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Executive order on building regulations 2018 (BR18)¹⁾

Pursuant to s. 2(4), s. 3, s. 4 B(1), s. 4 C, s. 5, s. 6(1)(a-d, f, g, j and k), s. 6(2 and 3), s. 7(1), s. 8(1 and 2), s. 9(1), s. 10(1), s. 12(6), s. 16 A, s. 16 B(1), s. 16 C(6), s. 18(5), s. 21(1 and 3), s. 22(9), s. 28(5), s. 30(2), s. 30 A and s. 30 C of the Danish Building Act , see Consolidated Act No. 1178 of 23 September 2016, the following shall be provided by authority and by authority under s. 18 of Executive Order No. 453 of 11 May 2017 on the duty and authority of the Transport, Building and Housing Agency, right to complain and proclamation of certain regulations of the Transport, Building and Housing Agency:

Part I - Administrative provisions

Chapter 1 - Administrative provisions

1. The Building Regulations apply to all buildings unless otherwise provided by ss. 4-6.

2. The Building Regulations apply to the following building works:
 - 1) Construction of new buildings.
 - 2) Additions to existing buildings.
 - 3) Conversions and other alterations of buildings which are material in respect of the Building Act or the Building Regulations.
 - 4) Changes in the use of buildings which are material in respect of the Building Act or the Building Regulations.
 - 5) Demolition of buildings.
 - 6) Maintenance building work and other alterations of existing buildings which have an impact on the energy consumption of the building.

3. The local council shall be the building authority which makes decisions under the Building Regulations.

Restrictions on the scope of the Building Regulations

4. The Building Regulations shall not apply to:
 - 1) Bridges, tunnels and other structures or erections for traffic purposes built or approved by the highway, railway or other authorities or companies with statutory responsibility for the construction works, and temporary structures and installations necessary for the completion of the construction works.
 - 2) Power supply pylons, ordinary masts for electrical installations, including street lighting and masts for the overhead cable systems of public electric railways.
 - 3) Bus shelters, etc.
 - 4) Substations and roadside junction boxes for the transmission of electricity, metering and pressure regulating stations for the transmission of gas; pumping stations and booster stations for water, drainage and district heating systems; radio and signal huts and relay housings for public transport purposes with a maximum area of 30 sq. metres and a maximum height of 3.0 metres.
 - 5) Siren units for warning systems installed or approved by the Danish Emergency Management Agency.

6) Boundary walls by adjoining properties, roads or paths and not exceeding 1.8 metres.

5. The following types of building works shall be in accordance with the Building Regulations, but may be erected without application for a building permit:

- 1) Erection of and additions to garages and carports not integrated with the primary building and outbuildings, chicken sheds, greenhouses, roofed-over terraces, etc. when the total area of the buildings does not exceed 50 sq. metres.
- 2) Conversion of garages, carports, outbuildings, chicken sheds, greenhouses, roofed-over terraces, etc.
- 3) Conversion and alteration of detached, semi-detached and terraced single-family houses and holiday homes. The conversion or alteration may not result in a material change of use or an extended floor area. External re-insulation is not considered an extension of the floor area.
- 4) Conversions and other alterations of existing buildings which do not change or affect supporting structures, the preconditions of the firefighting strategy of the building and shared installations. The conversion or alteration may not result in a material change of use or an extended floor area. For multi-storey buildings, only conversions and alterations within each unit shall be covered by the provision.
- 5) Open-air swimming pools, garden fireplaces and terraces adjoining single-family houses and holiday homes.
- 6) Transportable structures which are erected or used for building work for which building permit has been granted any transportable structures which are erected for building work for purposes other than the actual performance of the building work, including structures involving the performance of drawing office work, office work or similar work which is not actual building work during normal business hours.
- 7) Transportable tents included in the following list:
 - a) Single-storey tent for private use only.
 - b) Single-storey tents not for private use with a total area not exceeding 50 sq. metres.
- 8) Transportable structures included in the following list:
 - a) Stages, including automobile stages, erected indoors as well as outdoors with a maximum height of 1 m, uncovered.
 - b) Grandstands, including automobile grandstands, with a maximum height of 1 metre, uncovered.
 - c) Footbridges with a max. height of 1.0 metres above the ground, uncovered.
 - d) Site huts, wheeled facilities, containers, etc., structures with external walls of solid material regardless of whether the structure is on wheels or not and regardless of whether the structure is used for accommodation.
- 9) Erection of conversions and alterations for camping cabins, mobile homes, etc. covered by the Camping Regulations.
- 10) Erection of approved conversions and additions for allotment sheds that are permitted and the size and location of which have been provided for in a local plan, town planning by-law or registered declaration approved by a public authority.
- 11) Erection of conversions and additions for equipment cabins for electronic communication networks or services with an area not exceeding 50 sq. metres.
- 12) Outdoor facilities for storage of livestock slurry, grain and animal feed and drying facilities for grain, seed and other produce.
- 13) Antenna systems used for radio communication in electronic communication networks as defined in s. 2(4) and (5) of the Danish Act on Electronic Communications Networks and Services, including radio frequency-based or cable-based telecommunications infrastructure.
- 14) Masts and antenna systems, comprising antennas and associated technical equipment including cables, fixings, amplifiers, filters, equipment cabins, electrical earthing and micro links for transmission lines used for railway communication.
- 15) Structures and systems which comprise user-operated functions, such as IT points, ATMs and self-service machines and similar public-facing service functions.

16) Installations with an LPG storage capacity of up to 1,200 gas storage units.

(2) The following structures may only be erected subject to prior building permit if they are certified under the provisions of the Executive Order on a Certification Scheme for Transportable Tents and Structures:

- 1) Transportable tents:
 - a) All tents of more than 1 storey.
 - b) Tents which are not for private use with a total area of more than 50 sq. metres.
- 2) Transportable structures:
 - a) All structures of more than 1 storey.
 - b) Stages, including automobile stages, erected indoors as well as outdoors with a maximum height of 1 metre.
 - c) All stage covers regardless of the height of the stage if the area of the cover exceeds 50 sq. metres.
 - d) Grandstands, including automobile grandstands, with a height exceeding 1 metre.
 - e) All grandstand covers regardless of the height of the grandstand if the area of the cover exceeds 50 sq. metres.
 - f) Portal structures with and without covering which are erected, placed or used in a way which may constitute a risk of serious personal injury in case of failure.
 - g) Footbridges with a height of more than 1 metre without or without traffic below the footbridge, with or without cover.
 - h) All footbridge covers.
 - i) Towers, big screens, mobile antennas, loudspeaker towers, partition walls and similar self-supporting structures which are erected, placed or used in a way which may constitute a risk of serious personal injury in case of failure.
 - j) Truss systems which are erected, placed or used in a way which may constitute a risk of serious personal injury in case of failure.

(3) If an overall assessment is required under Chapter 8 for building work covered by subsection 1, a building permit must be obtained under s. 10.

(4) Subsection 2 also includes modular structures, the form and size of which mean that the structure exceeds the limits specified in subsection 2.

(5) If the structures listed in subsection 2 are not certified, they are subject to the requirement for building permit application, see s. 7.

(6) Exemption from the requirement for an application for a building permit shall not constitute exemption from compliance with and application for permits or registration required under other legislation.

6. The following building types shall be fully or partly exempt from compliance with the rules of the present Executive Order:

- 1) Garages, carports, outbuildings, chicken sheds, greenhouses, roofed-over terraces and similar structures and equipment cabins for electronic communication networks or services with an area not exceeding 50 sq. metres may be built without figures and calculations demonstrating their strength and stability.
- 2) Agricultural livestock breeding and operational buildings and horticultural hothouses are covered by the following requirements in Part II:
 - a) Drains in Chapter 4.
 - b) Fire safety in Chapter 5.
 - c) Layout of building sites and performance of building work in Chapter 7.
 - d) Building in ss. 184-186 height and distance requirements in ss. 191 and 194.
 - e) Layout of workplaces in ss. 221-227.
 - f) Energy supply plant for buildings in Chapter 12.
 - g) Structures in Chapter 15.
 - h) Water in Chapter 21.

- i) Indoor climate in rooms used by employees who perform office work. In such rooms, the requirements in relation to pollution in Chapter 13, sound conditions in Chapter 17, lighting and view to the surroundings in Chapter 18 and indoor climate requirements for thermal indoor climate and installations for heating and cooling systems in Chapter 19 and ventilation in Chapter 22 shall be observed.
- 3) Masts and antenna systems comprising antennas and associated technical equipment including cables, fixings, amplifiers, filters, equipment cabin and cabinets, electrical earthing and micro links for transmission lines used for railway communication are exempt from the provisions of Chapter 8.
- 4) Allotment sheds the size and location of which have been provided for in a local plan, town planning by-law or registered declaration approved by a public authority are subject to the following requirements of the present Executive Order:
 - a) Drains in Chapter 4.
 - b) Smoke alarm system in s. 90, para (14).
 - c) Energy supply plant for buildings in Chapter 12.
 - d) Water in Chapter 21.
- 5) Transportable structures which are erected or used for building work for which building permit has been granted are subject to the following requirements of Part II Layout of workplaces and performance of building work in Chapter 7.
- 6) Transportable structures which are used as permanent workplaces for the performance of drawing office work, office work or similar work during normal business hours and which are erected in connection with building work for which building permit has been granted are subject to the following requirements of the present Executive Order:
 - a) Layout of building sites and performance of building work in Chapter 7.
 - b) Fire safety in Chapter 5.
 - c) Energy consumption for temporary, movable pavilions in ss. 287-292.
- 7) Transportable tents and structures, see s. 5(1), para (7) and (8) and s. 5(2) are subject to the following requirements in Part II:
 - a) Building rights in Chapter 8. The provisions of Chapter 8 only apply to transportable tents and structures which are erected for a period exceeding 6 weeks.
 - b) Access conditions at the building in ss. 52-55.
 - c) Protection in ss. 59-61.
 - d) Structures in Chapter 15. Tents with a total area of maximum 50 sq. metres are not subject to the rules in Chapter 15.
 - e) Fire safety in Chapter 5.

Application for building permit

7. Building work may not be commenced without a building permit from the local council unless otherwise provided in ss. 4 and 5.

(2) The local council may decide to charge a fee for the administration of building permits, see s. 39.

8. The local council may hold a preliminary dialogue with the applicant with the purpose of determining the framework of the building project and the relationship to other legislation.

9. The application for a building permit must be submitted to the local council by using the digital solution provided by the local council and be signed by the owner using digital signature.

(2) In the absence of the owner's signature, other means of validating the applicant's right to carry out the work must be produced.

10. An application for a building permit must include:

- 1) Any information necessary for the identification of the property, building or unit including for example land register denomination, access address, property number and statement of floor.
- 2) Information for the identification of the work to be performed, including drawing stating the dimensions and location of the building.
- 3) Information about conditions relating to Chapter 8 and Chapter 20.
- 4) Information about the planned use of the building. in the case of conversions and changes of use of the building, it should also include information on the current use.
- 5) Information about and documentation of the structural class according to which the building can be classified, see Chapter 26 on structural classes and Chapter 28 on documentation of supporting structures.
- 6) Information about and documentation of the fire class to which the building can be classified, see Chapter 27 on fire classes and Chapter 29 on documentation of fire safety.
- 7) Information for registration of the case in the Building and Housing Register (BBR).
- 8) Statement concerning the technical conditions in the Building Regulations which apply to the building work.

(2) If deemed necessary, the local council may request supplementary documentation to clarify the nature and scope of the building work, see subsection 1, para (1) - (8).

(3) For buildings in structure class 2-4, supplementary documentation must be submitted, see ss. 19 and 25.

(4) For buildings in fire class 2-4, supplementary documentation must be submitted, see ss. 23 and 29.

(5) If deemed necessary in individual cases, the local council may request authentication by a surveyor of information concerning the size of the plot or the location of the building.

11. Application for a building permit for erection of a wind turbine and related building work must include:

- 1) A clear description of the work to be carried out.
- 2) A drawing with the scale marked and a specification appended showing the location of the building on the site, its height, length and width, its distance to boundaries and other buildings on the site; and
- 3) Any permissions required under other legislation.

12. In connection with the application for permission to give the public access to a mine and similar structures, a report on the expert surveys of the strength and stability of the subsoil being carried out must be submitted.

13. Applications for exemption from provisions of the Building Regulations must be submitted to the local council by using the digital solution provided by the local council and be signed by the owner using digital signature. The local council may require that an application for exemption or permission to continue a breach be signed in person by the owner.

(2) The local council may grant an applicant exemption to derogate from provisions stipulated in the Building Regulation when this is deemed compatible with the conditions underlying the provision from which exemption is sought, see s. 22 of the Building Act.

(3) The local council may request any information necessary in order to grant an exemption.

(4) An exemption is only valid when it is stated explicitly in the building permit or when the applicant is informed thereof in writing.

(5) The provisions of the Building Regulations may be relaxed in relation to listed buildings and buildings which form part of a scheduled ancient monument where such provisions are deemed to be in conflict with the protection and preservation value of the site.

14. The local council may give an owner temporary permission to use an adjoining plot in the following circumstances:

- 1) When it is necessary to safeguard neighbouring plots, buildings, pipelines and cables in connection with foundation works, excavations or earthworks on the owner's plot.
- 2) When it is necessary for an owner to carry out building, repair or maintenance works on the owner's own property.

(2) Work covered by subsection 1 must be notified no later than 14 days before such work is commenced.

(3) The adjoining plot must be used in such a way as to cause the least possible inconvenience. When the work has been completed, the person to whom the permit was granted must return the adjoining plot to its former condition as soon as possible.

(4) If new a building or alteration or removal of an existing building on a common boundary obliges the neighbour to alter or remove structures on the boundary, the neighbour must be allowed to carry out the necessary work before prevented to do so by the building work.

15. Before building work for which a building permit has been granted is commenced, notification hereof must be submitted to the local council.

Use of a certified structural engineer in structure class 2-4

16. In applications for building permits for building work in structure class 2-4, a certified structural engineer must be associated who must provide documentation of or check that Chapter 15 is observed.

(2) In applications for building permits for building work in structure class 2-4 for which a certified structural engineer is not associated the local council must process the building project, see ss. 24-27.

(3) The applicant must appoint a construction designer for the load-bearing structures with responsibility for collating and coordinating the structural documentation, such that it constitutes a coherent whole, see chapter 31. Information about the construction designer must be stated in the building permit application.

17. The following applies to the various structure classes:

- 1) For building work in structure class 2, one structural engineer must be associated who is certified in accordance with s. 12 of the regulation on certification system for documentation of technical issues in the Building Regulations.
- 2) For building work in structure class 3 and 4, one structural engineer must be associated who is certified in accordance with s. 13 of the regulation on certification system for documentation of technical issues in the Building Regulations.

(2) For building work in structure class 4, endorsement is required by one structural engineer who is certified to carry out third-party checks, see s. 14 of the certification system for documentation of technical issues in the Building Regulations.

18. The applicant will appoint a certified structural engineer. Information identifying the certified structural engineer must be stated in the building permit application.

(2) For building work in structure class 4, the applicant must appoint a structural engineer who is certified for third-party checks. Information identifying the structural engineer certified for third-party checks must be stated in the building permit application.

19. In connection with an application for a building permit in structure class 2-4, the following documentation approved by the certified structural engineer must be submitted:

- 1) Documentation of structure class classification, see Chapter 28.
- 2) Declaration of commencement, see s. 498(1).

(2) For building work in structure class 4, a declaration of commencement from a structural engineer certified for third-party checks must also be submitted, see s. 498(2).

Use of a certified fire consultant in structure class 2-4

20. In applications for building permits for building work in structure class 2-4, a certified fire consultant must be associated who must provide documentation of or check that Chapter 5 is observed.

(2) In applications for building permits for building work in structure class 2-4 for which a certified consultant is not associated, the local council must process the building project, see ss. 28 and 29.

21. The following applies to the various fire classes:

- 1) For building work in fire class 2, one fire consultant must be associated who is certified in accordance with s. 19 of the regulation on certification system for documentation of technical issues in the Building Regulations.
- 2) For building work in fire class 3 and 4, one fire consultant must be associated who is certified in accordance with s. 20 of the regulation on certification system for documentation of technical issues in the Building Regulations.

(2) For building work in structure class 4, endorsement is required by one fire consultant who is certified to carry out third-party checks, see s. 21 of the certification system for documentation of technical issues in the Building Regulations.

22. The applicant will appoint a certified fire consultant. Information identifying the certified fire consultant must be stated in the building permit application.

(2) For building work in fire class 4, the applicant must appoint a fire consultant who is certified for third-party checks. Information identifying the fire consultant certified for third-party checks must be stated in the building permit application.

23. In connection with an application for a building permit in structure class 2-4, the following documentation approved by the certified fire consultant must be submitted:

- 1) Documentation of fire class classification, see Chapter 29.
- 2) Statement indicating if the building is traditional in terms of contingency tactics, see s. 510.
- 3) Declaration of commencement, see s. 508(1).

(2) For building work in fire class 4, a declaration of commencement from a fire consultant certified for third-party checks must also be submitted, see s. 508(2).

(3) If the building is not traditional in terms of contingency tactics, the solutions regarding contingency tactics for the building must be approved by the local council before a building permit can be granted.

Building project process in structure class 2-4 up to 31 December 2019

24. If a certified structural engineer has not been appointed for building work in structure class 2-4, the local council must process the structural conditions, see Chapter 15.

(2) The applicant must appoint a construction designer for the load-bearing structures with responsibility for collating and coordinating the structural documentation, such that it constitutes a coherent whole, see chapter 31. Information about the construction designer must be stated in the building permit application.

25. In connection with applications for building permits in structure class 2-4 for which a certified structural engineer has not been associated, documentation must be submitted for processing by the local council stating that the building work is in accordance with the provisions of Chapter 15. The documentation must be drawn up in accordance with the provisions of Chapter 28.

26. For building work in structure class 3 and 4 for which a certified structural engineer has not been associated and which is subject to building project processing of structural conditions by the local council, a statement drawn up and signed in person by a structural engineer accredited according to the rules stated in Chapter 35 must be enclosed with the structural documentation. The statement must include the structural documentation in its entirety.

(2) The applicant appoints the accredited structural engineer. Information hereof shall be stated in the application for building permit.

27. For building work in structure class 4, in addition to a statement drawn up and signed in person by a structural engineer, a third-party check must be performed by a structural engineer accredited according to the rules of Chapter 35 who may not be financially connected, directly or indirectly, with the organisation(s) which have contributed during the planning stage of the building.

(2) The applicant appoints the accredited structural engineer. Information hereof shall be stated in the application for building permit. The local council must approve the choice of the accredited structural engineer.

Building project process in fire class 2-4 up to 31 December 2019

28. If a certified consultant has not been appointed for building work in fire class 2-4, the local council must process the fire safety conditions, see Chapter 5.

29. In connection with applications for building permits in fire class 2-4 for which a certified fire consultant has not been associated, documentation must be submitted for processing by the local council stating that the building work is in accordance with the provisions of Chapter 5. The documentation includes:

- 1) Fire safety documentation showing the layout of the building, see s. 522.
- 2) The basis of the fire safety measures chosen.
- 3) Documentation showing how checks and maintenance of the fire safety systems and building elements will be carried out.

(2) The local council may obtain a declaration by an expert in respect of the fire safety documentation, see subsection 1, para (1) - (3). The costs must be met by the applicant.

Transportable tents and structures

30. The transportable tents and structures stated in s. 5(2), which are not certified in accordance with the Executive Order for a certification scheme for transportable tents and structures, may not be erected without prior building permit from the local council.

(2) Transportable tents and structures erected for more than six weeks on the same location, may not be erected without prior building permit from the local council, regardless of the provision of s. 5(2). If a structure which is to be erected for more than six weeks is certified, the local council may rely on such certification for the technical part of the building application processing, and only building control matters, if any, need to be processed.

31. Temporary batten structures are only covered by the Building Act to the extent this is considered appropriate by the local council, see s. 2(3) of the Building Act. Temporary batten constructions are thus not covered by s. 5(1)(1 and 8) and s. 5(2).

32. For transportable tents and structures used by more than 150 persons, notification stating the layout and use of the transportable tent or structure, see s. 157, must be submitted to the local council no later than 4 weeks before use of the structure is commenced.

Camping, festival and sales areas

33. Camping areas at festivals, scout camps, sports events, etc. for overnight accommodation for over 150 persons must be located, arranged and used in accordance with s. 157.

(2) For camping areas at festivals, scout camps, sports events, etc. with a total area of 1,000 sq. metres to 3,000 sq. metres for overnight accommodation for over 150 persons, notification stating the layout and use of the area, see s. 157, must be submitted to the local council no later than 4 weeks before use of the area is commenced.

(3) For camping areas at festivals, scout camps, sports events, etc. with a total area of over 3,000 sq. metres for overnight accommodation for over 150 persons, an application for a building permit stating the layout and use of the area, see s. 157, must be submitted to the local council no later than 4 weeks before use of the area is commenced.

34. Festival and sales area with a total area of up to 1,000 sq. metres must be located and used in accordance with s. 157.

(2) For festival and sales area with a total area over 1,000 sq. metres, an application for a building permit stating the location, layout and use of the area, see s. 157, must be submitted to the local council no later than 4 weeks before use of the area is commenced.

Building permit

35. Notification of building permit must be communicated in writing to the applicant.

(2) Before a building permit can be granted, the local council must examine if the building work is in conflict with other legislation.

(3) Requirements stated in the building permit which have been stipulated pursuant to other legislation must be stated separately in the permit.

36. Before the local council can grant a building permit, it must assess if the documentation submitted under ss. 10 and 11 is in accordance with the requirements of the Building Regulations which are relevant to the building project.

37. A building permit is binding.

(2) If changes are made during in the course of the building work which are not in accordance with the building permit, the applicant has a duty to inform the local council hereof.

(3) The local council will assess whether the changes in the building works give rise to changes to the terms of the permission or a new decision.

(4) On the request of the applicant, the local council may appoint an expert in relation to the technical documentation if this is necessary in order for the local council to make a decision on the building permit. The costs must be met by the applicant.

38. If a suitable habitat evaluation has not been conducted, before issuing a building permit, the local council must, assess whether the plan or project will have a detrimental impact on the natural habitat.

(2) A building permit may be granted irrespective of subsection 1 if it is in the public interest to do so, given the existence of exceptional, urgent national imperatives and the absence of alternatives.

Building process fees

39. The local council may charge a fee for processing applications for building permits. A fee may also be charged if an application for a building permit is withdrawn, if an application is refused, or in connection with the processing of legalisation cases and applications for exemption by the local council.

(2) If the local council decides to charge a fee, such fee may be charged according to time spent or as a fixed fee. If the local council decides to charge a fixed fee for applications for building permits, fees may not be charged according to time spent for case types which are subject to a fixed fee.

(3) The local council may decide only to charge fees for certain case types. If the local council decides only to charge fees for certain case types, the local council may only have expenses related to the processing of such work subject to fees covered via the fees.

(4) If fees are charged according to time spent, the local council shall set the hourly rate. The local council must charge the same hourly rate for case types subject to fees according to time spent.

(5) Payments of fees according to time spent shall fall due when the local authority grants permission for the use of the building.

(6) The local council may determine that the fee under subsection 5 shall be payable in two instalments. The first instalment will fall due when the building permit is granted. The second instalment will fall due when the local authority grants permission for the use of the building.

(7) When fees are charged according to time spent, the statement of time spent for the processing shall be specified in each building process.

(8) If a fixed fee is charged, see s. 2, the fee may not exceed the amount stipulated in Executive order on fees charged by the Transport, Building and Housing Agency in the building sector. Payment of the fixed fee will fall due when notification of the building permit is communicated. The local council may withhold the building permit until the fee has been paid.

Conclusion of a building process

40. The local council must be informed when building work requiring a building permit is concluded.

(2) On conclusion notification the following must be submitted:

- 1) Documentation that building damage insurance has been taken out and that the premium has been paid, see s. 25 C(2) of the Building Act, for buildings covered by s. 25 A of the Building Act.
- 2) A statement indicating that the finished building is in accordance with the building permit and the Building Regulations.
- 3) Documentation stating that the provisions of the Building Regulations have been observed in the finished building. The documentation must include all material relevant to the building work, including general descriptions, calculations, drawings, tests, measurements, etc. The documentation submitted must provide documentation of the determination of specific levels based on the function requirements in the Building Regulations and of the compliance of the specific levels or detailed requirements of the Building Regulations.
- 4) Operating and maintenance instruction for the installations in the building, see ss. 80, 328, 392, 419 and 452.

(3) The owner of the building has a duty to give notice of circumstances relevant to the operation and updating of the Building and Housing Register (BBR) in accordance with the Executive Order on the updating of the Building and Housing Register.

(4) Temporary transportable structures are exempt from the requirement for conclusion notification.

41. For buildings in structure class 2-4, see Chapter 26, a conclusion notification drawn up by the certified structural engineer appointed by the applicant must be submitted, see s. 499(1).

(2) For buildings in structure class 4, a conclusion notification drawn up by the structural engineer certified for third-party checks and appointed by the applicant must also be submitted, see s. 499(2).

42. For buildings in fire class 2-4, see Chapter 27, a conclusion notification drawn up by the certified fire consultant appointed by the applicant must be submitted, see s. 509(1).

(2) For buildings in fire class 4, a conclusion notification drawn up by the fire consultant certified for third-party checks and appointed by the applicant must also be submitted, see s. 509(2).

43. Building work requiring a building permit may not be used without a permission for use by the local council.

(2) Before the local council can permit use of the building, it must verify that the applicant has submitted documentation proving that the requirements in the Building Regulations which apply to the building work and the requirements for documentation issued with the building permit are fulfilled.

(3) On the request of the applicant, the local council may appoint an expert in relation to the technical documentation if this is necessary in order for the local council to make a decision on permission to take the building into use. The costs must be met by the applicant.

(4) Garages and carports not integrated with the primary building and outbuildings, chicken sheds, greenhouses, roofed-over terraces, etc. are not included in subsection 1 and may therefore be taken into use without permission.

(5) Demolition work which requires approval by the local council, see s. 47, are not covered by subsection 1.

44. The local council may give permission for buildings to be taken into full or partial use, even if the building work has not been fully completed. The local council may set a deadline for the completion of the building work and may require a performance bond. If the deadline is exceeded, the building may be completed on the instigation of the local council, invoking the performance bond provided.

45. Where permission for use involves giving the public access to a mine or similar structure, an expert's report on the strength and stability of the subsoil must be provided. The local council may require the mine or similar structure to be monitored.

46. In 10 per cent of the building processes for which permission of use have been granted, the local council must take random samples of the total documentation submitted on the completion notice for the building work documenting compliance with the requirements of the Building Regulation for the completed building. In the random sample check, the local council must ensure that the building complies with the requirements of the Building Regulations which are relevant to the building.

(2) In building work in structure class 2-4, the local council is not required to ensure compliance with Chapter 15.

(3) In building work in fire class 2-4, the local council is not required to ensure compliance with Chapter 5.

(4) Building processes for detached, semi-detached and terraced single-family houses and holiday homes and building processes for garages, carports, outbuildings, chicken sheds, greenhouses, roofed-over terraces and similar structures are not included in the requirement for random samples, see subsection 1.

Demolition of buildings

47. Demolition of buildings for which construction requires a building permit may not be commenced without a permit from the local council

(2) Garages and carports not integrated with the primary building and outbuildings, chicken sheds, greenhouses, roofed-over terraces, etc. adjoining detached, semi-detached and terraced single-family houses and holiday homes may be demolished without a permit from the local council.

(3) An application for demolition must include information identifying the building, including the address and land register denomination of the property and information about the approximate height and surface area of the building and shall be submitted by using the digital solution provided by the local council and be signed by the owner using digital signature.

(4) The local council may determine guidelines for the demolition of buildings.

(5) A statement of conclusion of a building process in which a demolition permit has been granted for a building must be submitted to the local council.

Part II - Technical and building control provisions

Chapter 2 - Access

48. Buildings, residential areas and parking areas must have access condition which enable users to arrive and enter them and access their functions.

(2) Holiday homes are not included in the provisions of Chapter 2 on access.

(3) Detached single-family houses which are used only for residential purposes are not included in the provisions of Chapter 2 on access, except s. 51(3) and s. 52.

Access up to the building

49. Users must be able to get from the road to all access points to buildings, residential areas and parking areas on the land parcel.

(2) The following must be observed for the access areas on the plot:

- 1) Access areas and access roads must be lit. Stairs and ramps must be furnished with stronger lighting.
- 2) The access path from road and parking areas must be minimum 1.3 metres wide and have an even and hard surface.
- 3) Differences in levels in the access area must be levelled at ground level or by means of a ramp with a maximum rise of 0.15 metres and an area of minimum 0.3 metres. A horizontal area of minimum 1.3 x 1.3 metres must be established at both ends of the ramp.
- 4) The gradient of ramps may not exceed 1:20 (5 centimetres per metre). Ramps with a gradient exceeding 1:25 (4 centimetres per metre) should have landings for every 12 metres.
- 5) Grip-friendly hand rails must be installed at a height of approx. 0.8 metres on both sides of ramps and stairs.
- 6) Pedestrian access paths to the building must be established with a clear tactile partition to other traffic categories.
- 7) Over stairs, the paving must change in both colour and tactility 0.90 metres before the beginning of the stairs. The outermost part of steps and the edges of steps must be marked with a contrasting colour.

50. Gates or passages in access areas or driveways must be designed to enable easy access for rescue vehicles.

Access conditions at the building

51. At all entrances to buildings it must be ensured that the users can enter the building unassisted.

(2) The following must be observed for all access to the building:

- 1) At all outer doors, access to the building must be on the same level. Any differences in levels must be adjusted in the access area outside the building. This includes access to lifts at the access floor of the building. Any differences in levels must be adjusted in the access area outside the building. Ramps may be used.
- 2) A horizontal, hard and even area of 1.5 x 1.5 metres outside outer doors measured from the hinged side of the door . When the door opens outwards, further 20 centimetres must be added along the front of the building.
- 3) Door steps may not be higher than 2.5 centimetres.
- 4) Areas outside outer doors must be level with the indoor floor.

