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EUROPEAN COMMISSION

OFFICE FOR INFRASTRUCTURE AND LOGISTICS
IN BRUSSELS

Manual of Standard Building Specifications

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FOREWORD

Since 1992, the Manual of Standard Building Specifications has served as a reference document for use in the field of buildings policy, both internally by the Commission services and by the Commission's external partners in the Brussels real estate market.

In accordance with the Commission Decision of 22 July 2003 laying down the administrative rules for the Office for Infrastructure and Logistics in Brussels, and in particular Article 6(3) and (4) thereof, the technical standards with which Commission buildings must comply are defined in the Manual of Standard Building Specifications by the Director of the Office for Infrastructure and Logistics in Brussels (OIB) and approved by its Management Board.

The Manual of Standard Building Specifications forms part of the reference documentation available on the Commission's buildings policy¹, alongside other documents including the Housing Conditions Manual for the Commission DGs and Services in Brussels and Luxembourg, the Methodology for Prospecting and Negotiating for Buildings and the Measuring Code.

The Manual of Standard Building Specifications is a reference document for:

- evaluating the quality of buildings and their suitability in terms of the Commission's requirements, both during public procurement procedures and when managing the building stock;
- defining the performance levels to be achieved and the features to be incorporated into buildings during construction, renovation, redevelopment, repair or maintenance and during public procurement procedures involving prospection of real estate projects;
- producing technical documents which serve as a basis for defining and monitoring construction, renovation, redevelopment, repair or maintenance works (descriptions, specifications, etc.).

This version of the Manual of Standard Building Specifications strengthens its performance-based and results-based approach. As well as setting out key parameters for evaluating the performance levels of buildings, it is intended to foster innovation and allow greater flexibility in terms of potential solutions.

This version of the Manual of Standard Building Specifications focuses on sustainability, energy efficiency and user comfort.

The content has been reorganised (by separating out the general performance requirements from specific technical specifications) in order to make the document more usable and more suitable for a variety of purposes.

This document was approved by the Management Board of the Office for Infrastructure and Logistics in Brussels on 05 April 2019.

Marc Mouligneau

Director of the Office for Infrastructure
and Logistics in Brussels

¹ In particular:

- COM(2007) 501 of 5 September 2007 Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions on policy for the accommodation of Commission services in Brussels and Luxembourg.
- COM(2003)755 Communication from the Commission on buildings policy and infrastructures in Brussels.

OBJECTIVE

STRUCTURE OF THE DOCUMENT

The Manual of Standard Building Specifications sets out recommendations and requirements which are applicable to Commission buildings.

For each procurement procedure, it will be accompanied by technical documents taking into account the individual circumstances of each project and containing (where applicable) specific technical specifications governing execution of the work.

PERFORMANCE LEVELS


The Manual of Standard Building Specifications specifies the performance levels which should be met by buildings intended to accommodate Commission services in Brussels.

1. New buildings constructed for use by the Commission must meet all the specified performance levels. However, certain deviations may be possible, depending on the individual circumstances of the project, technical feasibility and financial considerations.
2. Improvements in the performance of renovated buildings (partial or major renovation, etc.) or redeveloped buildings must be appropriate, consistent and proportionate to the scope of the work, taking into account any existing legal, functional, technical and budgetary constraints and deadlines.

Any solutions which are likely to achieve the specified performance levels are permitted (unless expressly indicated otherwise by the Commission); preference should be given to solutions which provide the greatest possible level of flexibility, bearing in mind that updated technology is likely to become available. The aim is to identify the best possible solutions which will result in buildings with the highest possible performance levels, based on a total cost approach to economic analysis.

Otherwise, buildings must comply in all respects with the applicable legislation, depending on the nature of the works (new building, renovated or redeveloped building).

APPLICATION OF SPECIFIC TECHNICAL SPECIFICATIONS

This document stipulates both performance levels and technical requirements. The technical requirements are highlighted in grey in the text and preceded by the symbol .

As a general rule, these requirements are justified on the grounds that the Commission has an interest in applying uniform solutions throughout all of its building stock.

The solutions applied within a building must comply with the technical specifications set out in this document. However, any terms of reference for work issued by the Commission will always take precedence over the specifications in this document and may amend the latter in view of the requirements of the project in question.

Equivalent solutions may be considered if prior approval has been obtained from the Commission.

LEGISLATION AND STANDARDS

The building must meet the requirements set out in this document and the annexes to this document, and any additional requirements imposed by the European Commission (technical documents to be supplied by the Commission).

In all instances, buildings must comply with the applicable legislation, the requirements imposed by the competent public authorities, codes of good practice, the state of the art and any standards or other documents which apply to the project, at the very least until the date on which the application for planning permission is submitted.

This document does not set out any of the legislative requirements.

Buildings occupied by the Commission services are regarded as private-use buildings for the purpose of safety legislation. By contrast, premises specifically designed for use by the public, such as information points, welcome desks and similar, are regarded as public-access areas.

I.1. ARCHITECTURE AND DESIGN

I.1.1. FUNCTIONALITY

1. URBAN PLANNING ISSUES

Buildings accommodating Commission services must comply with the urban planning legislation in force on the date on which the application for planning permission is submitted.

The European Commission wishes to promote use of public transport by Commission staff travelling between their homes and their workplaces. It therefore endeavours to ensure that its buildings are located close to railway stations, metro stations, tram stops or bus stops, and ideally close to ‘multimodal’ stations.

The specific requirements which apply in respect of building locations and mobility will be specified in each public procurement notice, depending on requirements.

2. ARCHITECTURAL QUALITY

The Guide to the Commission’s architectural policy² must be followed for all large-scale projects (new builds or large-scale renovations).

The various parts of the building, the area surrounding it and its façades must fit into the urban environment and help to improve it.

The impression conveyed by the building must be consistent with the principles and values of the European project and the Commission’s way of working.

In order to improve the working environment, promote collaboration, and make it easier for building occupants to find their way around, a high level of diversity (in terms of the spatial configurations and finishes of adjacent spaces) must be achieved in access areas, connecting zones, communal areas and working areas.

The quality of the architecture should both enhance the efficiency of work and create a pleasant and comfortable environment.

The colours in the working environment should be chosen to avoid monotony which might affect well-being at work, while complying with the requirements for visual comfort (see Section I.1.4. Occupational well-being, paragraph 4.3. Visual contrast of interior surfaces).

3. SPATIAL ORGANISATION AND ACTIVITIES CARRIED OUT WITHIN BUILDINGS

The spatial organisation of the building must allow clear divisions into different zones, efficient use of space and optimised internal and interior/exterior flows.

3.1. Circulation

The management of flows within the building must be optimised through a range of access options and vertical and horizontal circulation routes.

Pedestrians, cars, bicycles and technical services must be able to access the building by means of:

² Communication from the Commission C(2009) 7032 of 23 September 2009 Guide to the Commission’s architectural policy.

- main pedestrian access from a public space,
- bicycle access to the car park,
- car access to the car park,
- an off-street delivery area for technical services.

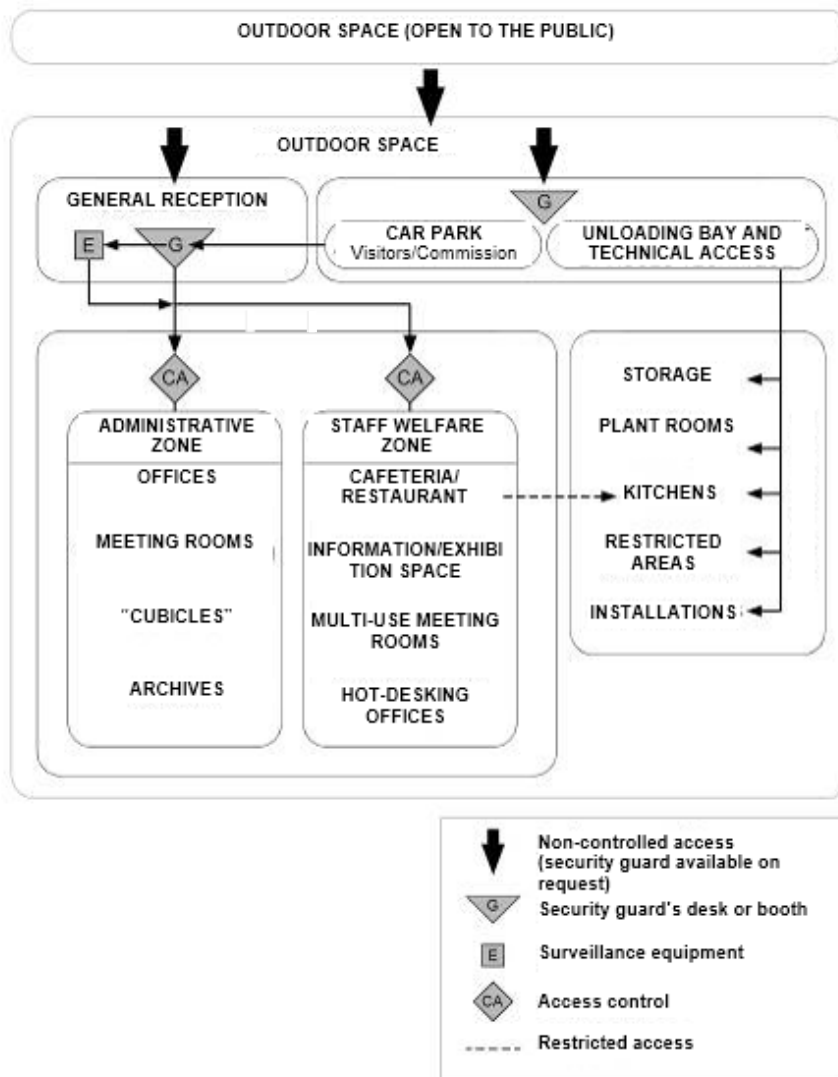
The area for unloading goods and the facilities where goods are stored should ideally be located on the same level in order to expedite the circulation of goods within the building (see Section I.3. Special-purpose zones).

The route followed by goods and furniture (between the area where they are unloaded, the facilities where they are stored and the offices where they are used) must be wide enough to allow a pallet on a pallet jack to get through.

Routes must be wide enough to allow goods and furniture to circulate through the building (at least 1.50 m for manual pallet jacks). There must be no narrow doors or steps along the routes. Ramps must be avoided (if this is impossible, the slope must be less than 5% in order to allow the use of manual pallet jacks).

Easy access must also be provided to the plant rooms on the upper floors.

Typical example of circulation within a building



Protection against malicious acts (security)

The routes connecting the different parts of the building, in particular the car parks, the social areas (restaurant, cafeterias) and the administrative zones, must comply with Section I.1.2. Protection against malicious acts, paragraph 2.3. Interior configuration.

A detailed list of security devices to be installed must be drawn up on the basis of requirements.

Working environment and occupational well-being

The building's occupants must be encouraged to use the stairs instead of the lifts. The entrance to the stairs should therefore be clearly signposted from the building's main access point, and they should be pleasant to use (spatial arrangement, lighting, etc.).

3.2. Ceiling clearances

The minimum ceiling clearances specified below are regarded as optimum values and apply alongside the relevant legislation and standards.

- Plant rooms in the roof area: $h \geq 3.0$ m
- Office levels: $h \geq 2.6$ m
- Horizontal circulation: $h \geq 2.4$ m
- Ground floor: $h \geq 3.5$ m
- Archives: $h \geq 2.25$ m
- Basement levels: $h \geq 2.2$ m.
- Car park levels and ramps: $h \geq 2.2$ m ($h \geq 2.0$ m below obstacles)

3.3. Efficiency and modularity of office areas

The building must accommodate an optimum number of workstations in relation to its floor space while at the same time guaranteeing a high level of comfort.

The principle of modularity must be followed in order to allow the working environment to be rearranged without any adverse impact on occupational well-being (see also Section 6.3. Flexibility of use).

4. STRUCTURAL STRENGTH

The building structures must comply with the Eurocodes³.

The imposed loads for the various rooms within the building must be based on the values set out in Standard NBN EN 1991-1-1ANB (Eurocode 1 - Actions on structures – Part 1-1: General actions – Densities, self-weight, imposed loads for buildings).

Maintenance and management***Flexibility of use***

In order to guarantee a high level of flexibility as regards the future use of rooms, the following imposed load values should, however, ideally be achieved:

³ In accordance with the series of standards NBN EN 1990, 1991-1992-1993-1994-1995-1996-1997-1998-1999 and their national annexes for Belgium (ANB).

Room	Minimum imposed load
Any room (including offices)	Class C2 4.0 kN/m ² and point load of 4.0 kN
Access to public or administrative buildings	Class C3 5.0 kN/m ² and point load of 4.0 kN
Archives, rooms used for storing paper, computer rooms, main kitchen, plant rooms and other rooms	Class E1 7.5 kN/m ² and point load of 7.0 kN
Archives with mobile shelving	10.0 kN/m ² or as required
Underground car parks (lightweight vehicles)	Class F 2.5 kN/m ² and point load of 20 kN ⁴
Access routes, delivery areas, areas accessible to fire-fighting vehicles (MPLW ⁵ ≤ 160 kN) Plaza, where applicable (MPLW ≤ 160 kN)	Class G 5 kN/m ² and point load of 90 kN ⁶
Meeting/conference rooms (permanent seating)	Class C2 4.0 kN/m ² and point load of 4.0 kN

Protection against malicious acts (security)

In cases where new buildings are constructed upon request by the Commission, the consequence class in accordance with standard NBN EN 1991-1-7 (Eurocode 1 – Accidental actions) and the reduction in the risk of progressive collapse must comply with the specific safety assessment (see Section I.1.2. Protection against malicious acts, paragraph 1. Risk evaluation and identification).

5. ACCESSIBILITY FOR PEOPLE WITH REDUCED MOBILITY (PRM)

5.1. Accessibility principles

The following principles are enshrined in the UN Convention on the Rights of Persons with Disabilities:

Persons with disabilities include those who have long-term physical, mental, intellectual or sensory impairments which, when they encounter various obstacles, may hinder their full and effective participation in society on an equal basis with others.

Furthermore, accessible buildings benefit everyone, in particular the elderly, persons with a temporary disability and children.

‘Universal design’ means the design of products, environments, programmes and services to be usable by all people, to the greatest extent possible, without the need for adaptation or specialised design. ‘Universal design’ does not exclude assistive devices for particular groups of persons with disabilities where this is needed.

In addition, construction works must be designed and built taking into consideration accessibility and use for disabled persons in accordance with Regulation (EU) No 305/2011 laying down harmonised conditions for the marketing of construction products.

5.2. Access to buildings

5.2.1. Entrance

⁴ 10 kN concentrated on two squares of 0.10 x 0.10 m whose axes are separated by 1.80 m.

⁵ MPLW: Maximum permissible laden weight.

⁶ 45 kN concentrated on two squares of 0.10 x 0.10 m whose axes are separated by 1.80 m.

Buildings must include at least one access route which is accessible for persons with reduced mobility.



There must be no obstacles on the access route that pose a hazard to or impede the passage of persons with impaired vision (no objects which do not extend to the floor) or persons with reduced mobility.

See Section I.1.7. Information and signage, paragraph 4 on tactile guide paths.

At least one of the entrance doors must be accessible for persons with reduced mobility (PRM).



Unless technically impossible, the access door must have an automated opening mechanism, in particular if the force required to open the door exceeds 3 kg (30 N).

Access control mechanisms must be accessible for persons with reduced mobility. In order to ensure that this is the case, an appropriate technical solution must be applied to at least one of each piece of access control equipment (width of access control lanes, X-ray gates, etc.).

5.2.2. Parking

The building must be designed with parking spaces accessible for people with reduced mobility, in line with the applicable legislation.



In the event that these spaces are in an underground car park, they should ideally be on the highest levels.

The doors which provide access to the lift landings should ideally be automated on the car park levels accommodating parking spaces accessible for persons with reduced mobility.

5.3. Circulation

5.3.1. Horizontal circulation

It must be possible to reach the various parts of the building's communal and office areas using corridors and routes which are accessible for persons with reduced mobility.



Unless technically impossible, corridors or routes which are accessible for persons with reduced mobility must not contain any protruding objects which do not extend to the floor (fire hose reels, letterboxes, radiators, shelves); objects protruding by more than 0.20 m from the wall to which they are fixed must either not extend below a height⁷ of 2.00 m or above a height of 0.30 m from the floor, or must be designed to have a solid horizontal casing which extends to the floor so that they can be detected with a cane.

Doors to communal and office areas must be accessible for people with reduced mobility.



Unless technically impossible, the following door clearances must be achieved:

⁷ The environmental permit requires that in indoor car parks, 'all overhead obstacles (beams, pipes, ducts, etc.) must be at least 2 metres above the floor in areas traversed on foot by users, with the exception of structural features in existing car parks'.

Minimum clearance	Door type
95 cm (door leaves \geq 103 cm)	Access doors to the lift landings Access doors to toilets accessible for people with reduced mobility Access doors to the meeting rooms

Knob or lever handle:

- must be located between 0.80 and 1.10 m above the floor (ideally 0.95 m);
- must be easy to operate with a clenched fist;
- should ideally be in a contrasting colour.

Automatic doors:

- sliding automatic doors are preferable to swinging automatic doors since the former are associated with a lower risk of impact-related accidents;
- automatic doors must be fitted with a device which prevents them from closing unexpectedly when someone is passing through.

5.3.2. Vertical circulation

Routes between different levels of the building must include at least one ramp or lift which is accessible for persons with reduced mobility.

5.4. Use

5.4.1. Toilets/washrooms

For further details regarding toilets accessible for persons with reduced mobility, see Section I.3.1. Rooms for a specific purpose, paragraph 2. Staff welfare facilities.

5.4.2. Counters and kiosks

At least one counter or kiosk (e.g. at the security checkpoint or in cafeterias, restaurants, etc.) must be accessible for persons with reduced mobility.

5.4.3. Mechanisms

Mechanisms, switches and devices designed to be operated by users must be accessible for persons with reduced mobility.



The following general principles apply to their accessibility for persons with reduced mobility:

- unless technically impossible, the components to be reached by users must be installed at a height of between 40 and 130 cm (average grip range of people in wheelchairs) depending on their purpose;
- unless technically impossible, the devices must be at least 50 cm distant from interior corners.

5.5. Emergency and evacuation

5.5.1. Emergency call devices

A communications system which is accessible for persons with reduced mobility must be installed in the rooms listed below in order to allow users to make an emergency call in case of need:

- lift lobbies on the levels of the underground car park accommodating spaces accessible for persons with reduced mobility,
- toilets accessible for people with reduced mobility,
- refuge areas (see paragraph 5.5.3. below).



A telephone must be installed at a height of 130 cm (measured from the upper part of the telephone) and at least 50 cm distant from interior corners, unless technically impossible.

The telephone number for the emergency and rescue centre 2 22 22 must be clearly displayed.

5.5.2. Alarm devices

See Section I.2.7. Fire protection, paragraph 1. Fire detection and alarms.

5.5.3. Evacuation of persons with reduced mobility and refuge areas

An evacuation plan for persons with reduced mobility has been produced by the Commission's Internal Service for Prevention and Protection at Work (part of the Office for Infrastructure and Logistics). Based on a risk assessment, this plan may incorporate a range of options for assisted evacuation, such as:

- evacuation lifts and fire-fighting lifts (see Section I.2.6. Lifts and escalators, paragraph 3);
- on an exceptional basis, carrying the person with reduced mobility down an emergency staircase or evacuating him or her through openings in a façade or on to a terrace.

To this end, refuge areas (or safe areas where persons with reduced mobility can wait for an assisted evacuation) must be planned on each floor other than the floor from which the evacuation will be carried out.



Depending on the evacuation solutions selected, the refuge areas must be located:

- either in a lobby for evacuation lifts and/or fire-fighting lifts;
- or in a lobby or landing for one of the evacuation staircases, the dimensions of which must be increased to accommodate at least one wheelchair (90 x 130 cm) outside of the door travel space, and without obstructing the flow of people evacuating from the building.

A telephone which is accessible for persons with reduced mobility must always be installed in refuge areas (see Section 5.5.1. Emergency call devices).

6. MAINTENANCE AND MANAGEMENT

6.1. Life-cycle costing

The architectural and technical design of the building must be such that maintenance and repair operations can be carried out with due regard to security conditions.

Structural systems, technical installations and their components must be selected in such a way as to minimise maintenance expenses and optimise costs⁸ during the building's life cycle (initial investment costs, operating costs, maintenance costs, replacement or removal costs).