5) Areas outside outer doors must have tactile markings or markings in another colour than the surrounding surface.

(3) For detached single-family houses only preparation of level access to one of the outer doors of the building at ground level is required.

52. Outer doors must have a free width for passage of minimum 0.77 metres. On the side of the door that opens towards the person, there should be minimum 0.50 metres of free space next to the door opposite the hinged side.

53. Ss. 51 and 52 also apply to doors for escape routes in the ground floor, garden, balcony and terrace doors and shared roof terraces for which access is possible via lift, etc.

54. In residential areas, parking areas and any areas for refuse collection adjoining the building, access conditions must be available which ensure that the users can access the areas and use their functions unassisted.

Shared access routes in the building

55. The users must be able to move from outside the building or via shared access routes in the building to the functions in the building unassisted.

56. Shared access routes leading to two or more dwellings, offices, meeting rooms, exhibitions, sales areas or other units or functions in each floor which includes wind screens, ante-rooms, access balconies, galleries, spaces outside lifts, ramps and landings in and outside the building and including outside access areas for basements must be planned and constructed as described below:

- 1) Direct and unimpeded access to lifts, residential units and functions in commercial buildings and shared spaces including outside living spaces on each floor.
- 2) Its width must be sufficient for its use, and unimpeded passage in its full width must be possible. The free width must be minimum 1.30 metres.
- 3) They must be marked using deviating materials, colours or lighting.
- 4) Any differences in level or height must be eliminated with ramps. Ramps may not be installed with a gradient over 1:20 (5 centimetres per metre) , and there must be a horizontal area of minimum 1.30 metres x 1.30 metres before and after the ramp. Ramps levelling differences in height of over 0.60 metres must also have a horizontal landing for each 0.60 metres rise. Ramps must be equipped with hand rails. For ramps with a gradient of 1:25 (4 centimetres per metre) or less, hand rails can be omitted.
- 5) Door in shared access routes must have a free width for passage of minimum 0.77 metres. On the side of the door that opens towards the person, there should be minimum 0.50 metres of free space next to the door opposite the hinged side.
- 6) Door steps may not be higher than 2.50 centimetres.

Stairs

57. Stairs in shared access routes must be established with sufficient width and headroom for their intended use. This provision is considered to be fulfilled when:

- 1) The free width of the stairs is minimum 1.0 metre, and the free headroom measured in the middle of the passage route of the stairs is minimum 2.10 metres.
- 2) Stairs have a gradient which makes them easy and safe to walk on. The gradient of the stairs (the vertical height of the steps) does not exceed 0.18 metres.
- 3) The going (the horizontal depth of the step) on straight run, quarter turn and half turn staircases is not less than 0.28 metres. In residential buildings, minimum 0.25 metres.
- 4) On circular and winding staircases the going may not be less than 0.20 metres.

Fencing

58. Corridors, staircases and ramps in shared access routes and balconies, French windows, balcony corridors, air locks, roof terraces, outside staircases and other elevated residential areas must be protected with fencing and equipped with hand rails with due consideration of the use of the building. With due consideration of the use of the building, all types of fencing or railings must be designed in to ensure that their height and design, openings in the fencing, etc. protect persons from falling over or through them. This provision is considered to be fulfilled when:

- 1) The height of fencing or railings is minimum 1.0 metre.
- 2) The height of fencing at staircases and ramps is minimum 0.80 metres and 0.90 metres over landings.
- 3) The height of fencing at staircases with a clearance over 0.30 metres, balcony corridors and air locks is minimum 1.20 metres.
- 4) The height of fencing must be measured over the front edge of the steps and from the top edge of the floor/deck.
- 5) Hand rails must be easy to grasp and hold on to.

59. Fencing must be designed with a distance between all types of baluster, vertical as well as horizontal, which does not cause personal injuries. In that connection, particular focus should be on ensuring that children cannot climb onto the guard or get pinched between balusters.

60. Fencing made from glass must be constructed in accordance with ss. 238-241.

Hand rails

61. Corridors, stairs and ramps in shared access routes must be equipped with grip-friendly hand rails which are easy to grip and hold on to in the sides not equipped with fencing. Hand rails must be installed without interruption over landings and must be terminated horizontally.

- (2) Hand rails must be installed at a height of approx. 0.80 metres.

Information

62. In building open to the public which offers citizen services, important information about the layout and use of the building must be easy to read and understand.

(2) Subsection 1 includes information at the entrance to the building and directions to important functions in the building such as lavatories, disabled lavatories, lifts, stairs, distribution routes, etc.

(3) With due consideration of the use of the building, this information must be provided in Braille, sound and pictograms, writing and graphics in relief and guiding lines.

Chapter 3 - Refuse systems

63. Buildings and areas surrounding buildings must be designed to enable the users to dispose of refuse from each unit in the buildings and on the grounds near the main entrances to the building.

64. Facilities for hygienic disposal of household waste until it is collected must be available in the building or on the plot.

(2) The design, construction, operation and maintenance of refuse systems must be carried out in a way which ensures that:

- 1) No health risks for people will occur.
- 2) No comfort-related nuisance such as noise and smell will occur.
- 3) Source-separated sorting must be possible.
- 4) No unnecessary use of energy will occur.

65. The waste systems must be arranged so that the users can use them unassisted.

66. Waste bins, boxes, etc. must be located on the same level as the access road for refuse collection vehicles in order to ensure that waste can be collected using technically appropriate means.

67. Refuse rooms must be designed and constructed with sufficient ventilation. This requirement will be fulfilled when:

- 1) Outside air is supplied via a grille or other opening into open air at floor level. The open area should be able to provide an air volume corresponding to the air volume which is evacuated. If an air inlet system is used, the inlet flow must correspond to the evacuation flow.
- 2) The evacuation system has a total volume flow of 1 l/s per waste bin, minimum 15 l/s.

68. Refuse systems, including waste chutes, must be planned and constructed to ensure that the system chosen is sufficiently ventilated.

Chapter 4 - Drains

69. Buildings and surrounding areas must be equipped with drains for waste water and water from technical installations. The planning, construction, operation and maintenance of drain installations must be carried out in a way which ensures that:

- 1) ;there is no risk of fire or explosion;
- 2) there are no health risks for people or comfort-related nuisance;
- 3) there is no risk of injury to people or damage to installations or building parts;
- 4) there is no risk of pollution of soil, ground water, other pipeline systems or other inappropriate water leakage;
- 5) there is no unnecessary energy consumption.

General provisions regarding drain installations

70. Drain installations must be planned and constructed in a way which ensures that the drainage water supplied is led away from the building and the surrounding areas. This must occur with due consideration of connections and surroundings and the use of the installation, the plot and the building.

(2) Drain installations must be dimensioned as stipulated in *DS 432 Standard governing drain installations*, s. 3, or in a way which ensures a similarly satisfactory removal, see (1).

(3) Ss. 69-81 can be fulfilled by observing *DS 432 Standard governing drain installations*.

71. Drain installations must be planned and constructed to ensure that:

- 1) no odour nuisance, deposits or floods will occur;
- 2) the location and installation does not result in vibration nuisance or damage to building parts or installations;
- 3) they are protected against frost;
- 4) unintended infiltration or leakage is avoided;
- 5) rats are prevented from breaking out of the installations into or under buildings;
- 6) in case of risk of damming in the main drain system, the building is protected against harmful flooding inside the building;
- 7) they can resist normal static, dynamic, chemical and thermal impact;
- 8) there is no risk of rupture or harmful pressure or water hammering;
- 9) flooding will not occur of water supply systems and water installations or other drain systems or installation units;
- 10) noise nuisance, moisture or odour is not carried via pipelines;
- 11) they can be cleaned, operated and maintained to a necessary degree. Cleaning access points and components which require operation, inspection or maintenance must be easily accessible in order to ensure that these operations can be carried out in an expedient and responsible way;
- 12) they are kept within the property;
- 13) the materials properties, strength and load-bearing capacity of covers and lids can bear the loads they are exposed to in order to ensure that personal injury or damage to other drain installations can be avoided.

72. When drain installations are laid in the ground, the foundation must be placed under the frost line and on a solid basis in order to ensure that damage will not occur as a result of soil movements.

73. Drain installations must be established as a separate system if the main drainage pipe is established as a separate system, or a separate system is required by the authorities.

74. The local council may request that necessary ventilation of main drainage pipes is established in the drain installation of a property.

Wastewater

75. Water installations with drainage and technical installations with e.g. ventilation and cooling surfaces which may produce damaging amounts of condensation and overflow from safety valves must be equipped with a drainage solution.

76. Anti-flood valve for protection against flood to be installed in or outside the building must be installed in accordance with Table 4.6.1 in *DS 432 Standard governing drain installations*.

Rain water

77. Drains for rain water must be established to ensure that removal, seepage or collection of water does result in a risk of damage to buildings or building parts or other disadvantages such as traffic disturbance.

(2) Roof water must be kept on the plot.

Drainage water

78. Installations for the drainage of buildings, etc. must be established in accordance with *DS 436 Standard for drainage of buildings, etc.*

Construction materials and products

79. Factory made products which form part of or are connected to drain installations must have the following mechanical/physical characteristics:

- 1) they must have a CE-marking stating that the products are in accordance with a harmonised standard or are covered by a European technical approval with the characteristics declared which are relevant to Denmark; or
- 2) they must have undergone testing of the characteristics which are relevant to Denmark and have undergone production checks at the factory to ensure that the performance declared is maintained as described in Chapter 24.

Operation and maintenance of drain installations

80. Operation and maintenance of drain installations must always be carried out in accordance with the provisions of ss. 70-78.

(2) Operation and maintenance instructions must be available before the building is put into use. The instruction must include drawings with indication of the location of installations which require maintenance and maintenance intervals.

(3) Unused areas of a drain installation must be protected against rat infestation by means of plugs. Plugs must be removed as closely as possible to the part of the drain system which is in use.

81. Substances which may damage or deteriorate the function of drain installations, main drain system, sewage plant or recipient may not be added to drain installations or the main drain system.

Chapter 5 - Fire

Fire safety in case of fire

82. Buildings must be sufficiently safe for persons in case of fire and the conditions for rescue of animals must be sufficient for buildings for commercial keeping of animals. The fire safety standard in a building must be upheld for the entire useful life of the building.

(2) Design, planning, construction, operation and maintenance of buildings must be carried out with due consideration of the use of the building and ensuring that:

- 1) the materials, building parts, structures and installation have sufficient fire safety in relation to their location and use;
- 2) safe evacuation of persons in and around the building is possible;
- 3) structures have a sufficient load-bearing capacity in case of fire;
- 4) it is ensured that fire cannot spread to buildings on other plot, that spreading of fire and smoke to other buildings in the same plot is limited, and that spreading of fire and smoke to the building where the fire originated is limited for the required period of time necessary in order to evacuate the building;
- 5) it is ensured that rescue personnel have secure options for searching for and rescuing persons and options for carrying out the extinguishing measures which are necessary in order to search for and rescue persons and limit the spreading of the fire;
- 6) it is ensured that the operation of the building is carried out in a way which maintains fire safety for the entire useful life of the building;
- 7) it is ensured that structures, building parts and fire safety installations are checked and maintained regularly in order to maintain fire safety for the entire useful life of the building.

83. Documentation of the compliance of the building with the requirements of Chapter 5 must be provided in accordance with the *Guidelines in the Building Regulations for Chapter 5 - Fire* or in a way which provides similar documentation of compliance with the requirements.

Category of use and risk classification

84. On determination of the necessary fire protection required in order to comply with the requirements in Chapter 5, a building must be divided into one or more building section with comparable fire risks.

(2) All building sections must be referred to a category of use, see Appendix 1, Table 1, and a risk class, see Appendix 1, Table 2.

85. The category of use must be determined based on whether a building section includes sleeping facilities, whether persons in the building section have been informed of escape routes, whether people are able to bring themselves into safety and based on the maximum number of persons which can be accommodated in each room. Determination of the category of use for a building section must be carried out in accordance with Appendix 1, Table 1.

86. The risk class of a building section must be determined based on the use of the building, the complexity of the evacuation procedures for people with due consideration of the layout of the building and based on the fire load of the relevant building section, see Appendix 1, Table 2.

(2) When a building is designed with several building sections with shared escape routes, the number of persons and the determination of the risk class must be based on the total number of persons in the building sections with shared escape routes.

(3) If a building has several building sections which are classified into different risk classes, and the building sections share escape routes, the highest risk classification of one of the building sections must apply to all the building sections allocated to the escape routes.

Materials, structures and building parts

87. Materials, structures and building parts intended to contribute to the fire safety of the building must be used and carried out with due consideration of their fire properties such as heat development, flame spread, smoke generation, production of burning droplets and particles, falling building parts and fire resistance and load-bearing capacity.

Fire safety installations

88. Fire safety installations installed in and around buildings must contribute to the fire safety of the building. The choice of fire safety installations must be made in consideration of the following needs:

- 1) Detection of the fire at an early stage in the fire process.
- 2) Quick alarm call to the emergency services.
- 3) Alerting of persons in the building in a way which enables quick commencement of evacuation.
- 4) Evacuation of persons in the building must be possible via safe escape routes.
- 5) The development of the fire is under control.
- 6) Smoke and heat is directed away from the building.
- 7) Persons in and around the building are able to assess the escape routes and find their way in connection with an evacuation procedure.
- 8) The conditions are safe for rescue and firefighting personnel.

(2) Fire safety installations must be planned and installed in such a way that they can be inspected and maintained throughout their entire useful life.

89. Ss. 90-133, which are related to fire safety installations, may be derogated from if the safety level stated in s. 82 is kept and documentation hereof is provided.

90. The fire safety installations and firefighting equipment of the buildings must be planned and installed as described below or in a which documents in a similar way that the fire safety installations function according to their purpose:

- 1) Automatic fire alarm system: *Guidelines of the Building Regulations on fire safety installations.*
- 2) Automatic system for closing of fireproof doors: *Guidelines of the Building Regulations on fire safety installations.*
- 3) Automatic sprinkler system: *Guidelines of the Building Regulations on fire safety installations.*
- 4) Automatic pressurisation system: *DS/EN 12101-6 Fire ventilation – Part 6: Specification of pressure differential systems – Components and Guidelines of the Building Regulations on fire safety installations.*
- 5) Fire beater: *Guidelines of the Building Regulations on fire safety installations.*
- 6) Firefighting lift: *DS/EN 81-72 Safety regulations for construction and installation of lifts – Special applications for person and goods lifts – Part 72: Firefighting lifts and the Guidelines of the Building Regulations on fire safety installations.*
- 7) Firefighting panel: *Guidelines of the Building Regulations on fire safety installations.*

- 8) Fire blanket: *DS/EN 1869 Fire blankets and Guidelines of the Building Regulations on fire safety installations.*
- 9) Fire ventilation: *Guidelines of the Building Regulations on fire safety installations.*
- 10) Escape route and anti-panic lighting: *DS/EN 1838 Lighting - Emergency lighting and Guidelines of the Building Regulations on fire safety installations.*
- 11) Hand-held fire extinguisher: *DS/EN 3-7 Hand-held fire extinguishers – Part 7: Characteristics, performance requirements and testing methods; DS/EN 3-8 Hand-held fire extinguishers – Part 8: Further requirements for EN 3-7 in relation to construction, pressure resistance, testing of fire extinguishers with a maximum permissible pressure of 30 bar or lower; DS/EN 3-9 Hand-held fire extinguishers – Part 9: Further requirements for EN 3-7 on the pressure resistance of CO₂ fire extinguishers and the Guidelines of the Building Regulations on fire safety installations.*
- 12) Oxygen-reducing systems: *DS/EN 16750 Design of oxygen-reducing systems for prevention of fire and the Guidelines of the Building Regulations on fire safety installations.*
- 13) Communication systems: *Guidelines of the Building Regulations on fire safety installations.*
- 14) Smoke alarm systems: *Guidelines of the Building Regulations on fire safety installations.*
- 15) Smoke evacuation: *Guidelines of the Building Regulations on fire safety installations.*
- 16) Risers: *Guidelines of the Building Regulations on fire safety installations.*
- 17) Pressure intensifier pump: *Guidelines of the Building Regulations on fire safety installations.*
- 18) Water-filled hose reel: *DS/EN 671-1 Stationary fire extinguishing systems – Hose systems – Part 1: Hose reels with fixed-dimension hose; DS/EN 671-2 Stationary fire extinguishing systems – Hose systems – Part 2: Hose reels with flat hose; DS/EN 671-3 Stationary fire extinguishing systems – Hose systems – Part 3: Maintenance of hose reels with fixed-dimension hoses and fire hose systems with flat hoses and the Guidelines of the Building Regulations on fire safety installations.*
- 19) Alarm system: *Guidelines of the Building Regulations on fire safety installations.*
 - (2) Automatic fire alarm systems and automatic sprinkler systems must be installed with automatic alarm transfer to the rescue personnel.
 - (3) If an alerting system is installed in the building, and an automatic fire alarm system or an automatic sprinkler system is installed, the alerting system must be activated by that system.

Evacuation and rescue of persons

91. Buildings must be designed, planned and constructed in a way which enables safe evacuation and rescue of persons in case of fire.

92. Buildings must be designed in a way which ensures that people become aware of a fire and safe quick evacuation can be commenced. This must be done with due consideration of:

- 1) The need for quick detection.
- 2) The need for alerting persons in the building.
- 3) The opportunity and ability of persons to bring themselves into safety unassisted.
- 4) The need for alarming the emergency services.

Requirements for fire safety installations for alerting persons and calling the emergency services

93. Fire safety installations must be installed for alerting persons and calling the emergency services as described below:

- 1) Building sections in use category 2 and 3 with associated escape routes for more than 150 persons must be equipped with an alerting system. Alerting may be omitted if all living spaces have doors leading directly to open air on ground level and the living spaces are limited to maximum 150 persons.
- 2) In building sections in use category 3 with associated escape routes for more than 150 persons, speech alerting must be used.
- 3) In building sections in use category 3 with associated escape routes which include living spaces for more than 150 persons, the living rooms with associated escape routes must be established with an automatic alerting system activated by an automatic fire alarm system if the living space is used in a way which reduces the possibility of safe evacuation.
- 4) A residential unit in a building section in use category 4 must be established with a smoke alarm system which is connected to the electricity supply and is equipped with a back-up battery.
- 5) Building sections in use category 5 with associated escape routes which are established with more than 10 bedrooms or sleeping accommodation for over 50 people must be established with an automatic alerting system activated by an automatic fire alarm system. When all bedrooms have direct access to open air on ground level, or when the building section is established with less than 10 bedrooms and sleeping accommodation for less than 50 persons, alerting may be omitted provided that all rooms are equipped with a fire alarm system which is connected to the electricity supply and is equipped with a back-up battery.
- 6) Building sections in use category 6 with associated escape routes must be established with an automatic alerting system activated by an automatic fire alarm system. Alerting must be adapted to the persons occupying the building section. If persons are unable to react to alerts or unable to bring themselves into safety unassisted, the staff must be alerted.

(2) When (1) is complied with, several building sections of the same use category with shared evacuation routes must be considered one building section.

Design of escape routes for the evacuation of persons

94. An escape route is a coherent system of exits, walking areas and escape staircases which ensure that persons can leave a building safely.

(2) The design, planning and construction of escape routes must be carried out with due consideration of:

- 1) Persons' knowledge of the escape routes in the building.
- 2) That escape routes must be easy to identify and use.
- 3) The opportunity and ability of persons to use the escape routes in the building.
- 4) That evacuation can be carried out safely to open air or a safe area in the building and then into open air at ground level.
- 5) That critical temperatures, smoke concentrations, heat radiation or similar critical conditions will not occur during the time when the escape routes are needed for evacuation.
- 6) That the escape routes are dimensioned for the number of persons who will be using them.
- 7) That doors in escape routes are easy to open without use of keys or tools when the escape route needs to be used by persons, and that doors in escape routes to be used by more than 150 persons must open in the direction of evacuation.
- 8) That escape routes must be clear in the necessary width.

Fire safety installations for protection of escape routes

95. An automatic sprinkler system must be installed in a building when the building includes one or more bedroom sections in use category 6, and these bedroom sections have a total floorage which exceeds 1,000 m², and the building is more than one storey above ground level.

Fire safety installations for protection of use of escape routes

96. Escape route and anti-panic lighting must be installed for the protection of use of escape routes:

- 1) In buildings with a top storey floor height higher than 22 metres above ground level, anti-panic lightning must be installed in escape route staircases.
- 2) In building sections with associated escape routes in use categories 2 and 3 intended for more than 150 persons, escape route and anti-panic lightning must be installed in the escape routes. When all accommodation rooms have access to open air on ground level, escape route and anti-panic lightning may be omitted.
- 3) In accommodation rooms in use categories 3 and 6 equipped for more than 150 persons, escape route and anti-panic lightning must be installed in walkways leading to the exits.
- 4) In building sections in use categories 5 and 6 with associated escape routes, escape route and anti-panic lightning must be installed in the escape routes if the floorage of the building section exceeds 1,000 sq. metres. For building sections in use categories 5 and 6 where all accommodation rooms have access to open air on ground level, escape route and anti-panic lightning may be omitted.

(2) When (1) is complied with, several building sections in the same use category with shared evacuation routes must be considered one building section.

Evacuation doors

97. Fire safety units to accommodate people must be equipped with evacuation doors unless a corresponding safety level can be achieved by other means.

98. Evacuation doors must be designed and established with due consideration of the following:

- 1) Persons in the room must be able to draw attention to themselves.
- 2) The number of persons the room is intended to accommodate.
- 3) That evacuation doors can be used for rescue of persons via the ladders of the firefighting personnel depending on the height of the building.
- 4) That evacuation doors in fire safety units can be opened without the use of keys or specialised equipment when persons are present in the fire safety units in question.

Fire resistance of load-bearing structures

99. In case of a fire, buildings and building parts must be sufficiently fire resistant.

(2) The planning and construction of building structures must be carried out with due consideration of:

- 1) Safe evacuation of the persons in the building must be possible, and the building must not suffer material damage.
- 2) Injuries or damage must not be inflicted on persons and buildings on other plots.

- 3) The emergency services must have secure options for searching for and rescuing persons and options for carrying out the extinguishing measures which are necessary in order to search for and rescue persons and limit the spreading of the fire.
- 4) Material damage must not be inflicted on other building on the same plot which may result in danger to persons or the rescue and firefighting measures of the emergency services.

100. The fire resistance of load-bearing building parts are determined either by standard fire effect or by use of a natural fire process as described in *DS/EN 1991-1-2 Eurocode 1: Load on load-bearing structures – Part 1-2: General loads – Fire load and DS/EN 1991-1-2 DK NA National annex to Eurocode 1: Load on buildings – Part 1-2: General loads – Fire loads*.

101. If a natural fire process pursuant to s. 100 is applied, the ability of the structure to resist the full fire process must be documented.

102. The load-bearing capacity during fire must be determined as described in Chapter 15.

103. Building parts must be integrated to ensure that the total building structure does not have a lower load-bearing capacity in case of a fire compared to each individual building part used in the structure. This provision applies to both load-bearing and fire separating building parts.

Ignition and spreading of fire and smoke

104. Buildings must be planned and erected to ensure that material spreading of fire or smoke does not occur in case of a fire. This must be done with due consideration of the following:

- 1) The risk of fire is limited.
- 2) Spreading of fire and smoke is limited to the fire unit where the fire started.
- 3) Spreading of fire and smoke to other fire units is prevented for the time necessary to carry out evacuation and rescue.
- 4) Spreading of fire to other buildings on the plot is limited.
- 5) Fire does not spread to buildings on other plots.

Risk of ignition

105. Installations and other measures which may result in an increased risk of fire, including electricity cabinets, charging stations, heating plant, evacuation systems, etc. must be located and installed in the building in a way which minimises the risk of fire.

106. It must be ensured that pipes, ducts and similar installations for carrying off hot smoke do not contribute to the ignition of building parts.

107. Large heating plants must be installed in separate fire units with direct access to open air in order to reduce the risk of fire spreading.

Spreading of fire and smoke in the room where the fire started

108. Interior surfaces in rooms may not contribute significantly to the spreading of fire and smoke for the period of time required for persons in the room to bring themselves to safety.

109. Interior surfaces must be designed and established in a way which does not contribute significantly to the spreading of fire and smoke as a result of the following surface properties:

- 1) Flammability.
- 2) Spreading of fire.
- 3) Generation of heat and smoke.
- 4) Generation of burning droplets and particles.

Spreading of fire and smoke in the building where the fire started or to buildings on the same plot

110. Interior surfaces in escape routes must be established in a way which does not contribute significantly to the spreading of fire and smoke for the period of time necessary to evacuate persons.

111. Buildings must be divided into one or more fire safety units. The division into fire safety units is intended to ensure that the escape routes can be used for the period of time necessary in order to evacuate and rescue persons in the building and to prevent material spreading of the fire.

112. Building sections in the various use categories must form independent fire safety units.

113. In a building section including various use categories, the fire protection measures in the entire building section must comply with the requirements in force for the use category in the section which requires the highest level of protection.

114. Penetrating installations in fire separating building parts must be established in a way which guarantees that the fire safety properties of the building parts are not reduced.

115. Building parts must be constructed in a way which ensures that fire cannot spread from a fire safety unit to a cavity which passes through one or more fire separating building parts.

116. Installation shafts, stair wells, elevator shafts, etc. which connect various fire safety units must be established with fire separation measures against other parts of the building. Fire separation may consist in establishment as separate fire safety units.

117. Outer walls and roofs must be planned and constructed in a way which ensures that:

- 1) spreading of fire in and on outer walls and roofs is limited;
- 2) in buildings consisting of more than one fire safety unit, spreading of fire does not occur between the various fire safety units via outer walls and roofs for the time necessary for evacuation and for rescue

- personnel to carry out their work;
- 3) outer walls do not develop unacceptable levels of burning droplets and particles;
 - 4) parts of the outer wall does not fall down and constitute a risk of injury to persons.

118. Buildings on the same plot must be located with sufficient distance or in a way which ensures that spreading of fire is limited for the time necessary for evacuation and for rescue personnel to carry out their work.

119. Camping, festival and sales areas must be located, laid out and used in a way which ensures that fire can be limited to the area where it started. Spreading of fire and smoke to other areas must be prevented for the time necessary for evacuation and for rescue personnel to carry out their work.

Fire safety installations for the limitation of spreading of fire and smoke

120. In camping, festival and sales areas, fire extinguishing equipment must be available to an extent which enables the people present to carry out acceptable preliminary measures.

121. Buildings must be equipped with water-filled hose reels as described below in order to ensure that persons in the building can carry out preliminary measures:

- 1) Building sections in use category 1 which are intended for use as industrial and storage buildings and as livestock breeding and operation buildings with a floorage exceeding 1,000 sq. metres.
- 2) Building sections in use categories 2 and 3 which are equipped for more than 150 persons.
- 3) All building sections in use categories 5 and 6.

122. In rooms over 1,000 sq. metres, automatic fire ventilation or an automatic sprinkler system must be installed to reduce the risk of spreading of fire in the room.

123. Automatic sprinkler systems must be installed in buildings as described below in order to prevent spreading of fire:

- 1) Building sections in use category 1 when the floorage exceeds 5,000 sq. metres. If the fire load of the mentioned building sections exceeds 800 MJ/sq. metres floor area, they must be established with automatic sprinkler systems if the floor area of the building section exceeds 2,000 sq. metres.
- 2) In storage buildings with building sections in use category 1 with a stacking height of over 8 metres and a floor area exceeding 600 sq. metres.
- 3) Building sections in use categories 2 and 3 if the floor area of the building section exceeds 2,000 sq. metres.
- 4) Building sections in use categories 4, 5 and 6 if the building section exceeds 600 sq. metres and the building has more than one storey.
- 5) Building sections in use categories 4, 5 and 6 if the building section exceeds 2,000 sq. metres and the building has one storey.
- 6) Buildings with a top storey floor height higher than 22 metres above ground level.

124. In industrial and storage buildings in use category 1, an automatic fire alarm system must be installed to ensure an early alarm call and preliminary action by the emergency service and to prevent material spreading of the fire if:

- 1) the floor area of the building section exceeds 2,000 sq. metres and an automatic sprinkler system has not been installed;
- 2) the floor area of the building section exceeds 5,000 sq. metres and the stacking height exceeds 10 metres.

Spreading of fire to buildings on other plots

125. Buildings must be placed with sufficient distance to the boundary to neighbouring plots, roads or footpaths or be established in a way which ensures that there is no risk of fire spreading to buildings on other plots.

Options for emergency service action

126. The location of the building on the plot and its design must ensure that, in case of fire, the emergency services can safely carry out search and rescue as well as evacuation of persons and animals. It must also be ensured that the necessary extinguishing work can be carried out and material spreading of fire prevented between fire safety units.

(2) Design, planning and construction must be carried out with due consideration of the following:

- 1) Access roads is provided on the plot which enables the emergency services to approach the building without encountering obstructions.
- 2) The necessary equipment for search and rescue of persons and for performing extinguishing work can be transported inside and outside the building.
- 3) Buildings are designed in a way which enables performance of safe rescue and extinguishing work.

127. Fire safety installations, including firefighting panels, risers, sprinkler centrals, etc. which are relevant to the rescue and extinguishing work of the emergency services must be clearly marked.

128. In buildings with evacuation doors where those evacuation doors are only accessible via the mobile ladders of the emergency services, fire rescue areas must be planned to enable the rescue personnel to carry out rescue work via the evacuation doors.

129. Buildings must be designed in a way which provides access for the rescue and extinguishing equipment of the emergency services anywhere in the building where such access is required:

- 1) in order to carry out evacuation and rescue of persons;
- 2) in order to carry out extinguishing work in connection with the evacuation and rescue of persons.

130. In buildings where the fire hoses of the emergency services cannot be transported via the primary access ways such as staircases, etc., risers must be installed.

131. Smoke evacuation must be possible in the primary access paths for the emergency services.

132. In building sections where smoke evacuation is not possible by natural ventilation via windows in

the outer walls, gates or roof hatches, other smoke evacuation options must be installed.

133. In buildings with a top storey floor height higher than 22 metres above ground level, minimum one firefighting lift must be installed to ensure that action by emergency services is possible.

Function testing and system integration test before commencement of use

134. Before a building is put into use, function testing and checks of the fire safety installations and the fire extinguishing equipment in the building must be carried out to demonstrate that each fire safety installation and firefighting equipment unit is working according to its purpose.

(2) Function testing and checks must be carried out according to the *Guidelines of the Building Regulations on fire safety installations* or in a way which documents in a similar way that the fire safety installations function according to their purpose.

135. For building sections in risk classes 2-4, function testing and checks must be carried out by a firm which is accredited in accordance with *DS/EN/ ISO 17020 – Compliance assessment – Requirements for various types of inspection bodies*.

(2) For the following fire safety installations and fire extinguishing equipment, function testing or checks may be carried out by other persons than a firm accredited in accordance with *DS/EN/ ISO 17020 – Compliance assessment – Requirements for various types of inspection bodies*:

- 1) Fire beater.
- 2) Fire blankets.
- 3) Escape route and anti-panic lighting systems.
- 4) Hand-held fire extinguisher.
- 5) Smoke alarm system.
- 6) Smoke evacuation installation.
- 7) Riser.
- 8) Water-filled hose reel.

136. In case several fire safety installations are intended to work together, a system integration test must be carried out to demonstrate that the integrated system of installations functions according to its purpose.

(2) System integration testing must be carried out according to the *Guidelines of the Building Regulations on fire safety installations* or in a way which documents in a similar way that the fire safety installations function according to their purpose.

Operation, inspection and maintenance of fire protection measures in and around buildings

137. Operation, inspection and maintenance of fire safety in and around buildings must be carried out in order to ensure that, in case of fire, safety is maintained throughout the useful life of the building, see s. 82.

138. Use of a building must take place in a way which ensures that, in case of fire, safety is maintained throughout the useful life of the building. This includes ensuring the following:

- 1) Escape routes inside and outside the building must be kept free and ready for use.
- 2) Evacuation doors must be accessible.
- 3) The access paths for the emergency services must be accessible and usable.
- 4) The risk of fire must be limited.

- 5) Sufficient fire extinguishing equipment must be available in suitable places.
- 6) The fire load in connection with ornamentation, stages, etc. must not be increased to a significant extent with consideration of the normal use of the building.

139. The owner, user or a person appointed to be in charge of the operation of the building must ensure that ss. 137, 138 and ss. 140-158 are complied with.

140. The fire protection measures of a building, including relevant parts of materials, structures, building parts and fire safety installations must be inspected and maintained to ensure that they contribute to fire safety throughout the useful life of the building, see s. 82.

141. Regular function testing and inspection must be carried out of fire safety installations, fire extinguishing equipment and fire protection of ventilation system in and around buildings and building sections.

(2) The requirement for regular function testing and inspection is considered to be complied with if testing and inspection is carried out at the intervals described in the *Guidelines of the Building Regulations on operation, inspection and maintenance*.

(3) The regular function testing and inspection of fire safety installations in building sections in risk classes 2 - 4 must be carried out by a firm which is accredited in accordance with *DS/EN/ ISO 17020 - Compliance assessment – Requirements for various types of inspection bodies*.

(4) For the following fire safety installations and fire extinguishing equipment, function testing or checks do not have to be carried out by a firm accredited in accordance with *DS/EN/ ISO 17020 – Compliance assessment – Requirements for various types of inspection bodies*:

- 1) Fire beater.
- 2) Fire blankets.
- 3) Escape route and anti-panic lighting systems.
- 4) Hand-held fire extinguisher.
- 5) Smoke alarms.
- 6) Smoke alarm system.
- 7) Smoke evacuation installation.
- 8) Riser.
- 9) Water-filled hose reels.

(5) Subsection 3 only includes buildings for which permission of use has been granted under the present Regulation, or for which function testing or inspection by an accredited firm is required in the building permit.

142. In cases where several fire safety installations are intended to work together, regular system integration testing must be carried out to demonstrate that the integrated system of installations functions according to its purpose.

(2) The requirement for regular function testing of subsection 1 is considered to be complied with if the system integration test is carried out at the intervals described in the *Guidelines of the Building Regulations on operation, inspection and maintenance*.

143. Prior to commencement of use, an operation, inspection and maintenance plan must be carried out for building sections in risk classes 2-4 which states how the fire safety of the building can be maintained throughout the useful life of the building, see ss. 137-142.

(2) Operation, inspection and maintenance of fire safety measures inside and outside the building which are included in subsection 1 must be carried out in accordance with the operation, inspection and

maintenance plan prepared for the building.

(3) Subsection 1 only covers buildings for which commencement of use has been permitted under this Executive Order.

144. For existing buildings in risk classes 2-4 for which an operation, inspection and maintenance plan has not been prepared before commencement of use is permitted, operation, inspection and maintenance must be carried out in accordance with the *Guidelines of the Building Regulations on operation, inspection and maintenance*.

145. An operations, inspection and maintenance plan must be prepared in a way which ensures that ss. 137-142 are complied with.

146. An operations, inspection and maintenance plan which is prepared in accordance with the *Guidelines of the Building Regulations on operation, inspection and maintenance* is considered to fulfil the provisions of this section.

Operation, inspection and maintenance of hotels, etc., nursing institutions, community centres, day-care facilities, etc. in which the use of the building requires special operational measures to maintain the fire safety of the building

147. Operation, inspection and maintenance of the building sections stated below must be carried out in accordance with ss. 137-142 and s. 148:

- 1) Bedroom sections with sleeping facilities for more than 10 persons at hotels, etc. and nursing institutions.
- 2) Community centres accommodating over 150 persons.
- 3) Teaching sections accommodating over 150 persons.
- 4) Day-care facility sections accommodating more than 50 persons or which have sleeping facilities for more than 10 persons.
- 5) Shops accommodating over 150 persons.
- 6) Buildings for which the use of the buildings requires certain operational measures in order to maintain the fire safety of the building.

148. An operation, inspection and maintenance plan for building sections stated in s. 147 must be prepared to ensure that ss. 137-142 are complied with, and:

- 1) A description of the operational organisation, including information about the person(s) in charge of operations from time to time and their contact information. The local council must be informed of the identity of the person(s) in charge of operations.
- 2) House regulations must be prepared for buildings covered by s. 147.
- 3) Fire and evacuation instructions must be prepared.
- 4) The staff has received training and instructions in both the house regulations and re regulations for evacuation, and the staff is has received instructions in the location and use of fire extinguishing equipment and fire safety installations.
- 5) For buildings covered by s. 147 for which an electricity safety certificate is not required under the Executive order on inspection of electrical installations in assembly facilities, a certificate must be prepared by a certified electrician every three years for escape route and anti-panic lighting, alerting

systems and automatic fire door closing systems. The certificate issued by the certified electrician must be submitted to the local council.

- 6) An area distribution plan must be prepared and fitted on the wall in rooms covered by s. 147(1)(2).
- 7) Operation records must be prepared for rooms covered by s. 147(1)(2).
- 8) Documentation of the performance of inspections stated in the operation records and any necessary repairs must be provided. The documentation must be kept on site.
- 9) In bedroom sections in hotels, etc. with sleeping facilities for more than 10 persons an alarm and evacuation plan for the users must be fitted on the wall. The plans must be placed in clear sight in all rooms and in communal areas.
- 10) In existing bedroom sections in nursing institutions where an automatic fire alarm system is not installed, a guard who is awake must be present for each 50 metres on each storey.
- 11) Fire extinguishing equipment in sufficient quantities must be installed.

149. For buildings covered by s. 147, an operation, inspection and maintenance plan prepared in accordance with the *Guidelines of the Building Regulations on operation, inspection and maintenance* is considered to comply with s. 148.

150. For existing buildings covered by s. 147 for which an operation, inspection and maintenance plan has not been prepared prior to the permission of commencement of use, or for which the operations, inspection and maintenance plan does not ensure compliance with ss. 137-142 and s. 148, operation, inspection and maintenance must be carried out in accordance with the *Guidelines of the Building Regulations on operation, inspection and maintenance*.

Existing holiday homes with sleeping facilities for more than 10 persons used for hire and existing churches

151. In holiday homes with sleeping facilities for more than 10 persons which is used for hire an appropriate number of smoke alarms must be fitted. Minimum one smoke alarm must be fitted in each holiday home. However, minimum one alarm must be fitted on each storey.

152. In existing church rooms used for ecclesial activities, concerts and similar events which do not constitute an increased risk of fire, factors which apply in general to assembly rooms, see s. 148, may be omitted.

(2) Church rooms for which operation, inspection and maintenance is carried out according to the *Guidelines of the Building Regulations on operation, inspection and maintenance* are considered to be in accordance with ss. 137-142.

Industrial and storage buildings for which the use of the buildings requires certain additional operational measures in order to maintain the fire safety of the building.

153. Operation, inspection and maintenance of the building sections stated below must be carried out in accordance with ss. 137-142 and s. 154:

- 1) Storage buildings with building sections in risk class 2 and a floor area exceeding 2,000 sq. metres.
- 2) Storage buildings in risk class 2 with a stacking height above 8 metres and building sections larger

than 600 sq. metres.

- 3) Storage buildings in risk classes 3 and 4.
- 4) Storage buildings where the use of the building requires special operational measures.

154. An operation, inspection and maintenance plan for building sections stated in s. 153 must be prepared to ensure that ss. 137-142 are complied with, and:

- 1) Rules for prevention of fire, evacuation plans and contingency plans have been prepared.
- 2) The staff has received training and instructions in both the regulations and the evacuation plans, and the staff is has received instructions in the location and use of fire extinguishing equipment and fire safety installations.
- 3) A description of stock in the building, including limitations on types of stock, storage principles and occupancy plans.
- 4) The contingency plan, if any, for the building is available to the relevant extent.
- 5) A description of the operational organisation, including information about the person(s) in charge of operations and their contact information, must be prepared.
- 6) Descriptions of the scope and frequency of any fire drills must be prepared.
- 7) Descriptions of rules for hot work must be prepared.

155. Ss. 153 and 154 are considered to be complied with if the operation, inspection and maintenance plan is carried out according to the *Guidelines of the Building Regulations on operation, inspection and maintenance*.

Transportable tents and structures, festival areas with associated sales and camping areas, assembly tents and market places for which use requires further operational measures in order to maintain fire safety in the building

156. Operation, maintenance and regular inspection of the following transportable structures and areas must be carried out in a way which ensures that ss. 137-142 and s. 157 are observed at all times:

- 1) Transportable tents and structures.
- 2) Festival areas with associated sales and camping areas.
- 3) Assembly tents.
- 4) Market places.
- 5) Sales areas.

157. An operation, inspection and maintenance plan for transportable tents and structures, festival areas with associated sales and camping areas, assembly tents and market places in s. 156 must be prepared in a way which ensures that ss. 137-142 is complied with and that:

- 1) for assembly tents accommodating over 150 persons, an operations record and an area distribution plan are prepared;
- 2) fire and evacuation instructions must be prepared;
- 3) regulations and evacuation plans on the prevention of fire must be prepared;
- 4) the staff has received training and instructions in both the regulations and the evacuation plans, and the staff is has received instructions in the location and use of fire extinguishing equipment and fire safety installations.

158. Ss. 156 and 157 are considered to be complied with when the operation, inspection and maintenance plan is prepared in accordance with the *Guidelines of the Building Regulations on operation, inspection and maintenance*.

Chapter 6 - User-operated facilities

User-operated facilities Self-service and user-operated facilities

159. User-operated facilities, including refuse disposal systems, IT columns, payment and self-service vending machines and similar facilities with service functions available to the public must be installed in a way which enables the users to use them unassisted. This requirement is considered to be complied with when the user-operated facility is installed as follows:

- 1) The access area to the facility must be minimum 1.30 metres wide, and differences in levels in this area are levelled out.
- 2) The installation height of the facilities enables users to operate the facility unassisted, or it can be raised and lowered.

Gate telephones and pager systems

160. Gate telephones and pager systems must be designed and installed in the building in a way which ensures that the users can operate the system unassisted. This requirement will be fulfilled when:

- 1) activation of the system has been stated aurally and visually, and connection to the recipient has been established;
- 2) the number 5 on the operating panel is marked with tactile identification.

Chapter 7 - The building site and performance of building work

161. The building site and building work must be planned and carried out to ensure that:

- 1) no injury or damage occurs to persons or buildings on and around the building site;
- 2) material nuisance to neighbours, roads and footpaths is avoided;
- 3) weather conditions are taken into account.

162. In planning and performance of building work it must be ensured that:

- 1) no failure of new or existing structures occur on own plot or neighbouring plots during excavation, building or conversion;
- 2) installation of building parts must be carried out without risk to persons on own plot or neighbouring plots.

163. During the performance of the building work, fire prevention measures must be implemented to ensure that:

- 1) fire safety in existing buildings which are still in use is not reduced;
- 2) the risk of fire is limited;
- 3) spreading of fire on the plot is limited;
- 4) fire does not spread to buildings on other plots;
- 5) access to the building site is possible for emergency service vehicles;
- 6) materials and structures for use in the building work must be placed on or directly adjacent to the building site in order to avoid the risk of fire spreading to buildings on own plot or neighbouring plots.

164. Building work may not cause unacceptable nuisance for other plots. During building work, the following must be ensured:

- 1) Sufficient fencing must be erected.
- 2) Unacceptable noise nuisance must be avoided.
- 3) Refuse must be kept and handled on the building site.
- 4) Road crossings must be kept free and clean.

165. During building work, any necessary precautions for the protection of moisture sensitive materials owing to climatic conditions such as snow, rain and low temperature must be carried out to ensure that moisture is not built into the building during construction.

Chapter 8 - Building right and overall assessment

166. The provisions of Chapter 8 do not apply if a local area development plan or a town planning regulation or adjustment plan stipulates other provisions for the relevant conditions.

167. The rules of calculation of factors affecting development are stated in Chapter 23. The rules of calculation in Chapter 23 are independent provisions which cannot be amended by a local area development plan, a town planning regulation or a regulation plan.

Building right

168. A building right is a right to erect buildings on a plot stated in the provisions in ss. 170-186 on building ratio, plot size, number of storeys and height and distance ratios are observed. As a result of the building right, the local council cannot refuse to approve building which are fulfil the provisions governing the building right.

169. If a building cannot be erected in accordance with the building right, the total scope of the buildings and their effect on the surroundings must be determined in an overall assessment according to the provisions of s. 187.

170. The buildings ratio is defined as the floor area as a percentage of the plot area, and it serves to ensure that the plot is developed in accordance with the use stated in the application.

(2) The local council may not refuse to approve the floor area of a building when the building ratio does not exceed:

- 1) 60 per cent for multi-storey buildings.
- 2) 40 per cent for fully or partly integrated single family houses, including semi-detached houses, terraced houses, houses attached via outbuildings, etc. and similar low, adjacent buildings.
- 3) 30 per cent for detached single- and two-family houses with horizontal separation lines located in an area comprised of detached family houses.
- 4) 15 per cent for holiday homes.
- 5) 45 per cent for other buildings, including buildings covered by para (1) - (4) and multi-storey buildings in areas not zoned for that purpose.

171. For two-family houses with horizontal separation lines, multi-storey buildings, commercial and institution buildings, the local council may not refuse a building ratio up to and including 50 per cent on plots with special locations which was built up before 1 February 1977.

172. Plots with special locations are defined as:

- 1) Corner plots.
- 2) Plots situated adjacent to roads which are minimum 15.0 metres wide; and
- 3) Plots with a depth not exceeding 25.0 metres measured from the boundary of the plot against the road.

173. In connection with land development, land registration or transfer of areas in relation to plots for single-family houses and holiday homes, the local council cannot refuse approval of properties with a plot

area of:

- 1) Minimum 700 sq. metres in case of detached single-family houses.
- 2) Minimum 1200 sq. metres in case of holiday homes.

174. On determination of plot size in s. 173, the road area which must remain undeveloped for corners or mandatory building lines for e.g. road construction will be deducted.

175. Land development, land registration or transfer of areas in connection with plots for other buildings than detached single-family houses and holiday homes must be carried out according to an overall assessment, see s. 187.

176. The local council cannot refuse approval of a building which includes maximum 2 storeys and no parts of the outer walls of the building or roof is elevated more than 8.50 metres above ground level.

177. For detached single-family houses, two-family houses with horizontal separation lines and semi-detached houses with vertical separation lines, the local council cannot refuse approval of building height and distances when the following conditions are met:

- 1) The maximum height is 1.40 metres x the distance to boundaries to neighbouring plots and paths.
- 2) the minimum distance to boundaries is 2.50 metres to neighbours, roads and paths.

178. For holiday homes, the local council cannot refuse approval of the floor area, height and distances of a building when the following conditions are met:

- 1) Minimum one storey.
- 2) Maximum roof height 5.0 metres.
- 3) Maximum height of outer wall along minimum one side is 3.0 metres.
- 4) Minimum distance to boundaries to neighbours, roads and paths is 5.0 metres.

179. For outside recreational areas elevated more than 0.30 metres above ground level, sun lounges, outdoor stairs, balconies, chimneys, roof terraces, swimming pools and solar panels or solar collectors, etc. the following distance requirements apply:

- 1) 2.50 metres from boundaries for detached single-family houses, two-family houses and semi-detached houses.
- 2) 5.0 metres from boundaries for holiday homes.

180. The following buildings adjacent to primary buildings must fulfil the provisions of ss. 176 and 177, but may be built closer than 2.50 metres to boundaries to neighbours, roads and paths:

- 1) Garages and carports.
- 2) Roofed-over terraces with a floor height elevated to maximum 0.30 metres above ground level.
- 3) Greenhouses, sheds, chicken sheds, pavilions and similar minor outbuildings.
- 4) Storage tanks for domestic fuel and similar installations for the operation of the building.
- 5) Equipment cabinets for electronic communication networks or services.

181. If a building covered by s. 180 is built closer to the boundaries to neighbours, roads or paths than 2.50 m, the following condition must be fulfilled:

- 1) No parts of the outer walls or roof of the building, including any roof fire barrier, may be higher than 2.50 metres above ground level or the level determined for the building within a distance of 2.50

metres from boundaries.

- 2) Sides facing boundaries may not constitute a total length which exceeds 12 metres. Only the longest side of the building facing a boundary is included.
- 3) Windows, doors or similar openings may not be established against boundaries.

182. In connection with holiday homes, the following buildings may be built provided they are located minimum 2.50 metres from boundaries to neighbours, roads or paths, and provided s. 183 is observed:

- 1) Garages and carports.
- 2) Roofed-over terraces which are not elevated above ground level.
- 3) Greenhouses, sheds, chicken sheds, pavilions and similar minor outbuildings.
- 4) Storage tanks for domestic fuel and similar installations for the operation of the building.

183. If a building subject to s. 182 is built adjacent to holiday homes within a distance of 2.50 metres and 5.0 metres from boundaries to neighbours, roads or paths, the following conditions must be observed:

- 1) No parts of the outer walls or roof of the building, including any roof fire barrier, may be higher than 2.50 metres above ground level or the level determined for the building.
- 2) Sides facing boundaries may not constitute a total length which exceeds 12.0 metres. Only the longest side of the building facing a boundary is included.
- 3) Windows, doors or similar openings may not be established against boundaries.

184. Agricultural livestock breeding and operational buildings located in a rural zone which do not require permission according to the Danish Act on planning or registration, permission or approval according to the Danish Act on environmental approval, etc. for livestock keeping may be erected up to a height of maximum 12.5 metres.

185. Freestanding silos erected as part of a feedstuff system connected to operation buildings via a transport system and silos erected as part of a larger building subject to s. 184 with a cross section of maximum 80 sq. metres may be erected up to a height of maximum 20.0 metres.

186. Horticultural properties are subject to the rules stated in s. 184, even if no agricultural properties have been registrable on the lot.

Overall assessment

187. The local council must carry out an overall assessment if conditions exist in relation to a building which is not regulated fully or partly by or fulfil the provisions on building rights in ss. 168-186. The overall assessment of the local council must be carried out in consideration of the general criteria of s. 188 and the conditions regulating the building in respect of the size of the plot, distances, number of storeys, heights, building ratio and the layout of the unbuilt areas, see Chapter 20.

188. The general criteria which must be included in the overall assessment of the local council are as follows:

- 1) The total size of the building must be appropriate considering its use and be equivalent of the usual conditions of the block, neighbourhood or the aim for the area.
- 2) With due consideration of the use of the building, satisfactory light conditions must be ensured for the

building and the neighbouring building, and material nuisance from view into the building must be blocked with respect to other buildings on the same plot and neighbouring plots.

- 3) Satisfactory free areas must be established in relation to the use of the building, including recreational areas for residents, users and employees, see s. 393.
- 4) With due consideration of the use of the building, satisfactory access conditions and roads must be established for the users of the building, including emergency services, see s. 393.
- 5) Sufficient parking areas must be established, see ss. 399-402.
- 6) For buildings erected near built-up urban areas adjacent to an area not subject to a local area development plan, an area with detached houses, holiday homes or allotments, or an area with low, adjacent buildings, the total scope of the building must be determined with due consideration of the nature of the adjacent areas and the scope of any buildings.

189. In connection of changes to the land register, the size of the plot must be determined according to the general criteria in s. 188.

190. The size of the plot may only be approved if an overall assessment of the relationship between any existing buildings and the plot size indicates that the property can be developed and used in accordance with the overall assessment stated in s. 187 and the requirement for non-built-up areas in Chapter 20. Further, in order for the plot size to be approved, road access must be possible in accordance with current road legislation.

191. The distance from the building to boundaries to neighbours, roads or paths will be determined according to the general criteria of ss. 188 and 192.

192. In connection with the determination of distances it must be ensured that windows, balconies, etc. do not give rise to material nuisance in the form of views into other buildings on the same plot and on neighbouring plots.

193. In areas with mainly closed buildings along the boundaries, the local council may decide that new buildings must be erected on the road or building line and on the boundaries to neighbouring plots.

194. The height and number of storeys of the building will be determined according to the general criteria of s. 188 with the extensions and limitations stipulated in s. 195.

195. In order to ensure satisfactory light conditions and prevent material nuisance from view into the building, the determination of the height and number of storeys of the building must be carried out with due consideration of distance and height compared to other buildings and free areas on the same plot and of the neighbouring building and its free areas. Furthermore, the determination of the height and number of storeys of the building must be carried out with due consideration of the distance and height in relation to roads and paths.

Chapter 9 - Building layout

196. With due consideration of their use, buildings must be planned and established in a way which ensures satisfactory conditions in regard to safety, health, functionality and use for the users and in regard to cleaning and maintenance,

197. In connection with conversion, on the request of the owner, the local council may assess that relaxation of the provisions in Chapter 9 can be made if the conversion work cannot be carried out without intervention which results in changes to the building.

198. Holiday homes are not included in the provisions of Chapter 9.

Layout of residential units

199. Residential units must be planned and erected in a way which ensures that the entire residential unit and each room has an appropriate size and layout for its use. Fulfilment of this requirement must be documented by a layout plan, furnishing plan, etc.

200. In addition to one or more living rooms and bedrooms, a residential room must be equipped with a kitchen and a bathroom with toilet.

201. Halls of residence, youth accommodation and residential units in institutions, etc. may be established with residential rooms and shared kitchen, bathroom and toilet for a number of residents. The layout of shared facilities must be carried out with due consideration of the number of residents of the unit.

202. The kitchen must accommodate suitable and safe kitchen work. This requirement can be fulfilled by:

- 1) establishing a free distance of 1.10 metres to work areas and storage areas;
- 2) in rooms with sloping walls, the requirement can be fulfilled by establishing headroom of minimum 2.10 metres at the front edge of work areas and storage areas.

203. For residential units with a floor average under 50 sq. metres, kitchen facilities may be established in the form of a kitchenette.

204. In detached single-family houses, multi-storey residential buildings, terraced houses, semi-detached houses, etc. minimum one toilet room must be established on the access floor, and it must have a suitable size and layout with sufficient free space in front of the washbasin and the toilet. Toilet rooms must be equipped with a washbasin.

205. Residential rooms and kitchen must have a room height which enables daylight to enter the room, and the room volume must ensure natural exchange of air. The room height must be established in relation

to the depth and size of the room and the location of windows.

206. The floor or residential rooms and kitchens may not be below the outdoor ground level. This requirement may be disregarded in case of special terrain conditions provided the floor is above the ground along minimum one wall with windows.

207. The doors of the residential unit must have a suitable width in relation to the layout of the unit.

208. Doors to windscreens, anterooms, corridors, residential rooms, kitchens, bathrooms and toilet rooms on the access floor of the building must have a free passage width of minimum 0.77 metres.

209. Windscreens, anterooms, corridors, etc. must have a free passage width of minimum 1.0 metre.

210. If doors or closet doors are established along the side of the floor area, the floor area must be minimum 1.30 metres wide.

211. One or more sleeping platforms may be established provided they have a floor area of maximum 4.5 sq. metres to distinguish them from a mezzanine. It is a condition that a sleeping platform has open access to the room into which it is built.

212. Adjacent to multi-storey residential buildings and terraced single-family houses a sufficient and closed area must be established for large consumer articles such as bicycles, prams and walkers.

213. In or adjacent to multi-storey residential buildings or terraced family houses facilities for laundry and drying of clothes must be established with due consideration of the indoor climate.

Layout of building with access for the public

214. Buildings with access for the public must be designed with sizes and layouts of the individual rooms which ensures that the functions and activities to be carried out in the building can be carried out functionally and safely.

(2) In storeys where public toilet facilities are established, minimum one room must be established which fulfils the following requirements:

- 1) Level access to the toilet room.
- 2) Free passage through the door to the toilet rooms must be minimum 0.77 metres.
- 3) Washbasin and toilet must be located across a corner on adjacent walls to enable hand wash by a person sitting on the toilet.
- 4) Free distance of minimum 0.90 metres on the side of the toilet facing away from the washbasin. The wall next to the toilet which faces away from the washbasin must be free of permanent fixtures.
- 5) A free area with a diameter of 1.5 metres in front of the toilet and free of the door opening range must be available for manoeuvring.
- 6) The toilet seat must be placed at a height of approx. 0.48 metres.

- 7) Foldable armrests must be established at a height of 0.80 metres on both sides of the toilet.
- 8) The washbasin must be established at a height of approx. 0.80 m, and the drain behind the washbasin must be installed further back.

215. Minimum one toilet room equipped according to s. 214 must be established on the ground floor or on other storeys accessible via lift, stairlift, etc.

216. In connection with conversions, toilet rooms subject to s. 214 must be designed for use by all users of the building. Minimum one toilet room equipped according to s. 214 must be established on the ground floor or on other storeys accessible via lift, stairlift, etc.

217. In buildings with assembly rooms, installations must be planned and established with due consideration of the technical conditions of the building in order to enable persons who need technical aids, e.g. telecoils, to participate unassisted in activities in the building.

218. Assembly rooms, including rooms designed for collective activities such as concerts, talks and other entertainment, must be equipped with a permanent telecoil system or similar systems on minimum the same level as a telecoil system.

(2) The mentioned assembly rooms include community halls, churches, cinemas, libraries, school halls and meeting rooms with access for the public.

219. Standard teaching facilities in schools and meeting rooms in office buildings are not subject to s. 218.

220. In rooms and facilities with access for the public with permanently fixed seats for audiences, seats must be set aside for persons with special space requirements, e.g. wheel chair users.

Layout of buildings with workplaces

221. In buildings where workplaces are arranged, the rooms must be designed considering their size, daylight, room height and room content in order to ensure that the room is dimensioned for the use and the number of persons expected to work there with due consideration of health, safety and functionality in the room.

222. In workplaces, toilet rooms, shower rooms and surrounding rooms must be established. The rooms must comply with the following conditions:

- 1) Access from work and recreational rooms to toilet rooms must occur via an anteroom.
- 2) Toilet rooms for anterooms for toilet rooms must be equipped with a washbasin.
- 3) An anteroom may lead to more than one toilet room.
- 4) The number of toilets must be determined according to the number of employees.

223. In storeys in a building where public toilet rooms are established for use by other people than employees of the building and in office and administration buildings, minimum one toilet room must be established which complies with the following requirements:

- 1) Level access to the toilet room.
- 2) Free passage through the door to the toilet rooms must be minimum 0.77 metres.
- 3) Washbasin and toilet must be located across a corner on adjacent walls to enable hand wash by a person sitting on the toilet.
- 4) Free distance of minimum 0.90 metres on the side of the toilet facing away from the washbasin. The wall next to the toilet which faces away from the washbasin must be free of permanent fixtures.
- 5) A free area with a diameter of 1.5 metres in front of the toilet and free of the door opening range must be available for manoeuvring.
- 6) The toilet seat must be placed at a height of approx. 0.48 metres.
- 7) Foldable armrests must be established at a height of 0.80 metres on both sides of the toilet.
- 8) The washbasin must be established at a height of approx. 0.80 metres, and the drain behind the washbasin must be installed further back.

224. In connection with conversions, toilet rooms subject to s. 223 must be designed to enable use by the users of the building. Minimum one toilet room subject to s. 223 must be established on the ground floor or on other storeys accessible via lift, stairlift, etc.

225. If the establishment of a dining room is required owing to the nature of the work, the dining rooms shall be located in a suitable place in relation to the workplaces. The following requirements must be fulfilled:

- 1) Dining rooms must not have direct access to toilet rooms or toilet anterooms.
- 2) Dining rooms must be equipped with a sink and cooking facilities and windows facing the surrounding area.

226. If a shower room is established adjacent to a work room, the number of showers must be adapted to the number of employees. Dressing rooms must be established adjacent to shower rooms.