⁸ Within the meaning of standard ISO/DIS 15686-5 'Buildings and constructed assets – Service life planning – Part 5: Life-cycle costing' or standards EN 15643-4 'Sustainability of construction works – Assessment of buildings – Part 4: Framework for the assessment of economic performance' and

Project contracts must be awarded in such a way as to guarantee the necessary level of building performance throughout the design, construction and operating stages.

6.2. Maintenance

Maintenance-related requirements:

- materials should be selected with due regard for maintenance and servicing requirements;
- all structural elements or equipment which require inspection or maintenance must be easy to access;
- access points for technical installations should ideally be located along circulation routes, outside working areas;
- all access points, protection systems and working areas required to carry out maintenance operations safely and easily must be available.

Cleaning-related requirements:

- preference should be given to straightforward cleaning procedures;
- cleaning procedures should ideally be possible without the use of special equipment such as ladders, scaffolding, gondolas, etc.;
- if there are parts of the building which are difficult to access and which need to be cleaned on a frequent basis (glass roofs, high windows), systems and procedures must be in place to ensure that they can be cleaned and maintained safely and easily;
- interior walls must be washable and must also be protected against any soiling and damage which may occur during floor cleaning operations (painted and lined surfaces, adapted skirting boards, etc.).

See also Section I.1.3. Occupational safety, paragraph 2.6. Working at height.



Maintenance of façades:

Façade surfaces which are easily accessible and likely to attract graffiti must be given a preventive coating in order to minimise the amount of cleaning required.

6.3. Flexibility of use

The building must accommodate a range of different uses so that any future adaptations can be carried out without excessive expense.

From that point of view, it will be easier to put the building to a different use, if necessary, if modular solutions are used for the main architectural components of the structure and the façade (see paragraph 3.3. Efficiency and modularity of office areas) and if the building is designed with adequate structural strength (see paragraph 4. Structural strength).

It must also be possible to alter the way in which the building is used by partitioning off offices or collaborative spaces with the minimum of effort.



EN 16627 ‘Sustainability of construction works – Assessment of economic performance of buildings – Calculation methods’.

The simplified method set out in Directive 2010/31/EU on the energy performance of buildings can also be applied (Commission Delegated Regulation (EU) No 244/2012 and standard EN 15459 Energy performance of buildings – Economic evaluation procedure for energy systems in buildings).

I.1.2. PROTECTION AGAINST MALICIOUS ACTS (SECURITY)

Partitions:

Insofar as possible, the physical separation of rooms and in particular of office areas and similar must be achieved using movable partitions.

These must be modular, prefabricated, collapsible and movable, and made up of interchangeable modular elements.

It must be possible to install or remove the movable partitions without removing the suspended ceiling.

The partitions separating offices (perpendicular to the façade) should ideally not be used to accommodate technical equipment (cables, sockets, etc.).

Raised floors:

Raised floors must be installed in office areas and similar in order to increase flexibility of use and facilitate the routing of electrical and telecommunications networks.

Suspended ceilings:

Any suspended ceilings present must be suitable for removal with a view to the repartitioning of all façade modules to create individual or shared offices (bandrasters etc. must be installed if necessary).

There must be an option of installing acoustic panels in the suspended ceiling above the partitions for all façade modules.

If no suspended ceilings are present, the suspension of acoustic panels from the ceiling (in order to improve reverberation conditions in the rooms) must not prevent the repartitioning of all façade modules.

Specialised technical services:

Equipment and primary circuits for electrical installations (up to the distribution boards), telecommunication installations (up to the racks in the cabling concentration rooms), HVAC (production, hot and cold water distribution circuits, air distribution circuits) and remote management (up to the control devices) must have adequate capacity to handle maximum occupation levels when rooms are turned into collaborative spaces, in order to minimise the modifications required in the event that the space is reconfigured.

See also Section I.2. Specialised technical services.

I.1.2. PROTECTION AGAINST MALICIOUS ACTS (SECURITY)

1. RISK EVALUATION AND IDENTIFICATION

Within the framework of Commission Decision 2015/443 of 13 March 2015 on security in the Commission and Decision 2015/444 of 13 March 2015 on the security rules for protecting EU classified information, a specific safety assessment must be carried out for any new project.

The aim of such assessments is to analyse the building within its environment, to identify the relevant risks and to plan the safety measures which should be taken in view of the circumstances (physical, human and/or electronic).

The assessment will be carried out by the Commission's Security Directorate, which must analyse the risks and (working together with the other project stakeholders and the other Commission services) identify specific safety measures for the building.

2. PHYSICAL SECURITY

The principles outlined below must be followed in respect of all new projects. It will be necessary to modify them on a project-by-project basis depending on the future use of the building and the level of risk identified at the project planning stage.

2.1. Shared use of buildings

It is vastly preferable for buildings to be reserved exclusively for the use of Commission services.

Nevertheless, in the event that it is necessary for a building to be shared with other tenants, including users of commercial units, the following principles must be taken into account:

- The area used by the Commission must be physically and architecturally separate from the other tenants, with its own entrances, including the entrances to car parks, technical areas and delivery entrances.
- An assessment of the risks (fire, security, intrusion, etc.) and problems associated with any potential constraints must be carried out by the competent services.
- A separate access control system must be in place for the Commission's area.
- Connecting zones between the Commission's area and other areas must be avoided unless technically impossible or required for safety reasons. The two areas must be separated in such a way as to guarantee physical security and ensure access control.
- The Commission building or area must be designed so as to be distinct from other areas, with an easily discernible perimeter that is delimited as clearly and simply as possible.
- For buildings with an inner courtyard, deliveries must not be allowed via that area to other occupants, and in particular to commercial entities.

2.2. External requirements

The following principles must be taken into account:

- Façades must not contain crevices or protrusions that might serve as footholds for anyone climbing up or along the façade.
- Dark corners with access to the public highway but which comprise a recess leading to doors or windows giving access to the building must be permanently lit as soon as daylight fades.
- The building must not be linked with neighbouring buildings by roofs or balconies. Roofs adjoining those of neighbouring buildings not occupied by the Commission and accessible from those roofs must be protected by railings and infrared beams at the edges between the two buildings.
- There must be no external stairways.

2.3. Internal requirements

The following principles must be taken into account:

- Car parks and basement floors must be served separately by an arrival point directly in front of the access control point for the Commission's area, in the main entrance hall. Anyone proceeding from the car parks to the upper floors via stairs or lifts will therefore be required to pass the security checkpoint in the foyer.
- The different zones (such as administrative zones, conference rooms, car parks, restaurants, etc.) must be physically separated by architectural measures. Ideally, the zone in front of access control at the main entrance should be the cross-over point.

- Commercial premises located in Commission buildings (concessions) must be located in front of the access control area.
- Proprietors of commercial premises located outside the Commission's area and not managed by Commission services must undertake to take into account the opinion of the Security Directorate as regards the nature of their proposed business before renting the premises.

3. DESIGN ELEMENTS

The specific security assessment must establish the requirements for design elements as regards the safety of persons and goods, depending on the future use of the building and the risk level identified in the assessment.



As a general rule, the requirements listed below apply:

- Based on a risk analysis, external glazing (doors, windows, etc.) and the metal frames on street-facing façades may (on certain levels) be explosion-resistant within the meaning of standards EN 13123 and EN 13124.
- For the ground floor and the other façades accessible to pedestrians, as well as the areas where access is possible by another means (roof, courtyard, terrace, balcony, etc.), glazing must be at least of anti-intrusion class P6B within the meaning of standard EN 356 and the frames must be at least of anti-intrusion class RC4 in accordance with standards EN 1627 and EN 1630. If existing buildings are renovated or redeveloped, the use of anti-shatter window films with a minimum class of 1(B)1 within the meaning of standard EN 12600 is acceptable.
- The security doors and window frames in the security area must comply with standards EN 1627 and EN 1630 class RC4.
- Doors and window frames which are used as emergency exits (not used as normal exits) and which lead to the exterior of the building must comply with anti-intrusion class RC4 on the basis of standards EN 1627 and EN 1630.
- Doors, car park shutters and openable window frames accessible from the ground floor on all sides of the building or from accessible platforms and terraces must be fitted with mechanical opening and closing devices (hierarchical key-operated locks).
- One entrance door other than the emergency exits from the building must be fitted with a key-operated lock that can be opened and closed manually from outside.

I.1.3. OCCUPATIONAL SAFETY

1. FIRE SAFETY

The requirements outlined below must be met in addition to the applicable legislation and standards.

1.1. Evacuation

The dimensions of escape routes and emergency exits serving office areas must take account of the possibility that they will be converted into collaborative spaces (level of occupation: 7 m² of office space per person).



Entrance halls:

Combustible materials inside the entrance hall must be kept to an absolute minimum. Special attention must be paid to this requirement during internal refitting works.

Location of emergency staircases:

Emergency staircases must be located inside buildings unless technically impossible.

Locking of emergency exits:

Escape routes and emergency exits may be locked provided that an electric or electromagnetic opening device is installed (see Section I.2.9. Protection against malicious acts).

1.2. Fire compartments and fire resistance of structural elements

1.2.1. Internal partitions and doors

Fire resistance of partitions:

- Copy rooms must have vertical partitions with a fire resistance of EI 30 and doors must have a fire resistance of EI₁ 30 and close automatically (linked to the fire detection system).

Door retaining devices:

- Certain fire doors for rooms which are accessed or traversed very frequently are kept open using magnetic retainers linked to the fire detection system (e.g. entrance halls and lift lobbies, corridor compartment doors, kitchenette doors and doors of copy rooms).
- As a minimum, rooms accommodating kitchenettes must have doors which close automatically (linked to the fire detection system).

Door closers:

- In addition to the requirements set out in the applicable legislation, access doors to toilets/washrooms, kitchenettes, copy rooms, etc. must also be fitted with door closers.

Horizontal communication between two buildings:

- In the case of doors forming an airlock between two buildings, an intermittent red light signal should be placed above or beside the door frames. This signal should light up on the non-dangerous side to indicate the danger when the alarm is raised.

2. USER SAFETY

The requirements outlined below must be met in addition to the applicable legislation and standards.

2.1. Risk of slip and fall accidents

The non-slip characteristics of floors must be appropriate to the intended purpose of the room.

The minimum requirements of at least one of the following classifications must be met⁹.

⁹ Coverings which do not pose a risk of slipping (in particular pile carpets) are excluded from the requirements under this classification.

Room	DIN 51130	DIN 51097 (barefoot)	EN 13893	CEN/TS 15676 (pendulum test)
Dry areas	Class R9	-	Class DS ($\mu \geq 0.30$)	USRV ≥ 25
Wet areas (toilets, showers, entrance hall, etc.)	Class R10 (R11 on inclines)	Class B	Class DS ($\mu \geq 0.30$)	USRV ≥ 35
Car parks	Class R10 (R11 on inclines)	-	-	USRV ≥ 45
Industrial kitchens (restaurants)	Class R12		-	

2.2. Electrostatic behaviour of floors

The electrostatic behaviour of floors must be appropriate for the intended use of the room.

The following requirements must be met¹⁰:

Room	Floor performance	Reference standards (or equivalent)
Office areas and similar	Anti-static ¹¹ (Electrostatic charge ≤ 2.0 kV)	NBN EN 1815, ISO 6356
Plant rooms	Anti-static (Electrostatic charge ≤ 2.0 kV)	NBN EN 1815, ISO 6356
	With punctual contact resistance ¹² $\geq 50\,000\ \Omega$	VDE 0100/T.610
Computer rooms and main distribution frame rooms ¹³	With punctual contact resistance $\geq 50\,000\ \Omega$	VDE 0100/T.610
	Static dissipation ¹⁴ ($\leq 10^9\ \Omega$)	NBN EN 1081, ISO 10965

2.3. Risk of falling from height

Areas at height which are accessible to users of the building must be protected using barriers (including handrails and railings for stairs) in accordance with standard NBN B 03-004 Railings of buildings.

In the event that glazed banisters are used, they must comply with standard NBN S 23-002 Work in glass (Glazing).



Floor gratings:

¹⁰ Based on the recommendations of the Belgian Building Research Institute (NIT 230 Raised floors and NIT 237 Ceramic tiles as interior floor coverings).

¹¹ To prevent electricity build-up in the body.

¹² To prevent electric shocks.

¹³ Rooms containing sensitive electronic devices.

¹⁴ For diverting electrostatic charge without damaging electronic devices.

Any accessible service shafts in the building and any ventilation outlets opening on to the roof must be fitted with floor gratings on every level in order to prevent accidents.

Gratings must not be used on:

- emergency staircases,
- escape routes on terraces.

Instead of gratings, emergency staircases and escape routes should be fitted with perforated metal sheets with a non-slip surface.

2.4. Risk of falling through open frames

Opening frames must be fitted with safety devices with the aim of preventing objects falling through windows or any accidents involving persons opening windows.



Opening frames must be fitted with a device limiting opening to 11 cm with a quick and simple unlocking mechanism.

If there is a risk that objects placed on the window sill might fall, a fixed section at the bottom of the frame or a screen with a height of 10 cm must be installed in front of the opening.

2.5. Safety of terraces, roofs and access to plant rooms

As a general principle, the most appropriate access arrangements possible should be selected for workplaces at height on the basis of the frequency of access, the height to be reached, the duration of work and the weight and volume of material to be moved.



The access route must be flat and without obstacles.

Persons accessing these areas must be protected using collective protection measures in order to avoid the risk of free-falls.

Flat roofs which are accessible by maintenance staff must be equipped with lighting points designed to have a safe access for their job.

If ladders are provided, they must be fixed in place.

It must be possible to open doors on the roof using an exterior opening device (no fixed handle).

2.6. Working at height

2.6.1. Cradles

Preference should be given to methods for cleaning façades which involve access from the interior, fixed-access walkways or (where applicable) cradles or other lifting gear.



Systems comprising a trolley on suspension rails and arms are recommended.

2.6.2. Anchoring devices

Anchoring devices must be designed to meet the requirements of NBN EN 795 as regards individuals working at heights of 3 m or more.

I.1.4. OCCUPATIONAL WELL-BEING

1. HYGROTHERMAL COMFORT

See Section I.2.3. Heating, ventilation, air conditioning (HVAC).

2. INTERNAL AIR QUALITY

A mechanical ventilation system must be available to safeguard the air quality and the supply of fresh air (see Section I.2.3. Heating, ventilation, air conditioning (HVAC)).

The design of the building must be such as to ensure that adequate standards of health, hygiene and safety are met for its occupants.

2.1. Outdoor air

Decisions as to whether to use opening window frames or other natural ventilation systems must be based on the building's energy design.

Adequate standards of health, hygiene and safety for the building's occupants must be guaranteed if opportunities to open exterior windows are limited.

Window frames must not open in the following cases:

- Windows looking on to streets with high levels of motorised vehicular traffic¹⁵ must not have opening frames, and the relevant façades must not feature natural ventilation systems.
- Exterior window frames exposed to excessive exterior air pressure (in particular above a height of 25 m) must not be designed to open. Natural ventilation systems which are safe and appropriate to the relevant wind exposure levels may be considered.
- In accordance with the specifications of the Commission's Security Directorate, frames on the ground floor must be either fixed or lockable using a key.
- In the case of atriums, opening windows may be installed if they are authorised by the competent authorities.

3. ACOUSTIC COMFORT

The requirements outlined below must be met in addition to the applicable legislation and standards.

3.1. Airborne sound insulation

Equivalent noise levels in office areas and similar must not exceed a value between 30 and 45 dBA.



Limit values for noise levels (with the aim of avoiding acoustic discomfort in buildings):

¹⁵ Further details of the impact of traffic on outdoor air quality can be found in the study on black carbon carried out by Brussels Environment. The study and the map showing black carbon concentrations at rush hour can be found at the following link: <https://environnement.brussels/news/la-pollution-au-black-carbon-touche-differemment-les-bruxellois-selon-le-mode-de-transport-et>

Airborne sound insulation levels must comply with the values specified in standard NBN S 01-401, depending on the category of external noise (by default category 4, $L_{aeq} > 75$ dBA, corresponding to the noise levels in city centres).

The equivalent L_{aeq} levels for all stable and unstable sounds and the NR index for stable sounds must be limited to the values set out in Tables III, IV and V of standard NBN S 01-401.

Sound levels must be measured inside finished and furnished rooms with the windows closed, lights on and HVAC systems in operation.

Sound insulation of interior walls and partitions:

Normalised gross sound insulation levels (D_n' , in situ) must comply with the minimum categories in standard NBN S 01-400, in particular:

- partitions between offices: D_n' category IIIb;
- partitions with a door: D_n' category IVb.

To obtain this result on the ground, the sound attenuation index (R, in the laboratory) of the partition must comply at least with category IIIa, in accordance with standard NBN S 01-400.

- partitions between offices: R category IIIa;
- partitions with a door: R category IVa.

Alternatively, the requirements set out below can be met:

Design element	Minimum R_w insulation (dB)
Partitions in offices, meeting rooms and quiet rooms	42
As above, with door	32
Partitions in offices/cabling concentration rooms	48
Walls between parts of the building leased by different tenants, partitions in offices/HVAC plant rooms or lift shafts, etc.	52

Design considerations:

All joining elements between partitions and the shell or finish of the building are to be soundproofed (noise barriers, false ceilings) so as to guarantee the level of sound insulation.

In office areas, noise barriers which extend partitions must be installed up to the height of the space above the false ceiling (where present).

3.2. Insulation against impact noises



The transmission of floor impact noise must be below the values stipulated for category IIa of standard S 01-400 or $L'_{nTw} \leq 64$ dBA in accordance with standard NBN EN ISO 701-2.

3.3. Insulation against vibrations caused by installations

The noise of technical installations in the building must be limited in order to comply with the noise level limits in rooms as specified in paragraph 3.1 of this section.



Technical installations in the building must be fitted with systems avoiding vibration transmission to the remainder of the building.

3.4. Reverberation times, echoes and intelligibility

Adequate acoustic comfort levels in rooms must be safeguarded through the use of absorbent materials, particularly in collaborative spaces.

The recommended maximum reverberation time which applies when designing collaborative spaces varies between 0.8 and 1.2 seconds (furnished rooms), depending on the volume and configuration of the rooms.

Acoustic comfort levels in large spaces (auditoriums, cafeterias, restaurants, etc.) must be analysed on the basis of an acoustic study.



Collaborative spaces:

As a general rule, appropriate reverberation time values can be achieved using floor and ceiling finishes with an absorption coefficient (α_w) of around 0.15.

In the case of ceilings with exposed concrete slab, suspended panels can be installed over 25% of the surface of the ceiling (corresponding to an absorption coefficient (α_w) of around 0.50 for the panels).

Pieces of furniture with absorbent surfaces can also be used to improve acoustic comfort levels in rooms.

Acoustic studies for large spaces:

Acoustic studies for large spaces may include analysis of the following:

- echoes (reference value between the arrival of incident sound and reflected sound below 0.02 seconds);
- reverberation (e.g. reverberation time of 1.2 seconds for auditoriums);
- specifically for auditoriums and large meeting rooms:
 - o sound distribution;
 - o acoustic optimisation measures must be carried out by determining the radiation pattern, attenuation and diffusivity of the sound and adapting/resizing the volume of the room, taking into account the required reverberation time.

4. VISUAL COMFORT

4.1. Natural lighting

Natural light is required for all permanent work stations and for restaurants.

As a general rule, preference should be given to the use of natural lighting; at least 80% of the surface area of offices should have a daylight factor (according to the International Commission on Illumination (CIE)) of 1.5% for façades without exterior obstructions, and 0.7% for other façades¹⁶.

See Section I.2.4. Electricity and lighting, paragraph 1 on the conditions which apply to artificial lighting.


4.2. Solar radiation and glare

¹⁶ In accordance with the European Union's Green Public Procurement (GPP) Criteria for Office Building Design, Construction and Management:
http://ec.europa.eu/environment/gpp/eu_gpp_criteria_en.htm

Measures must be taken to prevent glare and solar radiation, in particular through the use of solar protection systems selected and adapted according to the orientation of the rooms and dimming requirements.

Solar protection systems must be approved in advance by the Commission, and must be easily accessible, robust and easy to maintain.

See Section I.2.4. Electricity and lighting, paragraph 1 on the control of glare from artificial lighting.



Offices:

Offices and other areas where workstations are located must be fitted with internal blinds unless other solar glare protection systems have been installed (external shading, ability to control the amount of light transmitted through the glass, etc.) and there is no risk of direct exposure to solar radiation.