227. In case of work which involves dirt or health hazards, an appropriate number of freely accessible washbasins must be established.

Layout of standard classrooms

228. The area and volume of standard classrooms in schools, etc. and of living spaces in day-care facilities for children must be appropriate for the number of children and employees at the facility.

229. Living spaces in schools and day-care facilities must have:

- 1) Minimum 3 sq. metres free floor space per child in day nurseries and 2 sq. metres per child in kindergartens.
- 2) A volume of minimum 6 cubic metres per person in standard classrooms at schools, etc.

230. In the calculation of volume, only those parts of the room which can be used for work areas in respect of headroom are included. Areas of the room in excess of 4.0 metres above floor level is not included in the calculation. In the calculation it must be considered if the volume is reduced materially by machinery, furniture and stored objects, etc.

231. The floor of living spaces in day-care and 24-hour care facilities and in standard classrooms at schools, etc. may not be below the ground level. This requirement may be disregarded in case of special terrain conditions provided the floor is above the ground along minimum one wall with windows.

Layout of hotels

232. Hotels, inns and similar buildings must be designed in a way which enables the users to use the functions in the building unassisted.

233. In hotels, inns etc. with 10-20 beds, minimum 2 beds must be established with shower and toilet facilities which comply with the following requirements:

- 1) Level access to the toilet room.
- 2) Free passage through the door to the toilet rooms must be minimum 0.77 metres.
- 3) Washbasin and toilet must be located across a corner on adjacent walls to enable hand wash by a person sitting on the toilet.
- 4) Free distance of minimum 0.90 metres on the side of the toilet facing away from the washbasin. The wall next to the toilet which faces away from the washbasin must be free of permanent fixtures.
- 5) A free area with a diameter of 1.5 metres in front of the toilet and free of the door opening range must be available for manoeuvring.
- 6) The toilet seat must be placed at a height of approx. 0.48 metres.
- 7) Foldable armrests must be established at a height of 0.80 metres on both sides of the toilet.
- 8) The washbasin must be established at a height of approx. 0.80 metres, and the drain behind the washbasin must be installed further back.

234. In hotels, inns, etc. with 21-40 beds, minimum 4 beds must be equipped with own shower and toilet facilities which comply with s. 233.

235. In hotels, inns, etc. with more than 40 beds, minimum 1 in every 20 beds must be equipped with own shower and toilet facilities which comply with s. 233.

236. Irrespective of the number of beds in the building, s. 232 will always be complied with when minimum 10 beds are equipped with own shower and toilet facilities as stipulated in s. 233.

237. Balconies for rooms subject to 232 must be established in a way which enables the users to use them unassisted.

Glass panels, glass surfaces and fencing in front of glass in buildings

238. In buildings where there is a risk that persons may collide with large glass panels in the building, sufficient safety measures must be implemented to prevent personal injury as a result of collision with glass surfaces. Personal injuries may include cuts resulting from broken glass or injuries resulting from collision with glass where the glass is not broken. This provision includes for example glass doors, glass walls, glass facades, screens and large window surfaces.

(2) Subsection 1 is considered to be complied with if the following is established:

- 1) Screens.
- 2) Fencing; or
- 3) Markings on the glass.

239. If there is still a risk of collision and breakage of the glass panel after protection against injuries in accordance with s. 238, the glass must be established in a way which limits the risk of cutting injuries.

240. If glass is used in fencing on differences in levels in or outside the building, the provisions of ss. 58 and 59 on fencing must also be complied with.

241. Glass used in windows and doors in residential units are not subject to ss. 238 and 239, unless special conditions exist of the location of the window and door, or the building is used in such a way that there is a risk of injuries from collision with the glass.

Chapter 10 - Lifts

242. Lifts in shared access paths must ensure that the users have unassisted access to the storeys and the functions of the buildings .

(2) The design, construction, operation and maintenance of lifts must be carried out in a way which ensures that:

- 1) a reasonable level of safety can be achieved;
- 2) no unnecessary use of energy will occur.

243. The lift requirement does not apply to detached single-family houses, terraced houses, semi-detached houses, etc. which are used for residential purposes only or for holiday homes in areas allocated for holiday homes.

244. In new buildings with 3 or more storeys, minimum one lift which provides access to each storey, including basement and lofts used for residential purposes must be installed. In buildings with more than one stairway, this requirement applies to all stairways. A building with a ground floor, 1st floor and 2nd floor is considered a 3-storey building. In this connection, the basement is not included in the number of storeys.

245. For residential units with internally connected storeys, the lift is only required to reach the first access storey of the unit.

246. In new buildings, see s. 244, where a lifts are installed, minimum one lift must be designed and established as a type 2 lift in accordance with *DS/EN 81-70: Safety regulations for construction and installation of lifts – Special applications for passenger and goods lifts – Part 70: Access to lifts for persons, including disabled persons* or in a similar way which ensures access for disabled persons.

247. Conversions of and minor additions to existing residential buildings are not included in the requirement for establishing of lifts. This provision includes the use of existing lofts for residential purposes. Minor conversions which are included in the provision are establishments of towers for toilet rooms, bathrooms/shower rooms, kitchens, etc.

248. Lifts in new buildings and installation of new lifts in existing buildings must comply with energy class B of *DS/EN ISO 25745-2*. If the lift cannot be based on *DS/EN ISO 25745-2*, it must comply with class B of *VDI 4707 Aufzüge Energieeffizienz, März 2009*.

(2) This provision applies to lifts with a rated lift car load of up to 2,000 kg. The use category of the lift forms the basis of the energy classification.

(3) A higher energy consumption for elevator operation than energy class B can be accepted if corresponding compensatory energy savings are implemented.

249. Function testing must be carried out of the energy consumption of lifts, before they are put into use.

Chapter 11 - Energy consumption

250. Buildings must be planned, established, converted and maintained in order to avoid unnecessary consumption of energy for heating, domestic hot water, cooling, ventilation and lighting with due respect of the use of the building and the scope of the building work.

251. Buildings must be planned, established, converted and maintained to ensure that the energy demand does not exceed the energy framework, which includes the total demand of the building for energy supply for heating, ventilation, cooling, domestic hot water and lighting. Energy supply from various energy sources must added using the energy factors stated in ss. 252 and 253. Evidence must be provided based on the *instructions of the Danish Building Research Institute 213 Energy demand in buildings*.

(2) For additions, changes in use, conversions, temporary movable pavilions and holiday homes, the provisions of ss. 267-292 can be applied as an alternative to the energy framework.

252. In buildings the various sources must be weighted by calculation of the total energy demand supplied. The following factors are applied:

- 1) 2.5 for electricity.
- 2) 0.80 for district heating. The district heating factor is 1.0 when the renovation classes are applied.
- 3) For other heating sources a factor of 1.0 and the relevant efficiency are applied.

253. When a new building is connected to an existing boiler which also supplies existing boilers, a factor of 1.0 is applied. In connection with the use of waste heat from production plant and similar installations the district heating factor is applied.

254. The following applies for the rooms or buildings stated below:

- 1) Building parts adjacent to rooms for which waste heat is supplied, e.g. boiler rooms and bakeries, must be insulated according to their use.
- 2) Building parts adjacent to rooms which are not or which are only briefly heated to a temperature above 5 °C, must be insulated according to their use.
- 3) Unheated buildings or buildings heated to temperatures below 5 °C are not required to fulfil the requirements for heating insulation.

255. Buildings and building parts, including windows and doors, must be planned and established to ensure that heat loss is not increase to a significant degree as a result of:

- 1) Moisture in structures.
- 2) Unintended air flow though entrances in e.g. shops, offices and hotels.
- 3) Unintended air flow though building parts, e.g. heat insulation exposed to wind effects.
- 4) Thermal bridges.

256. For energy calculations, the following preconditions apply to the calculations:

- 1) In calculation of transmission areas, transmission loss and heat loss frameworks, *DS 418 Calculation of heat loss from buildings* must be applied.
- 2) The energy effect of thermal bridges must be included in the form of documentation of U values for each building part.
- 3) Unheated floor area is defined for the purpose of Chapter 11 as the total floor area of the storeys or parts hereof which are heated. Only rooms which are included in the floor area of the building may be included in the heated floor area.

- 4) Process energy is not included in the calculation of the energy demand of buildings.

General minimum requirements for building envelopes

257. Each building part must be insulated to ensure that the heat loss coefficients do not exceed the values stated in Appendix 2, Table 1. In certain cases, e.g. in case of tall buildings or complicated soil conditions, the requirements for linear thermal transmittance at the foundation cannot be observed. In such cases, a corresponding higher linear thermal transmittance coefficient can be accepted if problems with moisture and condensation do not occur.

(2) Subsection 1 does not apply to ss. 267-270 and ss. 274-282.

General minimum requirements for windows, glass outer wall, skylights and glass roofs

258. Windows, glass outer walls, skylights and glass roofs must be in accordance with the following requirements for energy performance:

- 1) For windows and glass outer walls, the energy balance for the reference window may not be lower than -17.0 kWh/sq. metre per year. The energy balance is calculated as $E_{ref} = 196.4 \times g_w - 90.36 \times U_w$.
- 2) For skylights and glass roofs, the energy balance for the reference window may not be lower than 0.0 kWh/sq. metre per year. The energy balance is calculated as $E_{ref} = 345 \times g_w - 90.36 \times U_w$.
- 3) Sound glass and other functional glass may be used if the reference windows fulfils the energy balance requirement. However, glass with a lower solar heat transmittance (g value) may be used if energy savings related to the solution can be proven.

(2) The reference dimensions for windows, glass outer walls, skylights and glass roofs is 1.23 metres x 1.48 metres. For glass outer wall and glass roofs, the energy balance is calculated from the centre lines of the profile system.

Energy frameworks for residential units, halls of residence, hotels, etc.

259. For residential units, halls of residence, hotels, etc. the total energy supply demand of the building for heating, ventilation, cooling and domestic hot water per sq. metre heated floor area may not exceed 30.0 kWh/sq. metre per year plus 1,000 kWh per year divided by the heated floor area.

Energy frameworks for non-residential buildings

260. For non-residential buildings which are not subject to s. 259 the total energy supply demand of the building for heating, ventilation, cooling, domestic hot water and lighting per sq. metre heated floor area may not exceed 41.0 kWh/sq. metre per year plus 1,000 kWh per year divided by the heated floor area.

(2) For non-residential buildings not subject to s. 259 which are heated to a temperature between 5.0 and 15.0

°C, the calculation will be carried out based on a room temperature of 15 °C.

(3) For non-residential buildings not subject to s. 259 or building sections in such buildings which require a high illumination level, extra ventilation, large consumption of domestic hot water or a long usage period

or buildings with large headroom, the energy framework is increased by an amount corresponding to the calculated energy consumption for the relevant purpose. The increase is calculated in accordance with the *instructions of the Danish Building Research Institute 213 Energy demand in buildings*.

Requirements for the use of energy frameworks

261. In buildings with various uses which can be referenced to different energy frameworks, the total heated floor area of the building is divided into building sections for the same use. This division is applied in the determination of the energy framework for the entire building.

262. For buildings with various uses where the main use constitutes minimum 80 per cent of the total floor area, the use is considered to be the main use.

263. The volume flow through flaws in the building envelope in new buildings heated to minimum 15 °C must not exceed 1.0 l/s per sq. metre heated floor areas at a difference in pressure of 50 Pa.

(2) For buildings with high ceilings where the surface of the building envelope divided by the floor area is higher than 3, requirements demanding that the volume flow through flaws does not exceed 0.3 l/s per sq. metre of building envelope can be applied as an alternative to s. 263(1).

(3) Documentation of flaws in the building envelope can be provided via pressure testing of the building or typical parts of large buildings.

(4) For floor areas where pressure testing is carried out of the volume flow through flaws, the test result may be applied in the calculation of the energy demand for such areas. If documentation does not exist, 1.5 l/s per sq. metre at 50 Pa will be applied.

(5) Pressure testing of the volume flow through flaws in the building envelope must be carried out based on Method 3 of *DS/EN ISO 9972 Thermal capacity of buildings - Determination of air permeability in buildings - Test method using positive pressure generated by a ventilator*. Handling of holes in the building envelope by pressure testing is described in the Guidelines of the Building Regulation on energy consumption. The result of the pressure test is expressed by the average measurement at positive pressure and negative pressure.

264. New buildings subject to the provisions of ss. 259 and 260 must be established in a way which ensures that the rated transmission loss per sq. metre of building envelope does not exceed 4.0 W for one-storey buildings, 5.0 W for two-storey buildings and 6.0 W for buildings of 3 storeys or more. The area covered by windows, skylights, glass roofs and doors and the transmission loss via those surfaces are not included in the calculation. However, heat loss via insulated sections of windows, skylights, glass roofs and glass outer walls are included in the rated transmission loss.

265. Systems renewable energy in or adjacent to buildings may be included in the energy framework calculation of the building in question. If a new building is established with a shared renewable energy system for the building, this system may be included in the energy framework calculation provided that it was established for the supply of energy to the building in question, and that it is located near the building.

(2) For all buildings, electricity production from renewable energy systems such as solar panels or wind turbines may be included in the energy framework at a maximum corresponding to a reduction of the energy supply demand of 25 kWh/sq. metre per year .

266. For heated or partly heated basements which are not included in the floor area, 50 per cent of the basement area will be included in the energy framework. No area is added for unheated basements.

Energy demand on change of use

267. In case of changes in use of a building or parts of a building which results in a significant increase in energy consumption, the energy demands may be observed by using the energy framework in ss. 259-266 or by following the requirements for U values in s. 268.

268. Building parts adjacent to heated rooms must be established with heat loss coefficients corresponding to the temperature to which the rooms are heated stated in Appendix 2, Table 2. Windows, glass outer walls, glass roofs and skylights must fulfil the requirements stated in ss. 257 and 258.

269. In case of changes in use of a building or parts of a building, structural circumstances may result in failure to fully observe s. 268. In that case, the missing capacity must be replaced by other energy solutions which compensate for this failure.

270. Structural changes must be in accordance with the requirements in s. 268. Changes which result in an increase in energy consumption may be carried out provided equivalent compensating energy savings are carried out.

Energy demand for additions

271. Additions must be planned and established in a way which ensures that the energy demand does not exceed the energy framework on calculation. If the energy framework is used for additions, the energy framework only applies to the addition. The size of the energy framework for the addition is calculated based on the area of the entire building. Alternatively, the requirements may be observed by observing the U values stipulated in s. 268 or the heat loss framework stipulated in s. 272. It is a condition of the use of the U values in s. 268 that the total area of outer doors and windows, including skylights, dome lights, glass outer walls and glass roofs does not exceed 22 per cent of the total heated floor area.

272. The heat loss framework may be applied to additions if the heat loss of the addition does not exceed the heat loss which would have occurred if the U value requirements in s. 268 had been complied with.

(2) In this context, the heat loss framework only includes the addition. However, 50 per cent of the previous heat loss through the part of the facade on the existing building which is covered by the addition may be included in the heat loss framework.

273. Windows in the addition may be included in the heat loss framework as the actual windows or windows with a U value of 1.2 W/sq. metre K. The actual windows must be used in the calculation of the real conditions.

Energy demand in relation to conversions and replacement of building parts

274. In conversions, energy savings must be carried out to the extent that they are financially viable and do not involve a risk of moisture damage. The energy demands in conversions may either be observed by fulfilling the requirements for all building parts affected in s. 279 or by observing the renovation classes for existing buildings in ss. 280-282. The renovation classes constitute an energy framework for existing buildings.

275. Conversions for which the annual savings times useful life divided by investment exceeds 1,33 are considered financially viable. If conversions are not financially viable, the lack of financial viability must be proven. If a conversion is not financially viable, it should be determined if a smaller conversion would be viable.

(2) In structures with room for insulation, e.g. sloping roofs with rafters, examinations must first be carried out to determine if insulation of the cavities are financially viable and then if re-insulation according to the requirements in s. 279 is financially viable.

276. Changes to buildings which involve an increase in energy consumption may be carried out if corresponding compensating energy savings are carried out.

277. If building parts or installations are replaced, the provisions in s. 279 and the installation parts must be maintained irrespective of their financial viability. However, there may be cases, e.g. in connection with concreting of foundations when replacement would result in additional costs related to adjacent building parts which are so substantial that the replacement is not financially viable under s. 275. In the calculation of financial viability, only costs related to adjacent building parts are included in the calculation.

278. Churches and additions which form part of a listed ancient monument are exempt from the provisions of ss. 274-282.

(2) Listed buildings are exempt from the provisions of ss. 274-282 if observing the energy requirements in ss. 274-282 would be contrary to the architectural, cultural, historical or environmental values of the listed building.

(3) Buildings worthy of preservation which are included in a local preservation planning regulation or a registered preservation declaration or buildings appointed in the municipal plan as being worthy of preservation under s. 19(1) of the Danish Act on Listed Buildings are also exempt from the provisions in ss. 274-282 if observation of the requirement would be contrary to the plan or appointment in question.

279. Conversion or other changes to the building must be in accordance with the requirements for U values and linear thermal transmittance stated in Appendix 2, Table 3. Windows, glass outer walls, glass roofs and skylights must fulfil the requirements stated in ss. 257 and 258.

Renovation classes for existing buildings

280. The following provisions apply for the use of renovation classes for existing buildings:

- 1) The need for energy supply must be reduced by minimum 30.0 kWh/sq. metre per year.
- 2) Evidence must be provided in accordance with the *instructions of the Danish Building Research Institute 213 Energy demand in buildings*.
- 3) The total energy supply to buildings must be composed partly by renewable energy.

- 4) When renovation class 1 is applied, the requirements for indoor climate stated in ss. 382-384, s. 386 and ss. §§ 443-449 must be complied with.

281. Residential units, halls of residence, hotels, etc. may be classified as:

- 1) Renovation class 2 when the total energy supply demand for heating, ventilation, cooling and domestic hot water per sq. metre heated floor area does not exceed 110.0 kWh/sq. metre per year plus 3,200 kWh per year divided by the heated floor area.
- 2) Renovation class 1 when the total energy supply demand for heating, ventilation, cooling and domestic hot water per sq. metre heated floor area does not exceed 52.5 kWh/sq. metre per year plus 1,650 kWh per year divided by the heated floor area.

282. Offices, schools, institutions and other buildings not subject to s. 281 may be classified as:

- 1) Renovation class 2 when the total energy supply demand for heating, ventilation, cooling, domestic hot water and lighting per sq. metre heated floor area does not exceed 135 kWh/sq. metre per year plus 3,200 kWh per year divided by the heated floor area.
- 2) Renovation class 1 when the total energy supply demand for heating, ventilation, cooling, domestic hot water and lighting per sq. metre heated floor area does not exceed 71.3 kWh/sq. metre per year plus 1,650 kWh per year divided by the heated floor area.

(2) For buildings and building sections which require a high level of illumination, extra ventilation, large consumption of domestic hot water or a long period of usage or buildings with large headroom, the energy framework is increased by an amount corresponding to the energy consumption calculated for this purpose. The *instructions of the Danish Building Research Institute 213 Energy demand in buildings* stipulate the conditions for those increased amounts.

Holiday homes, camping cabins and similar holiday accommodation

283. Holiday homes, camping cabins and similar holiday accommodation and adjacent outbuildings must fulfil the requirements for U values and linear thermal transmittance stated in Appendix 2, Table 4.

284. U values and linear thermal transmittance in s. 283 apply on the condition that the total area of windows and outer doors, including skylights and dome lights, glass outer walls, glass roofs and hatches opening to the outside constitute maximum 30 per cent of the heated floor area.

(2) These values can be derogated from if the resulting total heat loss does not increase.

285. For conversion, other changes and replacements, the requirements stated in s. 283 apply on the condition that the requirements are financially viable. Financial viability must be determined according to s. 275. In the assessment of financial viability the holiday home is considered also to be in use during the winter months.

286. In holiday homes, solid outer walls of e.g. wood, aerated concrete or brick with a U value lower than 0.50 W/m²K may be used on the condition that the total heat transmission heat loss will not be higher compared to the use of the U values in s. 283.

Temporary movable pavilions

287. Temporary movable pavilions must be erected in order to avoid unnecessary energy consumption in due consideration of the use of the pavilions. Temporary movable pavilions are structures which are set up for a period of 0-5 years, and they typically consist of a number of pavilion modules which are set up e.g. during a renovation process at a school, a day-care facility or an office building as a solution to an acute need for space, including reaccommodation.

(2) Permanent pavilions or pavilions used for more than 5 years must fulfil the relevant requirements for new buildings.

288. Pavilions set up for temporary use must fulfil the requirements for U values and linear thermal transmittance stated in Appendix 2, Table 5. New windows, glass walls, glass roofs and skylights must fulfil the requirements stated in ss. 257 and 258.

289. It is a condition for use of U values and linear thermal transmittance that the total area of windows and doors does not exceed 22 per cent of the heated floor area. U values and linear thermal transmittance may change and the window area, etc. may be increased if the heat loss of the pavilion does not increase compared to compliance with the requirements in the table. Windows may be included in the heat loss framework as the actual windows or windows with a U value of 1.5 W/sq. metre K. The actual windows must be used in the calculation of the real conditions.

290. Use of direct electric heating is allowed for temporary movable pavilions for installations to be used for up to 2 years. For installations to be used for 2 to 5 years, direct electric heating must be replaced by other heating supply, or compensation must be provided by establishing a corresponding production of renewable energy.

291. New pavilion modules must be ready for other heating sources than direct electric heating. For example, they could be ready for water heating.

292. In connection with conversion of pavilions, the requirements in s. 288 must be observed to the extent it is financially viable according to s. 275.

Heating of buildings

293. Heating of buildings must be based on renewable energy.

294. In buildings located in area where connection to a district heating supply grid is possible, buildings may be heated by district heating irrespective of s. 293.

295. In buildings located in area where a natural gas supply grid is established, or were a project approval prepared before 1 January 2013 exists on individual natural gas supply in the area under the Danish Act on Heating Supply, heating of buildings may be based on natural gas irrespective of s. 293.

296. Existing buildings located in areas where connection to a district heating supply grid is not possible, or where a natural gas supply grid has not been established or adopted under the Danish Act on Heating Supply before 1 January 2013, see s. 295, are not subject to s. 293.

297. Exemption from s. 293 can only be granted if a specific assessment of conditions concerning the building or property determines that heating of the building by renewable energy is not suitable. In case of an exemption, the local council may e.g. emphasise that one or more of the following factors make installation of renewable energy for the specific building unsuitable:

- 1) Plot size.
- 2) Location of the building on the plot.
- 3) Neighbour considerations.
- 4) Local development plans for district heating.
- 5) The planned use of the building.

298. In new and existing buildings where heating is not based on renewable energy in accordance with s. 293, and where material conversions or alterations are carried out, renewable energy must constitute part of the total energy supply for the building to the extent this is technically possible and financially viable. Financial viability is assessed according to s. 275. This provision does not apply to renovation of churches, listed buildings and buildings worthy of preservation, see s. 278.

Chapter 12 - Energy supply systems adjacent to buildings

299. In the planning, building, installation, operation and maintenance of energy supply systems adjacent to buildings, the following must be ensured:

- 1) No risk may rise of injury to persons or damage to buildings as a result of e.g. fire or explosion.
- 2) No risk may arise for the health or comfort of persons, e.g. as a result of poisoning, scalding or smoke or odour nuisance.
- 3) No unnecessary use of energy will occur.

300. Installations must be planned, built and installed to ensure that:

- 1) the location and installation does not result in vibration nuisance or damage to building parts or installations;
- 2) they are protected against frost;
- 3) they are tight to prevent e.g. flue gasses, water vapour and brine from escaping and damaging the installation, the building or persons in the building;
- 4) they can resist normal static, dynamic, chemical and thermal impact;
- 5) corrosion or deposits do not occur;
- 6) they are insulated against heat loss and condensation in accordance with *DS 452 Thermal insulation of technical installations*;
- 7) noise nuisance, moisture or odour is not carried via pipelines;
- 8) they can be cleaned, operated and maintained to a necessary degree. Cleaning access points and components which require operation, inspection or maintenance must be easily accessible in order to ensure that these operations can be carried out in an expedient and responsible way.

General provisions for heating systems

301. Heating systems must be planned, built and installed to ensure efficient combustion.

302. Heating systems must be provided with a sufficient air supply for the combustion process.

(2) Subsection 1 can be fulfilled by installing a heating system in a room equipped with an adjustable fresh air valve or by supplying air to the combustion chamber via an open air duct.

303. The combustion chamber of heating systems and the flue system must be designed with negative pressure in the installation under normal conditions compared to the room in which the system is installed.

(2) This requirement may be derogated from for particularly tight boilers which are designed for pressurised combustion and equipped with tight flue systems or which are installed separately from living and working spaces in a separate room with vents to open air which cannot be blocked.

Wood stoves, rocket mass heaters or open heating systems

304. Wood stoves, rocket mass heater and closed heating systems with manual registers must have a free flow area of minimum 20 sq. centimetres when they are closed.

305. Water heaters in open heating systems and wood stoves may not be connected to closed central

heating systems as these types of heating systems do not have automatic controls. Thus, there is a risk of periodic overheating and danger of explosion in the system. However, this does not apply if each boiler (heat producing unit) is equipped with a safety valve.

Central heating boilers, oil furnaces, etc.

306. As a minimum, solid fuel boilers up to 500 kW installed in or adjacent to buildings, must:

- 1) fulfil the efficiency requirements for boiler class 5 in *DS/EN 303-5 Central heating boilers for solid fuel, manual or automatic firing with a nominal heating effect of up to 500 kW, Terminology, requirements, testing and marking*;
- 2) have a safety level corresponding to *DS/EN 303-5 Central heating boilers for solid fuel, manual or automatic firing with a nominal heating effect of up to 500 kW, Terminology, requirements, testing and marking*;

(2) Subsection 1, para (1) does not apply to straw-fired boilers. As a minimum, straw-fired boilers up to 1 MW must fulfil the efficiency requirements for 3 in *DS/EN 303-5 Central heating boilers for solid fuel, manual or automatic firing with a nominal heating effect of up to 500 kW, Terminology, requirements, testing and marking*.

(3) Subsection 1, para (1), and subsection 2 do not apply to straw-fired boilers with an input effect of less than 130 kW intended for small bales.

307. Central heating boilers with a nominal performance of over 120 kW must be heat-insulated to prevent the temperature on their outer surfaces, except doors, etc., from exceeding 35 °C at a room temperature of 20 °C.

308. Oil- and gas-fired central heating boilers with a nominal performance of over 400 kW should not have a flue gas loss exceeding 7 per cent during full load and should be equipped with a flue gas cooler if the temperature conditions in the connected heating system is suited for this.

309. Interchangeable pellet furnaces with a maximum input effect of 70 kW installed in an existing boiler must be in accordance with *DS/EN 15270 Pellet furnaces for small heating boilers - Definitions, requirements, testing, marking*.

310. Oil-fired air heating units for heating of buildings must fulfil the requirements for air heaters in *DS/EN 13842 Oil-fired convection air heaters – stationary or portable for room heating*.

311. Oil furnaces must fulfil the requirements in *DS/EN 298 Automatic combustion control system for furnaces and apparatus which burn gaseous or liquid fuel* and *DS/EN 267 Automatic blasting oil furnaces for liquid fuel*.

312. Central heating boilers with a nominal performance of over 120 kW must be equipped with a measuring outlet and measuring equipment such as a flue gas thermometer, flue gas analysis outlet, hour meter and boiler thermometer with energy efficiency monitoring.

313. The local council may pose specific requirements for heating systems, etc. used for commercial purposes and for straw-firing systems and special biofuel-fired central heating boilers which are not subject to the requirements of EU Regulation 2016/426 on appliances burning gaseous fuels.

Connection to a flue system

314. The aperture area must correspond to the input effect. If more than one heating system is connected to the same flue system, the aperture area is calculated in relation to the total effect of the heating systems.

(2) For open heating systems, the aperture area of the flue system must be minimum 300 sq. centimetres. If the free opening of the heating system does not exceed 2,500 sq. centimetres, the aperture area may be reduced to 175 sq. centimetres.

315. The following heating systems must be connected to an independent flue system which does not receive flue gases from other systems:

- 1) Combined heating and power units.
- 2) Open heating systems.
- 3) Oil-fired boilers. Cascade oil-fired boilers may be connected to the same flue system.
- 4) Heating systems for commercial use and special biofuel-fired systems such as drying installations for grain, seeds and vegetable produce, smoking installations and hot oil systems.

(2) Wood stoves may not be connected to flue systems from gas-fired or oil-fired systems to or flue systems connected to boilers designed for pressurised combustion.

Flue systems for heating systems

316. Flue systems from oil-fired or solid fuel combustion systems must be planned, built and installed in a way which ensures that the flue system is terminated vertically with a height, location, design and aperture area which provide sufficient ventilation conditions to ensure that the ventilation of smoke does not constitute a nuisance in the surrounding area.

317. The cleaning hatch should have size at least equivalent of the aperture area of the flue system.

(2) If the flue system is designed for cleaning from above, access must be sufficiently safe.

318. Access to carry out inspection of the outside of the flue system must be provided.

319. Flue systems must be designed and installed with protection against blocking by e.g. nest building.

320. Flue systems must be planned, built and installed to resist the flue gas temperature in the heating system. Refer to the provisions of s. 110 concerning the risk of the occurrence and spreading of fire and s. 342 concerning the surface temperature of the flue system.

(2) Manually fired solid fuel systems and fireplaces and wood stoves may not be connected to flue systems with a lower temperature classification than T400, see *DS/EN 1443 Chimneys – General requirements*.

(3) Automatically fired solid fuel systems and pellet furnaces not be connected to flue systems with a lower temperature classification than T250, see *DS/EN 1443 Chimneys – General requirements*.

321. Flue systems used for oil or solid fuel must be resistant to soot fire, corresponding to a G classification according to the relevant product standard.

(2) Subsection 1 does not apply to flue systems used for boilers for clean mineral oil which area equipped with flue gas temperature protection in the boiler outlet pipe. Irrespective of the circumstances, the protective device must stop the firing at a flue gas temperature which corresponds to the temperature classification of the flue system, max. 200 °C. The protective device must be activated manually in case of an error message.

322. Flue systems used in connection with heating systems with condensation or systems in which the flue gas condenses in the flue system must be resistant to condensation and diffusion of water vapour, corresponding to a W classification according to the relevant product standard.

(2) The flue system must be designed to enable collection and removal of condensation.

323. The surface temperature of the flue system may not exceed the set maximum contact temperature under normal operation according to *DS/EN 1443 Chimneys – General requirements*.

(2) Subsection 1 may be derogated from if the flue system is installed in a shaft and in accordance with the manufacturer's instructions.

(3) Subsection 1 does not apply to the part of the flue system which is installed in the room where the heating system is installed.

Flue systems in roofing with insufficient fire resistance

324. In connection with roofing which cannot be classified as roofing class BROOF (t2) [roofing class T], flue systems must be established and installed in a way which provide sufficient protection against fire.

Other energy supply systems: Solar heating, solar panels, cooling systems and reverse cycle heating systems

325. Solar heating and solar panel systems must be planned, built and installed in a way which ensures that the temperature in the system does not cause injuries to persons or damage to buildings.

326. If hazardous liquids or gases are used in reverse cycle heating systems or cooling systems, and the room is therefore classified as explosive, see the ATEX Directive, the system must be installed in an appropriate and safe place.

327. Electricity consumption must be metered for reverse cycle heating systems and cooling systems with an annual electricity consumption of over 3,000 kWh. Electric cartridges, if any, must be equipped with an hour meter or an electricity meter. This provision applies to new buildings and new installations in existing buildings.

(2) Meters used for measuring electricity consumption must have a satisfactory accuracy.

(3) Subsection 1 does not apply to extensions to existing systems for e.g. an addition.

Operation and maintenance

328. Operation and maintenance of installations for energy supply must be carried out in accordance with the relevant provisions for the system in force from time to time as stipulated in ss. 299-327.

(2) Operation and maintenance instructions must be available before the system is put into use. The instructions must include drawings with indication of the location of installations which require maintenance and maintenance intervals.

(3) In connection with installation of a central heating boiler with an oil burner, the burner must be adjusted.

Chapter 13 - Pollution

Pollution from construction materials

329. Pollution from construction materials may not affect the indoor climate of buildings resulting in a risk to the health of people or comfort-related nuisance.

330. Building materials may not release gases, particles, ionisation radiation, etc. which may cause an unhealthy indoor climate. Building materials include materials used in the foundation of the building.

(2) Wood-based panels, ceilings and other construction materials which contain substances that release formaldehyde may only be used if the release of formaldehyde does not result in an unhealthy indoor climate.

(3) Construction materials covered by the harmonised standard *DS/EN 13986*, which are incorporated in the building in a way which means that they are in contact with the indoor climate must fulfil formaldehyde class E1.

(4) In connection with conversions, etc., it must be ensured that substances which constitute a health hazard such as asbestos, PCB, lead or particles from insulation materials from materials already incorporated are not dispelled into the indoor climate.

Pollution from the subsoil

331. Pollution from the subsoil may not affect the indoor climate of buildings resulting in a risk to the health of people or comfort-related nuisance.

332. Influx of radon to the indoor climate must be limited by making the building structure sufficiently airtight against the subsoil or by mean of other efficient measures.

(2) The building must be erected in a way which ensures that the content of radon in the indoor air estimated as an annual average value does not exceed 100 Bq/cubic metre.

333. Buildings erected on plots which contain pollution from e.g. previous refuse dumps, gas works or polluted industrial plots must be erected in a way which ensures that the pollution does not cause an unhealthy or hazardous indoor climate.

(2) If the plot is developed without prior complete removal of the pollution from the subsoil, the influx of soil pollution to the indoor climate must be limited by making the building structure sufficiently air and diffusion tight against the subsoil or by means of other similar effective measures.

Chapter 14 - Moisture and wet rooms

334. Buildings must be planned, built and maintained to ensure that water and moisture do not result in health risk to persons or damage to the building.

335. Buildings must be protected against damaging accumulation of moisture as a result of transport of moisture from the indoor air. Thermal bridges in the building envelope may not cause problems with e.g. condensation and mould fungus.

336. Building structures and materials may not have a moisture content which results in a risk of mould mildew at the time of occupation.

337. Buildings must be protected against penetration of water from ground and surface water. Buildings must also be protected against absorption of water from the subsoil.

338. The building envelope must be planned, built and maintained to ensure that it is impermeable against rainwater, meltwater and that water can run off safely. Roof water must be directed to the drain via gutters and chutes.

Wet rooms

339. Wet rooms, including bathroom, scullery and toilet rooms with floor drains must fulfil the following requirements:

- 1) Floors and walls must be built to resist moisture effects and the mechanical and chemical effects which normally occur in wet rooms.
- 2) Floors and flooring, including joints, connections, pipe penetrations, etc. must be water tight.
- 3) In the part of the wet room which is exposed to water, pipe penetrations must not be installed in the floor.
- 4) In the part of the wet room which is exposed to water, walls and wall coverings, including joints, connections, pipe penetrations, etc. must be water tight.
- 5) Water on the floor must be led out via a floor drain.
- 6) When frame walls and floor and wall structures which contain wood or other organic materials are used, a good waterproofing system must be applied.

Chapter 15 - Structures

340. The planning, construction, operation and maintenance of structures and building parts must be carried out in a way which ensures that:

- 1) injuries or damage is not inflicted on persons and buildings on own plot or on other plots;
- 2) no health risk occurs to persons owing to failing structures;
- 3) satisfactory functionality and durability is achieved;
- 4) no health risk occurs to persons owing pest intrusion.

341. For buildings, materials must be used which are suitable for the specific purpose.

342. Foundation must be established below the frost line or otherwise to ensure that damage does not occur owing to movements in the subsoil. In connection with exterior frost-proofing of foundations particular attention must be paid to the robustness and reliability of the solutions in order to ensure that the frost-proofing is maintained throughout the useful life of the building.

343. Roofs and skylights in roofs must be established with sufficient protection against penetration.

Planning and building

344. Structures must be planned and built to resist normal static and dynamic effects related to the location and use of the structure.

(2) Planning and building of structures must be carried out in accordance with:

- 1) *DS/EN 1990 Basis for planning of load-bearing structures with DS/EN 1990 DK NA.*
- 2) *DS/EN 1991-1-1 Densities, intrinsic load and live load for buildings with DS/EN 1991-1-1 DK NA.*
- 3) *DS/EN 1991-1-2 Fire load with DS/EN 1991-1-2 DK NA.*
- 4) *DS/EN 1991-1-3 Snow load with DS/EN 1991-1-3 DK NA.*
- 5) *DS/EN 1991-1-4 Wind load with DS/EN 1991-1-4 DK NA.*
- 6) *DS/EN 1991-1-5 Thermal load with DS/EN 1991-1-5 DK NA.*
- 7) *DS/EN 1991-1-6 Load on structures under construction with DS/EN 1991-1-6 DK NA.*
- 8) *DS/EN 1991-1-7 Accident load with DS/EN 1991-1-7 DK NA.*

(3) For heated horticultural hothouses and tent covers for container for storage of liquid livestock slurry, the requirements for snow load can be reduced by 65 per cent.

Special provisions for concrete structures

345. In addition to the provisions of s. 344, planning and construction of concrete structures must be carried out in accordance with:

- 1) *DS/EN 1992-1-1 Concrete structures, General rules and rules for building structures with DS/EN 1992-1-1 DK NA.*
- 2) *DS/EN 1992-1-2 Concrete structures, Fire safety dimensioning with DS/EN 1992-1-2 DK NA.*
- 3) *DS/EN 1992-3, Concrete structures for storage of liquids and powders with DS/EN 1992-3 DK NA.*
- 4) *DS/EN 206-1 Concrete, specification, properties, manufacture and compliance and DS 2426 Concrete - Materials - Regulations for use of DS/EN 206 in Denmark.*
- 5) *DS/EN 1520 Prefabricated reinforced sections of aerated concrete with light aggregates and an open*

structure with load-bearing or non-load-bearing reinforcement with DS/EN 1520 DK NA for structures in aerated concrete with light aggregates.

- 6) DS/EN 12602. Prefabricated reinforced components of autoclave-treated cellular concrete with DS/EN 12602 DK NA for structures of autoclave-treated cellular concrete.

Special provisions for steel structures

346. In addition to the provisions of s. 344, planning and construction of steel structures must be carried out in accordance with:

- 1) DS/EN 1993-1-1 Steel structures, General rules and rules for building structures with DS/EN 1993-1-1 DK NA.
- 2) DS/EN 1993-1-2 Steel structures, Fire safety dimensioning with DS/EN 1993-1-2 DK NA.
- 3) DS/EN 1993-1-3 Steel structures, Supplementary rules for cold forged elements and thin-plate sheeting with DS/EN 1993-1-3 DK NA.
- 4) DS/EN 1993-1-4 Steel structures, Supplementary rules for stainless steel with DS/EN 04/01/1993 DK NA.
- 5) DS/EN 1993-1-5 Steel structures, Plate structures with DS/EN 1993-1-5 DK NA.
- 6) DS/EN 1993-1-6 Steel structures, Strength and stability of shell structures with DS/EN 1993-1-6 DK NA.
- 7) DS/EN 1993-1-7 Steel structures, Strength and stability of plate structures with transverse load med DS/EN 1993-1-7 DK NA.
- 8) DS/EN 1993-1-8 Steel structures, Joints with DS/EN 1993-1-8 DK NA.
- 9) DS/EN 1993-1-9 Steel structures, Fatigue with DS/EN 1993-1-9 DK NA.
- 10) DS/EN 1993-1-10 Steel structures, Materials toughness and properties in the thickness direction with DS/EN 1993-1-10 DK NA.

Special provisions for composite structures

347. In addition to the provisions of s. 344, planning and construction of composite structures must be carried out in accordance with:

- 1) DS/EN 1994-1-1 Composite structures, General rules and rules for building structures with DS/EN 01/01/1994 DK NA.
- 2) DS/EN 1994-1-2 Composite structures, Fire safety dimensioning with DS/EN 1994-1-2 DK NA.

Special provisions for wooden structures

348. In addition to the provisions of s. 344, planning and construction of wooden structures must be carried out in accordance with:

- 1) DS/EN 1995-1-1 Wooden structures, General rules and rules for building structures with DS/EN 1995-1-1 DK NA.
- 2) DS/EN 1995-1-2 Wooden structures, Fire safety dimensioning with DS/EN 1995-1-2 DK NA.

Special provisions for masonry structures

349. In addition to the provisions of s. 344, planning and construction of masonry structures must be carried out in accordance with:

- 1) *DS/EN 1996-1-1 Masonry structures, General rules for reinforced and non-reinforced masonry with DS/EN 1996-1-1 DK NA.*
- 2) *DS/EN 1996-1-2 Masonry structures, Fire safety dimensioning with DS/EN 1996-1-2 DK NA.*
- 3) *DS/EN 1996-2 Masonry structures, Design considerations, choice of materials and building of masonry with DS/EN 1996-2 DK NA.*

Special provisions for foundations

350. In addition to the provisions of s. 344, planning and construction of foundations must be carried out in accordance with *DS/EN 1997-1 Soil engineering, General rules with DS/EN 1997-1 DK NA.*

Special provisions for aluminium structures

351. In addition to the provisions of s. 344, planning and construction of aluminium structures must be carried out in accordance with:

- 1) *DS/EN 1999-1-1 Aluminium structures, General rules with DS/EN 1999-1-1 DK NA.*
- 2) *DS/EN 1999-1-2 Aluminium structures, Fire safety dimensioning with DS/EN 1999-1-2 DK NA.*
- 3) *DS/EN 1999-1-3 Aluminium structures, Fatigue with DS/EN 1999-1-3 DK NA.*

Other materials and structures

352. When materials and structures not covered by the provisions of ss. 345-351 are used, documentation is required to prove that a safety level as described in s. 344 is achieved.

Tents and similar transportable structures

353. Tents and similar transportable structures must be dimensioned according to *DS/EN 13782, Temporary structures – Tents – Safety with DS/EN 13782 DK NA*, or in a way which ensures that the relevant provisions of ss. 344-351 are fulfilled.

Stationary storage systems

354. Stationary storage systems must be dimensioned according to *DS/EN 15512 Stationary storage systems in steel - Adjustable pallet rack systems - Principles of dimensioning with DS/EN 15512 DK NA*, or in a way which ensures that the relevant provisions of ss. 344-351 are fulfilled.

Spectator stands

355. Telescopic stands and removable spectator stands be dimensioned according to *DS/EN 13200-5 and 13200-6* with *DS/EN 13200-5 DK NA* and *DS/EN 13200-6 DK NA*, respectively, or in a way which ensures that the relevant provisions of ss. 344-351 are fulfilled.

Exceptions

356. S. 344(2) to s. 351 and ss. 353-355 may be derogated from if it can be ensured and documented by other means that derogation is safe, and if a safety level as described in s. 344(2)(1) can be achieved.

Operation, inspection and maintenance

357. Operation, inspection and maintenance of structures must be carried out to ensure that they are in accordance with the provisions of ss. 344-354 at any time.

Chapter 16 - Playgrounds, etc.

358. Planning, construction, operation and maintenance of playground equipment and surfaces, outdoor exercise equipment, skateboard facilities, etc. with public access must be carried out in order to ensure that they are safe and do not cause injuries.

Playground equipment

359. Playground equipment must be planned in accordance with:

- 1) *DS/EN 1176-1 Playground equipment and surfaces – Part 1: General safety requirements and testing methods.*
- 2) *DS/EN 1176-2 Playground equipment and surfaces – Part 2: Swings – Supplementary specific safety requirements and testing methods.*
- 3) *DS/EN 1176-3 Playground equipment and surfaces – Part 3: Chutes – Supplementary specific safety requirements and testing methods.*
- 4) *DS/EN 1176-4 Playground equipment and surfaces – Part 4: Ropeways – Supplementary specific safety requirements and testing methods.*
- 5) *DS/EN 1176-5 Playground equipment and surfaces – Part 5: Carousels – Supplementary specific safety requirements and testing methods.*
- 6) *DS/EN 1176-6 Playground equipment and surfaces – Part 6: Seesaws – Supplementary specific safety requirements and testing methods.*
- 7) *DS/EN 1176-7 Playground equipment and surfaces – Part 7: Guidelines for installation, inspection, maintenance and operation.*
- 8) *DS/EN 1176-10 Playground equipment and surfaces – Part 10: Fully closed-off playground equipment – Supplementary specific safety requirements and testing methods.*
- 9) *DS/EN 1176-11 Playground equipment and surfaces – Part 11: Three-dimensional climbing nets – Supplementary specific safety requirements and testing methods.*
- 10) *DS/EN 1177 Shock-absorbing playground surfaces - Determination of critical fall height.*

Skateboard facilities, inflatable play equipment and artificial climbing walls and outdoor exercise equipment

360. Skateboard facilities must be planned in accordance with *DS/EN 14974 + A1 Sports equipment – Facilities for users of rolling sports equipment (e.g. inline skates, roller skates, skateboards, BMX bikes) – Safety requirements and testing methods.*

361. Inflatable play equipment must be planned and erected in accordance with *DS/EN 14960 Inflatable play equipment – Safety requirements and testing methods.*

362. Artificial climbing walls must be planned and erected in accordance with:

- 1) *DS/EN 12572-1 Artificial climbing walls – Part 1: Safety requirements and testing methods for artificial climbing walls with safety attachment points.*
- 2) *DS/EN 12572-2 Artificial climbing walls – Part 2: Safety requirements and testing methods for boulder structures.*
- 3) *DS/EN 12572-3 Artificial climbing walls – Part 3: Safety requirements and testing methods for climbing grips.*

363. Outdoor exercise equipment must be planned and erected in accordance with *DS/EN 16630 Permanently installed outdoor fitness equipment – Safety requirements and testing methods*.

364. Exercise equipment which is also used as playground equipment must be planned to ensure that the equipment and the surface are suitable for the actual use.

365. For playground equipment, outdoor exercise equipment, skateboard facilities, etc. which are not covered by s. 359(1)(2) to s. 364, documentation is required to prove that a safety level as described in s. 358 and s. 359(1)(1) is achieved.

Exceptions

366. S. 359(1)(2) to s. 364 may be derogated from if it can be ensured and documented by other means that sufficient protection has been achieved against injury as described in s. 358.

Operation, inspection and maintenance

367. Operation, inspection and maintenance of playground equipment and surfaces, outdoor exercise equipment, skateboard facilities, etc. must be carried out to ensure that they are in accordance with the relevant provisions in ss. 358-365 at any time.

Chapter 17 - Noise

368. Buildings must have satisfactory noise conditions in terms of health and comfort in consideration of their use.

(2) In planning and construction the following must be considered:

- 1) Sound transmission between rooms, residential units or commercial units within the building.
- 2) Noise from the building's technical installations.
- 3) Noise from roads and railways.
- 4) Reverberation time.

(3) Documentation of noise conditions can be obtained by calculation or measuring in the finished building.

Residential units and other buildings for overnight accommodation

369. For residential units and other buildings which are used for overnight accommodation, it must be ensured that persons in the buildings are not disturbed by sound from other rooms in the other residential and commercial units, from installations in the buildings or from roads and railways.

(2) For residential units, the sound conditions must be in accordance with class C in *DS 490 Sound classification of residential units* and the levels stated in the *Guidelines in the Building Regulations on sound conditions*.

370. If rooms with noisy activities are adjacent to residential units and shared communal living spaces, sound-proofing must be carried out. This provision is fulfilled when documentation can be obtained stating that rooms with noisy activities have been built in accordance with class C in *DS 490 Sound classification of residential units*.

371. Technical installations may not result in a noise level which constitutes a nuisance immediately outside windows in living spaces, kitchen or recreational areas of the building, including balconies, roof terraces, outdoor spaces, etc. This provision has been fulfilled when it can be documented that the threshold values stated in the *Guidelines in the Building Regulations on sound conditions* are complied with.

372. The reverberation time of rooms must be adjusted according to their use.

(2) For communal spaces, the provision is fulfilled when it can be documented that class C in *DS 490 Sound classification of residential units* has been observed.

373. For holiday homes in areas allocated for holiday homes it is merely provided that technical installations may not result in a noise level which constitutes a nuisance immediately outside windows in living spaces, kitchen or the recreational areas of the building, including balconies, roof terraces, outdoor spaces, etc.

Non-residential buildings

374. For non-residential buildings it must be ensured with due consideration of the use of the building that persons in the building are not disturbed by sound from adjacent rooms, from installations in the building or from roads and railways in the surrounding area.

(2) For teaching or day-care facilities, the provision has been fulfilled when it can be documented that the threshold values stated in the *Guidelines in the Building Regulations on sound conditions* are observed, or when it can be documented by other means that an equivalent level has been reached.

375. If rooms with noisy activities in the same or adjacent buildings are adjacent to teaching rooms or living rooms, sound-proofing must be carried out.

(2) For teaching or day-care buildings, the provision has been fulfilled when it can be documented that the threshold values stated in the *Guidelines in the Building Regulations on sound conditions* are observed, or when it can be documented by other means that an equivalent level has been reached.

376. The reverberation time of rooms must be adjusted according to the use of the rooms.

(2) For teaching or day-care buildings, the provision has been fulfilled when it can be documented that the threshold values stated in the *Guidelines in the Building Regulations on sound conditions* are observed, or when it can be documented by other means that an equivalent level has been reached.

Chapter 18 - Light and view of the surroundings

377. Buildings must have light conditions that ensure that no risk will occur to the health, safety and comfort of people. Sufficient daylight and view of the surroundings must be ensured as well as sufficient electric lighting with due consideration of the use.

(2) Planning and construction must be carried out with due consideration of the following:

- 1) Daylight must be utilised as a source of light to the extent it is possible.
- 2) Unnecessary energy consumption should be avoided.
- 3) Unnecessary transfer of heat to the rooms should be avoided.
- 4) Nuisance from direct sunlight can be avoided.
- 5) Blinding nuisance must be avoided.

View of the surroundings

378. Working rooms, living rooms, teaching rooms, etc must be equipped with windows which provide a view of the surroundings. Windows and sun screening must be planned and implemented to ensure a view to the surroundings for a satisfactory part of the usage time.

Daylight

379. Work rooms, living spaces in institutions, teaching rooms, dining rooms, in the following referred to as working rooms, etc. and living rooms and kitchens must have access to daylight to an extent which ensures sufficient lighting of the rooms.

(2) Sufficient access to daylight may be documented by a glass surface without shadowing effect equivalent of minimum 10 per cent of the relevant floor area. The glass area stated must be adjusted for any shadows in the surroundings, reduced light transmittance, etc. as stated in the *Guidelines of Transport, Building and Housing Agency on light and view of the surroundings*. Alternatively, sufficient daylight may be documented by proving that the inside lighting intensity from daylight is 300 lux or by for minimum half to the relevant floor area for minimum half of the daylight hours. For living rooms, the relevant floor area equals the indoor floor area. For working rooms, etc., the relevant floor area equals the area where workplaces are located. If it can be documented that sufficient lighting of the rooms has been provided, other calculation methods may be used as documentation.

380. The requirement for access to daylight may be derogated from if compliance would constitute a decisive disadvantage for the operation of the business, e.g. if the production of the business does not permit daylight.

381. Windows must be established, placed and possibly shielded to ensure that direct sunlight does not cause overheating of the rooms and to prevent nuisance form direct sun radiation.

Electric lighting

382. Work rooms, etc. and shared access roads must:

- 1) be equipped with electric lighting to the necessary extent. Work place lighting must be carried out in accordance with *DS/EN 12464-1 Light and lighting – Lighting of workplaces – Part 1: Indoor workplaces* along with *DS/EN 12464-1 DK NA*;
- 2) must be equipped with energy-efficient lighting;
- 3) must be equipped with automatic daylight control if sufficient daylight is present;
- 4) in case of occasional use only, movement devices must be equipped. This provision also applies to shower rooms and toilets adjacent to workrooms, etc. The use of movement devices can be omitted if switching off the light may result in a risk of accidents or if the light sources are not suitable for such a solution;
- 5) be implemented with lighting systems divided into zones with use option according to daylight conditions and activities. In small working rooms, e.g. individual offices, this requirement can be derogated from.

(2) Subsection 1 can be derogated from if compliance results are a critical disadvantage to the operation of the business.

383. S. 382 also applies to replacement of lighting fittings. For replacement of lighting fittings, s. 382(1), para

(3) - (5) only apply if the measures has the necessary total financial viability, see s. 275.

384. Function testing must be carried out of the lighting system before it is put into use. The purpose of the function testing is to document that the lighting system complies with the requirements of the Building Regulations for light intensity, and that daylight control, movement devices and zones are functioning according to their purpose.

Chapter 19 - Thermal indoor climate and installations for heating and cooling systems

385. The thermal indoor climate of building must be sufficiently healthy and comfortable in consideration of their use.

(2) The planning, construction, operation and maintenance of heating and cooling systems must be carried out in a way which ensures that:

- 1) there is no risk of fire or explosion;
- 2) there are no health risks for people or comfort-related nuisance;
- 3) there is no risk of injury to people or damage to building parts or installations;
- 4) no unnecessary use of energy will occur.

General provisions for thermal indoor climate

386. In rooms where people stay for longer periods of time, it must be ensured that a satisfactory thermal indoor climate in terms of health and comfort can be maintained during the intended use and activities of the room.

(2) Documentation of the thermal indoor climate must be obtained via calculations based on the conditions in the critical room and based on Design Reference Year, DRY 2013 for the calendar year 2010. For residential units, a simplified calculation model may be applied.

General provisions for installations for heating and cooling systems

387. Heating and cooling systems must be planned and established to ensure that a sufficient distribution of heating and cooling is achieved in the building and for associated systems.

(2) Heating and cooling systems must be planned and established as stipulated in *DS 469 Heating and cooling systems in buildings*.

388. Domestic hot water installations must be planned and established to minimise growth of legionella bacteria in the hot water. Dimensioning and establishment must be carried out as stipulated in *DS 469 Heating and cooling systems in buildings* and in accordance with Chapter 21.

389. Heating and cooling installations must be planned and established to ensure that:

- 1) the location and installation does not result in vibration nuisance or damage to building parts or installations;
- 2) they are protected against frost;
- 3) unintended leakage is avoided;
- 4) they can resist normal static, dynamic, chemical and thermal impact;
- 5) there is no risk of rupture or harmful pressure or water hammering;
- 6) corrosion or deposits which may reduce the capacity does not occur;
- 7) they have a useful life which is suitable for their location and replacement options;
- 8) noise nuisance, moisture or odour is not carried via pipelines;
- 9) surface temperatures do not occur which may result in injuries to persons with due consideration of their use;
- 10) they can be cleaned, operated and maintained to a necessary degree. Components which require operation, inspection or maintenance must be easily accessible in order to ensure that these operations can be carried out in an expedient and responsible way.

Energy consumption

390. Installations must be carried out to ensure that unnecessary energy consumption is avoided. The installations must be insulated against heat loss and condensation in accordance with *DS 452 Thermal insulation of technical installations*.

(2) If server rooms are installed in a building, electricity consumption or cooling effect for cooling must be metered. Similarly, electricity consumption for servers must be metered.

(3) Meters used for measuring electricity consumption or cooling, see subsection 2, must have a satisfactory accuracy.

Inspection

391. Function testing must be carried out of heating and cooling systems before they are put into use. The purpose of the function testing is to document if the heating and cooling systems comply with the requirements in the Building Regulations for adjustment and control.

Operation and maintenance

392. Operation and maintenance of installations for heating and cooling systems must be carried out to ensure that they are always in accordance with the provisions ss. 385-390.

(2) Operation and maintenance instructions must be available before the system is put into use. The instructions must include drawings with indication of the location of installations which require maintenance and maintenance intervals.

Chapter 20 - Areas without buildings surrounding buildings

393. Areas of a suitable size must be allocated to a building in consideration of the use, scope and location of the building in the form of recreational areas, areas for collection of refuse and parking areas. Access roads must be established to ensure easy access for emergency vehicles.

Recreational areas

394. Recreational areas must be located on ground level.

(2) In cases where recreational areas are not located on ground level, they may be located on a roofed-over or elevated courtyard area, or they may be established partly on a roof area or on large balconies.

395. Areas without buildings may be shared by a number of properties. Design, construction and use of such shared open spaces must be protected by listings on the properties in question.

(2) Areas without buildings may not be used contrary to their purpose.

396. In the building permit, the local council may stipulate a deadline for the design and establishment of recreational and play areas after use of the building has been commenced.

397. In areas for refuse collection adjoining the building, access conditions must be available which ensure that the users can access the areas and use their functions unassisted.

398. For multi-storey residential buildings and low adjacent buildings, including terraced houses, houses separated by outbuildings, etc. a suitable part of the recreational area must be established as a play area. The portion of the play area of the plot area must be determined by the local council and be stated on the building permit.

Parking areas

399. On the property, a sufficient area must be allocated for parking of cars, motorcycles, mopeds and bicycles, etc. with due consideration of the use of the building.

(2) The parking areas must be available to the residents, employees, customers, suppliers, etc. of the building.

400. The local council determines the area of the plot which must be set aside or established as a parking area and the time of establishment hereof.

401. In connection with the design of parking spaces, an appropriate number of spaces must be designed for vehicles suitable for disabled persons.

(2) The requirement is considered to have been fulfilled when the parking spaces are designed and established as follows:

- 1) The use area is 3.5 metres x 5.0 metres and located as closely as possible to the entrance.
- 2) The paving is hard and level.
- 3) Differences in levels in the access area from the parking area to other areas are maximum 2.5 centimetres.

402. Detached single-family houses and holiday houses are not included in s. 401.

Chapter 21 - Water

403. Buildings must have water supply which is appropriate considering the use of the building and installation. The planning, establishment, operation and maintenance of water installations must be carried out in a way which ensures that:

- 1) there are no health risks for people or comfort-related nuisance;
- 2) there is no risk of injury to people or damage to installations or building parts;
- 3) no unnecessary use of water or energy will occur.

404. Water installations must be planned and established to ensure that water is supplied to the individual taps. This must occur with due consideration of the conditions of supply and the use of the building and the installation.

(2) Water installations must be dimensioned as stipulated in *DS 439 Standard governing water installations*, section 2, or in a way which ensures a similarly satisfactory water supply to taps with due consideration of the use of the building and the installations, see (1).

405. Water installations must be planned and constructed to ensure that:

- 1) they can function with risk to the health of people as a result of bacteria growth, including legionella, in the water;
- 2) the location and installation does not result in vibration nuisance or damage to building parts or installations;
- 3) they are protected against frost;
- 4) unintended infiltration or leakage is avoided;
- 5) they can resist normal static, dynamic, chemical and thermal impact;
- 6) there is no risk of rupture or harmful pressure or water hammering;
- 7) corrosion or deposits which may reduce the capacity does not occur;
- 8) they have a useful life which is suitable for their location and replacement options;
- 9) noise nuisance, moisture or odour is not carried via pipelines;
- 10) they can be cleaned, operated and maintained to a necessary degree. Components which require operation, inspection or maintenance must be easily accessible in order to ensure that these operations can be carried out in an expedient and responsible way.

(2) Subsection 1, para (1) can be complied with by adhering to *Pipe centre instruction 017 Legionella - Principles of installation and methods of control*.

Leaks

406. Water installations must be planned and established to ensure that leaks and outflow of water does not occur and that leaks can be detected easily. This also applies to water connection to apparatus with automatic water filling which are connected to the water supply.

Protection of water quality

407. Water installations must be designed to ensure that treated water, water from fire extinguishing systems and water drained from taps cannot flow back into the drinking water installation.