The blinds must be designed to comply with requirements to be supplied by the Commission. They should ideally have vertical slats.

Meeting rooms:

Meeting rooms lit by natural daylight must have adjustable solar protection systems or curtains which make it possible to shade the rooms adequately.

4.3. Visual contrast of interior surfaces

In order to ensure visual comfort and make it easy for building occupants to find their way around and use the premises safely, sufficiently contrasting colours must be used for signs indicating potential hazards.



The following light reflectance values are recommended for visual comfort (according to standard NBN EN 121464-1 Light and lighting of workplaces – Part 1: Indoor workplaces):

Surfaces	Light reflectance
Ceilings	70-90%
Walls and partitions	50-80%
Floors	20-40%

The brightest possible colours should be chosen for interior coverings in order to improve lighting efficiency.

In order to ensure an appropriate contrast between the various elements of the building, standard ISO 21542 (Building construction – Accessibility and usability of the built environment) sets out reference LRVs (light reflectance values¹⁷) for use at the design stage.

Visual task to be performed	Minimum recommended difference in LRV (light reflectance value)
- Perception of contrast between door leaf and handle	≥ 15 points
- Perception of contrast on doors and between large-scale areas (floors, walls, ceilings).	≥ 30 points

¹⁷ Light reflectance is expressed on a scale from 0 to 100; a value of 0 means pure black, and a value of 100 means pure white.


- Perception of features used for orientation (handrails, switches, signs indicating glazed surfaces)	
- Perception of signs indicating potential hazards and providing information.	≥ 60 points

5. HYGIENE

5.1. Prohibited materials and emission limits for volatile organic compounds

The requirements outlined below must be met in addition to the applicable legislation and standards.

An air quality (product with low emissions) certificate is recommended for materials used to manufacture floor coverings, partitions, false ceilings, paintwork, etc.

 At least the following (non-exhaustive list) must be checked in line with the European Union’s Green Public Procurement (GPP) Criteria :

Emission limits for VOCs (volatile organic compounds) and SVOCs (semi-volatile organic compounds):

- The technical specifications (key criteria) set out in the European Union’s Green Public Procurement (GPP) Criteria¹⁸ for timber-based panels as regards emission limits for formaldehyde and phenol.
- The technical specifications (key criteria) set out in the European Union’s Green Public Procurement (GPP) Criteria for Office Building Design, Construction and Management as regards emission limits for VOCs and formaldehydes in connection with completion and finishing products :

Product	Emission limit values (µg/m³)	
	3 days	28 days
TVOC ¹⁹	10 000	< 2 000
Formaldehyde	-	< 120 or emission class E1

5.2. Asbestos

The applicable legislation relating to the protection of workers against asbestos-related risks must be observed.

The materials used to construct buildings may not contain asbestos. The owner of the building must confirm this by providing the Commission with an ‘asbestos-free’ certificate for a new building and an ‘asbestos-safe’ certificate for a renovated building, as well as an up-to-date asbestos inventory.

¹⁸ European Union’s Green Public Procurement (GPP) Criteria for wall panels (Version 2016): http://ec.europa.eu/environment/gpp/eu_gpp_criteria_en.htm

¹⁹ TVOC: Total VOCs.

I.1.5. ENVIRONMENT

The Commission aims to ensure that all of the buildings it occupies are of a very high quality, in particular as regards environmental performance standards, in line with the guidelines set out in its buildings policy and its EMAS policy²⁰.

1. ENVIRONMENTAL ASSESSMENT

One of the Commission's top priorities is ensuring that an environmental assessment is carried out for all of its newly constructed or substantially renovated buildings²¹.

The building's entire life cycle (design, construction, maintenance, renovation, demolition) must be taken into account.

The assessment may be carried out within the framework of an environmental assessment system certified by an independent or public body.

2. ENERGY EFFICIENCY

The European Commission has set itself the goal of ensuring that the buildings it occupies meet the highest possible standards in terms of energy performance.

The minimum requirements of the applicable building energy performance regulations must be met.

Pursuant to Directive 2010/31/EU on the energy performance of buildings and Directive 2012/27/EU on energy efficiency, the Commission pursues the goal of constructing buildings with nearly zero energy consumption (nearly zero-energy building or NZEB) by 2019.

In the event that buildings which do not comply with NZEB performance standards are constructed or renovated, a feasibility study (with the minimum scope required by the applicable building energy performance legislation) must be carried out in order to plan future measures, in particular as regards the introduction of systems using renewable energies.

Zero-emission or low-emission sources of alternative energy must be used if they are available on site and cost-effective²².

See also the requirements relating to the energy efficiency of installations in Section I.2. Specialised technical services.

3. SUSTAINABLE USE OF NATURAL RESOURCES

3.1. Choice of materials and life-cycle analysis

The environmental impact throughout the building's life cycle, including the impact of the materials used, must be assessed on the basis of the nature of the works, the scale of the project and the complexity of the public procurement procedure, based on the following options²³:

²⁰ Regulation (EC) No 1221/2009 of the European Parliament and of the Council of 25 November 2009 on the voluntary participation by organisations in a Community eco-management and audit scheme (EMAS) and Regulation (EU) 2017/1505 of the Commission of 28 August 2017 amending Annexes I, II and III to Regulation (EC) 1221/2009.

²¹ Newly constructed or substantially renovated buildings which form the subject of a public procurement procedure.

²² In accordance with the European Union's Green Public Procurement (GPP) Criteria for Office Building Design, Construction and Management:
http://ec.europa.eu/environment/gpp/eu_gpp_criteria_en.htm

- a) a global life-cycle analysis (LCA²⁴) at building level, in accordance with Annex I to the European Union's Green Public Procurement (GPP) Criteria for Office Building Design, Construction and Management²⁵;
- b) a life-cycle analysis at product level on the basis of environmental product declarations (EPD)²⁶, in accordance with Annex I to the European Union's Green Public Procurement (GPP) Criteria for Office Building Design, Construction and Management²⁷;
- c) requirements which apply to construction products, prioritising (where applicable) the aspects referred to below and taking into account the need to develop a circular economy:
 - products with an environmental label certified by an independent third party (type I within the meaning of standards NBN EN ISO 14024 and NBN EN ISO 14020 on environmental labels and declarations), a European Ecolabel or equivalent;
 - products with a high percentage by weight of recycled products²⁸ or reused products;
 - an option to recycle the product (the availability of recycling facilities must be proven);
 - reduced CO₂ emissions associated with the transport of heavy construction materials, in particular as regards the transport of granulates used for the manufacture of concrete and masonry.

3.2. Waste management during works

During construction or major renovation works²⁹, the generation of waste must be minimised as far as possible on the basis of a waste management plan.

A high percentage of the non-hazardous waste generated during renovation, demolition or renovation works must be reused or recycled³⁰.

3.3. Waste management, reuse and recycling during occupation

There must be clearly indicated areas in buildings for the collection and storage in bin rooms of recyclable materials (batteries, cardboard, cartridges, solvents, glass, metal, paper, food packaging, etc.); these areas must be included in the relevant safety planning processes.³¹ These collection points should not obstruct passageways.

3.4. Timber

²³ In accordance with the European Union's Green Public Procurement (GPP) Criteria for Office Building Design, Construction and Management:

http://ec.europa.eu/environment/gpp/eu_gpp_criteria_en.htm.

²⁴ Life-cycle analysis (LCA).

²⁵ Only possible for ambitious projects with a description and a price schedule (project implementation phase) during the contract award stage, depending on the availability of the data.

²⁶ Environmental product declaration (EPD).

²⁷ Only possible for ambitious projects with a description and a price schedule (project implementation phase) during the contract award stage, depending on the availability of the data.

²⁸ Particularly in the event that concrete or masonry structures are built, recycling percentages above or equal to 15% or 30% are recommended, provided that compliance with the regulatory limits and the requirements for quality labels for certain applications is guaranteed.

²⁹ In the event that the works form the basis for a public procurement procedure initiated by the Commission.

³⁰ For reference, the European Union's Green Public Procurement (GPP) Criteria for Office Building Design, Construction and Management stipulate a minimum inert waste recycling rate of 55%.

http://ec.europa.eu/environment/gpp/eu_gpp_criteria_en.htm.

³¹ In accordance with the European Union's Green Public Procurement (GPP) Criteria for Office Building Design, Construction and Management:

http://ec.europa.eu/environment/gpp/eu_gpp_criteria_en.htm

I.1.6. STRUCTURAL ELEMENTS AND FINISHES

All timber used must have been harvested lawfully in accordance with Regulation (EU) 995/2010 of the European Parliament and of the Council of 20 October 2010 laying down the obligations of operators who place timber and timber products on the market³².

Timber must originate from certified sustainable plantations, as proven for example by means of the labels PEFC (Programme for the Endorsement of Forest Certification), FSC (Forest Stewardship Council) or equivalent.

4. BIODIVERSITY

In order to maximise biodiversity and ecosystem conservation opportunities, compliance with the applicable legislation must be guaranteed and priority must be given to areas which can be eco-managed (in-ground planting, areas of permeable soil, ‘wetland’ areas, green roofs or walls, edible crops, etc.) on the plot occupied by the building.

The design and diversity of the building’s green roofs and walls must improve the quality of the urban experience by prioritising the use of indigenous varieties.

In order to reduce the need for irrigation, the use of varieties requiring regular watering should be minimised.

I.1.6. STRUCTURAL ELEMENTS AND FINISHES

This section outlines the specific requirements which apply to structural elements and finishes in addition to the requirements set out in the preceding sections of Section I.1. Architecture and design.

1. FAÇADES, ROOFS, FRAMES AND GLAZING

All the walls of the exterior shell must be covered by a hygrometric study taking account of the expected interior climate and the characteristics of the various materials that might be included in the composition of the walls. This composition must be adjusted in light of the findings of the study in order to avoid any condensation and associated damage in the rooms.

The class of vapour barrier is to be determined either by calculation or on the basis of the recommendations listed in standards NIT 240 and 195 of the Belgian Scientific and Technical Construction Centre, having regard to transitory weather extremes and the thermal and hydrological inertia of the roofing materials

Exterior joinery and glazing must comply with the requirements set out in standard NBN B 25-002-1 Exterior joinery – Part 1: General provisions and standard NBN S 23-002 Glazing, NBN S 23-002-2 Calculation of glass thicknesses and NBN S 23-002-3 Calculation of glass thicknesses in façades.

In new structures (built by the Commission), the frames and glazing must be BENOR/ATG-certified (issued by the Belgian Union for Technical Approval in the Construction Industry) or a European equivalent.

³² In accordance with the European Union’s Green Public Procurement (GPP) Criteria for Office Building Design, Construction and Management:
http://ec.europa.eu/environment/gpp/eu_gpp_criteria_en.htm

2. DOORS IN OFFICE AREAS

The doors must comply with the recommendations set out in STS 53.1 Doors – Unified technical specifications.

For accessibility conditions, see Section I.1.1. Functionality, paragraph 5.3.1. Horizontal circulation.



The main features of office doors are as follows:

- width: minimum 93 cm (clearance of 85 cm);
- height: minimum 201.5 cm;
- the number and type of hinges must make it possible to guarantee at least a mechanical class of M2 and a usage frequency class of f5, in accordance with STS 53.1;
- door furniture made from brushed stainless steel;
- reversible mortise locks;
- handles: see Chapter I.1.1. Functionality, paragraph 5.3.1. Horizontal circulation;
- accessories: door stops and draught excluders.

3. RAISED FLOORING

Raised flooring must be installed in office areas and similar in order to increase flexibility of use and facilitate the routing of electrical and telecommunications networks.

Raised flooring must also be installed in certain specific rooms (see Section I.3.2. Specialised rooms).

4. FALSE CEILINGS

Office areas should ideally have false ceilings or panels to improve their acoustics (see Chapter I.1.4. Occupational well-being, paragraph 3. Acoustic comfort), and potentially to conceal ducts and pipes.

Any false ceilings which are present must be easy to dismantle and sturdy enough that the equipment integrated into them can be modified and maintained without causing any kind of damage. It must also be easy to keep them clean.

5. LOCKS

5.1. Internal doors within the building

Doors (including doors of shafts, hatches which provide access to ducts, etc.) must be fitted with cylinder locks, in line with the requirements and an access requirements diagram to be supplied by the Commission.



Unprotected cylinders with duplicable keys:

As a general rule, doors must be fitted with unprotected cylinders with at least five pins, with duplicable keys and a European profile type.

Blank cylinders may also be requested, depending on requirements.

The elements to be protected and access levels will be stipulated by the Commission. The following is a general organisational outline for reference purposes:

- one general master key,
- office master key,
 - o different versions for all offices, where applicable,
 - o different versions for all archives,
 - o one version for 'cleaning' rooms,
 - o one version for stairwells.
- plant room master key:
 - o one version for electricity/high voltage,
 - o one version for telecommunications,
 - o one version for lifts,
 - o one version for HVAC, electricity/low voltage.
- kitchen/cafeteria master key:
 - o different versions for all rooms.
- conference room master key:
 - o different versions for all rooms (where necessary).

Each cylinder should have five keys, and ten examples of each key should be supplied.

Access doors to emergency staircases with locks must have a blank cylinder in order to ensure that they act as fire barriers.

Protected cylinders with non-duplicable keys:

It may be possible for certain installations which are closed off using internal doors (to be specified by the Commission) to be fitted with protected cylinders with non-duplicable keys.

In such cases the supplier must supply a certificate from the factory which certifies the non-duplicability of the keys on the basis of an international patent.

5.2. External doors of the building

External doors must be fitted with cylinders with reversible keys (that can be inserted from both directions) in accordance with the requirements and the access requirements chart to be provided by the Commission and in accordance with standard NBN EN 1303 Building hardware – Cylinders for locks – Requirements and testing methods.



The cylinders of external doors must comply with property safety class 4 and drilling resistance class 1 in accordance with NBN EN 1303.

The cylinders of anti-intrusion doors (class RC4) must comply with property safety class 6 and drilling resistance class 2 in accordance with NBN EN 1303.

A 10-year warranty must apply against manufacturing defects or operating faults.

For protected cylinders with non-duplicable keys, the supplier must supply a certificate from the factory which certifies the non-duplicability of the keys for a minimum period of 15 years on the basis of an international patent.

5.3. Locks

Cylinder locks must be of a reversible mortise type, in accordance with standard NBN EN 12209 Building hardware – Locks and latches – Mechanically operated locks, latches and locking plates – Requirements and testing methods.



The locks must comply at least with usage class 3 in accordance with NBN EN 12209.

All the locks must have the same dimensions in terms of casing, faceplate, keyway and length from end to end, so that they can be interchanged without the leaf of the door being altered.

They must allow roses or backplates to be installed.

5.4. Locks on cupboard doors

Locks on cupboard doors must have duplicable master keys.



Three keys should be supplied with each lock, together with three master keys. The locks and their respective keys must have identical numbers.

5.5. Door closers



Door closers:

Door closers must comply with usage class 4 (closure possible at 180°) and have an adjustable closing force (at least class 3 for doors with a width of 93 cm and class 4 for doors with a width of 103 cm).

Access doors:

Access doors should be fitted with a device allowing them to be automatically blocked open at a 90° angle if necessary.

6. COVERING MATERIALS

The prescribed floor coverings and the relevant installation requirements are those recommended in the technical information notes [Notes d'information technique, NIT] of the Belgian Scientific and Technical Construction Centre, the technical specifications [spécifications techniques, STS] published by the Construction Specifications and Approval Service (Federal Public Service Economy), manufacturers' requirements, the state of the art and best practice.

Maintenance and management

Covering materials must be stable and resistant to wear and impacts, depending on the planned intensity of use.

Cleaning procedures must be straightforward and effective.

6.1. Floor coverings

Flooring types must be appropriate to the purpose of the rooms where they are installed.

I.1.6. STRUCTURAL ELEMENTS AND FINISHES

Room	Flooring type	Minimum performance level ³³
Offices and similar	Carpets, smooth floor coverings, etc.	Usage class ³⁴ : 33 (heavy commercial) or UPEC classification ³⁵ : U3 P3 E1 C0
Rooms for a specific purpose (archives, entrance halls, kitchens, kitchenettes, toilets/washrooms, computer rooms)	Flexible coverings: rubber, linoleum, cork, etc.	According to requirements: Usage class: 33 (heavy commercial), 41 or 42 (light or general industrial) or UPEC classification: U3 P3 E1 C1 (entrance halls, cafeterias), U3 P2 E2 C1 (toilets/washrooms), U4 P4 E3 C2 (restaurant kitchens, etc.).
	Hard coverings: concrete screed (treated or untreated), parquet (solid wood or layered), ceramic tiles, natural stone, epoxy resin, etc.	

See also Section I.1.3. Occupational safety, paragraph 2.1. Risk of slip and fall accidents.



Hygiene:

Concrete screeds and concrete stairs which are exposed must be protected with an anti-dust treatment.

The flooring in entrance halls and other areas which are traversed to access the exterior of the building must feature mats which are fixed in place, which are non-slip when wet, and which present no obstacles to wheelchair users.

Carpets:

Carpets must comply with standard NBN EN 14041 Resilient, textile and laminate floor coverings – Essential characteristics (CE marking) and have the following technical characteristics:

Characteristics	Standards	Carpet type
		Looped
Composition and dye	-	Spun-dyed polyamide
Total weight of pile	ISO 8543	Min. 325 g/m ²
Minimum flame resistance	EN 13501-1	B _{FL} -s1 (or in accordance with the applicable legislation)
Anti-static behaviour	EN 1815, ISO 6356	≤ 2 kV(anti-static)
Use	EN 1307	33 (heavy commercial use)
Acoustic insulation (impact)	ISO 717-2, ISO 10140	ΔL _w ≥ 24 dB
Sound absorption coefficient	ISO 354 ISO 11654	α _w ≥ 0.15

Floor coverings must be glued across their entire under-surface using a contact adhesive that does not leave residues upon removal (in order to facilitate recycling) and that has been certified by the carpet manufacturer.

³³ Equivalent classification systems can be used.

³⁴ In accordance with standards EN ISO 10874 Resilient, textile and laminate floor coverings – Classification and EN 1307 Textile floor coverings – Usage classification of pile carpets.

³⁵ UPEC classification of rooms by the Belgian Scientific and Technical Construction Centre.

I.1.6. STRUCTURAL ELEMENTS AND FINISHES

The entrance mats for areas which are traversed to access the exterior of the building must meet the following requirements:

- a) ideally rigid (made from rubber or metal profiles);
- b) made from cut-pile carpet which has the characteristics stipulated in the table below, but which has a total pile weight of at least 750 gr/m² and which presents no obstacles to wheelchair users.

Linoleum floor coverings:

Linoleum floor coverings must comply with the following technical characteristics:

Characteristics	Standards	Minimum performance requirements
Usage class	EN ISO 10874, EN ISO 24011	33 Heavy commercial use or 41 Light industrial
Minimum flame resistance	EN 13501-1	B _{FL} -s1 or in accordance with the applicable legislation
Overall thickness	EN 428	≥ 2.5 mm
Residual indentation	EN 433	<0.15 mm
Indentation resistance	VDE 0100/T.610	≥ 50 kΩ
Electrostatic charge limit	EN 1815, ISO 6356	≤ 2.0 kV (anti-static)
Resistance to wheeled chairs	EN 425	Yes
Resistance to chemicals	EN 423	Yes

Non-enamelled, pressed earthenware tiles:

The tiles and their placement must comply with the recommendations set out in NIT 237 Ceramic tile coverings of internal floors.

The following requirements must be observed:

- absorption class I (≤ 3%) in accordance with NBN EN 14411;
- as an alternative to the UPEC classification, the usage classification as set out in standard NBN B27-011 can also be adopted:
 - o resistance to compression: class 3,
 - o resistance to wear: class 4 or 5, tests NBN B 15-223,
 - o resistance to shocks: class 3,
 - o chemical resistance: class 2.

Tiles must be fixed to a hardened screed surface using adhesive. Joints must be filled using a grouting cement that is compatible with the laying adhesive.

In the event that adhesive mortar is used, it must be of at least improved type C2 (NBN EN 12004).