(2) In order to protect the water supply system from pollution flowing back into the drinking water

installation, e.g. from failure in backstops a backstop must be installed on the distribution pipe after the entrance of the ground pipe in the property and before branching off to other pipes.

(3) Protection against flowback must be installed in accordance with *DS/EN 1717 Protection against pollution of drinking water in water installations and general requirements for backstops* and *Pipe centre instructions 015 Backstops in water supply systems* or in a way which provides equivalent protection against backflow of water in the drinking water installation and the water supply system.

408. In cases where drinking water installations can get in contact with substances which present a health hazard, the installations must be planned and established to ensure protection against such substances in the drinking water installation by corrosion or diffusion to ensure that health hazards cannot occur.

409. Installations for water for technical use and installations which for other reasons result in the requirements for drinking water quality not being fulfilled must be clearly marked to prevent misuse.

Cold water

410. Water installations must be designed, located and isolated to prevent unnecessary increases in the temperature of the cold water.

(2) Subsection 1 does not apply to systems which use rain water for toilets and/or washing machines or for special installations for water for technical use.

Hot water

411. Systems for production of domestic hot water must be able to produce a sufficient water quantity and water flow which is appropriate for its purpose with due consideration of the number and use of the hot water taps. At taps where hot water is required, an appropriate hot water temperature must be present without disturbing waiting time with due consideration of energy consumption, water consumption and the frequency of use of the installation.

412. Water installations must be planned and established to ensure that no risk of scalding is present at the taps and that surface temperatures do not occur which may cause injury to persons.

413. Other liquids than water which are used in heat exchangers for domestic water must be traceable in the domestic hot water.

Energy and water consumption

414. Water installations must be planned and constructed to ensure that:

- 1) unnecessary water consumption and waste of water is avoided;
- 2) unnecessary energy consumption is avoided. The installations must be insulated against heat loss and condensation in accordance with *DS 452 Thermal insulation of technical installations*;

3) The consumption of hot and cold water can be metered.

415. The total consumption of heat for heating and circulation of hot water must be metered if the heat consumption for heating and circulation of hot water exceeds 10,000 kWh per year. This provision applies to new buildings and new installations in existing buildings. This provision does not apply if an addition or a conversion of a room receives water from an existing system.

(2) Meters used for measuring heat, see subsection 1, must have a satisfactory accuracy.

Construction materials and products for water installations

416. Water installations must be made from materials which do not give off substances that constitute a health hazard, malodour, bad taste, discoloration or offensive growth of microorganisms to the water. This requirement concerns all materials used for the installations, e.g. pipes, fittings and gaskets.

417. Factory-made products which form part of or are connected to the permanent drinking water installations up to and including the tap must be approved by the Transport, Building and Housing Agency in terms of properties which may influence the quality of the drinking water, see the Executive Order on water quality and control of water supply systems, unless the product in question is exempt under the Executive Order on marketing and sale of construction materials which come into contact with drinking water.

418. Factory-made products which form part of or are connected to water installations must have the following mechanical/physical characteristics:

- 1) They must have a CE-marking stating that the products are in accordance with a harmonised standard or are covered by a European technical assessment with the characteristics declared which are relevant to Denmark, or
- 2) They must have undergone testing of the characteristics which are relevant to Denmark and have undergone production checks at the factory to ensure that the performance declared is maintained as described in Chapter 24.

Operation and maintenance

§ **419,** Operation and maintenance of water installations must always be carried out in accordance with the provisions of ss. 404-418.

(2) Maintenance of backstops must be carried out in accordance with *DS/EN 806-5 Specifications for drinking water installations in buildings – Part 5: Operation and maintenance* or by other means which provides equivalent guarantee that the function of the backstops is intact.

(3) Operation and maintenance instructions must be available when the system is put into use. The instructions must include drawings with indication of the location of installations which require maintenance and maintenance intervals.

(4) Before a water installation or parts of an installation can be put into use, including after repair, the installation must be flushed through with drinking water.

(5) Unused installations must be removed from the part of the installation which is in use to prevent bacterial growth, etc. Removal must be carried out immediately at the branch to the part of the installation which is in use.

Chapter 22 - Ventilation

420. Buildings must be ventilated to provide a satisfactory air quality and moisture with consideration of the use.

(2) The planning, construction, operation and maintenance of ventilation systems must be carried out in a way which ensures that:

- 1) the risk that a fire occurs, develops and spreads is minimised;
- 2) there is no risk of injury to people or damage to installations or building parts;
- 3) there are no health risks for people or comfort-related nuisance;
- 4) no unnecessary use of energy will occur.

General provisions for ventilations systems

421. Ventilation systems walls must be planned and installed in accordance with:

- 1) *DS 447 Ventilation in buildings – Mechanical, natural and hybrid ventilation systems.*
- 2) *DS 428 Standard for fire safety measures for ventilation systems.* Systems for natural ventilation should only be established in accordance with *DS 428* to the extent that they are comparable to mechanical ventilation systems.
- 3) *DS 452 Thermal insulation of technical installations.*

422. Ventilation systems must be located to enable appropriate and safe operation and maintenance.

423. Supply of outdoor air must be implemented via vents directly into open air or via ventilation systems with injection and preheating of injected air.

424. External air intakes and air vents must be placed and designed with due consideration of the purity and temperature conditions of the outdoor air and in a way which ensures that the ventilation air is supplied and vented in a way which is appropriate for the ventilation system and does not constitute a nuisance to the surroundings. Air vents from natural ventilation systems must be conducted through the roof and have a height and design which ensures a satisfactory function and does not result in nuisance to the surroundings.

425. In connection with supply and removal of air, it must be ensured that draught does not occur in rooms where people stay for longer periods of time. For rooms where activities are carried out sitting down, proving that the risk of draught (draught rate) does not exceed 20 per cent is one method of documenting that draught will not occur in the zone.

426. Transfer of air from one room to another may not occur from rooms with heavier pollution to rooms with less pollution.

427. For ventilation systems which services more than one residential or commercial unit, and where pollution may occur, solutions must be chosen which ensure a satisfactory air quality in all units.

428. Ventilation systems must be designed and installed in a way which ensures that they do not supply substances to the ventilated rooms, including microorganisms which result in an unsatisfactory indoor climate in terms of health.

429. Systems for humidification of supply air may only be installed on grounds based on safety, production, conservation or health grounds, e.g. in print shops or museums.

Energy requirements for ventilation systems

430. Ventilation must occur in a way which ensures that unnecessary energy consumption is avoided and that the function is not affected to an unacceptable degree by other air consuming installations such as heating systems and tumble dryers.

431. It must be possible to limit the supply of outdoor air in periods when the need for ventilation of the building is reduced. In rooms where the need for ventilation varies significantly, it must be possible to adapt the supply of outdoor air to the load.

432. Ventilation systems with injection and evacuation must be installed with a heat recovery solution.

433. Only batteries with fluid couplings can be used if separation of air flows is vital to the maintenance of the functions of the rooms.

434. However, the heat recovery requirement may be derogated from when the excess heat of the discharge air cannot be used in reasonable way, e.g. in situation when only a need for cooling exists.

(2) The heat recovery unit can be combined with a reverse cycle heating system for heat recovery. A reverse cycle heating system can be used for evacuation systems. Reverse cycle heating systems must have a COP of minimum 3.6 in heating mode. COP during heating is documented in accordance with *DS/EN 14511 Air condition systems, liquid coolers and reverse cycle heating systems with electric compressors for room heating and room cooling – Part 1-3*.

435. Ventilation systems with injection and evacuation in which the unit and ducting is only used in one residential unit must be established with heat recovery and a dry temperature efficiency of minimum 80 per cent.

436. The specific electricity consumption for air transportation may not exceed:

- 1) 1,800 J/m³ of outdoor air for ventilation systems with a constant air rate.
- 2) 2,100 J/m³ of outdoor air at a maximum pressure drop for systems with a variable air rate.
- 3) 1,500 J/m³ outdoor air at the basic air exchange for ventilation systems for multi-storey residential units.
- 4) 800 J/m³ at maximum pressure drop for evacuation systems without mechanical supply of outdoor air.

437. S. 436 does not apply to systems associated with industrial processes and systems with an annual electricity consumption or air transport of less than 400 kWh.

438. For ventilation systems with a constant or variable air rate and heat recovery where the unit and ducting is only used for one residential unit, the specific electricity consumption for air transport may not exceed 1,000 J/m³ at the maximum pressure drop. The system must be connected in a way which enables the establishment of a meter for measuring the specific electricity consumption for air transport.

439. Ventilation systems for which the electricity consumption for ventilation units exceeds 3,000 kWh per year must be equipped with meters for measuring the electricity consumption. This provision applies to new buildings and new installations in existing buildings.

440. S. 439 does not apply if an existing ventilation system is extended to include other rooms in the building.

441. In ventilation systems where the heat consumption for heating surfaces exceeds 10,000 kWh per year, the heating consumption must be metered. The electricity consumption of electric heating surfaces where the total consumption exceeds 3,000 kWh per year must be metered. This provision applies to new buildings and new installations in existing buildings.

442. Meters used for measuring electricity consumption or heating under ss. 438, 439 and 441 must have a satisfactory accuracy.

Ventilation in residential buildings

443. In residential rooms as well as throughout the residential unit, supply of outdoor air must be present at any time at minimum 0.30 l/s per sq. metre heated floor area. This provision also applies to demand-controlled ventilation.

(2) The basic air exchange of the residential unit must be carried out by means of a ventilation system with injection into residential rooms and evacuation in bathroom, toilet room, kitchen and scullery. The ventilation system must be equipped with heat recovery for heating of the injection air. Outside the season, injection may be replaced by supply of outdoor air through windows, air vents, etc.

(3) Kitchens in residential units must be equipped with a range hood over the cooker. The range hood must have adjustable, mechanical ventilation and evacuation into open air and have sufficient efficiency for the removal of moisture and airborne pollution from cooking. The evacuation should be adjustable to minimum 20 l/s.

(4) Evacuation from bathrooms and toilet rooms in residential units should be adjustable to minimum 15 l/s. In toilet rooms without bath/shower and sculleries, evacuation should be adjustable to minimum 10 l/s.

444. Evacuation from basements in single-family houses should be adjustable to minimum 10 l/s. For other types of residential buildings than single-family houses, ventilation from the basement should be dimensioned according to the size and use of the room.

445. For other rooms in residential buildings than those stated in ss. 443 and 444, the dimensioning of the ventilation must be carried out in consideration of the size and use of the room.

446. Single-family houses may be ventilated via natural ventilation or a combination of natural and mechanical ventilation. Single-family houses with natural ventilation are subject to s. 443(1) and (3).

Ventilation of day-care facilities and teaching rooms

447. Living spaces in day-care facilities, teaching rooms in schools, etc. must be ventilated via a ventilation system which includes injection, evacuation and heat recovery for heating of the injection air.

(2) In day-care facilities, injection of outdoor air and evacuation must be minimum 3.0 l/s per child and minimum 5.0 l/s per adult and 0.35 l/s per sq. metre floor area. In teaching rooms in schools, etc., the injection of outdoor air and evacuation must be minimum 5.0 l/s per person and 0.35 l/s per sq. metre floor area. In day-care facilities and teaching rooms in schools, etc. it must also be ensured that the maximum CO₂ content of the indoor air does not exceed 1,000 ppm for the dimensioned conditions.

(3) In a ventilation system with demand-controlled ventilation is used, the stated air quantities can be derogated from when the demand is reduced. During the period of use, ventilation may not be less than 0.35 l/s per sq. metre floor area.

Ventilation of other buildings and rooms

448. Garages with a floor area over 150 sq. metres must be equipped with an independent mechanical ventilation system for the removal of fumes and carbon monoxide.

449. For other rooms than those stated in ss. 443-447, the dimensioning of the ventilation must be carried out in consideration of the size and use of the room.

Inspection

450. Function testing must be carried out of the ventilation system before it is put into use. The function testing is intended to verify that the ventilation system complies with the requirements in the Building Regulations for specific electricity consumption for air transport of air volumes and that any demand control is functioning according to its purpose.

Operation and maintenance

451. Cleaning, operation and maintenance of ventilations systems must be carried out in order to maintain a technically and hygienically safe condition and to ensure that they are always in accordance with the provisions of ss. 421-449. Cleaning, operation and maintenance of ventilation systems must be carried out as stipulated in *DS 447 Ventilation in buildings – Mechanical, natural and hybrid ventilation systems*.

452. Operation and maintenance instructions for ventilation systems must be available when the system is put into use. The instruction must include drawings with indication of the location of installations which require maintenance and maintenance intervals. The operation and maintenance instruction must be prepared as stipulated in *DS 447, Ventilation in buildings – Mechanical, natural and hybrid ventilation systems*.

Part III - Additional provisions

Chapter 23 - Rules for calculation

453. The plot ratio is defined as the floor area as a percentage of the plot area.

454. The plot area includes the area stated for the lot number in question. The road area or unbuilt area laid out for corners or mandatory building lines for establishment of roads must be included in the plot area in the calculation of the plot ratio.

(2) The following is included in the plot size:

- 1) The plot area of an individually registered area laid out as a communal free area for several properties. The shares of the individually registered free area must be distributed equally according to the individual plot sizes unless the local council determines otherwise in each case, including a different division norm, or that the communal free area should not be included.
- 2) Areas set aside for roads before 1 February 1977, but which have nonetheless been included in the plot area. Such areas are included in accordance with the terms stipulated for the permit.
- 3) The total area of several lot numbers when they constitute a total adjacent real property.

(3) The following is not included in the plot size:

- 1) Areas of the plot situated in a different zone from the zone being built on.
- 2) Lot numbers which form part of a total non-adjacent real property.

455. Floor area is calculated by adding the gross areas of all floors, including basements, lofts not used for residential purposes, balconies, sun lounges, corridors, etc.

(2) Rooms intersecting more than one story are only included in the storey where the floor is located. External as well as internal staircases, stairwells, access balconies, installation shafts and elevator shafts are included for all storeys.

(3) The following are not included in the floor area:

- 1) Parts of the basement where the surrounding terrain is less than 1.25 metres under the basement ceiling.
- 2) Open balconies.
- 3) Open roof terraces.
- 4) Refuse rooms on ground level.
- 5) Air-raid shelters in buildings obligated to have air-raid shelters with a specified size and public air-raid shelter approved by the authorities.
- 6) Sleeping platforms with areas up to 4.5 sq. metres.
- 7) Projection of external staircases and access balconies on the grounds.
- 8) External fire ladders (escape ladders).

(4) For garages, carports, outbuildings, greenhouses, chicken sheds, open roofed-over areas including open roofed-over terraces and similar structures. Only parts of the area exceeding the following are included:

- 1) 20 sq. metres per residential unit for multi-storey residential buildings and for residential areas with both vertical and horizontal separation lines and for terraced houses groups of house and similar types of fully or partly adjoined single-family houses.
- 2) 50 sq. metres per residential unit for detached single-family houses, semi-detached houses with vertical separation lines and holiday homes, and
- 3) 25 per cent of the remaining floor area of the building for other buildings, including commercial buildings and institutions. However, garage or outbuilding areas in basements or courtyard basements are not included.

(5) The floor area is measured in one plane which is determined by the surface of the finished floor to the

outside of the limiting outer walls with the following deviations:

- 1) In loft storeys which can be used for residential purposes, the area within in the intersection between the plane and the exterior side of the roofing in a horizontal plane 1.50 metres above the finished floor is included.
- 2) For open storeys, gates, airlocks, etc., the area up to the line defined by the outer walls of the building is included.
- 3) In case of shared walls between to be included in separate floor areas, measurements are taken to the middle of the wall. However, in case of shared walls placed over boundaries, the distance to the boundary is measured.

456. Heights are measured from the natural ground level. For buildings on sloping ground or ground with large level differences, measurements are carried out from one or more levels determined by the local council. The location of the levels must be stated clearly in the building permit, e.g. by indication of elevation numbers. If necessary, several levels can be indicated for the same plot.

(2) In the determination of levels, the local council must take the following into consideration:

- 1) The ground conditions of adjacent plots and the nature of the surrounding buildings.
- 2) That fair development opportunities and access conditions are provided for the plot.
- 3) Buildings on sloping grounds may be built without determination of levels if the height measured vertically from the ground does not exceed the limits stipulated in ss. 176-186 for the height of the building and the distance to boundaries.
- 4) Antenna with a top point maximum 5.50 metres above the roof surface, attic windows, chimney necks, ventilation caps, gables and roof overhangs are not included in the calculation of the height of the building provided they are of usual size. On the determination of the height of the building, the local council may also decide to disregard stairwell buildings, elevator shafts, signs and luminous advertising.

457. Distances are measured horizontally without consideration of differences in ground levels. The distance is measured perpendicularly to the relevant opposite line (road line, boundary) or building, but to account for light conditions or to limit views into the building, it may be measured as the minimum free distance between the building or building part and the opposite road line, boundary or other buildings on the same plot. In case of buildings without limiting outer walls, measurement is carried out from the roof surface.

(2) In the determination of the distance between the building and the boundary, the following is disregarded:

- 1) Basement, basement staircase, tanks, wires, etc. below ground; and
- 2) Roof overhangs, gable boards, entrance coverings and similar small building parts with a protrusion of maximum 0.50 metres.

(3) In the calculation of the distance from the building to road boundaries, the following building protrusions facing boundaries to roads and which are permitted under the Danish Act on public roads and the Danish Act on shared private roads are disregarded:

- 1) Bays, open balconies, convex windows and similar building parts which are situated 2.8 metres above footpaths and up to 1.5 from road edges or bicycle lanes.
- 2) Gates, doors, shutters and windows which open outwards and which are situated minimum 2.3 metres above footpaths measured from their lower edge.

458. Each building storey including the ground floor is included in the number of storeys registered in the Building and Housing Register (BBR). In addition, the following is included in the number of storeys:

- 1) Loft storeys which may be used for residential purposes.
- 2) Basements with ceilings more than 1.25 metres above ground level.

(2) For buildings with displaced floors or mezzanines, etc., the floor area is determined by the local council according to a specific assessment. For living spaces in the loft storey in a building, or on the roof of buildings, the local council may decide in individual cases that a sleeping platform with an area exceeding 4.5 sq. metres and balconies, sun lounges, terraces and similar living spaces should be included as a storey.

Chapter 24 - Description of a control system for water and drain installations

459. For factory-made products included in water and drain installations which are not yet covered by a harmonised standard under the Regulation for construction materials or a European technical assessment, the following is required in relation to their mechanical/physical properties:

- 1) A preliminary test based on the properties which are relevant for declaration in Denmark according to the rules of the Building Regulations.
- 2) A manufacturing control system which ensures that the declared performance of the products are maintained. Certification of the manufacturing control is not required.

The factory's own manufacturing control

460. The manufacturer must have a separate manufacturing control scheme. A manufacturing control scheme is an ongoing internal control system carried out by the manufacturer. This control must provide systematic documentation stating that the products maintain the declared properties.

(2) The manufacturing control scheme of the factory combines manufacturing technology with the measures required to maintain and control the compliance of the product with the relevant technical specifications.

(3) Manufacturing control includes control and testing of measuring equipment, raw materials, components supplies, processes, machinery and manufacturing equipment, including their materials properties. Finally, the control includes the use of the results obtained.

Requirements for manufacturing control

461. The manufacturer is responsible for arranging the manufacturing control scheme of the factory. Tasks and responsibilities of the scheme must be documented, and the documentation must be kept up to date. The manufacturer may delegate the powers to a person who has the necessary authority to:

- 1) plan the procedures for documentation of the compliance of the product in relevant stages of the process;
- 2) find and register all cases of lack of compliance;
- 3) find methods to remedy cases of lack of compliance.

(2) The manufacturer must provide a detailed description of the control scheme and keep the documentation up to date. The manufacturer's documentation and the control system of the factory must be adapted to the product and the manufacturing process.

462. The reliability of the control system must be determined in relation to the compliance of the products, i.e.:

- 1) Planning of procedures and instructions.
- 2) Efficient commencement of procedures and instructions.
- 3) Description of tasks, areas of responsibility and results.
- 4) The results will be used for remedying deviations, repairing the effect of deviations and if necessary assess the manufacturing control system in order to eliminate the reason for the lack of compliance with the technical specification.

463. The control measures include one or more of the following:

- 1) Specification and control of raw materials and component supplies.

- 2) Control and tests during production to an extent determined in advance (control and testing includes manufacture of the product and adjustment of machinery and equipment, etc., control and testing at the frequency hereof depends on the type and composition of the product, the complexity of the manufacturing process, the sensitivity of the product properties to variations in manufacturing parameters, etc.).
- 3) Control and testing of the finished products to an extent which may be determined in the technical specifications and which are adapted to the product and the manufacturing conditions of the product.
 - (2) If the finished products are not controlled in the market, the manufacturer must ensure that packaging, handling and transport is planned in a way which ensures that the product is not damaged.

Verification

464. The manufacturer must either have his own measuring and staff or have access hereto in order to be able to carry out the necessary verifications and tests.

(2) The manufacturer is responsible for carrying out the necessary calibration of measuring and testing equipment.

(3) The manufacturer must calibrate or verify and maintain the control, measuring and testing equipment in a good and usable condition in order to be able to verify the compliance of the product with the determined quality.

Testing

465. Testing must be carried out according to a fixed plan and in accordance with the methods stated in the technical specification. In general, the test methods must be direct methods.

466. The manufacturer must create and maintain registers indicating that testing of the product has been carried out. These registrations should prove that the product complied with the criteria determined for acceptance.

Guarantee of compliance

467. If the control or test results indicate that the product does not live up to the requirements, the manufacturer must take the relevant steps to rectify the manufacturing process immediately.

468. Products and series of products which are not in accordance with the determined quality must be kept separate for the purpose of identification. When the error is rectified, testing and verification must be repeated.

469. If the product is supplied before the results are known, the manufacturer must have an established procedure which ensures that the clients are informed in a way which enables the necessary consequences to be taken.

The manufacturer's register

470. The manufacturer's own manufacturing control must be thoroughly documented by the manufacturer. Description of the product, date of manufacture, testing method used, test results and acceptance criteria must be registered via annotation by the person in charge of the control procedure who carried out the verification.

(2) The manufacturer must register the corrections carried out in order for the product to comply with the requirements.

Traceability

471. It is the responsibility of the manufacturer to keep a complete register of all products or product series including manufacturing detail and properties. The manufacturer must also register the customer to whom the products were first sold.

472. Individual products or series of products must be fully identifiable and traceable by this information. In some cases, e.g. for raw materials, this is not always possible.

(2) The manufacturer must keep the technical documentation for 10 years after the product was sold.

Chapter 25 - Building class 2020

473. In order for the building to be classified as building class 2020, a voluntary low-energy class, the requirements stated in this chapter must be fulfilled. The additional requirements stated in Chapter 11 must also be fulfilled.

474. Residential units, halls of residence, hotels, etc. may be classified as building class 2020 if the total demand for energy supply for heating, ventilation, cooling and domestic hot water per sq. metre heated floor area does not exceed 20.0 kWh/m² per year.

475. Other buildings than buildings not subject to s. 474 may be classified as building class 2020 when the total demand for energy supply for heating, ventilation, cooling, domestic hot water and lighting per sq. metre heated floor area does not exceed 25.0 kWh/m² per year.

(2) (2) For buildings and building sections in building class 2020 which require a high level of illumination, extra ventilation, large consumption of domestic hot water or a long period of usage or buildings with large headroom, the energy framework is increased by an amount corresponding to the energy consumption calculated for this purpose. The increase must be calculated in accordance with the *instructions of the Danish Building Research Institute 213 Energy demand in buildings*.

476. Buildings subject to the provisions of ss. 474 or 475 must be established in a way which ensures that the rated transmission loss per sq. metre of building envelope does not exceed 3.7 W for one-storey buildings, 4.7 W for two-storey buildings and 5.7 W for buildings of 3 storeys or more. The area covered by windows and doors and the transmission loss via those surfaces are not included in the calculation.

477. In building class 2020, the various sources must be weighted by calculation of the total energy demand supplied. The following factors are applied:

- 1) 1.8 for electricity.
- 2) 0.60 for district heating.
- 3) For other heating sources a factor of 1.0 and the relevant efficiency are applied.

(2) When a new building is connected to an existing boiler which also supplies existing boilers, a factor of 1.0 is applied. In connection with the use of waste heat from production plant and similar installations the district heating factor is applied.

478. The energy balance (E_{ref}) through windows and glass outer walls in the heating season may not be lower than 0.0 kWh/sq. metre per year.

(2) For skylights and glass roofs, the energy balance may not be lower than 10.0 kWh/sq. metre per year. For dome lights, the U value may not exceed 1.20 W/sq. metre K. Special-function glazing may be used, see s. 258.

(3) The energy balance (E_{ref}) is calculated for glass outer walls with the following reference window: $U_g=0.70$ W/sq. metre K, $g_g=0.50$ and $\psi=0.05$ W/metre K.

(4) Reference sizes are stated in s. 258.

479. Outer doors and hatches may not have a U value exceeding 0.80 W/sq. metre K. Outer doors with glass panes may not have a U value exceeding 1.00 W/sq. metre K or an energy balance through the door in the heating season below 0.0 kWh/sq. metre per year. Reference sizes are stated in s. 257. For fire doors the provisions of s. 257 apply.

480. Gates may not have a U value exceeding 1.80 W/sq. metre K.

481. The volume flow through flaws in the building envelope in new buildings heated to minimum 15 °C must not exceed 0.5 l/s per sq. metre heated floor areas at a difference in pressure of 50 Pa.

(2) For buildings with high ceilings where the surface of the building envelope divided by the floor area is higher than 3, the volume flow through flaws may not exceed 0.15 l/s per sq. metre of building envelope.

(3) This requirement can be documented by pressure testing of the building or typical parts of large buildings.

482. For floor areas where pressure testing is carried out of the volume flow through flaws, the test result may be applied in the calculation of the energy demand for such areas. If documentation does not exist, 1.5 l/s per sq. metre at 50 Pa will be applied.

(2) Pressure testing must be carried out according to s. 263(5).

483. Ventilation systems in which the unit and ducting is only used in one residential unit must be established with heat recovery and a dry temperature efficiency of minimum 85 per cent.

484. For ventilation systems with a constant air rate, the specific electricity consumption for air transport may not exceed 1,500 J/m³ outdoor air.

(2) For ventilation systems with a variable air rate, the specific electricity consumption for air transport may not exceed 1,800 J/m³ outdoor air at maximum pressure drop.

(3) For ventilation systems for multi-storey residential buildings, the specific electricity consumption for air transport may not exceed 1,500 J/m³ outdoor air at the basic air exchange.

(4) For systems where the unit and ducting is only used for one residential unit, the specific electricity consumption for air transport may not exceed 800 J/m³ at the maximum pressure drop.

Chapter 26 - Structure classes

485. The load-bearing structures of a building must be allocated to a structure class based on:

- 1) The consequence class of the structure, see *DS/EN 1990 Basis for planning of load-bearing structures* and the related *DS/EN 1990 DK NA*.
 - 2) The complexity of the structure; and
 - 3) Experience with the structure type.
- (2) If it can be proven that division of the building into several structural sections can be made safely, the individual structural sections may be allocated to different structure classes.

486. A structural section for the purpose of this executive order is a limited part of a structure under one planning organisation.

- (2) A structural section may have one structure class and one consequence class.

487. The complexity of the structure must be determined as follows:

- 1) Simple structure: A structure for which lowering of load is easy, and balance conditions can be determined in a simple way without special qualifications or tools.
 - 2) Complex structure: A structure for which lowering of load may be difficult to assess, where determination of balance conditions requires special qualifications or tools or where changes in the precondition may be significant to the operation of the structure.
- (2) In case of doubt regarding the complexity of the structure, it should be considered complex.

488. Experience with the structure type must be determined as follows:

- 1) Traditional structure: A structure for which vast experience exists and which is based on established technologies and work methods.
 - 2) Untraditional structure: A structure for which vast experience does not exist and which is based on new technologies and work methods.
- (2), Load-bearing structures subject to ss. 352 and 356 are considered untraditional.
- (3) In case of doubt regarding experience with the structure type, it should be considered untraditional.

489. Structures or structural sections must be allocated to one of the following structure classes:

- 1) Structure class 1 (KK1), which includes:
 - a) Structures or structural sections of low consequence class (CC1).
 - b) Structures or structural sections of middle consequence class (CC2) which are used in single-family houses, terraced houses and holiday homes without horizontal separation lines.
 - c) Structures or structural sections of middle consequence class (CC2) which are used in 1-storey agricultural livestock breeding and operational buildings and which have maximum span of 40 metres. However, the provision does not include agricultural livestock breeding and operational buildings for which failure would result in a great risk of loss of animal lives, equivalent of buildings which would be allocated to a high consequence class (CC3) if they were intended for people.
 - d) Simple and traditional structures or structural sections of middle consequence class (CC2) which are used in 1-storey industrial and storage buildings and which have maximum span of 40 metres.
- 2) Structure class 2 (KK2), which includes structures or structural sections of middle consequence class (CC2), and which are not included in structure class 1 or 3.
- 3) Structure class 3 (KK3), which includes:
 - a) Structures or structural sections of middle consequence class (CC2) with an untraditional or complex structure or structural section.
 - b) Structures or structural sections of high consequence class (CC3).
- 4) Structure class 4 (KK4), which includes structures or structural sections of high consequence class for

which the consequences of failure are particularly serious (CC3+).

(2) Garages, carports, outbuildings, chicken sheds, greenhouses, roofed-over terraces and similar structures and equipment cabins for electronic communication networks or services with an area not exceeding 50 sq. metres are exempt from classification in structure classes under (1).

Chapter 27 - Fire classes

490. A building must be classified in a fire class based on

- 1) the risk classification of the building, see s. 86, and
- 2) the chosen method of documentation of fire safety, see s. 492.
(2) If it can be proven that division of the building in terms of fire safety into several building sections can be made safely, the individual building sections may be allocated to different fire classes.

491. The risk class must be determined in accordance with Chapter 5 and is based on the risk situation and complexity of the building.

492. The method of documentation of fire safety must be determined based on one of the following categories:

- 1) Pre-accepted solutions which provide examples of fire protection solutions which comply with the fire safety requirements of the Building Regulations.
- 2) Comparative analysis based on pre-accepted solutions.
- 3) Fire dimensioning.
- 4) Fire test(s).
- 5) A combination of the four methods stated above.

493. Buildings or building sections must be allocated to one of the following fire classes:

- 1) Fire class 1 (BK1), which includes:
 - a) Simple and traditional buildings classified in risk class 1. The technical solutions must be implemented in accordance with the pre-accepted solutions described in the *Guidelines in the Building Regulations for Chapter 5 - Fire*. For the purpose of fulfilling the requirements for buildings in fire class 1, only simple fire safety installations such as smoke alarm systems may be installed, and only simple fire extinguishing equipment such as hand-held fire extinguishers, etc. may be used. The total floor area of the building may not exceed 600 sq. metres.
 - b) Garages, carports, outbuildings, chicken sheds, greenhouses, roofed-over terraces and similar structures and equipment cabins for electronic communication networks or services with an area exceeding 50 sq. metres. The building may not affect the fire safety of other buildings on the plot.
- 2) Fire class 2 (BK2), which includes:
 - a) Traditional buildings in risk classes 2 and 3. The technical solutions must be implemented in accordance with the pre-accepted solutions described in the *Guidelines in the Building Regulations for Chapter 5 - Fire*.
 - b) Buildings which fundamentally fulfil the requirements for fire class 1, but where pre-accepted solutions for the use of fire safety installations other than simple smoke alarm systems, fire extinguishing equipment, etc. is used.
 - c) Buildings which fundamentally fulfil the requirements for fire class 1, but with a total floor area over 600 sq. metres.
- 3) Fire class 3 (BK3), which includes complex buildings in risk class 1-3. The technical solutions must be implemented in accordance with the pre-accepted solutions, comparative solutions based on the pre-accepted solutions, fire dimensioning or by using a combination of the methods described in the *Guidelines in the Building Regulations for Chapter 5 - Fire*.
- 4) Fire class 4 (BK4), which includes buildings not included in fire classes 1-3.
(2) Garages, carports, outbuildings, chicken sheds, greenhouses, roofed-over terraces and similar structures and equipment cabins for electronic communication networks or services with an area not exceeding 50 sq. metres are exempt from classification in fire classes under (1).

Chapter 28 - Documentation of load-bearing structures

494. Documentation of the load-bearing structures of a building must prove that the performance of the load-bearing structures is in accordance with the requirements defined for safety and fitness for use, see Chapter 15, and that the planning and implementation is satisfactory and in accordance with the requirements defined.

(2) Documentation must be prepared for the load-bearing structures equivalent of the structure class to which the building is classified, see Chapter 26.

495. Documentation must be prepared for the load-bearing structures for the following building work:

- 1) New structures during and after construction.
- 2) Existing structures during and after conversion.
- 3) Temporary structures before construction.
- 4) Transportable structures.

(2) If building work is carried out close to existing buildings, documentation must be provided stating that the necessary protection exists against failure in the adjoining buildings, and that the function and condition of the adjoining buildings will not be deteriorated during and after construction.

496. Documentation of the load-bearing structures for buildings in structure classes 2-4 includes:

- 1) Declaration of commencement.
- 2) Declaration of conclusion; and
- 3) Structural documentation.

497. For buildings including structures or structural sections in structure classes 2-4, the applicant must appoint a construction designer for the load-bearing structures. The tasks of the construction designer are listed in Chapter 31.

498. The declaration of commencement must be prepared by the certified structural engineer and must state:

- 1) that the documentation of load-bearing structures according to s. 19 have been submitted;
- 2) that the correct structure classes have been selected, at that the documentation hereof is true;
- 3) that the documentation proves that the building will fulfil the requirements of the Building Regulations for load-bearing structures, see Chapter 15;
- 4) that a satisfactory inspection plan has been prepared for the planning and implementation relevant to the project stage; and
- 5) whether the certified structural engineer will act as planner or inspector, or in an active or administrative role.

(2) For structure class 4, which includes a requirement for third-party checks by a certified structural engineer, the third-party inspector must prepare a declaration of commencement stating:

- 1) that the correct structure classes have been selected, at that the documentation hereof is true;
- 2) that the documentation proves that the building will fulfil the requirements of the Building Regulations for load-bearing structures, see Chapter 15;
- 3) that a satisfactory inspection plan has been prepared for the planning and implementation; and
- 4) whether the certified structural engineer will act in an active or administrative role.

499. The declaration of completion must be prepared by the certified structural engineer and must state:

- 1) that the documentation of load-bearing structures according to Chapter 28 have been submitted;
- 2) that the documentation proves that the structure classes used are in accordance with the building

- permit;
- 3) that the documentation proves that the basis of the project and the requirements of the Building Regulations for load-bearing structures, see Chapter 5, have been complied with;
 - 4) that the checks stated in the inspection plan for the building permit have been carried out, and that the deviations found during inspections have been remedied;
 - 5) deviations on which agreement has not been reached by the certified structural engineer of the planner and the certified third-party inspector;
 - 6) an account of deviations found during third-party checks and reasons for not acting on them; and
 - 7) whether the certified structural engineer will act as planner or inspector, including in an active or administrative role.

(2) For structure class 4, which includes a requirement for third-party checks by a certified structural engineer, the third-party inspector must also prepare a declaration of completion stating:

- 1) that the documentation proves that the structure classes used are in accordance with the building permit;
- 2) that the documentation proves that the basis of the project and the requirements of the Building Regulations for load-bearing structures, see Chapter 5, have been complied with;
- 3) that the checks stated in the inspection plan for the building permit have been carried out;
- 4) deviations on which agreement has not been reached by the certified structural engineer of the planner and the third-party inspector; and
- 5) whether the certified structural engineer will act in an active or administrative role.

500. The structural documentation includes:

- 1) A. Documentation of structures, see s. 501.
- 2) B. Project documentation, see s. 502.

(2) The structural documentation must be prepared and designed according to principles described in the *instructions of the Danish Building Research Institute 223, Documentation of load-bearing structures*.

(3) The documentation of load-bearing structures must be prepared in Danish or English.

501. A. The documentation of structures includes:

- 1) A1. Basis of structures which should form a uniform and consistent shared basis of the planning and subsequent understanding of the load-bearing structures. A1. The basis of structures must include all necessary information for the planning of load-bearing structures in all functional, technical and construction terms, including e.g. the use and design of the building, function requirements, standards basis, consequence classes for structural section, IT tools used, preliminary examinations, the structural operation of the structure, robustness, fire safety, loads and construction materials used.
- 2) A2. Structural calculations including:
 - a) A2. 1. Structural calculations – buildings which the basis of the planning of each structural section and include the information about distribution of loads in the structural system used in the building in the form of cutting forces, reactions, etc. and general structural calculations such as robustness and verification of ICT tools used.
 - b) A2. 2. Structural calculations – structural sections composed by the documentation of each structural section which includes the documentation stating that the structural parts of each structural section are sufficiently safe and comply with the function requirements.
- 3) A3. Structural drawings and models including a graphic presentation of the design of the structure stating location and dimension of the structural parts used. A3. Structural drawings and models are composed of structural drawings and models for the building and for each structural section used in the building.
- 4) A4. Structural changes which include documentation of the changes to the structure which are made after A1 is prepared. Basis of structures, see 1 and A2. Structural calculations, see 2, have been concluded.

502. B. The project documentation includes:

- 1) B1. Structural project report which describes and documents planning and implementation, and which includes, as a minimum, a description of the building, choice of structure classes and documentation hereof, organisation and coordination and a list of documents.
- 2) B2. Structural check plan describing the requirements for checks of planning and implementations for all parts of the building. For all checks, the type, level, scope, documentation requirements and the organisations and persons performing the check must be stated.
- 3) B3. Structural check report including:
 - a) B3. 1. Structural check report planning, including documentation for checks of the planning carried out, see 2.
 - b) B3. 2. Structural check report implementation, including documentation for checks of the planning carried out, see 2.

503. Documentation of choice of structure classes in Chapter 26 must include the basis of allocation of the building or structural section to structure classes. As a minimum, documentation for allocation to structure classes 2-4 must include the relevant parts of the following parts of the structural documentation which is relevant to the building work:

- 1) A1. Basis of structures, see s. 501(1)(1).
- 2) A2. 1. Structural calculations – building, see s. 501(1)(2)(a).
- 3) A3. Structural drawings and models, see s. 501(1)(3).
- 4) B1. Structural project report, see s. 502(1)(1).
- 5) B2. Structural check plan, see s. 502(1)(2).

(2) When building work is carried out close to or in existing buildings, the structural documentation must include specification of requirements to be fulfilled for the protection of such buildings.

504. Documentation of the load-bearing structures for buildings allocated to structure class 1 includes relevant parts of the following, see the *instructions of the Danish Building Research Institute 223, Documentation of load-bearing structures*:

- 1) Structure documentation:
 - a) A1. Basis of structures, see s. 501(1)(1),
 - b) A2. Structural calculations, see s. 501(1)(2),
 - c) A3. Structural drawings and models, see s. 501(1)(3),
 - d) A4. Changes to structures, see s. 501(1)(4),
- 2) Project documentation: B1. Structural planning report, see s. 502(1)(1).

(2) The documentation submitted documents the choice of structure class.

(3) (1) may be fully or partly derogated from if it can be documented by other means that the requirements for load-bearing structures have been fulfilled, e.g. via the *instructions of the Danish Building Research Institute 254, Small houses – strength and stability*.

505. Buildings in structure class 2-4 for which the local council handles the building project processing of structural conditions, see s. 25, are exempt from s. 496 and ss. 498-503. Documentation for load-bearing structures must be prepared and verified in accordance with the principles stated in the *instructions of the Danish Building Research Institute 223, Documentation of load-bearing structures*. The structural documentation must include the following elements:

- 1) Structure documentation:
 - a) A1. Basis of structures, see s. 501(1)(1).
 - b) A2. Structural calculations, see s. 501(1)(2).

- c) A3. Structural drawings and models, see s. 501(1)(3).
 - d) A4. Changes to structures, see s. 501(1)(4),
- 2) Project documentation:
- a) B1. Structural planning report, see s. 502(1)(1).
 - b) B2. Structural check report, see s. 502(1)(2).
 - c) B3. Structural inspection report, see s. 502(1)(3).

Chapter 29 - Documentation of fire safety

506. Documentation of the fire safety conditions of a building must prove that the fire safety conditions are in accordance with the requirements defined for safety and fitness for use, see Chapter 5, and that the design, planning and implementation is satisfactory and in accordance with the requirements defined.

(2) Documentation must be prepared for the fire safety conditions of the building equivalent of the fire class to which the building is classified, see Chapter 27.

507. Relevant documentation of fire safety conditions for buildings in fire classes 2-4 when a certified fire consultant is used includes:

- 1) Declaration of commencement.
- 2) Declaration of completion.
- 3) Statement indicating if the building is traditional in terms of contingency tactics.
- 4) Documentation of fire classification.
- 5) Fire strategy report.
- 6) Fire plans, room distribution plans, occupancy plans, etc.
- 7) Report stating fire dimensioning.
- 8) Description of functions.
- 9) Check plan.
- 10) Check report.
- 11) Operation, inspection and maintenance plan.

(2) The documentation stated in subsection 1, para (3) - (11), must be prepared and arranged according to the principles described in the *Guidelines in the Building Regulations for Chapter 5 - Fire*.

(3) The documentation of fire safety conditions for buildings must be prepared in Danish or English.

508. The declaration of commencement must be prepared by the certified fire consultant and must state:

- 1) that the documentation of fire safety conditions at the time of application for building permit, see s. 23, has been submitted;
- 2) that the documentation states that the correct fire class has been selected, and the documentation presents a true view;
- 3) that the documentation proves that the basis of the project and the requirements of the Building Regulations in relation to fire, see Chapter 5, have been complied with;
- 4) that a satisfactory check plan has been prepared for the fire safety documentation corresponding to the project stage, planning of necessary fire prevention measures and implementation; and
- 5) whether the certified fire consultant will act as inspector in a preparatory role.

(2) For fire class 4, which includes a requirement for third-party checks by a certified fire consultant, the third-party inspector must also prepare a declaration of commencement stating:

- 1) that the documentation states that the correct fire class has been selected, and the documentation presents a true view;
- 2) that the documentation proves that the building equivalent of the present level of detail observed the fire requirements of the Building Regulations, see Chapter 5;
- 3) that a satisfactory check plan has been prepared for the fire safety documentation, planning of necessary fire prevention measures and implementation; and
- 4) the role of the certified fire consultant as third-party inspector.

509. The declaration of conclusion must be prepared by the certified fire consultant and must state:

- 1) that the documentation of fire safety conditions, which must be submitted under Chapter 33 of the Building Regulations, has been submitted;
- 2) that the documentation proves that no changes have been made to the fire classification of the building

stated on the building permit;

- 3) that the documentation proves that the requirements in regard to fire safety in the Building Regulations, see Chapter 5, have been fulfilled, and that the operation, inspection and maintenance plan indicates the operation, inspection and maintenance of the building which is required in order to ensure that the fire protection measures of the building are maintained throughout the useful life of the building;
- 4) that the checks stated in the inspection plan have been carried out, and that the deviations found during inspections have been remedied;
- 5) deviations on which agreement has not been reached by the certified fire consultant and the third-party inspector;
- 6) an account of deviations found during third-party checks and reasons for not acting on them; and
- 7) whether the certified fire consultant will act as inspector in a preparatory role.

(2) For fire class 4, which includes a requirement for third-party checks by a certified fire consultant, the third-party inspector must also prepare a declaration of conclusion stating:

- 1) that the documentation proves that no changes have been made to the fire classification of the building which has been permitted;
- 2) that the documentation proves that the requirements in regard to fire safety in the Building Regulations, see Chapter 5, have been fulfilled, and that the operation, inspection and maintenance plan indicates the operation, inspection and maintenance of the building which is required in order to ensure that the fire protection measures of the building are maintained throughout the useful life of the building;
- 3) that the checks stated in the inspection plan have been carried out, and that the deviations found during inspections have been remedied;
- 4) deviations on which agreement has not been reached by the certified fire consultant and the third-party inspector;
- 5) the role of the certified fire consultant as third-party inspector.

510. For a statement indicating that the building traditional in terms of contingency tactics, documentation must be provided stating that the building has been built in accordance with the *Guidelines in the Building Regulations for Chapter 5 - Fire*.

511. Documentation of allocation to fire classes in Chapter 27 must include an overall fire safety strategy for the building and drawings indicating the layout of the building and supporting the use of the selected fire safety strategy in the building.

(2) The overall strategy must include the following:

- 1) A description of the design of the building, including the use of the building and a general description of the persons using the building.
- 2) Allocation of building sections in usage categories, see s. 85, and risk classes, see s. 86.
- 3) A description of a method for verification of the fire safety requirements as basis for the choice of fire classes.
- 4) Main principles of the fire safety strategy, including:
 - a) Frameworks for location of the building on the plot, distance to other buildings and distance to boundaries.
 - b) Main principles for evacuation of people, including design of escape routes, use of rescue doors and choice of fire safety installations which support evacuation.
 - c) Concept for fire protection of load-bearing structures, including the required fire resistance and choice of fire safety installations which support the protection of load-bearing structures.
 - d) Concept for protection against spreading of fire and smoke, including choice of internal surfaces, fire safety-related division of the building, distance between buildings and choice of external facing and fire safety installations which support the protection against spreading of fire and smoke.
 - e) Options for emergency service action, including the need for search and rescue of persons, access

roads to the building, access routes for emergency services in the building and fire safety installations which support the protection against spreading of fire and smoke.

512. The fire strategy report must describe how the requirements in terms of fire are fulfilled for the building with due consideration of the usage category and risk class of the building.

513. Fire plans must indicate the fire plan for the building and further elaborate on the fire strategy report. Fire plans must include the following:

- 1) The location of the building on the plot in relation to other buildings and boundaries to neighbouring plots.
- 2) Access for emergency services.
- 3) Location of risers and riser connections.
- 4) Layout of escape routes, exits and rescue doors.
- 5) Plan for fire safety units in the building, including the fire resistance of fire safety units.
- 6) Location of water-filled hose reels, hand-held fire extinguishers, etc.
- 7) Location of fire signal units, automatic fire alarm units and sprinkler system units.

514. For rooms intended for 150 persons or more, distribution plans showing the location of furniture, mobile stages, stands, etc. must be prepared with consideration of the planning of escape routes and passageways. The location of water-filled hose reels and fire extinguishing equipment must be stated on the distribution plan.

515. For storage buildings subject to s. 153, occupancy plans must be drawn up which indicate the location of stock, furniture, etc. with consideration of the planning of escape routes and exits. The location of water-filled hose reels and fire extinguishing equipment must be stated on the distribution plan.

516. The report on fire safety dimensioning must include documentation of:

- 1) Fire safety requirements to be proven by fire safety dimensioning.
- 2) Acceptance criteria representing fire safety requirements.
- 3) Description of dimensioned scenarios to be proven, the relevance of such scenarios in relation to the design of the building and the persons using the building and fire safety requirements and acceptance criteria which should be proven.
- 4) Validation of models used in relation to the specific investigation.
- 5) Results of calculations and assessment of results of calculations in relation to acceptance criteria and fire safety requirements which are being investigated.
- 6) Sensitivity analyses.

517. The function description describes the fire protection measures which are necessary in order to fulfil the fire safety strategy and the location of such measures in the building.

(2) As a minimum, the function description should include:

- 1) A description of the fire protection measures necessary in order to fulfil the fire safety strategy.
- 2) The presumed location of the fire protection measures in the building.
- 3) Performance criteria for the various fire protection measures, including:
 - a) Fire resistance of building parts and load-bearing structures.
 - b) Reaction to fire and fire resistance, if any, of surfaces and facings.
 - c) Classes of fire safety installations.

- d) Capacity of fire safety installations.
- 4) Standards assumed to be used as a basis of planning and implementation.
- 5) Methods for checks of the implementation of the various fire protection measures, including requirements for function testing.
- 6) Functional relations between the various fire protection measures and requirements for function testing of relations.

518. The fire safety check plan must describe the requirements for inspection of documentation, planning and implementation of fire protection measures. For all checks, the type, level, scope, documentation requirements and the organisations and persons performing the check must be stated.

519. The fire safety check reports include checks which have been performed. Check reports must be prepared for:

- 1) Documentation of inspection of the fire safety documentation.
- 2) Documentation of inspection of planning of fire protection measures.
- 3) Documentation of inspection of implementation of fire protection measures.

(2) Check report the documentation must include the check carried out of the entire fire safety documentation as stated in s. 507. Check report for planning and implementation of fire protection measures includes checks to verify that the checks described in the check plan have been carried out.

520. An operation, inspection and maintenance plan must be prepared in accordance with s. 143.

521. Documentation of fire safety conditions of buildings in fire class 1 must be provided according to the principles described in the *Guidelines in the Building Regulations for Chapter 5 - Fire*.

(2) The documentation submitted served as documentation stating that the choice of fire class and the fire safety condition of the building are in accordance with the requirements defined for safety and fitness for use.

522. Buildings in fire class 2-4 for which the local council handles the building project processing of fire safety conditions, see s. 28, are exempt from ss. 507-521. Documentation of the fire safety conditions must include the following:

- 1) The basis of the fire safety measures chosen.
- 2) Documentation of the performance of the checks and maintenance of fire safety measures and building components.

(2) Depending on the building work, the documentation must include the following:

- 1) Fire strategy report.
- 2) Drawing material, which may include fire plans, distribution plans and occupancy plans.
- 3) Descriptions indicating the fire safety properties of the individual building parts, fire safety installations, escape routes and access for rescue personnel and emergency services.
- 4) Fire safety calculations using fire safety dimensioning as part of the documentation.
- 5) Building operations report.
- 6) Documentation of the fire safety properties of each building part and installation and a description of regular inspection and maintenance of any fire safety installations and building parts.
- 7) Function testing of fire safety installations.
- 8) System integration test in which several fire safety installations act together as one system.

Chapter 30 - Inspection of documentation of load-bearing structures and fire safety

523. Inspection of documentation for load-bearing structures and fire safety is intended to ensure that the documentation fulfils its purpose, see Chapter 28 and 29.

524. Inspection must be performed of the load-bearing structures and documentation of the load-bearing structures in accordance with *DS/EN 1990 Basis for planning of load-bearing structures, Annex B4* with related *DS/EN 1990 DK NA* and according to the principles of the *instructions of the Danish Building Research Institute 223, Documentation of load-bearing structures*.

525. Inspection must be carried out of documentation for fire safety in buildings where a certified fire consultant is used according to the principles of *DS/EN 1990 Basis for planning of load-bearing structures, Annex B4* med related *DS/EN 1990 DK NA* and according to the principles of the *Guidelines in the Building Regulations for Chapter 5 - Fire*.

526. The types of inspection for inspection of documentation of load-bearing structures and fire safety include:

- 1) Internal inspection: Inspection carried out by the person who prepared the documentation.
- 2) Independent inspection: Inspection carried out by a person who did not participate in the preparation of the documentation of the fire safety of the building or planning of the load-bearing structures for the building. The inspection may be carried out by a person in the same organisation.
- 3) Third-party inspection: Inspection carried out by a person who is neither directly or indirectly related, financially or organisationally, to the business(as) or organisation(s) which contributed to the preparation of the documentation of the fire safety or planning of the load-bearing structures of the building.

527. Determination of the inspection level for inspections of load-bearing structures and fire safety must be made based on the structure and fire classifications of the building in accordance with Appendix 3, Table 1.

(2) Inspection is carried out on the following level:

- 1) Minimum inspection (MIN): a systematic inspection of the completeness, preconditions, consistency and scope of the documentation and an overall inspection of the content of the documentation as well as random samples from selected areas.
- 2) Extended inspection (UDV): a systematic inspection of defined parts of the documentation and random samples of the remaining parts of the documentation.
- 3) Maximum inspection (MAX): systematic inspection of the entire documentation.

528. The independent inspector and the third-party inspector should have the necessary qualifications and experience in the subject areas covered by the documentation. Qualifications are assessed based on formal professional training and experience in the field in question.

(2) A person certified to carry out third-party inspection of structures or fire safety conditions, see the regulation on certification system for documentation of technical issues in the Building Regulations, may act as third-party inspector see s. 526, and according to *DS/EN 1990 Basis for planning of load-bearing structures, Annex B4* with related *DS/EN 1990 DK NA*.

Chapter 31 - Construction designer of load-bearing structures

529. The applicant must appoint a construction designer for the load-bearing structures with responsibility for collating and coordinating the structural documentation, such that it constitutes a coherent whole.

(2) Only one construction designer can be appointed for a building.

530. The construction designer is responsible for:

- 1) Definition of structural sections and interfaces between structural sections.
- 2) Preparation, inspection and approval of A1. Structural basis, A2. 1. Structural calculations – building, A3. Structural drawings and models for the building, B1. Structural project report and B2. Structural inspection plan.
- 3) Specification and communication of basis for the planning of the structural sections planned by other persons than the construction designer.
- 4) Coordination and inspection of interfaces between structural sections.
- 5) Inspection of documentation to ensure that inspection of structural section has been carried out and that the inspection is documented.
- 6) Check of follow-up on inspection of documentation of structural sections.
- 7) Coordination and collection of documentation of planning and implementation in B3. Structural inspection report
- 8) Coordination and continuation of items for ongoing special inspection.
- 9) Coordination of changes during planning and implementation.
- 10) Preparation, inspection and approval of A4. Structural changes to the building.
- 11) Coordination and collection of documentation of changes to structures in structural section in A4. Structural changes to structural section.
- 12) Coordination of planning and implementation measures as a result of deviation found during inspection of planning and implementation.
- 13) Coordination of updates to the structural documentation as performed.
- 14) Collection of structural documentation of the entire building in order to present a whole.

Chapter 32 - The roles of the certified structural engineer and fire consultant

531. The purpose of the work of the certified structural engineer and fire consultant is to ensure that:

- 1) the building is designed and built according to the provisions of the Building Regulations for Chapter 5 and 15, respectively;
- 2) the load-bearing structures are in accordance with the requirements defined for safety and fitness for purpose, and that they are in accordance with sound construction principles; and
- 3) the documentation of the building and building work fulfils its purpose, see Chapter 28 and 29.

532. The certified structural engineer and fire consultant must:

- 1) perform their work in accordance with the rules of the Danish building legislation;
- 2) be aware of their own expertise and seek qualified assistance for conditions which may be beyond their own qualifications; and
- 3) act unbiased and objectively.

533. The certified structural engineer or fire consultant are associated with the building process and the building in general and must be certified in accordance with the highest relevant structure class or fire class of the building. Only one certified structural engineer and one fire consultant may be associated to a building process, see (2), however.

(2) For parts of a building which are in structure class 4 and fire class 4, a certified structural engineer and fire consultant must be associated as third-party inspectors.

534. In connection with the preparation of documentation of load-bearing structures and fire safety, see Chapter 28-30, the certified structural engineer or fire consultant must carry out the following depending on their field, see ss. 536 and 545:

- 1) Preparation (P): Planning and designing and documentation.
- 2) Inspection (I): Inspection of documentation.
- 3) Approval (A): Be informed of the content of the documentation and whether it is prepared and inspected in accordance with the basis thereof and declare that the document can be used in its present state. The certified expert can only approve documentation prepared in his or her own organisation.

535. The third-party inspector may not be limited in his or her performance of the inspection.

Chapter 33 - The role of the certified structural engineer

536. The certified structural engineer may act as:

- 1) Active planner.
- 2) Administrative planner.
- 3) Active inspector; or
- 4) Administrative inspector.

(2) The certified third-party inspector of load-bearing structures may act as:

- 1) Active inspector; or
- 2) Administrative inspector.

537. As a minimum, the services of the certified structural engineer in his or her work as active or administrative planner of a building project includes the following:

- 1) Preparation and approval of declaration of commencement and conclusion.
- 2) The work is carried out in the organisation of the construction designer.
- 3) Determination of structure classes of structures and structural sections.
- 4) Participation in planning from beginning to conclusion in order to ensure that the load-bearing structures are in accordance with the requirements defined for safety and fitness for use, see Chapter 15.
- 5) Participation in planning from beginning to conclusion in order to ensure that documentation of load-bearing structures fulfil their purpose, see Chapter 28.
- 6) Coordination and collection of structural documentation.

538. In the role of active planner, as a minimum, the certified structural engineer must prepare, inspect and approve the parts of the structural documentation which is stated in Appendix 4, Table 1.

539. In the role of administrative planner, the certified structural engineer must:

- 1) participate actively in the preparation of A1. Structural basis, B1. Structural project report and B2. Structural inspection plan, see Chapter 28;
- 2) plan and design structures, allocate structural systems and participate in the implementation of the preliminary calculations of the main structure of the building and vial structural parts in order to ensure that they form a whole;
- 3) inspect A2. 1 Structural calculations – building, see Chapter 28; and
- 4) Approve all parts of the structural documentation prepared in own organisation.

(2) The remaining tasks related to the preparation of the structural documentation can be assigned subject to the ongoing quality control of the planning by the certified structural engineer. In his or her capacity of head of planning, the certified structural engineer must prepare a planning report, including a description of the role of the certified structural engineer in the planning to be included in B1. Structural project report, see Chapter 28,

540. As a minimum, the services of the certified structural engineer in his or her work as active or administrative inspector of a building project includes the following:

- 1) Preparation and approval of declaration of commencement and conclusion.
- 2) Checking that the solutions chosen for load-bearing structures are in accordance with the requirements defined for safety and fitness for use, see Chapter 15.
- 3) Checking that the documentation of the load-bearing structures fulfil their purpose, see Chapter 28, and
- 4) Checking that the structure functions as a whole across structural sections.

541. In the role of active inspector, as a minimum, the certified structural engineer must inspect the structural documentation on the inspection levels stated in Appendix 4, Table 2.

542. In his or her capacity of head inspector, the certified structural engineer must check that the structural documentation is inspected on the same inspection level as if the certified structural engineer had been an active inspector, see s. 541.

(2) Inspection tasks may be allocated under the field of the certified structural engineer as inspector under the ongoing quality control of the quality of the inspection. In his or her capacity of head inspector, the certified structural engineer must prepare an inspection report, including a description of the role of the certified structural engineer in the inspection, to be included in B2. Structural inspection plan, see Chapter 28.

(3) In his or her capacity of head inspector, the certified structural engineer must collect, inspect and approve the inspection documentation to ensure that it forms a whole.

543. In the role of third-party inspector, as a minimum, the certified structural engineer must inspect the structural documentation on the inspection levels stated in Appendix 4, Table 3.

(2) The third-party inspection includes parts of the building which are included in structure class 4. To the extent the operation and documentation of other parts of the building are relevant to the part of the building included in structure class 4, they must also be inspected by the certified structural engineer.

544. In connection with transfer of a project for which a building permit has been granted, from one certified structural engineer to another, the certified structural engineer transferring the project must prepare a statement which includes the following:

- 1) Declaration of commencement.
- 2) The role of the certified structural engineer in the project.
- 3) The documents prepared and/or inspected by the certified structural engineer and whether the projects are final or drafts.
- 4) Status of performance of inspection, see B2. Structural inspection plan and documentation hereof.
- 5) Critical conditions of the project which require special attention by the certified structural engineer taking over the project.

(2) The certified structural engineer taking over a project must assess the extent to which inspection of the structural documentation is required, see (1) prior to continuing the project and/or the implementation. This assessment should be accounted for in B1. Structural project report. The description must be summed up in the declaration of conclusion.

(3) If it is not possible to prepare a statement in connection with transfer of the project, the certified structural engineer taking over the project must carry out a maximum (MAX) inspection of the structural documentation transferred, corresponding to the role of a certified structural engineer acting as an inspector.