Solid wood parquet:

Wooden floors and their installation must comply with the recommendations set out in NIT 218 Wooden floor coverings: floorboards, parquet and engineered floor coverings, and must have the following technical characteristics:

I.1.6. STRUCTURAL ELEMENTS AND FINISHES

Characteristics	Standards	Minimum performance requirements
Manufacture	EN 13226	Wood flooring – solid parquet elements with tongues and/or grooves
Minimum flame resistance	EN 13501-1	B _{FL-S1} or in accordance with the applicable legislation
Overall thickness		≥ 14 mm
Usage classification	EN ISO 10874, UPEC of the Belgian Scientific and Technical Construction Centre	33 (EN ISO 10874) U3 P3 E1 C0 (UPEC)
Eco-certified timber	FSC or PEFC or equivalent	Timber certified in line with the FSC or PEFC labels or equivalent
Resistance to wheeled chairs	EN 425	Yes
Prohibited materials	EN 14342	Formaldehyde emission class: E1 and pentachlorophenol content (PCP) < 5 ppm

Multi-layer wood parquet:

Wooden floors and their installation must comply with the recommendations set out in NIT 218 Wooden floor coverings: floorboards, parquet and engineered floor coverings, and must have the following technical characteristics:

Characteristics	Standards	Minimum performance requirements
Manufacture	EN 13489	Wood flooring – multi-layer laminated parquet elements
Wear layer		≥ 2.5 mm of wood
Minimum flame resistance	EN 13501-1	B _{FL-S1} or in accordance with the applicable legislation
Usage classification	EN ISO 10874, UPEC of the Belgian Scientific and Technical Construction Centre	33 (EN ISO 10874) U3 P3 E1 C0 (UPEC)
Eco-certified timber	FSC or PEFC or equivalent	Timber certified in line with the FSC or PEFC labels or equivalent
Prohibited materials	EN 14041	Formaldehyde emission class: E1 and pentachlorophenol content (PCP) < 5 ppm

6.2. Wall coverings



Coatings:

Coatings must be chosen on the basis of their intended purpose in line with the recommendations set out in NIT 199 (interior coatings, with at least a standard finishing class), NIT 201 (interior coatings – execution), NIT 209 (exterior coatings), NIT 227 and in addition with standards NBN EN 13914-1 (exterior coatings) and NBN EN 13914-2 (interior coatings).

Fibre glass fabric + paintwork:

Consideration must be given to the recommendations set out in NIT 194 Code of best practice for the installation of flexible wall coverings.

Fabric on duffle:

Consideration must be given to the recommendations set out in NIT 194 Code of best practice for the installation of flexible wall coverings.

Ceramic wall tiles:

Tiles and their installation must comply with the recommendations set out in NIT 227 Wall tiles, depending on the use of the room where they are installed (normal finish).

The tiles must meet at least the shock resistance requirements for Class II in accordance with NBN B27-011 and comply with water exposure class E_B (toilets/washrooms) or E_E for restaurant kitchens³⁶.

Tiles must be laid using adhesive or adhesive mortar in accordance with the manufacturer's requirements and pushed into the adhesive before it dries using a slight twisting movement.

Joints must be filled using a grouting cement that is compatible with the laying adhesive.

The specifications of the adhesives or adhesive mortars must comply with the recommendations set out in NIT 227 on the basis of standard NBN EN 12004 Adhesives for tiles – Requirements, evaluation of conformity, classification and designation (CE marking) or with the tile manufacturer's requirements.

6.3. Paints



Painting, varnishing and staining products and systems and their application must comply with the recommendations set out in NIT 249 – Best practice for the execution of painting works (standard level of finish for substrates and execution level II – standard finish for paintwork).

Paints used for interior paintwork must be odourless and washable, ideally water based.

Unless otherwise required, for a duly justified reason, all paint should have a matt finish.

Food-grade paints:

The paint used in kitchens and cafeterias must be food grade and resistant to soiling, mould, bacteria and stains.

7. ACCESSORIES

Coat hooks or other facilities for hanging clothing must be installed close to workstations in offices or elsewhere.

³⁶ For kitchens, NIT 227 Wall tiles recommends the following:


- Ceramic tiles: AI / BI
- Installation product: R (reactive adhesive) / C2 (improved adhesive mortar).
- Grouting product: RG (resin-based).

I.1.7. INFORMATION AND SIGNAGE

The requirements outlined below must be met in addition to the applicable legislation and standards.

1. GENERAL INFORMATION AND SIGNAGE

The general information and signage system must make it easy to find the various rooms and installations in the building and must comply with the requirements to be supplied by the Commission.

 At least the following signs must be installed:
Positioning of signs:

General signs	
Exterior access route and surroundings of the building	- Clearly visible and contrasting sign with the street number of the building - Arrows indicating the building's main entrance, where necessary - The services housed in the building
Cafeterias, restaurants and other staff welfare rooms	- Pictogram on doors - Pictogram suspended perpendicular to the flow of circulation, where necessary
Toilets	- M/F pictograms on doors - M/F pictograms suspended perpendicular to the flow of circulation
Changing rooms, showers, rest rooms, kitchenettes	- Pictogram on doors
Meeting rooms, video conferencing rooms, training rooms, etc.	- Pictograms on doors with the room number - Room numbers and directional arrows from the lift lobbies
Quiet rooms, etc.	- Pictogram on doors + 'Occupied/Vacant' sign
Offices and collaborative spaces	Name plates ³⁷ or a system for labelling individual workstations or modular spaces
Plant rooms, archives, utility sinks, etc.	- Pictogram on doors
Passenger lifts	- Pictogram + arrow in the corridors used to access the lift lobby, suspended perpendicular to the flow of circulation
Fire-fighting and evacuation lifts	- Pictogram in the lobby on the evacuation level, next to the lift and in the lift car
Goods lifts	- Pictogram in the lobby on the evacuation level (access control), next to the lift
Lift landings and cars	- Numbering of all lifts at the evacuation level, on the landings and in the lift cars (see Section I.2.6. Lifts and escalators)

Other directional pictograms for these rooms may be required as orientation for staff and/or visitors.

³⁷ The individual name plate must contain at least the name(s) of the occupant(s) and the number of the room.

General signs should ideally use pictograms which comply with standard ISO 7001.

If the use of text is unavoidable and it is impossible to include translations of the text into all the official languages of the European Union, the text should be bilingual unless otherwise stipulated:

- outside the building, in French and in Dutch,
- inside the building:
 - o in French and English if the message is addressed to the building's occupants,
 - o in French and Dutch if the message is addressed mainly to the maintenance staff.

Care should be taken to avoid using the same colours, shapes or logos as are used for safety signs.

2. SAFETY SIGNS

2.1. Signage of evacuation routes

Signs for escape routes, exits and emergency exits must be approved by the Internal Service for Prevention and Protection at Work (part of the Office for Infrastructure and Logistics).



The signs must include at least:

Signage of evacuation routes	
Stairwells	Numbering of levels ³⁸ : - next to the emergency exit pictogram above the door - on the landings, visible with the doors open
Lift landings	- numbering of levels on the landings
Telephone recess in the lift car	- emergency call sticker (2 22 22) on the external face of the recess door, supplied by the Commission - plate indicating the emergency number (2 22 22) and the number of the car on the internal face of the recess door
Priority fire-fighting and evacuation lifts	- on the evacuation level, the appropriate pictograms (approved by the Commission's Internal Service for Prevention and Protection at Work) to the right of the key switches located on the landing.
Emergency telephones	- emergency call sticker (2 22 22), supplied by the Commission

Door colours:

In the case of doors or emergency exits which open on to an escape route or emergency stairway (including in kitchens), the side of the door facing those evacuating the premises must be painted green (RAL 6032)³⁹. The other side of the door and all other doors must be painted

³⁸ In the event that there is more than one evacuation level, the following recommendations should be followed:

- level 0 should be the lowest level with direct access to the street;
- all levels of the building should be numbered from this reference level, including the other evacuation levels;
- the number 0 should not be used for a level below the level stipulated above.

³⁹ In the event that a double set of doors opens on to a stairwell, the side of each of the two doors which faces those evacuating the premises must be painted green.

in another colour (any colour apart from the prohibited colours: green, red, black and dark blue).

2.2. Evacuation plan

Evacuation plans containing information on how staff should behave in the event of a fire must be displayed in the building.

Evacuation plans must comply with the formal and substantive requirements to be supplied by the Commission's Internal Service for Prevention and Protection at Work (part of the Office for Infrastructure and Logistics).



Evacuation plans must be supplied in AutoCAD or dxf format and in PDF format.

2.3. Signs alerting to risks of impacts and falls

2.3.1. Signs alerting to obstacles and hazardous areas



Signs must be provided alerting car park users to the following obstacles in particular:

- the edges of interior pavements, steps, platforms and protruding features at floor level;
- horizontal obstacles located at a height of less than 2.0 m (beams, ducts, cable passageways, etc.);
- objects in which a user might become trapped (gutters, gratings, gullies, platform edges, etc.).

Pillars and walls in car parks:

To prevent accidental collisions when vehicles are manoeuvred, a yellow stripe about 40 cm wide must be painted on walls and pillars; the top of the stripe must be approximately 1.5 m above ground level. This stripe must be applied to every visible surface of the pillars.

To make these stripes more prominent, the rest of the wall and pillar surfaces may be painted in white or in other bright colours depending on the requirements to be supplied by the Commission.

2.3.2. Signs on picture windows and glass doors



The signs on picture windows and glass doors required in accordance with the applicable legislation must be in a contrasting colour and cover at least two strips of around 7 cm in width with a height of 85-100 cm and 140-160 cm respectively⁴⁰.

3. SIGNS IN CAR PARKS

The signs used for the entrances and exits of car parks must comply with the applicable legislation and standards.

⁴⁰ Design guidance for accessible buildings by the Wallonia-Brussels Accessibility Collective [Collectif Accessibilité Wallonie-Bruxelles, CAWaB]

4. ACCESSIBILITY OF INFORMATION AND SIGNS FOR PERSONS WITH DISABILITIES

Information and signs for persons with disabilities must comply with the requirements to be supplied by the Commission in addition to the applicable legislation and standards.



At least the following requirements must be met:

Visual and tactile signs (for persons of reduced mobility and blind and partially sighted persons):

Accessible elements	Signage
Communication routes within the building which are accessible for persons with reduced mobility	- ISA ⁴¹ + arrows and text, where necessary. - If necessary, supplemented by pictograms and/or guiding lines in buildings which are accessible to the public, conference centres, etc.
Car parks which are accessible for persons with reduced mobility	- Labelling of areas for persons with reduced mobility using ISA pictograms + arrows from the entrance, if necessary.
Location of lifts for persons with reduced mobility	- Location of lift accessible for persons with reduced mobility, indicated using a pictogram. ISA + lift pictogram + arrows.
Adapted toilets	- Location from lift lobbies: ISA pictogram + pictogram for toilets M/F + arrows. - Ideally, colour-contrasting M/F pictograms relief-mounted to the right of the door, at a height of 0.80-1.10 m, in buildings which are accessible to the public, conference centres, etc.
Automatically opening door	- Sign indicating that the door is automatic. Automatically opening swinging door: - Sign indicating the direction of opening on the side which opens towards the user.
Refuge area	- Identified using an ISA pictogram. - Labelled using signs with arrows in the direction of evacuation + ISA.

Tactile guide paths (for partially sighted and blind persons):

Elements	Tactile guidance
Exterior access route and surroundings of the building	- Guidance along the entire access route, with tactile slabs and directional indicators up to the entrance door.
Main hall	- Signs with directional guidance from the entrance door up to the building's reception/access control and the lift which is accessible for persons with reduced mobility (fitted with a voice synthesiser).
Automatically opening swinging	- Ideally on the side opening towards the user,

⁴¹ International Symbol of Accessibility.

I.2.1. REMOTE MANAGEMENT

door	tactile strip with dots at the end of the area within which the door swings.
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Tactile guide paths must be executed using elements or tiles (using nails or adhesive, or integrated into the floor covering) in line with the following guidelines:

Type of element or tile	Function
Grooved	Directional guidance
With bumps, dots, etc.	Tells the user to watch out for a hazard (step, obstacle, etc.) or a change of direction
Flexible covering (rubber tile, etc.) ⁴²	Access to information on the exterior of the building (information point, etc.).

The following reference documents can be used to identify tile requirements and arrangements:

- Pedestrian Facilities Manual of the Brussels Capital Region – Chapter 4 – Accessibility for pedestrians
- Standard ISO 21542 Building construction – Accessibility and usability of the built environment (Annex A)
- Design guidance for accessible buildings by the Wallonia-Brussels Accessibility Collective [Collectif Accessibilité Wallonie-Bruxelles, CAWaB]

Acoustic signals:

See Section I.2.7. Fire protection, paragraph 1. Fire detection, alerts and alarms (for audio alarm systems with back-up light signals) and Section I.2.6. Lifts and escalators, paragraph 1. Passenger lifts (for voice synthesisers).

I.2. SPECIALISED TECHNICAL SERVICES

I.2.1. REMOTE MANAGEMENT

The requirements outlined below must be met in addition to the applicable legislation and standards.

1. CENTRALISED MANAGEMENT SYSTEM

1.1. Purpose of remote management

A remote management or centralised technical management system must be put in place to manage the technical installations of buildings occupied by the Commission services in Brussels.

The Commission will define and approve the type of system and the equipment to be installed.

⁴² Flexible tiles intended to provide information must always be integrated into the floor covering because of their thickness. If this is not technically possible, they must be replaced with elements or tiles which alert the user to potential hazards (bumps or dots) which are installed on the floor using adhesive or nails.

The proposed solutions must take into account the latest technological developments available.

The system must be aimed at making it easier to manage the relevant installations, with a view to allowing the Commission's maintenance and technical services to:

- check at any time the operational status of the technical installations (comfort levels, alarms, consumption, temperatures, etc.);
- install technical systems (configuration of control setpoints, programming of times, etc.);
- control the energy used within the building in order to monitor and manage both electricity and gas consumption (by type of use) and water consumption;
- carry out maintenance operations easily (status reports, maintenance reminders, etc.).



System type:

The remote management system must be developed on the basis of an open system which complies with the requirements to be supplied by the Commission.

Design and defect warranty:

A single contractor must be responsible for designing the entire system, choosing the components, creating the visual interface and programming it.

1.2. Physical architecture

The Commission will stipulate the architecture, the necessary management sub-systems and their functionalities and performance levels according to requirements. It will also decide what information will be taken over from the management systems, and in what form, to be incorporated into one of the centralised technical management systems which already exist within the Commission.

The levels which apply are as follows, in accordance with standard NBN EN ISO 16484-2⁴³ :

- 1) Field devices: sensors, actuators, gauges, etc.
- 2) Control devices or local data collection and processing units (ULT, "unités locales d'acquisition et de traitement de données")
- 3) Management devices:

The system must incorporate two management levels (which may be grouped together in certain cases).

3.1) Technical management sub-system for the building (GT, "Sous-système de gestion technique")

There must be a single technical management system (GT) for the entire building (electricity, metering, electricity distribution, lighting, etc.) unless technically impossible.

⁴³ NBN EN ISO 16484-2 Building automation and control systems (BACS) – Part 2: Equipment

All controls must be centralised using a centralised technical management system (GTC) chosen by the Commission.

3.2) Centralised technical management system (GTC, “Gestion technique centralisée”)

The centralised technical management system must make it possible to pool and use information from the various technical management sub-systems.

The workstations for the centralised technical management system must be centralised in one or more of the Commission’s buildings.

Preference should be given to the physical system architecture with the fewest possible levels and the fewest possible management sub-systems.

At the level of control devices (ULT), the supplier must state how the solutions meet the technical and financial criteria (and how a balance has been achieved between the cost of cabling and the cost of equipment).

1.3. Communications system

Communication protocols must be selected on the basis of the different types of systems selected and must take account of the latest technological developments available.

1.4. Functionality

An exhaustive list of functionalities and points to be connected to the centralised technical management system (GTC) must be drawn up in line with the Commission’s requirements, the principles set out below and the specific technical specifications.

Accessibility for persons with reduced mobility

See Section I.1.1. Functionality, paragraph 5.4.3. Mechanisms.



Mechanisms and switches should ideally comply with the following requirements:

- as a general rule, mechanisms and switches must be located at a maximum height of 130 cm or, in the case of mechanisms which incorporate sensors, at the lowest possible height depending on technical requirements;
- they must be at least 50 cm distant from interior corners.

Maintenance and management

Accessibility for maintenance

The elements of the remote management system must be easily accessible for maintenance purposes.

Flexibility of use

Sensors and control devices for regulating installations which are specific to certain rooms must be easy to reconfigure in the event of changes in layout (control of HVAC terminal units, presence of light sensors and light switches, window opening detectors, electric blind controls ,etc.).



The capacity of the remote management system (down to the level of control devices) must be designed to accommodate the number of field devices (sensors, actuators, etc.) required for

configurations involving partitioned offices or collaborative spaces, in order to limit the number of adaptations needed.

In the event that modifications are made to the partitioning of office areas, the settings of HVAC terminal units must be changed through (software-based) reprogramming of the addresses for reference sensors and window contacts in offices.

Planned extension

It must be possible to increase (by at least 10%) the number of inputs and outputs, either by using new interface modules (centralised architecture) or through new local data collection and processing units (ULT) linked to a communication bus (if the latter is available).

At the level of the modules (input/output), extra capacity of at least 10% must be provided.

Protection against malicious acts (security)

The system must be protected against any misuse or mishandling by unauthorised persons:

- The system must feature a firewall and security systems which have been duly approved by the Commission so that the connection can be secured remotely.
- Access to programs and their functions must be limited according to the priority level of the operator and the workstation used by the operator.
- The system must also log all interventions and the persons performing these interventions (traceability). The list of operators must be approved by the Commission.

Operating safety

The failure of a local control system (ULT) or its connection to the centralised technical management system (GTC) must not interfere with the proper functioning of the centralised technical management system in relation to the other regulation systems. Each malfunction in a local data collection and processing unit must be immediately reported to the technical management system and the centralised technical management system. In the event that a local data collection and processing unit (ULT) malfunctions, the output points must switch to a safety mode.

The local ULT control systems must be able to function on a stand-alone basis and without any interruption if the technical management system or centralised technical management system (GTC) is down and communication with either of these systems fails.

It must be possible to override the control mechanisms manually and from the LPU. It must also be possible to move actuators (servo motors of taps, registers, etc.) manually.

Stand-alone power source

After a power cut the remote management system (local data collection and processing unit ULT, technical management system GT and centralised technical management system GTC) must automatically resume operation without any manual intervention. The technical management system and/or centralised technical management system must be run on a no-break power supply (uninterruptible power supply – UPS).

Fire detection and gas detection devices within the remote management system must be supplied with power from a stand-alone power source (battery or UPS).

All devices within the centralised technical management system (GTC) connected to electrical and HVAC installations for specialised rooms must be supplied with power from a stand-alone power source (battery, UPS or emergency unit).

Energy efficiency

Energy management system

The energy consumption management system must be designed in consultation with the Commission.

The remote management system must incorporate an energy management system for the building with the following features:

- Real-time data on energy consumption within the building. The interface must make it possible for building managers to analyse and visualise building-specific information concerning energy consumption and costs.
- Management and optimisation of control systems for building equipment and installations (HVAC, lighting, etc.) in order to guarantee user comfort while reducing energy consumption and costs (including consumption via sockets, temperature of water distribution circuits, HVAC reset periods, free cooling, lighting control systems, etc.),

More specifically:

- It must be possible to adjust the setpoint temperature by ± 1 °C using a local temperature control system for the heating and air conditioning terminal units. The centralised technical management system (GTC) must feature a remote-control function in order to allow actuation and optimised control of the terminal units and the resetting of any adjustments made locally by the building occupants.
- In order to save energy, the heating and cooling systems in a room must cease to operate whenever a window is opened, without affecting other rooms and while maintaining an adequate level of frost protection.

The system must also be capable of the following⁴⁴:

- analysing and monitoring energy consumption per use type (at least cooling, heating and lighting) and by functional zones, and analysing and monitoring the generation of renewable energy;
- optimising performance in terms of building occupation, room setpoints and environmental conditions inside and outside the building;
- analysing trends, comparing them with other buildings and identifying the cause of any deviations from the intended mode of operation;

the energy efficiency of the HVAC and lighting remote-control system should ideally be Class A according to standard NBN EN 15232⁴⁵.

Sustainable use of natural resources

Water management system

The remote-control system must incorporate a water management system with automatic meter reading and software for analysing consumption and detecting leaks (see Section I.2.5 Plumbing, paragraph 1. Drinking water system).



Local data collection and processing unit (ULT):

⁴⁴ In accordance with the European Union's Green Public Procurement (GPP) Criteria for Office Building Design, Construction and Management:

http://ec.europa.eu/environment/gpp/eu_gpp_criteria_en.htm

⁴⁵ NBN EN 15232 Energy performance of buildings – Impact of building automation, controls and building management.

It must be possible to configure or program regulators from one or more 'terminal unit controllers' via the bus. However, it must also be possible to program and download them from the technical management or centralised technical management system.

- All programs, parameters and other data required by the local data collection and processing unit (ULT) to carry out its tasks must be stored in internal memory. There must be an option to download and save the content of the local data collection and processing unit (ULT) memories on to a portable memory device.
- The input/output modules must be fitted with control and override switches, status LEDs and a potentiometer for regulating the analogue output signals. Any procedure affecting these modules carried out in override mode must be reported to the technical management (GT) and/or centralised technical management system (GTC). The override options must be selective and linked to the access level of the system.
- In the event of a malfunction in the local data collection and processing unit (ULT), it must be possible to switch to override mode, to return to the last known value or to return to the setpoint.
- 'Gas detection alarm' points must not be linked to an electrical switchboard installed in the same area as the boiler room.

Centralised technical management system (GTC):

The features and performance levels of the technical management and centralised technical management system must comply with the requirements to be supplied by the Commission, depending on the demands which exist in terms of information management, analysis and diagnostics, equipment control and regulation software, alert and alarm management, back-ups of historic data, etc.

All interactions with the system must be carried out via visual menus in order to guarantee that it can be used easily and conveniently.

Diagrams of the hydraulic, compressed air and electrical installations controlled by the system must be available.

When one point is put into override mode at local level (ULT) or at system level (technical management and/or centralised technical management system), this must be clearly indicated on the image or images on which the point is displayed (special text, different colour, etc.).

Addressing:

It must be possible to locate the point geographically and identify its function using a visual and alphanumeric identifier (Commission's address).

This method must be used to enable the addressing of 'software points' as well as points within the normal sense of the word. Software points are variables which are produced, appear or are defined in programs, such as logical combinations of digital points, arithmetical combinations of analogue points, results of calculation programs, etc.

Programming:

All user programs must be stored in the control and calculation unit.

All data required to adapt the system (technical management GT, centralised technical management system GTC and ULT's) to the installation in question must be stored in the command and control local unit. It must be possible to back them up in a portable memory system using a simple command.

The program must specify the day, month and year of the date. The switch from winter time to summer time and vice versa must be programmed.

1.5. Points to be connected

An exhaustive list of points to be connected to the centralised technical management system (GTC) must be provided in accordance with the Commission's requirements.

The three main criteria for connecting a point to the system are as follows:

- all points in installations affecting the safety of persons;
- the points in installations which maintain user comfort in buildings;
- the points needed to operate, use, maintain and protect technical installations and the building as a whole.



The following list includes the main points to be installed:

Fire detection:

- fire alarm
- evacuation alarm
- central unit malfunction alarm
- central unit override alarm

Carbon monoxide detection:

- carbon monoxide detection alerts (thresholds 1 and 2)
- carbon monoxide detection alert (threshold 3)
- central unit malfunction alarm

Methane gas detection:

- gas detection alert (threshold 1)
- gas detection alert (threshold 2)
- central unit malfunction alarm

High-voltage cabinet:

- transformer temperature alarm
- alarm for high temperature in the room
- main meter for day-rate and night-rate electricity, quarter-hourly kW loading

General low-voltage distribution board:

- low voltage alarm
- inverter status (generator set)
- status of the power supply circuit breakers to the sectoral boards (ideally)
- one control switch per sectoral board for lighting, in the event that a lighting control system connected to the centralised technical management system (GTC) is not provided

Generator set and security lighting:

- general alarm
- fuel level

No-break power supply:

- general alarm

Blower and extractor units:

- control switch of blower and extractor units
- humidifier control switch
- status of blower and extractor units
- air register status
- humidifier status, preferably
- temperature measurement (fresh air, dew point, airflow, intake, etc.)
- humidity of intake measurement
- measurement of filter pressure losses
- blower and extractor fire alarms, depending on flow rate of unit
- regulation of the different units (reheating, cooling, post-heating)
- frost alarm
- override alarm for each control switch (ideally)
- pumps, fans and electric motors in general:

- control switch
- local override (ideally)
- overheat or malfunction alarm

Window contacts:

- status

Terminal unit regulators:

- room temperature and valve status

Boilers:

- control switch
- status
- low flow rate alarm
- general alarm
- circulators: see pumps
- outgoing and return temperature measurement
- pressure measurement

Refrigerating systems:

- control switch
- status
- general alarm per refrigerator
- circulators: see pumps
- outgoing and return temperature measurement

- pressure measurement
- free-cooling status

Cooling columns:

- control switch
- status
- general or malfunction alarm
- circulators: see pumps
- outgoing and return temperature measurement

Drainage pumps:

- general or malfunction alarm

Compression pump:

- general or malfunction alarm
- pressure measurement

Water softener:

- general or malfunction alarm, where present
- circulator: see pumps

Sprinklers:

- malfunction alarm
- valve status alarm

Lifts and platform-lifts:

- general alarm for each lift/platform-lift
- push-button alarm in the lift cage/on the platform-lift

Escalators:

- general alarm

Kitchen refrigerators:

- low-voltage alarm for the circuit supplying the refrigerators
- temperature in each freezer or refrigerator

Meters (automatic reading) linked to the centralised technical management system (GTC):

- general meters for gas, electricity and water
- energy sub-meters as required by the applicable legislation on building energy performance
- sub-meters for the main outputs in line with the Commission's requirements:

- metering of water consumed by the main consumers: specific consumption of water associated with the kitchens, cafeterias, HVAC equipment, etc., separately from the office areas (including toilets/washrooms and kitchenettes) (see Section I.2.5. Plumbing)
- metering of electrical consumption via the main outputs: separate electrical meters for car parks, kitchens and cafeterias, offices, HVAC equipment and (ideally) lighting installations

- metering of renewable energy generated on site (co-generation, photovoltaic panels, etc.)

Sensitive rooms:

Computer rooms:

- relative humidity and ambient temperature sensor
- general alarm for air-conditioning cabinet

Main distribution frame room (LTG):

- ambient temperature sensor
- general alarm for air-conditioning cabinet

Cabling concentration room (LR):

- ambient temperature sensor

Static UPS:

- general alarm (UPS/units)
- local temperature of units
- local temperature of UPS

Central unit for the production of cold water for specialised rooms:

- control switch
- status
- general alarm per refrigerator
- circulators: see pumps
- outgoing and return temperature measurement
- pressure measurement
- free-cooling status
- temperature measurement of water at the input/output of the standby heat exchanger
- heat exchanger changeover valve status

Telephone switchboard (PABX):

- general PABX alarm

For other installations, the points to be connected to the centralised technical management system (GTC) must be identified in consultation with the Commission.

I.2.2. TELECOMMUNICATIONS

The requirements outlined below must be met in addition to the applicable legislation and standards.

1. CABLING INFRASTRUCTURE

The Commission will outline the principles to be followed and approve the topology, network equipment and location of the rooms required depending on needs.

The proposed solutions must take into account the latest technological developments available.

As a general rule, the infrastructure for IT and telephony installations must include:

- a main distribution frame room (LTG, “Local de Télécommunication Générale”);
- where applicable, a redundant secondary main distribution frame room (LTG’);
- cabling concentration rooms (LR, “Local de Reconfiguration”);
- shafts;
- cabletrays;
- housing for sockets (e.g. ducts, peripheral raceways, floor boxes, etc.).

Maintenance and management

Flexibility of use



The capacity available for telecommunications installations up to the racks in the cabling concentration rooms must be adequate for the maximum occupation when spaces are used as collaborative spaces, in order to minimise any adaptations required in the event that the space is reconfigured.

Planned extension

Extra space equivalent to at least 15% of the actual space required must be provided in the shafts, the cabletrays, the floor ducts and the connection panels.

Operating safety

Redundancy

The Commission will stipulate the necessary level of network redundancy depending on requirements (specific-use buildings, small buildings, non-strategic buildings, etc.):

- redundancy at the point where the connection from the Internet provider enters the building;
- redundancy at the level of the main distribution frame room LTG (in the form of a secondary main distribution frame room LTG’);
- redundancy at the level of the connection between the main distribution frame room LTG or the secondary LTG’ and the cabling concentration rooms LR (with two fibre-optic connections routed through different shafts).

Stand-alone power source

Telecommunications system equipment in main distribution frame rooms LTG, secondary main distribution frame rooms LTG and cabling concentration rooms LR, as well as their air-conditioning systems, must be supplied with power by different stand-alone power sources (see Section I.3.2. Specialised rooms).

1.1. Main distribution frame room and secondary main distribution frame room

For the layout of the main distribution frame rooms LTG and secondary main distribution frame rooms LTG’, see Section I.3.2. Specialised rooms, paragraph 2.

1.2. Cabling concentration room

For the layout of the cabling concentration room, see Section I.3.2. Specialised rooms, paragraph 3.



All incoming connection points on a given floor must originate from the same cabling concentration room. If this is not possible for reasons of distance or architecture (as a reference, no more than 90 m between sockets and the cabling concentration room LR), the whole building must be divided into wings, in which case all points on the same floor/wing must originate from the same cabling concentration room LR.

1.3. Shafts

Maintenance and management

Planned extension

A spare capacity of 15% must be provided.



The shafts must be located as close as possible to the cabling concentration rooms.

Dimensions:

The size of the shafts must be appropriate for the volume of the cables to be routed through them.

They must incorporate cable ladders which differ from those used for electricity; these cable ladders must be at least 50 cm wide.

The shafts must be at least 50 cm deep to comply with a minimum radius of curvature for the cabling to be run.

Layout

The shafts must have the following characteristics:

- Lighting
- Easy accessibility
- Compliance with fire compartmentalisation of ducts.

1.4. Cabletrays and in-ground ducts

These are used for:

- the junction between cabling concentration rooms LR and shafts;
- the junction between the main distribution frame room LTG or secondary main distribution frame room LTG' and the shafts;
- the junction between the main distribution frame room LTG or secondary main distribution frame room LTG' and cables entering the building from the outside;
- the junction between the cabling concentration room LR and the ring circuit or floor boxes.

Fire safety



Unless otherwise indicated by the Commission:

- in the event that there is no redundancy at the level of the connection between the main distribution frame room LTG or secondary main distribution frame room LTG' and the cabling concentration rooms LR, the cabling between the main distribution frame room LTG and the shafts must be routed outside rooms at risk of fire; otherwise, fire-resistant cables must be used (the circuit must have a fire resistance of at least one hour);

- if no plans exist for redundancy at the level of operator services, the connection between these services and the main distribution frame room LTG must be outside rooms at risk of fire; otherwise, fire-resistant cables must be used (the circuit must have a fire resistance of at least one hour).

Maintenance and management

Planned extension

It must be possible to route new cables through cabletrays and in-ground ducts.

Extra capacity of 15% must be provided.



At least 15 cm of free space must be provided between cabletrays and/or ceilings.

1.5. Peripheral raceways and floor boxes

Telecommunications sockets and electrical sockets must be installed in peripheral raceways or floor boxes.

See Section I.2.4. Electricity and lighting, paragraph 3.2. Electrical circuits.

1.6. Data and telephone sockets

The minimum number of sockets will be indicated by the Commission.



The minimum number of data sockets is indicated below:

Room	Data socket equipment
Partitioned offices	3 points per two façade modules in the event that an IP telephony and unified communications solution is used ⁴⁶ .
Collaborative spaces and similar (quiet rooms, meeting rooms)	1.5 points per workstation in the event that an IP telephony and unified communications solution is used ⁴⁷ .
Copy rooms	4 points in horizontal raceway
Archives	2 points per door in raceway on the switch side
Cafeterias and restaurants	At the counters: 4 points close to the cash register ⁴⁸ . 1 point per group of drink/snack dispensers
Restaurant and cafeteria kitchens	1 point for an emergency communication (telephone) system at a height of 1.30 m ⁴⁹ , outside the cooking areas
Sensitive rooms	Sensitive rooms (specialised main distribution frame LTG and cabling concentration rooms LR, secure zones, etc.) fitted with an access control system: 1 point for emergency communication (telephone) system at a height of 1.30 m within the room
Plant rooms	Access corridors to the various plant rooms: 1 point for emergency communication (telephone) system at a height of 1.30 m, depending on requirements
Roofs	Inside, close to the access doors to the roofs: 1 point for emergency communication (telephone) system at a height of 1.30 m
Refuge areas for persons with reduced mobility PRM (fire-fighting or emergency lift halls and landings for emergency stairs)	1 point for emergency communication (telephone) system at a height of 1.30 m
Toilets for PRM	1 point for emergency communication (telephone) system at a height of 1.30 m
Lifts	1 point for emergency communication (telephone) system in a recess + 1 point for remote alarm
Platforms for PRM	1 point for emergency communication (telephone) system at a height of 1.30 m
Rest and care rooms	1 point for emergency communication (telephone) system at a height of 1.30 m
Security guard's booths/car park	According to requirements, at least 5 points

Access points for Wi-Fi antennae must be provided on the basis of a specific assessment to be carried out by the Commission (DG DIGIT).

In other room types, the number and availability of the sockets must be determined on the basis of a specific assessment.

Socket type:

⁴⁶ Otherwise 2.5 points per façade module (distribution in peripheral raceway).

⁴⁷ Otherwise 2.5 points per potential workstation (distribution in peripheral raceway) or 5 points per floor box provided for 2 workstations.

⁴⁸ For an internal telephone, contractor telephone, cash register and electronic payment system.

⁴⁹ The height of 1.30 m for the emergency telephones must be measured from the top of the telephone.

All user-side connectors must be installed on a flat mosaic 45 frame (single/double type), fitted with a shutter.

The sockets must be female RJ45 type, FTP Cat 6a. They must be designed to connect any type of telephone and computer workstation.

Cabling type:

Cabling must be universal structured cabling, 100Ω F/FTP (or S/FTP) Cat 6a, which can support various types of telephone network (analogue, digital, ISDN) and IT networks (Ethernet, fast Ethernet, Gigabits Ethernet).

Distribution via floor boxes:

Extra space for data and electricity cables to the floor boxes (slack loop) must be provided in the raised flooring to allow the relocation of floor boxes within a radius of around 2 m.

Sockets for emergency telephones:

In the case of sockets for emergency telephones, an RJ45 socket must be connected at the end of the cable for reflectometry purposes and in order to disconnect this socket for connection to the wall plate supplied by the Commission. The contractor will be responsible for installing this wall plate.

Operating safety

Stand-alone power source

Emergency communication systems must be able to operate on a stand-alone basis for at least one hour.

1.7. Cabling

Cabling and the relevant installation solutions must comply with the applicable legislation, the performance requirements imposed by the Commission, the manufacturer's instructions, codes of best practice and the state of the art.

Account must be taken in the construction process of the latest technological developments available.

Maintenance and management

Cabling and sockets must be labelled in accordance with the requirements to be supplied by the Commission.

2. ACTIVE EQUIPMENT

The Commission will stipulate and approve the network topology and performance of telecommunication equipment installations according to requirements.

The proposed solutions must take into account the latest technological developments available.

As a general rule, the network topology should be as follows:

- All cabling to end users must be concentrated in patch panels installed in cabling concentration rooms LR.
- The cabling concentration rooms LR and (secondary) main distribution frame rooms LTG must be equipped with racks for fibre or FTP cables ('passive' racks) and racks for the installation of active equipment ('active' racks). The active racks must be interspersed between the passive racks in order to limit the distance between the live equipment and user connections.

- A fibre-optic backbone must be available from each cabling concentration room. This backbone must be made up of multimode and/or monomode fibres according to length requirements and will end in the (secondary) main distribution frame rooms (LTG and LTG’).

Operating safety

Redundancy

The Commission will stipulate the network redundancy required according to needs.

Stand-alone power source

Active equipment in the (secondary) main distribution frame room LTG(‘) and cabling concentration room LR and their air-conditioning systems must be supplied with power by stand-alone power sources using different currents (see Section I.3.2. Specialised rooms).

3. TELEPHONE NETWORK

The Commission will stipulate and approve the telephony network topology and the performance levels for equipment installations according to requirements.

The proposed solutions must take into account the latest technological developments available.

Operating safety

Stand-alone power source

Live equipment in the (secondary) main distribution frame rooms LTG(‘) and cabling concentration rooms LR must be supplied with power by a stand-alone power source (see Section I.3.2. Specialised rooms).



Installation type:

The telephony network must be executed on the basis of one of the following options, in accordance with the requirements to be supplied by the Commission:

- a) Traditional analogue telephone network.
- b) IP or unified communications telephony, with use of ‘softphones’ via the PC. A PABX or equivalent with battery back-up must always be installed for the emergency telephones.

4. CABLE TELEVISION

Installations must not exceed the network infrastructures based on the requirements to be specified by the Commission.



Remote deployment must be executed using one of the following options, in accordance with the requirements to be supplied by the Commission:

- a) traditional coaxial installation,
- b) deployment via data network.

Satellite dishes:

Satellite dishes will no longer be installed on the roofs of new buildings.

I.2.3. HEATING, VENTILATION AND AIR-CONDITIONING (HVAC)

The requirements outlined below must be met in addition to the applicable legislation and standards.

1. OCCUPATIONAL WELL-BEING OBJECTIVES

1.1. Hygrothermal comfort

The temperature, humidity and air speed conditions selected for rooms occupied by Commission employees must be maintained throughout the occupied areas of the building⁵⁰.

1.1.1. Areas which are permanently occupied

Air-conditioning systems must be designed on the basis of comfort category II⁵¹ in accordance with standard NBN EN 15251⁵². In particular, the following design conditions must be observed for office areas and similar:

- Maximum working temperatures⁵³ of 20 °C in winter and 26 °C in summer must be used as a basis for calculating the output of installations.
- The average air speed in occupied areas of the building must not exceed 0.16 m/s in winter (at a temperature of 20 °C) or 0.25 m/s in summer (at a temperature of 26 °C).


The working temperature ranges and acceptable air speeds for each comfort category are set out in the following table for reference purposes:

Comfort category (NBN EN 15251)	Acceptable working temperature range (°C)		Average air speed in occupied area (m/s)	
	Winter	Summer	Winter	Summer
I	21.0-23.0	23.5-25.5	0.10-0.12	0.12-0.14
II	20.0 -24.0	23.0- 26.0	0.16 -0.21	0.19- 0.25
III	19.0-25.0	22.0-27.0	0.21-0.30	0.24-0.37

These values apply to office-type and similar activities, meeting and conference rooms, auditoriums, etc.

The design values for relative humidity in office areas and similar must comply with the applicable legislation.

Adaptive comfort criteria based on the exterior temperature may be proposed in accordance with Annex A to standard NBN EN 15251, subject to approval by the Commission.



Design conditions:

For a stationary calculation, the following exterior conditions apply in Brussels:

⁵⁰ The occupied area defined in standard NBN EN 13779 is calculated as the entire floor surface with a usable height of 1.80 m, with the exception of a peripheral area of 0.15 m (0.5 m in the case of windows).

⁵¹ In accordance with the European Union’s Green Public Procurement (GPP) Criteria for Office Building Design, Construction and Management:

http://ec.europa.eu/environment/gpp/eu_gpp_criteria_en.htm

⁵² NBN EN 15251 Indoor environmental input parameters for design and assessment of energy performance of buildings addressing indoor air quality, thermal environment, lighting and acoustics.

⁵³ Working temperature is an indicator of thermal comfort, which takes into account the effect of the air temperature and the temperature of the surfaces in the room (standard NBN EN ISO 7730). In the majority of cases, the working temperature can be deemed to be equivalent to the air temperature (standard NBN EN 13779).

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- baseline exterior temperature in winter: - 8 °C, 90% relative humidity
- baseline exterior temperature in summer: + 30 °C, 50% relative humidity
- in any season: wind speed: 5 m/s

A standard meteorological year must be used as the basis for dynamic calculations.

The operating conditions during occupation of the building must comply with the applicable legislation.

1.1.2. Areas which are not permanently occupied

As a general rule, the minimum temperature of the ambient air in rooms which are not permanently occupied must be 14 °C in winter.

Specific conditions for the rooms listed below apply during times when the building is occupied:

- passageways, circulation within the building: ≥ 18 °C
- toilets: ≥ 18 °C
- kitchenettes: ≥ 18 °C
- showers and changing rooms: ≥ 22 °C
- file registries: ≥ 18 °C
- historical archives: according to assessment
- storage: ≥ 16 °C
- car parks: ≥ 5 °C (frost protection)
- atrium, piazza: ≥ 18 °C
- waste paper bin areas: ≥ 16 °C
- kitchen bin areas: ≤ 15 °C

For other rooms, see Section I.3. Specific zones.