Chapter 34 - The role of the certified fire consultant

545. The certified fire consultant may act as:

- 1) Performer; or
- 2) Inspector.
(2) The certified third-party fire inspector may act as inspector.

546. As a minimum, the services of the certified fire consultant in his or her work in building includes the following:

- 1) Preparation and approval of declaration of commencement and conclusion and declaration stating that the building is traditional in terms of contingency tactics.
- 2) Determination of fire classes and building sections.
- 3) Participation in preparation of fire safety solutions to ensure that the fire safety conditions are in accordance with the requirements for safety and fitness for use, see Chapter 5.
- 4) Participation in preparation of fire documentation on fire safety conditions to ensure that the documentation fulfils its purpose, see Chapter 29; and
- 5) Coordination and collection of fire documentation as stated in Chapter 29.

547. In the role of performer, as a minimum, the fire consultant must prepare, inspect and approve the parts of the fire documentation which is stated in Appendix 5, Table 1.

548. As a minimum, the services of the certified fire consultant in his or her work as inspector of a building includes the following:

- 1) Preparation and approval of declaration of commencement and conclusion.
- 2) verification that the correct fire classes have been selected and that the building traditional in terms of contingency tactics.
- 3) Checking that the fire safety solutions chosen are in accordance with the requirements defined for safety and fitness for use, see Chapter 5; and
- 4) Checking that the documentation of the fire safety conditions fulfil their purpose, see Chapter 29.

549. In the role of inspector, as a minimum, the fire consultant must prepare and inspect the parts of the fire documentation which is stated in Appendix 5, Table 2.

550. In the role of third-party inspector, as a minimum, the certified fire consultant must inspect the fire documentation on the inspection levels stated in Appendix 5, Table 3.

(2) The third-party inspection includes parts of the building which are included in fire class 4. To the extent the operation and documentation of other parts of the building are relevant to the part of the building included in fire class 4, they must also be inspected by the certified fire consultant.

551. In connection with transfer of a project for which a building permit has been granted, from one certified fire consultant to another, the certified fire consultant transferring the project must prepare a statement which includes the following:

- 1) Declaration of commencement.
- 2) The role of the certified fire consultant in the project.
- 3) The documents prepared and/or inspected by the certified fire consultant and whether the projects are final or drafts.
- 4) Status of performance of inspection, see the inspection plan and inspection reports.

5) Critical issues in the project which require special attention of the certified fire consultant taking over the project, e.g. deviations from the *Guidelines in the Building Regulations for Chapter 5 - Fire*, or circumstances which makes the building non-traditional in terms of contingency tactics.

(2) The certified fire consultant taking over a project must assess the extent to which inspection of the fire documentation is required, see (1) prior to continuing the project and/or the implementation. This assessment must be accounted for in the inspection report. The description must be summed up in the declaration of conclusion.

(3) If it is not possible to prepare a statement in connection with transfer of the project, the certified fire consultant taking over the project must carry out a maximum (MAX) inspection of the fire documentation transferred, corresponding to the role of a certified fire consultant acting as an inspector.

Chapter 35 - Accreditation of structural engineers

552. Accreditation of structural engineers is granted to persons who carry out their work in Denmark and who fulfil the requirements stated in s. 557.

(2) The following denominations are used:

- 1) "Accredited structural engineer" describes a person who has achieved professional evaluation and accreditation according to these guidelines.
- 2) "Another country" means another EU member state or EEC member state with which the European Union had made an agreement on the performance of the profession of accredited structural engineer.
- 3) "Competent authority" means the authority which administers the profession of accredited structural engineer in "another country".

553. The purpose of accreditation of structural engineers is to:

- 1) Ensure quality in planning and construction of structures in the building sector.
- 2) Ease the workload of the building authorities without deteriorating the structural documentation of building projects.

554. Persons may be granted the title of "accredited structural engineer" for a limited period subject to decision by the approving body referred to in s. 556(1).

(2) The accreditation is personal and follows the accredited structural engineer irrespective of employment relations.

555. The accredited structural engineer may only exercise his profession within the framework determined by the accrediting body, see s. 556(5) and may not use the accreditation without that framework.

556. The accrediting body is the general council of The Danish Society of Engineers, which creates an accreditation scheme and ensures that it is in accordance with *DS/EN ISO/IEC 17024 Compliance assessment – General requirements for bodies issuing certifications for persons*.

(2) The accrediting body will appoint a committee of 9 members to perform the tasks related to the accreditation scheme:

- 1) 3 members, preferably among employees at research and educational institutions, recommended by the Transport, Building and Housing Agency.
- 2) 2 members are recommended by the Danish Association of Consulting Engineers.
- 3) 2 members are recommended by Local Government Denmark.
- 4) 1 member is recommended by accredited structural engineers.
- 5) 1 member is recommended by The Danish Construction Association.

(3) Members are appointed for 4 years and may be reappointed.

(4) Members must have relevant qualifications in the area of load-bearing structures, e.g. accredited structural engineers.

(5) The accrediting body stipulates the rules of operation of the schedule. They will be included in a manual, which must

- 1) be in accordance with *DS/EN ISO 9001:2015 Quality systems* and *DS/EN ISO/IEC 17024*, see (1),
- 2) be available to the public,
- 3) serve as a guide for applicants and notifying persons on procedures, rights and duties,
- 4) provide guidelines of the work of accredited structural engineers, and
- 5) guide accredited structural engineers on their duties in relation to processing of building projects.

(6) The accrediting body must publish information on each accredited structural engineer, including the

term of accreditation, the country of origin of the accreditation, the educational background of the accredited structural engineer and the business title of the accredited structural engineer.

(7) If the accreditation was granted in another country, the name of the competent authority in that country must be stated.

557. Accreditation is granted based on an application and following a decision made by the accreditation committee. The accreditation committee must revise and assess the information stated in (2) and (3) and make their decision on accreditation based thereon. The accreditation body may request information for the support of accreditation with Danish and foreign authorities, and applicants must accept this. The accreditation committee must state their decision on accreditation no later than 6 months after receipt of the application and all required documentation. The deadline may be extended once if merited by the complexity of the case. The applicant must be informed of the extension and the duration of such extension before the expiry of the above-mentioned deadline. On receipt of an application for accreditation, the committee must issue a receipt to the applicant stating the deadline of the process their options for submitting complaints.

(2) Accreditation may be granted to candidates with the following educational backgrounds: MSc Engineering, BSc Engineering, Bachelor of Engineering from a Danish or foreign educational institution. The accreditation body must allow applicants who do not have a degree in engineering, see the above, to take a test in order to discover if the applicant has equivalent professional qualifications.

(3) As trade requirement for accreditation information about the work of the applicant for a period up to the application is requested.

(4) If the accrediting body refuses the application for accreditation, the applicant must receive a written reasoned statement indicating the reasons for the refusal.

558. Persons who possess course certificates or exam certificates or certificates which grants access to work as an accredited structural engineer in another country, see s. 552(2), such persons may work as accredited structural engineers in Denmark provided that the course certificate, exam certificate or certificate is issued by a competent authority in the other country. An accredited structural engineer from another country must work within the framework of accredited structural engineers in Denmark.

(2) An accredited structural engineer from another country, see s. 552(2) may work as an accredited structural engineer in Denmark on a temporary and occasional basis subject to the approval of the accrediting body, see Directive 2005/36/EC of the European Parliament and of the Council as amended by Directive 2013/55/EU on the recognition of professional qualifications in the European Union, art. 7, subart. 1, 2, 2a and 4. Information from the accredited structural engineer on temporary and occasional work is submitted to the accrediting body. The accrediting body may verify the professional qualifications of the accredited structural engineer, before he or she starts working in Denmark according to art. 7, subart. 4 of the Directive. The notification must be renewed annually.

(3) An accredited structural engineer from another country, see s. 552(2) may be granted permission to work permanently as an accredited structural engineer in Denmark by decision of the accrediting body, see Part III, Chapter 1, of Directive 2005/36/EU of the European Parliament and of the Council on the recognition of professional qualifications in the European Union, art. 10-14. Application for permission must be submitted to the accrediting body. No later than 1 week from receipt of the application, the accrediting body must confirm receipt and notify the applicant of any missing documents. No later than 2 months from submission of the application, the notifying body must provide the applicant with a duly reasoned decision permitting the applicant to establish, or whether the applicant must perform compensatory measures. In specific cases, the deadline may be extended by 2 weeks if special considerations concerning public health or the safety of the recipient of the service are present. The deadline may only be extended once, and the applicant must be informed of the reason hereof.

(4) Persons subject to (2) and (3) who perform work as accredited structural engineers in Denmark must possess

- 1) professional qualifications equivalent of the requirements described in this Chapter and
- 2) sufficient language skills required to carry out the work as accredited structural engineer in Denmark in accordance with the Building Regulations.

(5) The accrediting body may verify the qualifications of the applicant. Further, the accrediting body may verify the language skills of the applicant in cases where serious and specific doubt exists regarding the sufficiency of the language skills of the professional.

(6) Under Directive 2005/36/EU of the European Parliament as amended by Directive 2013/55/EU on the recognition of professional qualifications in The European Union, art. 14, subart. 1, 2, 4 and 5, the accrediting body may request that the applicant is granted a trial period, which may not exceed three years, or takes an aptitude test, even if the applicant fulfils the conditions stated in s. 599(1). If the accrediting body exercises their right to request a trial period or an aptitude test, their decision must be duly reasoned. In the assessment of whether a trial period or an aptitude test should be requested of the applicant, it should be considered whether the qualifications obtained by the applicant in the course of his or her professional experience or life-long learning in another country constitutes full or part fulfilment of the requirement for the necessary qualifications. The applicant must be allowed to take the aptitude test no later than 6 months after the original decision is made to request an aptitude test in accordance with Directive 2005/36/EC of the European Parliament and of the Council as amended by Directive 2013/55/EU on the recognition of professional qualifications in the European Union, art. 14, subart. 6 and 7.

(7) The accrediting body may exchange information with competent authorities in other countries on:

- 1) Persons from other countries, see s. 552(2) who wish to work temporarily or occasionally or to establish a permanent business as an accredited structural engineer in Denmark, see (2) and (3).
- 2) Accredited structural engineers in Denmark who wish to work temporarily or occasionally or to establish a permanent business as an accredited engineer in another country.

559. An accreditation can be renewed on expiry of the term of validity subject to application by the accredited structural engineer. As basis of the renewal of accreditation, information about the work of the applicant for a period up to the application is requested.

560. The accrediting body may deprive a person of the title "accredited structural engineer" under s. 555 subject to specific criteria.

561. Decisions on refusal or deprivation of accreditation may be appealed in writing to the accrediting body by the person in question, and he or she is entitled to present his or her case in person to the accreditation body.

562. The accreditation body determines the finances of the accreditation scheme, including payments related to the operation of the accreditation scheme to ensure that, over time, the scheme is financially independent.

563. The accredited structural engineer must carry out his or her work in accordance with the provisions issued by the accreditation committee under The Danish Society of Engineers.

(2) In connection with an application for a building permit from the Danish building authorities, in which participation of an accredited structural engineer is required, the accredited structural engineer will sign a structural engineer declaration in person in accordance with the provisions issued by the accreditation committee under The Danish Society of Engineers.

Part IV - Sanctions and commencement

Chapter 36 - Sanctions

564. Persons who violate provisions stipulated in the Building Regulations will be fined. This provision also applies to building work which may be carried out without application for a building permit.

(2) Companies, etc. (legal entities) may be held criminally liable under the rules of Chapter 5 of the Danish Penal Code for violations stated in (1), see s. 30(5) of the Danish Building Act.

Chapter 37 - Commencement

565. This Executive Order enters into force on 1 January 2018.

(2) Executive Order No. 1028 of 30 June 2016 on publication of Building Regulations 2015 (BR15) are revoked, see (4), however.

(3) This Executive Order applies to applications for building permit submitted after the commencement of the Executive Order. If the building work does not require a building permit, the Executive Order must be complied with in connection with building work initiated after the commencement of the Executive Order.

(4) Irrespective of the provisions of subsections 1-3, the previous provisions, see (2) may be chosen up to and including 30 June 2018 if

- 1) the local council receives a satisfactory application no later than 30 June 2018 for a building permit for building work subject to the rules on building permits, or
- 2) the building work is initiated no later than 30 June 2018 for building work not subject to the rules on building permits.

Transport, Building and Housing Agency, 13 December 2017

CARSTEN FALK HANSEN

/ Christian Vesterager

¹⁾ This Executive Order implements parts of Directive 2012/27/EU of the European Parliament and of the Council of 25 October 2012 on energy efficiency amending Directives 2009/125/EC and 2010/30/EU and repealing Directives 2004/8/EC and 2006/32/EC, The Official Journal of the European Union 2012, No. L 315, page 1, parts of Directive 2010/31/EU of the European Parliament and of the Council of 19 May 2010 on the energy performance of buildings, The Official Journal of the European Union 2010, No. L 153, page 13, parts of Directive 2009/125/EC of the European Parliament and of the Council of 21 October 2009 on establishing a framework for the setting of ecodesign requirements for energy-related products, The Official Journal of the European Union 2009, No. L 285, page 10, parts of Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora, The Official Journal of the European Union 1992, No. L 206, page 7, as amended by Council Directive 2006/105/EC of 20 November 2006, The Official Journal of the European Union 2006, No. L 363, page 368, parts of Directive 2005/36/EC of the European Parliament and of the Council of 7 September 2005 on the recognition of professional qualifications, The Official Journal of the European Union 2005, No. L 255, page 22, as amended subsequently by Commission Regulation (EU) No. 623/2012 of 11 July 2012, The Official Journal of the European Union 2012 No. L 180, page 9 and Directive 2013/55/EC of the European Parliament and of the Council of 20 November 2013 amending Directive 2005/36/EC, The Official Journal of the European Union 2013, No. L 354, p. 132, and Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC, The Official Journal of the European Union 2009, No. L 140, page 16. The Executive Order in draft form has been notified in accordance with Directive 2015/1535/EU of the European Parliament and of the Council on laying down a procedure for the provision of information in the field of technical regulations and of rules on Information Society services (codification).

Appendix 1.

Tables for Chapter 5 – Fire

Table 1 - Categories of use

| Category of use | The building section includes sleeping facilities | Persons in the building section have been informed of escape routes | Options allowing persons to bring themselves to safety unassisted | Maximum number of persons which the room accommodates |
|-----------------|---|---|---|---|
| 1 | No | Yes | Yes | No limitations |
| 2 | No | No | Yes | 50 max. |
| 3 | No | No | Yes | No limitations |
| 4 | Yes | Yes | Yes | No limitations |
| 5 | Yes | No | Yes | No limitations |
| 6 | No | No | No | No limitations |

Table 2 - Risk classes

| Risk class | Category of use of the building | The layout of the building, the total number of persons in the building section with shared escape routes and fire load |
|------------|---------------------------------|---|
| 1 | 1 | <p style="text-align: center;">General</p> <p>Buildings with maximum 1 storey above ground level and maximum 1 storey below ground level</p> <p style="text-align: center;">and</p> <p>The fire load of the building section may not exceed 1,600 MJ/sq. metre floor area</p> |
| | 4 | <p style="text-align: center;">General</p> <p>Buildings with maximum 1 storey above ground level and maximum 1 storey below ground level</p> <p style="text-align: center;">or</p> <p>Detached, semi-detached and terraced single-family houses and holiday homes with maximum 2 storeys above ground level and maximum 1 storey below ground level</p> |
| 2 | 1 | <p style="text-align: center;">General</p> <p>Buildings with top storey floors maximum 9.6 metres above ground level and maximum 1 storey below ground level</p> <p style="text-align: center;">or</p> <p>Buildings with maximum 1 storey above ground level and maximum 1 storey below ground level with a possible fire load in the building section exceeding 1,600 MJ/sq. metre floor area</p> |

| | | |
|---|---------|---|
| | 4 | <p align="center">General</p> <p align="center">Buildings with top storey floors maximum 9.6 metres above ground level and maximum 1 storey below ground level</p> |
| | 2, 5, 6 | <p align="center">General</p> <p align="center">Buildings with maximum 1 storey above ground level and maximum 1 storey below ground level</p> |
| | 3 | <p align="center">General</p> <p align="center">Buildings with maximum 1 storey above ground level and maximum 1 storey below ground level</p> <p align="center">and</p> <p align="center">The number of persons in a building section with shared escape routes may not exceed 1000</p> |
| 3 | 1 and 4 | <p align="center">General</p> <p align="center">Buildings with top storey floors between 9.6 metres and 45 metres above ground level and maximum 1 storey below ground level</p> |
| | 2 and 5 | <p align="center">General</p> <p align="center">Buildings with top storey floors maximum 22 metres above ground level and maximum 1 storey below ground level</p> |
| | 3 | <p align="center">General</p> <p align="center">Buildings with top storey floors maximum 22 metres above ground level, maximum 150 storey below ground level and maximum 150 persons in the building section</p> <p align="center">or</p> <p align="center">Buildings with maximum 2 storeys above ground level and 1000 persons in the building section</p> |

| | | |
|---|--------|---|
| | 6 | General Buildings with maximum 2 storeys above ground level and maximum 1 storey below ground level |
| 4 | 1 to 6 | General Buildings not covered by risk classes 1 - 3 |

Appendix 2.

Tables for Chapter 11 – Energy consumption

Table 1 - General minimum requirements for building envelopes

| Building part | U value [W/sq. metre K] |
|---|-------------------------|
| Outer walls and basement walls adjacent to soil | 0.30 |
| Storey partitions and partition walls adjacent to rooms, where the temperature difference between the rooms is 5 °C or more | 0.40 |
| Ground slab, basement floors adjacent to soil and storey partitions to open air or a ventilated crawl space | 0.20 |
| Storey partitions under floors with underfloor heating adjacent to heated rooms | 0.50 |
| Ceiling and roof structures, including cupboards under roof slopes, flat roofs and sloping walls adjacent to roofs | 0.20 |
| Outer doors without glass panes. Reference dimensions 1.23 metres x 2.18 m | 1.40 |
| Outer doors with glass panes. Reference dimensions 1.23 metres x 2.18 m | 1.50 |
| For gates and hatches opening to the outside or to unheated rooms and glass walls and windows adjacent to rooms heated to a temperature creating a temperature difference between the rooms of 5 °C or more | 1.80 |
| Dome lights | 1.40 |
| Insulated sections of glass outer walls. The requirement is for the centre U value | 0.60 |
| Storey partitions and walls adjacent to freezing rooms | 0.15 |

| | |
|--|---|
| Storey partitions and walls adjacent to refrigeration rooms | 0.25 |
| Building part | Linear thermal transmittance [W/metre K] |
| Foundations around rooms which are heated to minimum 5 °C | 0.40 |
| Joint between outer wall and windows or outer doors, gates and hatches | 0.06 |
| Junction between roof structure and skylights or dome lights | 0.20 |

Table 2 - Minimum requirements for building envelope in case of changes in use

| Building part | U value [W/sq. metre K] | |
|---|---|---|
| Room heated to | Room heated to $T > 15\text{ }^{\circ}\text{C}$ | Room heated to $5\text{ }^{\circ}\text{C} < T < 15\text{ }^{\circ}\text{C}$ |
| Outer walls and basement walls adjacent to soil | 0.15 | 0.25 |
| Storey partitions and partition walls adjacent to rooms with a room temperature difference of $5\text{ }^{\circ}\text{C}$ or more | 0.40 | 0.40 |
| Ground slab, basement floors adjacent to soil and storey partitions over open air or a ventilated crawl space | 0.10 | 0.15 |
| Ceiling and roof structures, including cupboards under roof slopes, flat roofs and sloping walls adjacent to roof | 0.12 | 0.15 |
| Gates | 1.80 | 1.80 |
| Hatches opening to open air to rooms with a temperature difference of $5\text{ }^{\circ}\text{C}$ or more between the rooms (does not include vents of less than 500 sq. centimetres) | 1.40 | 1.50 |
| Dome lights | 1.40 | 1.80 |
| Building part | Linear thermal transmittance W/metre K | |
| Foundations | 0.12 | 0.20 |
| Joint between outer wall and windows or outer doors, gates and hatches | 0.03 | 0.03 |
| Junction between roof structure and skylights or dome lights | 0.10 | 0.10 |

Table 3 - Minimum requirements for building envelope in connection with conversions and other changes to the building

| Building part | U value [W/sq. metre K] |
|--|---|
| Outer walls and basement walls adjacent to soil | 0.18 |
| Storey partitions and partition walls adjacent to rooms with a room temperature between the rooms of 5 °C or more | 0.40 |
| Ground slab, basement floors adjacent to soil and storey partitions to open air or a ventilated crawl space | 0.10 |
| Ceiling and roof structures, including cupboards under roof slopes, flat roofs and sloping walls adjacent to roofs | 0.12 |
| Gates | 1.80 |
| Hatches, storm windows and dome lights | 1.40 |
| Renovated storm windows | 1.65 |
| Building part | Linear thermal transmittance [W/metre K] |
| Foundations | 0.12 |
| Joint between outer wall, windows or outer doors, gates and hatches | 0.03 |
| Junction between roof structure and skylights or dome lights | 0.10 |

Table 4 - Minimum requirements for building envelope for holiday homes, camping cabins and similar holiday accommodation

| Building part | U value [W/m²K] |
|---|---|
| Outer walls and basement walls adjacent to soil | 0.25 |
| Partition walls and storey partitions adjacent to unheated rooms | 0.40 |
| Ground slab, basement floors adjacent to soil and storey partitions to open air or a ventilated crawl space | 0.15 |
| Ceiling and roof structures, including cupboards under roof slopes, and flat roofs | 0.15 |
| Windows, outer doors, skylights, glass outer walls, glass roofs and dome lights to open air or unheated rooms | 1.80 |
| Building part | Linear thermal transmittance [W/metre K] |
| Foundations | 0.15 |
| Joint between outer wall and windows or outer doors, gates and hatches | 0.03 |
| Junction between roof structure and skylights or dome lights | 0.10 |

Table 5 - Minimum requirements for building envelope for temporary portable pavilions

| Building part | U value [W/sq. metre K] |
|---|---|
| Outer walls | 0.20 |
| Storey partitions and partition walls adjacent to rooms, where the temperature difference between the rooms is 5 °C or more | 0.40 |
| Floor and storey partitions above open air or a ventilated crawl space | 0.12 |
| Ceiling and roof structures, including cupboards under roof slopes, flat roofs and sloping walls adjacent to roof | 0.15 |
| For gates and hatches opening to the outside or to unheated rooms and glass walls and windows adjacent to rooms heated to a temperature creating temperature difference between the rooms of 5 °C or more | 1.80 |
| Dome lights | 1.80 |
| Linear thermal transmittance | Linear thermal transmittance [W/metre K] |
| Foundations | 0.20 |
| Joint between outer wall, windows or outer doors, gates and hatches | 0.03 |
| Junction between roof structure and skylights or dome lights | 0.10 |

Appendix 3.

Tables for Chapter 30 – Inspection of documentation of load-bearing structures and fire safety

Table 1 - Minimum requirements for types of inspection depending on fire and structure class

| Fire or structure class | Internal inspection | Independent inspection | Third-party inspection |
|-------------------------|---------------------|------------------------|------------------------|
| 2 | X | X* | |
| 3 | X | X | |
| 4 | X | X | X |

* For buildings in fire class 2, independent inspection of documentation must be carried out in relation to fire classification, declarations regarding whether the building is traditional in terms of contingency tactics, of the fire strategy report and the inspection plan, see ss. 510-512 and s. 518 (fire safety documentation). For structure class 2, the requirement for independent inspection only applies to *A1. Structural basis* and *B2. Structural inspection plan*, see s. 501, para (1) and s. 502(1), para (2). For the remaining part of the documentation, inspection may be carried out by persons who did not participate in the preparation of the documentation for the relevant structure/structural section, but who participated in the planning of the building.

Appendix 4.

Tables for Chapter 33 – The work of the certified structural engineer

Table 1 - Minimum requirements for the work of the certified structural engineer as an active planner

| ID | Subject | KK2 | KK3 | KK4 |
|----|---|----------|----------|----------|
| A1 | Structural basis | Kmax + G | U + G | U + G |
| A2 | Structural calculations | | | |
| | A2. 1 Structural calculations – building | Kext + G | Kmax + G | UA + G |
| | A2. 2 Structural calculations – structural section, own organisation | Kext + G | Kext + G | Kmax + G |
| | A2. 2 Structural calculations – structural section, other organisation | Kext | Kext | Kmax |
| A3 | Structural drawings and models | | | |
| | A3. 1 Structural drawings and models – building | Kext | Kmax | Kmax + G |
| | A3. 2 Structural drawings and models – structural section, own organisation | Kext | Kmax | Kmax |
| | A3. 2 Structural drawings and models – structural section, other organisation | Kext | Kext | Kmax |
| A4 | Structural changes | | | |
| | A4. 1 Structural changes, own organisation | Kext | Kmax | Kmax + G |
| | A4. 2 Structural changes, other organisation | Kext | Kext | Kmax |
| B1 | Structural project report | Kext + G | Kext + G | U + G |
| B2 | Structural inspection plan | Kmax + G | U + G | U + G |

| | | | | |
|--|---|------|------|------|
| B3 | Structural inspection report | | | |
| | B3. 1 Structural inspection report – planning | Kext | Kmax | Kmax |
| | B3. 2 Structural inspection report – implementation | Kext | Kext | Kmax |
| <p>A): The requirement for U only includes vertical and horizontal lowering of loads and robustness. For other parts, "K_{max} + G" is required.</p> | | | | |

Table 2 - Minimum requirements for the work of the certified structural engineer as an active inspector

| ID | Subject | KK2 | KK3 | KK4 |
|----|---|------|------|------|
| A1 | Structural basis | Max. | Max. | Max. |
| A2 | Structural calculations | | | |
| | A2. 1 Structural calculations – building | Ext. | Max. | Max. |
| | A2. 2 Structural calculations – structural section | Ext. | Ext. | Max. |
| A3 | Structural drawings and models | | | |
| | A3. 1 Structural drawings and models – building | Ext. | Max. | Max. |
| | A3. 2 Structural drawings and models – structural section | Ext. | Ext. | Max. |
| A4 | Structural changes | | | |
| | A4. 1 Structural changes – building | Ext. | Max. | Max. |
| | A4. 2 Structural changes – structural section | Ext. | Ext. | Max. |
| B1 | Structural project report | Ext. | Ext. | Max. |
| B2 | Structural inspection plan | Max. | Max. | Max. |
| B3 | Structural inspection report | | | |
| | B3. 1 Structural inspection report – planning | Ext. | Max. | Max. |
| | B3. 2 Structural inspection report – implementation | Ext. | Ext. | Max. |

Table 3 - Minimum requirements for the work of the certified structural engineer as a third-party inspector

| ID | Subject | Third-party inspection |
|----|---|------------------------|
| A1 | Structural basis | Max. |
| A2 | Structural calculations | |
| | A2. 1 Structural calculations – building | Max. |
| | A2. 2 Structural calculations – structural section | Ext. |
| A3 | Structural drawings and models | |
| | A3. 1 Structural drawings and models – building | Max. |
| | A3. 2 Structural drawings and models – structural section | Ext. |
| A4 | Structural changes | |
| | A4. 1 Structural changes – building | Max. |
| | A4. 2 Structural changes – structural section | Ext. |
| B1 | Structural project report | Ext. |
| B2 | Structural inspection plan | Max. |
| B3 | Structural inspection report | |
| | B3. 1 Structural inspection report for planning | Ext. |
| | B3. 2 Structural inspection report for implementation | Ext. |

Appendix 5.

Tables for Chapter 34 – The work of the certified fire consultant

Table 1 - Minimum requirement for the work of the certified fire consultant as preparer of the fire safety documentation

| Subject | BK2 | BK3 | BK4 |
|---|---------------|---------------|---------------|
| Documentation of fire classification(s) | U + G | U + G | U + G |
| Statement indicating if the building is traditional in terms of contingency tactics | U + G | U + G | U + G |
| Fire strategy report | $K_{max} + G$ | $K_{max} + G$ | U + G |
| Fire plans | K_{ext} | K_{max} | K_{max} |
| Area distribution plans and paving plans | K_{ext} | K_{ext} | K_{ext} |
| Fire dimensioning | - | $K_{ext} + G$ | $K_{max} + G$ |
| Description of functions | K_{ext} | K_{ext} | K_{max} |
| Fire management plan | $K_{max} + G$ | U + G | U + G |
| Fire management reports | K_{ext} | K_{max} | K_{max} |
| Operation, inspection and maintenance plan | K_{ext} | K_{ext} | K_{max} |

Table 2 - Minimum requirement for the work of the certified fire consultant as inspector of the fire safety documentation

| Subject | BK2 | BK3 | BK4 |
|---|------|------|------|
| Documentation of fire classification(s) | Max. | Max. | Max. |
| Statement indicating if the building is traditional in terms of contingency tactics | Max. | Max. | Max. |
| Fire strategy report | Max. | Max. | Max. |
| Fire plans | Ext. | Max. | Max. |
| Area distribution plans and paving plans | Ext. | Ext. | Ext. |
| Fire dimensioning | - | Ext. | Max. |
| Description of functions | Ext. | Max. | Max. |
| Fire management plan | Max. | Max. | Max. |
| Fire management reports | Ext. | Max. | Max. |
| Operation, inspection and maintenance plan | Ext. | Ext. | Max. |

Table 3 - Minimum requirement for certified third-party checks of the fire safety documentation

| Subject | Third party |
|---|-------------|
| Documentation of fire classification(s) | Max. |
| Statement indicating if the building is traditional in terms of contingency tactics | Max. |
| Fire strategy report | Max. |
| Fire plans | Max. |
| Area distribution plans and paving plans | Ext. |
| Fire dimensioning | Ext. |
| Description of functions | Ext. |
| Fire management plan | Max. |
| Fire management reports | Ext. |
| Operation, inspection and maintenance plan | Ext. |