1.2. Internal air quality

Air quality must be guaranteed by means of a mechanical ventilation system which supplies fresh air to the building.

Depending on individual circumstances, the air may need to be treated in order to improve user comfort.

1.2.1. Areas which are permanently occupied

The design value for fresh air flow rate in ventilation systems must comply with the applicable legislation.

Maximum occupation of the building must be estimated on the basis of the following table.

Areas designed for human occupation	Floor area per person ⁵⁴
Individual office	10 m ² per person
Shared office	8 m ² per person
Communal area	7 m ² per person
Meeting rooms	2 m ² per person

⁵⁴ In accordance with the Housing Conditions Manual for the Commission services.

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Restaurant and cafeteria	2 m ² per person, based on assessment
Entrance hall	1.5 m ² per person
Piazza/atrium	based on assessment

In the office areas, the design value for air flow rate must allow for maximum occupancy in terms of collaborative spaces (7 m²/person).

Functioning of the ventilation system in office areas and similar must be regulated by default on an hourly basis (Category IDA-C3 in accordance with standard NBN EN 13779). Additional presence detection features (IDA-C4) are recommended.

In the case of layouts involving collaborative spaces, a CO₂ sensor (IDA-C6) must also be installed for regulation purposes to supplement the baseline IDA-C3 monitoring.

Rooms which are occupied on an intermittent basis (meeting rooms, conference rooms, cafeterias, restaurants, etc.) must be regulated on the basis of a CO₂ sensor (IDA-C6) in addition to baseline IDA-C3 and IDA-C4 monitoring.

1.2.2. Areas which are not permanently occupied

The minimum flow rates stipulated below must be complied with in addition to the requirements set out in the applicable legislation and standards:

- entrance hall and entrance lobby: 2 m³/h/m²
- changing rooms⁵⁵: 1 renewal/hour
- kitchen bin area: 4 renewals/hour
- waste paper bin area: 2 renewals/hour
- archives and storage areas: 2 renewals/hour
- storage in the basement: 1 renewal/hour
- copy room: at least 2 renewals/hour, ideally 150 m³/h per room
- kitchenette: 100 m³/h per room
- ventilation of the car park must be programmable and regulated by the carbon monoxide detection system (see Section I.2.8, paragraph 2. Carbon monoxide detection and venting).

1.3. Acoustic comfort

The acoustic requirements to be met for the various room types are set out in Section I.1.4. Occupational well-being, paragraph 3. Acoustic comfort.

2. TREATMENT TYPE FOR ROOMS

Rooms must be fitted with the HVAC installations required to guarantee the appropriate levels of hygrothermal comfort and air quality.



Treatment type:

By default, the rooms listed below must be equipped with the specified installations (unless an alternative solution

⁵⁵ The return air used to ventilate shower cubicles may also come from transfer ventilation of the changing rooms attached to these shower cubicles.

can be justified on the basis of an assessment):

Air-conditioned⁵⁶ and ventilated rooms:

- offices and similar rooms,
- conference and meeting rooms,
- interpreting booths,
- restaurants (without humidification),
- cafeterias (without humidification),
- kitchens and dish-washing areas (without humidification).

Heated and ventilated rooms:

- entrance halls (without humidification),
- file registries (with humidification),
- historical archives (with humidification),
- storage areas,
- toilets and passageways on car park levels or in non-heated areas,
- showers and changing rooms,
- rest and care rooms,
- plant rooms (depending on requirements).

Rooms which are only ventilated:

- toilets and passageways (corridors, circulation, etc.) supplied with air transferred from the offices or heated rooms. A heating system must be provided for these rooms on car park levels or in non-heated areas,
- car parks,
- copy rooms,
- plant rooms (depending on requirements),
- high-voltage and low-voltage cabinets,
- grease traps (extraction).

Self-contained air conditioning system capable of running 24 hours a day

The following rooms must be equipped with a self-contained air-conditioning system capable of running 24 hours a day, even if the building's air-conditioning or heat and cold production installations are no longer operating:

- control centres (see Section I.3.1. Rooms for a specific purpose, paragraph 10. Rooms for maintenance services),
- main distribution frame rooms LTG and cabling concentration rooms LR (see Section I.3.2. Specialised rooms),
- kitchen bin areas.

Self-containing heating system capable of running 24 hours a day and ventilation system:

⁵⁶ The term 'air conditioning' refers to heating, cooling and humidity control according to requirements.

- welcome desks in an entrance hall and guard's booths (see Section I.3.1. Rooms for specific purposes, paragraph 8 Rooms for guards and/or receptionists).

3. PLANT ROOMS

Maintenance and management

Planned extension

Shafts must be designed with an area/volume reserve of 20% in order to allow the future installation of technical networks of pipes, air ducts, etc.

Operating safety

The design and construction of boiler rooms and rooms accommodating refrigerating installations must comply with the applicable legislation and standards.

Further details regarding cogeneration rooms can be found in Section I.2.4. Electricity and lighting, paragraph 6.3. Generator set room.

4. ENERGY GENERATION

Maintenance and management

Accessibility for maintenance

The components of HVAC installations must be accessible for maintenance.

Redundancy

Redundancy (partial or complete) of hot and cold production equipment must be agreed with the Commission in order to facilitate maintenance and repair operations without a shut-down of services.

Flexibility of use



Power generation capacity must be designed in such a way as to handle maximum occupation when spaces are used as collaborative spaces, with a view to minimising the adaptations necessary in the event that the areas are reconfigured.

4.1. Boilers

Energy efficiency

Energy efficiency of generators

Preference should be given to the use of natural gas condensing boilers and terminal units which operate at a low or very low hot water temperature (e.g. radiant ceilings or dynamic beams in the range 55-40 °C or 40-30 °C).

As a general rule, the minimum seasonal energy efficiency (η_s) of the boilers⁵⁷ must be at least 90%⁵⁸.

The minimum efficiency of natural gas condensing boilers must be 107% (for lower heating value) at a return temperature of 30 °C and 95% at temperatures of up to 70 °C.

⁵⁷ Except for solid biomass boilers.

⁵⁸ In line with the European Union's Green Public Procurement (GPP) Criteria for Water-based Heaters (Version 2014):

http://ec.europa.eu/environment/gpp/eu_gpp_criteria_en.htm

Regulation

Boilers must allow power modulation in order to adapt immediately to thermal requirements.

Sustainable use of natural resources

Polluting emissions

Gas boilers must have a low CO (carbon monoxide) and NO_x (nitrogen oxide) emission rate in line with the applicable legislation.

The limit value for greenhouse gas emissions from boilers is 220 g of CO₂ equivalent/kWh of thermal power⁵⁹.

4.2. Refrigerating systems and heat pumps

Operating safety

The safety class for refrigerant gases must be at least A2L or A1 in accordance with standard EN 378.

Energy efficiency

Energy efficiency of generators

Preference should be given to the use of high-performance refrigerating systems or pumps and terminal units which operate at a high cold-water temperature (e.g. cold ceilings, dynamic beams in the range 17-19 °C or fan coil units in the range 12-16 °C).

The performance of refrigerating systems or heat pumps must be at least equivalent to that indicated on the relevant European ecolabel⁶⁰ and should ideally comply with EUROVENT Energy Class A.

Regulation

It must be possible to regulate the power of refrigerating systems and heat pumps that have no energy storage reservoir from 10% to 100%.

Where applicable, the autonomous regulation of refrigerating systems or heat pumps must be integrated into the regulating function of the centralised technical management system.

Sustainable use of natural resources

Polluting emissions

The refrigerants used must have the lowest possible global warming potential (GWP) in order to reduce the greenhouse effect⁶¹ and an ozone depletion potential (ODP) of zero in order to avoid damaging the ozone layer.

⁵⁹ In line with the European Union's Green Public Procurement (GPP) Criteria for Water-based Heaters (Version 2014):

http://ec.europa.eu/environment/gpp/eu_gpp_criteria_en.htm

⁶⁰ In accordance with the Commission Decision of 9 November 2007 establishing the ecological criteria for the award of the Community eco-label to electrically driven, gas driven or gas absorption heat pumps, tested in accordance with standard EN 14511 :

Minimum output in cooling mode:

EER of 2.20 for electric air/water refrigerating systems and 3.20 for water/water refrigerating systems.

Minimum output in heating mode at low temperature:

COP of 3.10 for electric air/water refrigerating systems and 5.10 for water/water systems.

COP values corresponding to an input temperature of 30 °C and an output temperature of 35 °C.

⁶¹ In accordance with Regulation (EU) No 517/2014 on fluorinated greenhouse gases: GWP below 150 for refrigeration systems with a rated capacity of 40 kW or more (by 2022), GWP below 750 for systems containing less than 3 kg of gas (by 2025), etc.

A GWP below 10 is preferred in line with the BREEAM criteria (environmental assessment system).

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The limit value for greenhouse gas emissions from the heat pumps is 170 g of CO₂ equivalent/kWh of thermal power⁶².

Refrigerating systems for centralised installations must be fitted with a refrigerant leak detection system.



Cooling towers:

In the event that cooling towers are used, they must have a closed design.

An automatic biocidal dosing system must be installed within the water circuit in the cooling columns.

An automatic bleed off (blowdown) control system must also be installed.

A corrosion inhibitor dosing and automatic descaling system must be incorporated into the water supply.

4.3. Renewable energy

A building energy performance feasibility study must be carried out for new or substantially renovated buildings in accordance with the relevant legislation.

4.4. Energy metering

See Section I.2.1. Remote management, paragraph 1.5. Points to be connected.

5. HYDRAULIC NETWORK

Maintenance and management

Redundancy

All the pumps in the primary circuit (production) and secondary circuit (distribution) must be backed up by replacements, controlled automatically in cascade and of non-jamming, in order to allow maintenance and repair operations to be carried out without cutting off services and guarantee continuity of service in the event of a breakdown.

Flexibility of use



The capacity of distribution circuits must be designed in such a way as to handle the maximum occupation when spaces are used as collaborative spaces, with a view to minimising the adaptations necessary in the event that the areas are reconfigured.

Planned extension

A connection must be provided for a supplementary hot and cold water distribution circuit.

The collector heat exchangers must be designed with a power output which is 10% greater than required.

Energy efficiency

Energy efficiency of the hydraulic network

⁶² In line with the European Union's Green Public Procurement (GPP) Criteria for Water-based Heaters (Version 2014):

http://ec.europa.eu/environment/gpp/eu_gpp_criteria_en.htm

I.2.3. HEATING, VENTILATION AND AIR-CONDITIONING (HVAC)

In the event that simultaneous distribution of hot and cold water is planned, continuous mixing of hot and cold water is prohibited.

The hot water/cold water distribution circuits must have a variable flow rate (speed-controlled pumps).

Partitioning and regulation

The water distribution circuits must be designed on the basis of homogeneous demand areas (with similar thermal requirements, comfort requirements and schedules).

The operation and temperature of water distribution circuits must be optimised on the basis of exterior temperature, average ambient temperature per façade, the average of local setpoints and the timetable of building occupation.

Sustainable use of natural resources

Polluting emissions

Any thermal insulation foams used must be manufactured using gases with the lowest possible global warming potential (GWP)⁶³.

6. TERMINAL UNITS

Maintenance and management

Flexibility of use

It must be possible to reconfigure the regulation of terminal units so that their operation can be adapted to the requirements of new layouts.

Energy efficiency

Regulation

Office rooms must have automatically regulated systems with the option of local overrides, allowing the occupants of these rooms to override the setpoint temperature by a minimum of ± 1 °C.

In order to save energy, the heating or air-conditioning systems in a room must cease to operate whenever a window is opened, while maintaining an adequate level of frost protection.

An automatic control system based on presence detection should ideally be installed in offices and rooms which are only occupied intermittently.

The centralised technical management system (GTC) must feature a remote-control function in order to allow actuation and optimised control of the terminal units and the resetting of any adjustments made locally by the building occupants.

7. AIR CONDITIONING

Maintenance and management

Planned extension

The heater batteries for the blower units must be designed with a power reserve of 10%.

Hygiene

Filtering

⁶³ In accordance with Regulation (EU) No 517/2014 on fluorinated greenhouse gases.

I.2.3. HEATING, VENTILATION AND AIR-CONDITIONING (HVAC)

Fresh air must be filtered appropriately.

This filtering requirement does not apply to natural passive ventilation.



Minimal filtration level:

Fresh air must be filtered in compliance with at least class F7 (NBN EN 779).

In the case of heat recovery devices, a filter with a minimum class of M6 must also be installed at the return air intake.

Provision must be made for measuring filter clogging on the basis of differential pressure.

Central air-conditioning units:

Central air-conditioning units must at least meet all of the criteria set out below on the basis of standard NBN EN 1886:

Characteristic	Classification according to NBN EN 1886
Thermal conductivity	T3 (T2 for units located outside)
Thermal bridge	TB3 (TB2 for units located outside)
Air tightness class	L2
Air leaks from filter	F9
Rigidity of casing	D2

The units must have a plate indicating the rated electrical output of the motor (kW) and the air volume flow (m³/h).

Fans:

A safety switch which disconnects the power supply to the fan must be installed outside the casing, close to the fan's access door.

Humidifier casing:

The tray must be designed in such a way as to avoid any stagnant water in order to prevent the growth of bacteria (Legionella, etc.).

Humidifier:

The humidifier system must be selected with a view to preventing the growth of bacteria (Legionella, etc.), taking into account maintenance and operating costs as well as energy efficiency.

The system must allow regulation of the required supply of moisture.

Types not accepted:

- rotating nozzle mist spray humidifiers,
- centrifugal mist spray humidifiers,
- steam-injection humidifiers using steam produced by an evaporation humidifier (e.g. 'Amazone' humidifiers),
- mist injector humidifiers,

An automatic bleed off (blowdown) control system should be installed on the water circuit for the humidifier washer trays.

Steam generators:

I.2.3. HEATING, VENTILATION AND AIR-CONDITIONING (HVAC)

In the event that a steam generator is installed, it must be fitted with an automatic water refilling system.

A condensation return circuit is mandatory unless a direct steam injection procedure is used. If a condensation return circuit is used, provision must be made for automatic dispersal flushing and (potentially) a deaerator.

Steam generators should ideally be supplied with distilled water or otherwise softened water.

Dehumidifiers:

Dehumidifying installations are prohibited, with the following exceptions:

- To regulate relative humidity control in areas housing historical archives. Such systems must be absorption dehumidifiers with an electrically heated air outflow, unless technically impossible. Refrigerant or absorption dehumidifier systems must be avoided.
- To regulate relative humidity in specialised rooms, using air-conditioning cabinets (see Section I.3. Special-purpose zones).
- To regulate relative humidity in rooms which have a specific, genuine need for such regulation.

Energy recovery and free cooling:

The recovery system must incorporate natural ventilation based on the principle of free cooling in response to temperature (interior and of the fresh air).

Ventilation network for car parks

As well as complying with the applicable legislation, the ventilation network for the operating or guard's rooms must be an overpressure system, independent from the ventilation network for the car park.

See Section I.2.8. Gas detection and venting, paragraph 4 for the specific requirements applicable to the ventilation system as regards LPG detection and venting in car parks.

8. VENTILATION NETWORK

8.1. Blower and extractor openings

Maintenance and management

Flexibility of use



In office areas, façade modules must be fitted with pre-set blower opening (fresh air) and an extraction opening (return air) as alternatives in order to facilitate use of the rooms in different layouts.

8.2. Ventilation ducts

Maintenance and management

The air supply network must be completely ducted. The extraction should also ideally be completely ducted (including in office areas).

It is recommended that the meeting rooms be situated only in certain zones within each floor area so that separate ducts can be installed for these rooms and their systems more easily regulated.

Hygiene

I.2.3. HEATING, VENTILATION AND AIR-CONDITIONING (HVAC)

The internal walls of air ducts must be smooth and low-maintenance.

Access hatches must be provided for the purpose of maintaining air ducts in accordance with the provisions of standard NBN EN 12097 Ventilation for buildings – Ductwork – Maintenance.

There must be a slight difference between the supply and extraction flow rate in order to maintain an overpressure in the offices.

Energy efficiency

Lagging

In order to avoid any risk of condensation, return or extraction air ducts must be insulated when passing through areas with a temperature of below 14 °C.

Air tightness

As a general rule, the air tightness of air ducts must correspond to at least Class B⁶⁴ in accordance with standards EN 12237, NBN EN 1507 or EUROVENT, in order to limit energy losses.



Fire dampers:

Fire dampers must be:

- motor-driven (electric motor) in the supply network,
- motor-drive or fuse-controlled in the extraction network.

An easily accessible trapdoor must be installed either on the casing or on the duct immediately next to the damper in order to allow the damper to be inspected and maintained. This trapdoor must have the same level of fire resistance as the duct.

The fire dampers and ventilation units must be individually labelled on the fire service panel and reported to the control centre. A manual override must also be provided for certain units.

The fire dampers must be numbered using the following format: 'FLOOR/WING/OFFICE NUMBER'. The installer will be responsible for numbering the fire dampers.

8.3. Air intakes and discharges

Hygiene

Air intakes and discharge vents must be located in such a way as to reduce the risk of ventilation air being polluted:

- fresh-air intakes should ideally be located in the upper part of the building,
- the distance between fresh-air suction intakes or opening windows and sources of pollution (chimneys, extraction ducts, cooling columns, outlets, etc.) must take into account the conditions of standard EN 13779 regarding the location of intakes and discharge vents. The distance from sources of pollution should not be less than 8 m and should ideally be more than 20 m⁶⁵.



⁶⁴ Class B corresponds to a maximum leakage of $f = 0.009p^{0.65}$ ($l.s^{-1}.m^{-2}$), where p is the static pressure in the duct during the test in Pa, in accordance with standards NBN EN 12237 or NBN EN 1507.

⁶⁵ In accordance with the European Union's Green Public Procurement (GPP) Criteria for Office Building Design, Construction and Management:
http://ec.europa.eu/environment/gpp/eu_gpp_criteria_en.htm

Gratings must be installed to prevent the entry of birds or small animals.

I.2.4. ELECTRICITY AND LIGHTING

The requirements outlined below must be met in addition to the applicable legislation and standards.

1. STANDARD LIGHTING

1.1. Lighting equipment

Artificial lighting must be installed in all rooms and at all external access points to the building in order to ensure an adequate level of high-quality lighting, regardless of natural lighting conditions⁶⁶.

Visual comfort

In order to maximise visual comfort, the artificial lighting systems must comply with at least the following values, based on risk assessments, the criteria set out in standard NBN EN 12464-1⁶⁷ and accessibility for persons with reduced mobility (PRM).

Room	Em (lux) Minimum lighting ⁶⁸	UGR Maximum glare ⁶⁹	Ra Minimum colour rendering ⁷⁰
Office, meeting room and similar	300 (ambient) 500 (workstation/table), dimmable using a luminosity sensor	19	80
Kitchenette	300	19	80
Entrance hall	according to requirements, manually dimmable As a reference: 400 (reception desk) 200 (hall)	22	80
Security standby area	500, manually dimmable	19	80
Centralised technical management system (GTC) control centre	500, manually dimmable	19	80
Circulation route	Horizontal	100	40-80
	Staircases, ramps	150	40-80
Toilets/washrooms	200	25	80
Restaurant, cafeteria	300-400	22	80
Kitchen	500	22	80

⁶⁶ See Section I.1.4. Occupational well-being, paragraph 4.1. Natural lighting.

⁶⁷ NBN EN 12464-1 Light and lighting of workplaces – Part 1: Indoor workplaces.

⁶⁸ Average lighting (Em) is the required level of lighting. It must be measured either at the height of the work surface (by default 0.85 m from the floor) or on the floor in areas of circulation and archives.

⁶⁹ The unified glare rating assesses the level of glare discomfort caused directly by luminaries.

⁷⁰ The minimum colour rendering (Ra) or colour fidelity for a light source, which depends on the lamp type.

Plant room and accessible ducts	200-500 ⁷¹	25-28	60-80
Store room	200	25	60
Car parks ⁷²	Circulation	75-100	25
	Parking space	50-75	-
	Spaces for persons with reduced mobility ⁷³	100	-
Archive room	200	25	80
Copy room	300	19	80
External access routes ⁷⁴	20	-	-

The uniformity of lighting⁷⁵ (U_o) must be at least 0.60 in office areas and similar and 0.40 in circulation areas (corridors, staircases, ramps).

The colour temperature must be between 3000 K and 4000 K, depending on requirements.

In order to reduce the risk of indirect glare on screens, the average luminance of luminaires in offices must be below 3 000 Cd/m² for angles of elevation equal to or above 65°. The shield angle of luminaires must not be below 30°.

Energy efficiency

Lighting must meet the highest possible levels of energy efficiency.

Total installed power (including ballast, transformers or auxiliary equipment) must be less than 2 W/m² per 100 lux for collaborative spaces and car parks and less than 3 W/m² per 100 lux for partitioned offices, small rooms, corridors and staircases⁷⁶.

Waste management

The mercury content of fluorescent lamps must be as low as possible⁷⁷.



The lamps must meet the highest possible standards of energy efficiency and comply with at least energy class B (for lamps with colour rendering ≥ 90) or class A in other instances.

Auxiliary equipment (ballast, etc.) must be electronic (dimmable if regulated using a luminosity sensor), with the highest possible level of energy efficiency.

The minimum degree of protection of lighting fixtures intended for the kitchen or for the exterior of the building must be IP 55.

1.2. Control and regulation of lighting installation

⁷¹ Depending on the purpose of the room.

⁷² Car park lighting should ideally be installed in at least two different circuits.

⁷³ Above parking spaces designed for persons with reduced mobility and along the route from these parking spaces to the lifts.

⁷⁴ For areas designed for a specific use, the following standard applies: NBN EN 12464-2 Light and lighting – Lighting of workplaces – Part 2: External workspaces.

⁷⁵ The uniformity of lighting (U_o) is the ratio between the minimum level of lighting and the average level of lighting in working areas (desk surfaces in the offices or areas of movement in circulation areas).

⁷⁶ In accordance with the European Union's Green Public Procurement (GPP) Criteria for interior lighting:

http://ec.europa.eu/environment/gpp/eu_gpp_criteria_en.htm

⁷⁷ See the European Union's Green Public Procurement (GPP) Criteria for interior lighting: http://ec.europa.eu/environment/gpp/eu_gpp_criteria_en.htm

- Offices and similar:

Lighting systems for individual or shared offices or collaborative spaces, meeting rooms and similar must be equipped with the following:

- Switches which can be used by the building occupants to switch the lighting on and off manually.
- Absence detectors which switch the lighting off automatically. The lighting must only be switched on again by means of a manual switch.
- Luminosity sensors for the automatic and gradual regulation of artificial lighting based on the level of natural light must be installed for the rows of luminaries on the façade side, parallel to the windows and up to 3 m away from the façade.

- Toilets/washrooms and windowless rooms:

Toilets/washrooms (toilets, changing rooms and showers) and any windowless rooms, with the exception of plant rooms, must only be equipped with presence detectors which have adjustable timing. The use of manual switches is not foreseen.

- Plant rooms, service rooms and storage rooms:

The lighting system must feature a manual switch (non-timed).

- Passageways:

Passageways, corridors, lobbies and staircases must be fitted with presence detectors with adjustable timing which control the standard and emergency lighting.

Lighting in halls, passageways, etc. with access to natural light must be regulated using luminosity sensors.

- Car parks:

The lighting system must incorporate presence detectors with adjustable timing for separate zones.

Maintenance and management

Flexibility of use

It must be easy to reconfigure lighting control and regulation systems so that their mode of operation can be adapted to any layout required.



Absence detectors and luminosity sensors for the regulation of lighting in office areas must be installed or pre-installed for at least every other façade module so that the layout of the rooms can be changed more easily.

It must be possible to reconfigure the luminary control and regulation systems as follows:

- either by means of a rapid-access electrical network and remote programming of circuits (including night-time switch-offs);
- or by means of a centralised lighting management system with individual addressing of luminaries.

1.2.1. Mechanisms

Accessibility for persons with reduced mobility (PRM)

See Section I.1.1. Functionality, paragraph 5.4.3. Mechanisms.



As a general rule, mechanisms and switches must be located at a maximum height of 130 cm or, in the case of mechanisms which incorporate sensors, at the lowest possible height depending on technical requirements.

They must be at least 50 cm distant from interior corners.

2. SECURITY LIGHTING

The security lighting must comply with the applicable legislation and standards.

3. ELECTRICAL INSTALLATIONS

3.1. Electrical sockets

The minimum number of sockets will be indicated by the Commission.



The minimum number of electrical sockets is indicated below:

Room	Electrical socket installations
Partitioned offices	Two sockets per façade module
collaborative spaces and similar (quiet rooms, meeting rooms)	Two sockets per workstation
Corridor, hall, cafeteria, restaurant	One recessed maintenance socket per 10 m of working radius.
Toilet/washroom, changing room	One socket per toilet block or changing room.
Copy room	Four sockets per room.
Kitchenette	Four 16 A sockets.
Car parks	One surface-mounted maintenance socket per 300 m ² . Sockets and terminals for recharging electric vehicles and electric bicycles may be requested by the Commission, depending on requirements.
Rest and care rooms	Two 16-A sockets.
Plant room, archives, storage room	Sockets according to requirements, at least one socket per room.
Guard's booth for car parks	According to requirements, at least five sockets.

3.2. Electrical circuits

Energy efficiency

Electrical installations must be designed and dimensioned in such a way as to minimise losses associated with transformers, circuits and equipment.

Automatic systems must be incorporated to correct the power factor.

Operating safety

Stand-alone power source

Installations or equipment regarded as essential on the basis of regulatory requirements must be supplied from a stand-alone power source.

I.2.4. ELECTRICITY AND LIGHTING

Based on the Commission's risk assessments and specifications, other installations must also be supplied from stand-alone power sources in order to ensure that they continue to function in the event of a power cut, in particular:

Installations supplied from a stand-alone power source on the basis of risk assessments
Equipment for returning lifts to the evacuation level(s) (see Section I.2.6. Lifts and escalators).
Surveillance and security control system.
UPS (in the event that the building contains an emergency generator).
Lifting platforms for persons with reduced mobility PRM (see Section I.2.6. Lifts and escalators).
Refrigeration rooms for 'self-service' restaurant kitchens.
Specialised rooms (cabling concentration rooms LR and main distribution frame rooms LTG for PABX, including computers and air conditioning) as well as centralised technical management system (GTC) rooms, including cold production and distribution for these rooms (see Section I.3.2. Specialised rooms).

In the event that the building contains generators, they must automatically (within no more than one minute) guarantee the continued functioning of the aforementioned installations for 24 hours, unless otherwise stipulated by the Commission.

Maintenance and management

Flexibility of use



The capacity of electricity installations up to the sectoral distribution boards must be designed in such a way as to handle the maximum occupation when spaces are used as collaborative spaces, with a view to minimising the adaptations necessary in the event that the areas are reconfigured.

Planned extension

The sectoral distribution boards must be designed with a surplus capacity of 20% in terms of power and space.



Electrical sockets:

Maintenance sockets (in the corridors, halls, cafeterias, restaurants, etc.) must incorporate reinforced wall anchors in order to avoid their being pulled out during cleaning operations.

Ducts:

In vertical ducts, cables must be laid in cable trays or conduits.

Sectoral distribution boards:

At least one board must be available per floor. The boards must be metallic and lockable using a security key (a single key for all the boards).

Appropriate protection must be provided against power surges, according to requirements.

Lighting controlled by a door switch is to be provided.

The appliances on the boards must be identified using labels manufactured from a resistant material.

A document holder is to be affixed to the inside of the door.

Horizontal distribution:

Electricity must be distributed horizontally through office areas using one of the following options:

- a) wall-mounted: a network of at least two separate raceways (one for the data network) must be installed;
- b) in the raised floor: floor ducts with two compartments (one for the data network) measuring at least 370 * 38 mm must be installed.

Extra space for data and electricity cables to the floor boxes (slack loop) must be provided in the raised flooring to allow the relocation of floor boxes within a radius of around 2 m.

3.3. Renewable energy

A building energy performance feasibility study must be carried out for new or substantially renovated buildings in accordance with the relevant legislation.

3.4. Energy metering

See Section I.2.1. Remote management, paragraph 1.5. Points to be connected.

3.5. Lightning conductors

Buildings must be equipped with lightning conductors on the basis of a risk assessment.

Lightning conductors must be installed in compliance with standard NBN EN 62305.

4. PLANT ROOMS

4.1. High-voltage substation

Planned extension

Space is to be provided for an additional transformer and its ancillary devices.

Transformers must be designed with a surplus capacity of 20% in terms of power.



The ventilation systems in these rooms must ensure that an average daily ambient temperature of 30 °C is not exceeded.

High-voltage and low-voltage rooms must not be installed below wet rooms. High-voltage rooms must be installed at an adequate distance from rooms used on a permanent basis by the building's occupants.

4.2. Generator set room



The tank must be fitted with a filling alarm whistle, a pre-alert level and a low-level indicator, which are to be transmitted and connected to the centralised technical management system (GTC).

To switch from the Normal to the Emergency power supply, fail-safe power-cut switches must be used.

Once the power cut is over, the installations must be brought up to full power gradually and using a timed procedure.

I.2.5. PLUMBING

The requirements outlined below must be met in addition to the applicable legislation and standards.

1. DRINKING WATER INSTALLATIONS

Drinking water installations must comply with the series of standards NBN EN 806 Specifications for installations inside buildings conveying water for human consumption, or equivalent.

Installations must be designed in such a way as to guarantee the required flow rates at the water draw-off points, at a water pressure which is appropriate for the equipment. The following default values apply: minimum pressure of 100 kPa (1 bar) and maximum pressure of 500 kPa.

Maintenance and management

Installation components must be accessible for maintenance purposes.

One easily accessible isolation valve must be installed per toilet block (ideally in the technical shafts).

The network and its components must be clearly labelled so that they can be identified easily.

Operating safety

The necessary measures must be taken to prevent the risk of frozen pipes or condensation in pipes.

Hygiene

Water quality

A water softener (approved by the Commission in advance) must be installed.

Sustainable use of natural resources

Water metering

For details of the meters to be installed, see Section I.2.1. Remote management, paragraph 1.5. Points to be connected.

All water meters in the building must be programmed to analyse consumption and detect micro-leaks and fractures in pipes.

A water breaker switch should ideally be installed to allow automatic closure of the mains water supply in the event that fractures are detected in pipes.



Pressure reducers:

If necessary, an adjustable pressure reducer and a filter must be installed at the mains water intake.

A bypass must be installed to ensure continuity of service when the reducer or filter are undergoing maintenance.

The fire network (hose reels/hydrants/sprinklers) must be connected upstream of the pressure reducer and the water breaker switch (which offers protection against pipe fractures).

Overpressure system:

In the interests of reducing energy consumption, floors where the mains pressure is adequate must be supplied with water which has not been routed through the pressure tank.

Water softener:

The water softener must be designed in such a way as to allow water hardness to be adjusted over a range between 10 and 15 French degrees.

This range may be amended to between 2 and 15 French degrees in the event that a specific demand exists for softened water (e.g. for humidifiers, kitchens or cafeterias serving light refreshments), and a mixer bypass must be installed on each take-off.

A tap must be installed to allow samples to be taken at the softener outlet, and a non-return valve must be installed upstream of the device.

2. SANITARY HOT WATER INSTALLATIONS

In office areas and similar (toilets, utility sinks, etc.), taps must be supplied exclusively with cold water, with the following exceptions:

- showers and sinks in the changing rooms,
- taps in the kitchenettes,
- sinks in the rest and care rooms,
- other specific purposes (washrooms in kitchens, etc.).

Operating safety***Risk of burns***

Hot taps for sinks and showers in changing rooms must have thermostatic mixers.

Hygiene***Prevention of Legionnaires' disease***

Specific measures must be taken with a view to preventing Legionnaires' disease, in particular for low-use or intermittent-use draw-off points (e.g. distribution via a loop with as few dead legs as possible, automatic bleeder vents, programmable automatic flushing devices, etc.).

Energy efficiency***Renewable energy***

Feasibility studies must be carried out for new or substantially renovated buildings in accordance with the regulations on EPB building energy performance; among other things, these studies must assess the feasibility of producing domestic hot water using solar thermal and cogeneration systems.

**Production of domestic hot water:**

Ideally, local boilers should be installed. A distribution loop for the mains hot water should be installed by default.

Five-litre electric boilers must be installed for kitchenettes and for rest and care rooms; they must be fitted with a timer so that the boilers can be switched off during periods when the offices are unoccupied.

3. WATER DRAINAGE INSTALLATIONS

The drainage installations must comply with the series of standards NBN EN 12056 Gravity drainage systems inside buildings, or equivalent.

A separation-type drainage system with at least a rainwater and a wastewater system must be installed.

Maintenance and management

Installation components must be accessible for maintenance purposes:

- ideally, sealing hatches should be installed along the pipework of the water and drainage network so that it can be maintained and repaired if necessary;
- the number of inspection points for water drainage installations must be sufficient to allow proper maintenance. All risers must be fitted with an inspection point.

Sustainable use of natural resources

Efficient water management at plot level

Systems for directing rainwater towards drains (permeable surfaces, blue (water buffering) roofs, infiltration systems or storm water retention tanks) must be installed in accordance with the applicable regulations.

Rainwater collection

The design of draw-off points fed by rainwater must be based on an assessment of rainwater requirements and collection potential: supply of toilets (except in daycare facilities), watering of green spaces, provision of water to cooling columns, etc.

Alternative water supply systems (recycling of grey water and/or used water) are possible, depending on the outcomes of a specific feasibility study and with the prior approval of the Commission.

4. TOILETS

The number of toilets/washrooms to be installed in the building is specified in Section I.3.1. Rooms for a specific purpose, paragraph 2.1. Toilets.

4.1. Plumbing fittings

Sustainable use of natural resources

Water-saving appliances

Fittings installed during construction or renovation works must comply with the values stipulated below:

Draw-off point	Maximum available water flow rate (l/min.)
Sink taps	7.0
Kitchenette sink taps	8.0
Showers	9.0

Preference should be given to lower water flow rates and water flow rate limiters which are adjustable on the basis of pressure⁷⁸.

Sanitary fittings must be fitted either with adjustable timed shut-off devices or with adjustable presence detectors with an automatic safety shut-off device to avoid blockages caused by constantly running water.

⁷⁸ See the European Union's Green Public Procurement (GPP) Criteria for sanitary fittings (Version 2013): http://ec.europa.eu/environment/gpp/eu_gpp_criteria_en.htm.

Water-saving technologies must also be incorporated into special-purpose domestic water infrastructures (kitchens, etc.) (see Section I.3.4. Catering).



Showers:

Showerheads must be fitted with a recessed, anti-theft safety temperature lock.

4.2. Sinks



Sinks accessible for persons with reduced mobility (PRM) :

The waste pipe should ideally be offset.

4.3. Urinals

Sustainable use of natural resources

Water-saving appliances

Flushing urinals installed during construction or renovation works must have a nominal volume of water per flush which can be adjusted but which does not exceed 2 litres. Preference should be given to lower water volumes⁷⁹.

In the interests of saving water and improved hygiene, preference should be given to electronic touch-free flushing systems.

Waterless urinals may only be selected on the basis of a feasibility study and with the prior consent of the Commission. If such urinals are installed, they must comply with the requirements set out in Appendix 2 to Decision 2013/641/EU⁸⁰ and must operate either without any fluid or using a fluid which is readily biodegradable.

4.4. Toilets

Sustainable use of natural resources

Water-saving appliances

Toilets installed during construction or renovation works must be fitted with an adjustable dual flush with a maximum volume of 3-6 litres. Preference should be given to lower water volumes⁸¹.



Toilets should ideally be wall-hung.

⁷⁹ See the European Union's Green Public Procurement (GPP) Criteria for flush toilets and urinals (Version 2013):

http://ec.europa.eu/environment/gpp/eu_gpp_criteria_en.htm.

⁸⁰ Commission Decision 2013/641/EU of 7 November 2013 establishing the ecological criteria for the award of the EU Ecolabel for flushing toilets and urinals.

⁸¹ See the European Union's Green Public Procurement (GPP) Criteria for flush toilets and urinals (Version 2013):

http://ec.europa.eu/environment/gpp/eu_gpp_criteria_en.htm.

I.2.6. LIFTS AND ESCALATORS

The requirements outlined below must be met in addition to the applicable legislation and standards.

1. PASSENGER LIFTS

All car park levels and levels with workstations or communal services must be linked to the ground floor by means of lifts.

It must not be necessary to walk more than 50 m to reach a lift.

The number of lifts must be calculated on the basis of a circulation study. As a reference, the transport capacity must be at least 25% within 5 minutes, with a maximum waiting time of 25 s to 30 s.

Accessibility for persons with reduced mobility (PRM)

All passenger lifts must comply with the minimum dimensions set out below in order to facilitate access for persons with reduced mobility:

- the car must have a depth of at least 1.40 m and a width of at least 1.10 m;
- the car door clearance must be at least 0.90 m.

At least one in each bank of lifts (for access to the office floors and the underground car park levels) must comply with all the requirements concerning accessibility for persons with restricted mobility in line with the applicable legislation and standard EN 81-70.

Maintenance and management

Passenger lift traffic management must incorporate full collective control (buttons in the lift lobby to call for an ascending or descending lift and traffic optimisation per bank of lifts). In high-traffic buildings, a destination button (button in the lift lobby indicating the destination floor) will be required in accordance with the requirements to be supplied by the Commission.

As a minimum, fault information must be forwarded to the building's centralised technical management system GTC (see Section I.2.1. Remote management, paragraph 1.5. Points to be connected).

Each lift installation must be equipped with a traffic recording system:

- a) either using a start-up counter;
- b) or using a system for analysing traffic statistics, energy consumption, system component status, alarm signals, use of priority buttons, etc. (to be installed with the prior approval of the Commission).

Protection against malicious acts (security)

For safety reasons, persons travelling from the car parks to higher levels of the building must pass via the ground floor. A bank of lifts serving the car park levels must be available at ground floor level or on the same level as the reception desk⁸².

According to the Commission's instructions, an anti-intrusion device must be installed at the main reception desk (button behind glass to be broken in the event of an emergency) which calls all the lift cars to the reference level.

Fire safety

⁸² Lifts which serve both higher levels and basement levels must be secured to prevent unauthorised access to the basement levels.



A fire detector (to be supplied by the lift manufacturer) must be installed in the hoistway; it must be accessible for maintenance and checks.

Operating safety

Two-way data communication systems

Based on the Commission's requirements, the car must incorporate a communications system allowing calls to the external emergency numbers 112 and 2 22 22.



A recess accommodating a telephone (which also allows calls to the Commission's internal network) must be provided for this purpose in the car.

Stand-alone power source

See Section I.2.4. Electricity and lighting, paragraph 3.2. Electrical circuits.

Acoustic comfort

See Section I.1.4. Occupational well-being, paragraph 3. Acoustic comfort.

Energy efficiency

As a minimum, lifts must comply with energy class B according to standard VDI 4707 or equivalent.



Traction type:

Lifts must be designed to be electric. If this proves impossible, hydraulic appliances may be installed, provided that the proper level of service is guaranteed.

Transport capacity:

The default minimum capacity of lifts must be eight persons or 630 kg.

Car equipment:

The floors must have a non-slip covering which can withstand tools used to transport heavy loads (floor coverings in stone or similar materials must be avoided).

The car interiors must incorporate:

A mechanical ventilation system for the car, which stops automatically after the car has been unoccupied for any given period of time.

A digital indicator placed where it can be seen from all points of the car, showing the position of the car.

The lower edge of the mirrors or glass panels must be 60 cm or more above the floor of the car.

An A3 display panel in landscape format, holding two A4 sheets. The panel must match the car décor. It must have a protective cover made from transparent material.

In addition to the manufacturer's identification plate, each car must be numbered using a sequential system to be determined by the Commission (e.g. 1, 2, 3, 4, etc.). This numbering must also be displayed at the level of each landing and affixed to the interior of the lobby door frame. The identification plate must be made from stainless steel and have the dimensions 60 x 60 mm in the car and 25 x 15 mm in the lift lobby.

Hooks placed around the edge of the car interior near the ceiling, for hanging protective covers. The hooks must be positioned at the same intervals in all lifts in the same block or compartment of the building.

A set of protective covers per block or compartment of the building in order to protect the walls of the car when transporting equipment.

Telephone recess in the car:

The minimum dimensions of the recess must be as follows: $h \times w \times d = 300 \text{ mm} \times 200 \text{ mm} \times 100 \text{ mm}$.

Its lowest part must be at least 90 cm above the car floor.

In the event that the recess is equipped with a door, it must be possible to open it using simple pressure or another arrangement allowing easy opening by persons with reduced mobility.

Emergency telephone signs (see Section I.1.7. Information and signage).

Landing doors:

Landing doors must be made from stainless steel sheets.

Landing equipment:

A digital position indicator should be fitted on the main floor above each landing door.

On each floor an arrow must light up and a gong must sound to announce the arrival of a lift car.

Hoistway equipment:

Audible and visual alarms indicating the need to evacuate the building must be installed in the hoistway and machine room; they must be audible and visible from all parts of the hoistway.

Anti-intrusion button:

The control device must be a blue button behind glass to be broken in the event of an emergency (of the same type as the fire alarm) with a lightweight cover and seal, which can be reset with a key, and which is located at the main reception desk.

The lifts should be called to the evacuation level if the button is pressed. The lifts must remain there with their doors open.

The button(s) must be connected to the central security system.

Hydraulic lifts:

The use of hydraulic devices is not advised, and they should ideally be replaced by electric lifts without a machine room.

Where necessary, they must comply with the requirements and installation conditions of the standards NBN EN 81-50 and NBN EN 81-20 (which have replaced standard EN 81-2 since 1 September 2017).

Lifts accessible for persons with reduced mobility (PRM):

Call system:

In the event that accessibility-related functions for persons with reduced mobility are made available on a temporary basis, a non-priority call button for persons with reduced mobility, labelled with an ISA pictogram⁸³ and a notice in Braille, must be installed on all levels close to the lift for persons with reduced mobility.

⁸³ ISA: International symbol of access in accordance with standard ISO 7001.

The button must activate the following functions:

- minimum time of six seconds between opening and closing of the doors;
- automatic reset after a complete cycle.

The voice synthesiser option must always be activated in the lift cars.

Cars which are accessible for persons with reduced mobility:

voice synthesiser:

The communication system must have a visual display and also a voice synthesiser with a volume adjustable between 35 dBA and 65 dBA.

Voice messages must be in French and English.

The voice synthesiser must confirm to the passenger the floor they have chosen, each successive floor reached during ascent or descent, and their arrival at their chosen floor. An audible signal must indicate the lift's arrival and the opening and closing of the doors. The voice synthesiser must also be capable of issuing messages in the event of an emergency.

Signage for persons with reduced mobility:

See Section I.1.7. Information and signage, paragraph 4. Information and signage accessible for persons with reduced mobility.

2. GOODS LIFTS

The building must have at least one goods lift which serves all levels, including the plant rooms in the roof. It must be fitted with equipment enabling a reservation mode.

All goods lifts must also be capable of transporting passengers.

At least one goods lift per zone must be capable of evacuating a person lying horizontally, so that the stairs do not have to be used.

See paragraph 1. Passenger lifts for carrying out 'Maintenance and management', 'Safety in the event of a fire', 'Operating safety', 'Acoustic comfort' and 'Energy efficiency'.

Protection against malicious acts (security)

Goods lifts must be secured to prevent unauthorised access to the basement levels.

According to the Commission's instructions, an anti-intrusion device must be installed at the main reception desk (button behind glass to be broken in the event of an emergency) which calls all the lift cars to the reference level.



By default, at least one of the goods lifts must feature the following:

Characteristic	Minimum value
Nominal load	≥1600 kg
Car dimensions *	Width ≥ 1.40 m Depth ≥ 2.4 m
Door clearances	Width ≥ 1.1 m Height ≥ 2.1 m

* In the event that the car does not allow internal partition elements with a height of 2.6 m and a width of 1.2 m to be transported, the car must have an opening in part of its ceiling or a platform system on its roof.

Car equipment:

Goods lifts must be equipped with two rows of strong shock absorbers at the bottom and two rows of shock-resistant handrails.

The floors must have a non-slip covering which can withstand tools used to transport heavy loads, ideally in treadplate (floor coverings in stone or similar materials must be avoided).

Reservation mode:

The interior of the car and the landing at the evacuation/access control level must be equipped with a badge-reader system managed by the Commission's Security Directorate. The badge reader in the car will have the function of setting the lift in motion. A visual indication must be displayed on all levels when the lift is being used in 'Reserved' mode.

Override mode for basement levels:

Goods lifts must be secured to prevent unauthorised access to basement levels; such access must only be possible in reservation mode, i.e. an appropriate badge must be presented to the badge reader in the car before the buttons for the basement levels can be activated.

Lifting platform for the transport of bulky materials:

In the event that a platform system is installed on the roof of the goods lift car, it must comply with the requirements to be supplied by the Commission according to a technical opinion (based on the prototype model) issued by the Minister for Labour.

3. FIRE-FIGHTING AND EVACUATION LIFTS

Fire safety

Consideration should be given to the provision of two types of lifts for use in an emergency:

- Fire-fighting lift:

The 'fire-fighting' lift, which may be available for normal use (ideally as a goods lift), must have buttons allowing it to be controlled directly by fire-fighters when in override mode.

'Fire-fighting' lifts must be installed in accordance with the relevant legislation and the requirements of the Brussels Region Fire Service which apply to lifts intended to be used by the fire services.

- Evacuation lift:

The 'evacuation' lift, which may be available for normal use, must allow the evacuation of injured, ill and disabled persons by qualified representatives of the Commission's HR-DS.1 service or the Internal Service for Prevention and Protection at Work within the Office for Infrastructure and Logistics (OIB.SIPP). See Section I.1.1. Functionality, paragraph 5.5.3. Evacuation of persons with reduced mobility and refuge areas.

The lifts must be installed on the basis of risk assessments and in accordance with the requirements to be supplied by the Commission. The Commission requires one 'evacuation' lift by default for high-rise and medium-rise buildings⁸⁴. The 'evacuation' lifts must also be available for use by the fire services.

The arrangements for operating these two types of units in override mode must be identical (see paragraph 4. Lift servo-controls).

⁸⁴ A template evacuation plan for persons with reduced mobility has been produced by the Commission's Internal Service for Prevention and Protection at Work (part of the Office for Infrastructure and Logistics). This plan may include various evacuation solutions such as evacuation through an opening in the façade or on to a terrace, refuge areas where building occupants can wait for assistance, or evacuation lifts.

Operating safety

The fire-fighting and evacuation lifts must be supplied with power by a stand-alone power source (e.g. emergency unit, stationary batteries, etc.). See Section I.2.4. Electricity and lighting.



The 'fire-fighting' and 'evacuation' lifts must meet the specifications of standard NBN EN 81-72 ('fire-fighting' lifts) and the requirements set out below:

- The minimum nominal load must be 1 000 kg.
- A KABA 900 key switch must be installed for each 'fire-fighting' and 'evacuation' lift.
- The lift must include at least one trapdoor in the ceiling to allow firefighters to be rescued if necessary.

'Evacuation' lifts:

'Evacuation' lifts must comply with the following requirements at least:

- the car must have a depth of at least 1.40 m and a width of at least 1.10 m;
- the car door clearance must be at least 0.90 m.

Signage:

See Section I.1.7. Information and signage.

4. LIFT SERVO-CONTROLS

The servo-controls for passenger lifts and goods lifts must comply with the following requirements (in addition to the applicable legislation and standards).

4.1. Basic principle

Use of the lifts will be strictly prohibited in the event of a fire in the building. The only way to evacuate the building will be via the emergency staircases.

Building occupants will only be permitted to use the 'fire-fighting' and 'evacuation' lifts if accompanied by authorised personnel.

4.2. Alerts and evacuations

4.2.1. Recall procedure (in the event of a fire alarm or the detection of a fire in the building)

The recall procedure must be triggered in the event that the evacuation alarms are sounded, in the event of double detection in the building, or in response to actuation of the manual recall device installed at reception.



The recall manoeuvring shall also apply in the case of simple detection in the lift lobby area, as required by the applicable regulations.

In the event of single detection outside the lift lobby area, control is not taken over and the lifts operate normally (with the exception of lifts which are not supplied with electricity from a stand-alone power source).

The recall procedure involves bringing all the lifts in a bank situated within a fire compartment to the evacuation floor to enable any passengers in these lifts to be evacuated.

4.2.2. ‘Car evacuation’ procedure (in the event that a fire is detected in the hoistway or machine room)

The ‘car evacuation’ procedure involves evacuating – as rapidly as possible, and towards the first level encountered in the direction of travel – all the lifts in a bank of lifts in the event of single detection of a fire in the machine room or the hoistway.

4.2.3. Override mode for the ‘fire-fighting’ and ‘evacuation’ lifts

In override mode, the ‘fire-fighting’ lifts must serve all levels without restrictions. Override mode, which implements a priority call of the lift cars, must be reserved for the Brussels Region Fire service.

However, override mode must not be possible if an emergency has been detected in the machine room.

To operate in override ‘fire-fighting’ mode, both KABA 900 priority key switches must be activated: one installed in the lobby on the evacuation level, close to the lobby door, and one on a button inside the car.

Activation of the override mode for the ‘evacuation’ lift must be identical to that of the ‘fire-fighting’ lift.

4.3. Procedures in the event of a power cut

The stand-alone power source must supply enough power to keep the priority ‘fire-fighting’ and ‘evacuation’ lifts in operation.

The servo-control system for the ‘evacuation car’ procedure must remain active in the event that the stand-alone power source is used.

A stand-alone power source must be available to guarantee that all non-priority lifts can be recalled to the evacuation level(s) in the event of a power cut, in accordance with the risk assessments and the Commission’s specifications.

5. ESCALATORS

Based on an assessment of circulation within the building, escalators must be installed to serve levels likely to experience high circulation (e.g. in the vicinity of the conference rooms).

They must comply with standards NBN EN 115-1 and NBN EN 115-2.

Maintenance and management

As a minimum, fault information must be forwarded to the building’s centralised technical management system GTC (see Section I.2.1. Remote management, paragraph 1.5. Points to be connected). Escalators must cease operation in the event of an evacuation alarm.

6. LIFTING PLATFORMS FOR PERSONS WITH REDUCED MOBILITY (PRM)

Lifting platforms for persons with reduced mobility (PRM) must comply with the applicable legislation and standards NBN EN 81-40 (inclined platforms) and NBN 81-41 (vertical platforms)⁸⁵.

⁸⁵ Alternatively, standards ISO 9386-1 (vertical platforms) and ISO 9386-2 (inclined platforms) may be used, or evidence provided of compliance with safety conditions which are equivalent to the aforementioned standards.

Maintenance and management

As a minimum, fault and alarm information must be forwarded to the building's centralised technical management system GTC (see Section I.2.1. Remote management, paragraph 1.5. Points to be connected).

Operating safety

It must be possible to lower or raise the platform manually to the nearest level. The procedure to be followed in the event of an emergency must be displayed within the platform, as well as a type plate or label with details of the manufacturer, date of manufacture and technical features.

Two-way communication system

An emergency call system (e.g. using a telephone) must be installed in the platform unless the room is monitored (entrance hall).

Stand-alone power source

Lifting platforms for persons with reduced mobility must be connected to a stand-alone power source (e.g. a generator set or battery) which supplies enough power to complete at least one full cycle. See Section I.2.4. Electricity and lighting, paragraph 3.2. Electrical circuits.

7. LIFT TABLES



Lift tables must have at least the following characteristics:

- in the event of a power failure or similar problem, the table can be manually returned to its lowered position,
- if the control unit is situated close to the lift table, it must have an IP 55 protection rating,
- lift tables must be safe to use, i.e. they must have a protective lip (skirting) at ground level, to prevent loads on wheels or those likely to slip from falling; at the upper level, they must have an access gate or similar system to prevent objects or people from falling.

I.2.7. FIRE SAFETY

The requirements outlined below must be met in addition to the applicable legislation and standards.

1. FIRE DETECTION, ALERTS AND ALARMS

1.1. Intended purpose

An addressable fire detection system must be installed on the basis of an opinion supplied by the Brussels Region Fire Service.

A total surveillance (generalised detection) system must be installed in accordance with standard NBN S-21-100-1.

Fire detectors must be fitted in particular in offices, meeting rooms, restaurants, kitchens, workshops (production, storage and joinery), corridors, lobbies, windowless rooms, car parks, archives, plant rooms, copy rooms, kitchenettes, shafts, the room accommodating the fire control panel, etc.

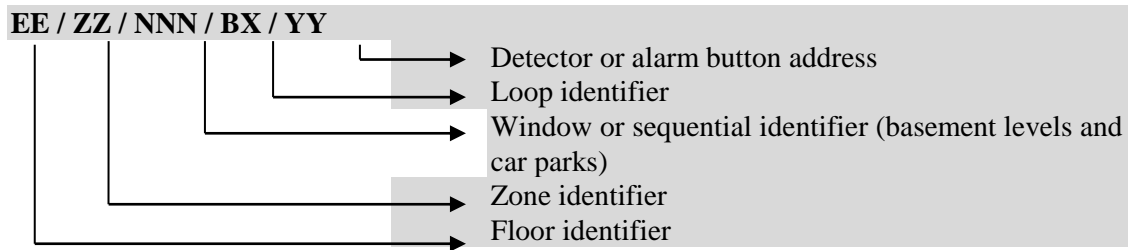
The number, type and position of detectors must be specified in a detailed assessment carried out by a specialised company approved by a certification body in accordance with NBN S-21-100-2.

Detectors must comply with the system for identifying addressing points and with the alert and alarm plan to be supplied by the Commission.



Identification of evacuation alert/alarm sources:

Identifiers must be allocated to potential sources of fire alerts in the form of labels (to be placed on each detector, action indicator, push button and technical address in accordance with the graphical layout provided by the Office for Infrastructure and Logistics), using the following format:



Fire alerts must be displayed as follows on the fire control panel:

ET--/Z---/FEN---/ LOCALISATION

ET-- : Floor number

Z--- : Zone number

FEN--- : Window or sequential identifier (basement levels)

LOCATION: Accurate description of the fire location

If a standard numbering system is in place for floors, zones and window identifiers, there will be at least 23 characters available for pinpointing the precise location of a fire. The identification details given on the fire control panel display must therefore match those on the detector identification label.

The example below illustrates these rules:

ET12/Z024/FEN085/BLOCK A COURTYARD SIDE

Alarms must be displayed as follows on the fire control panel:

ET--/Z---/FEN---/ EVACUATION

ET-- : Floor number

Z--- : Zone number

FEN--- : Window or sequential identifier (basement levels)

1.2. Functionality

Accessibility for persons with reduced mobility (PRM)

For further details of push buttons used for fire alerts and alarm devices, see Section I.1.1. Functionality, paragraph 5.4.3. Mechanisms.



Push buttons must be installed at a height of 130 cm (measured from the upper part of the case) in corridors and lift lobbies.

Maintenance and management

Accessibility for maintenance

The fire-detection system must have the following features:

- Easy access to all connections and components. All connecting terminals must have an identification number,
- ability to carry out rapid repairs through the use of interchangeable components and modules and universal detector mountings.

Flexibility of use

Fire detectors must be easily reconfigurable so that their mode of operation can be adapted to any layout required.



In office areas, detectors must be preinstalled using baseplates (one baseplate per two façade modules) in order to make adaptations easier if the layout of the room is changed.

Planned extension

Networks must be designed with a capacity reserve of 10% to allow the connection of additional detection points in addition to the basic network.

Operating safety

Stand-alone power source

The control panel(s) must be supplied with 24 hours of power from a stand-alone power source (battery) in accordance with standard NBN EN 21-100-1.

Any emergency units present in the building must also supply the control panel with power in accordance with standard NBN EN 54-4.

Hygiene

Fire detectors must not contain any radioactive source.



Compatibility:

All components of the fire detection system must be supplied by the same manufacturer.

The system must use an 'open technology' communication protocol which guarantees technical compatibility between the potential control panels and addressing points connected to the detection networks (detectors, alert/alarm push buttons, input/output modules, etc.).

Network cabling:

The cabling used for fire detection networks must be looped, starting and finishing in the fire control panel.

Detectors:

Detectors must be installed in accordance with the guidelines in standard NBN S 21-100-1.

Universal mountings must be used for detector components of all types so that they are easily interchangeable without needing to redesign the circuit.

It must be possible to fit buzzers in the mountings of detectors which can be programmed to the evacuation alarm signal.

Push buttons:

Fire alert push buttons must be located behind glass to be broken in the event of an emergency; it must be possible to reset them.

1.2.1. Control panel features

The fire control panel must:

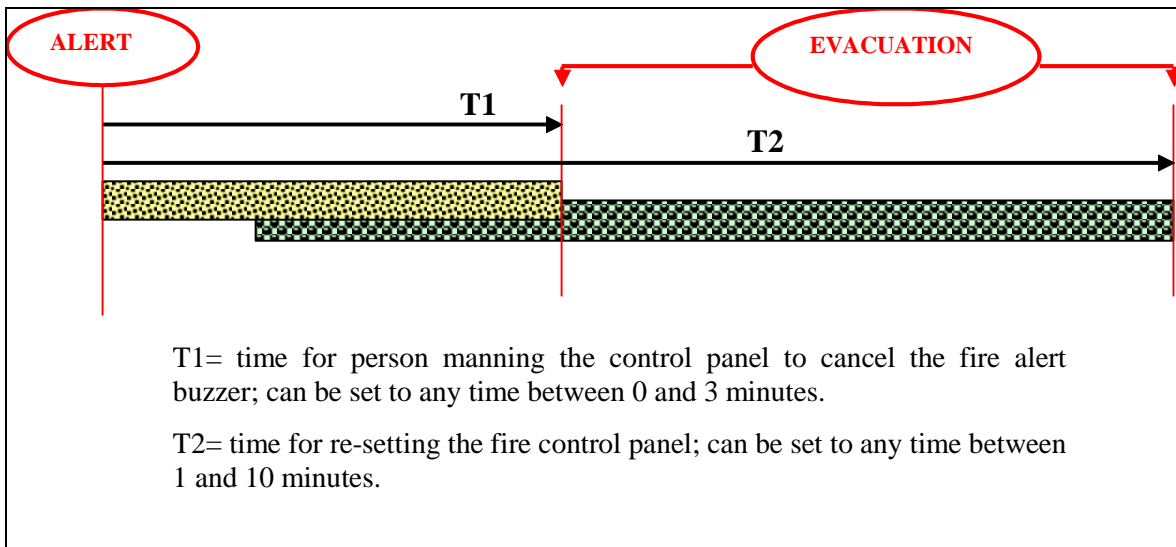
- Provide a real-time display of the sensitivity values of each detection sensor to help assess their level of clogging. These values must be printable at least for each network or according to a threshold value defined on the printer by the operator.
- Give a precise indication (on the display) of the location of any short-circuit or broken cable.
- Monitor and display the number of components installed per network.
- Allow the programming of schedules in order to decommission specified zones during a pre-programmed period (annual scheduler).
- Allow (via a diagnostics program) the testing of each control (slave relays) on the master or peripheral control panels.
- Store events recorded by addressable analogue detectors, addressable alarm push buttons, addressable I/O modules, etc. The system must save in its memory at least the 50 most recent events involving every alert, fault or use of override mode and must be able to display them in sequence on request.
- Have or be connected to a printer which prints all information in clear text, without abbreviations or codes.

The control panel must be programmed in such a way that the following options are available when expressly requested by the Commission:

OPTION 1: day/night function for the signal transmitter.

OPTION 2: 'dead man' operation.

If the buzzer stop button is pressed, the fire control panel must automatically go into 'checking' mode. This will give the operator or an authorised person a short period of time to go and check the location from which the signal was sent. If this check confirms the need for an alarm, it must be possible for an alarm to be triggered by pressing an alarm button at reception. If the operator fails to reset the fire control panel within the pre-programmed time, the fire control panel must trigger the alarm automatically:



The servo-control commands to be issued by the control panel must comply with the requirements set out below.

The fire control panel must:

Requirements which apply if the Commission is not the sole occupant of the building:

In the event that the Commission is not the sole occupant of the building, each occupant must have its own fire control panel and its own alert and alarm relay system. Information from these control panels must be forwarded to the Commission's control panel.

Location of the control panel:

If the control panel is not located behind the desk at the entrance to the building, a passive repeater panel must be installed there, with its functions limited to stopping the acoustic signals, visually displaying all events and triggering an evacuation alarm using push buttons.

The fire control panel or repeater must be prominently mounted so that it can be observed at all times.

User manual:

A user manual in French or in English clearly indicating the procedures to be followed by the security service must be included with each system.

It must be placed in a glass case large enough to contain two sheets of A3 paper, located close to the reception desk.

Servo commands to be issued by the control panel:

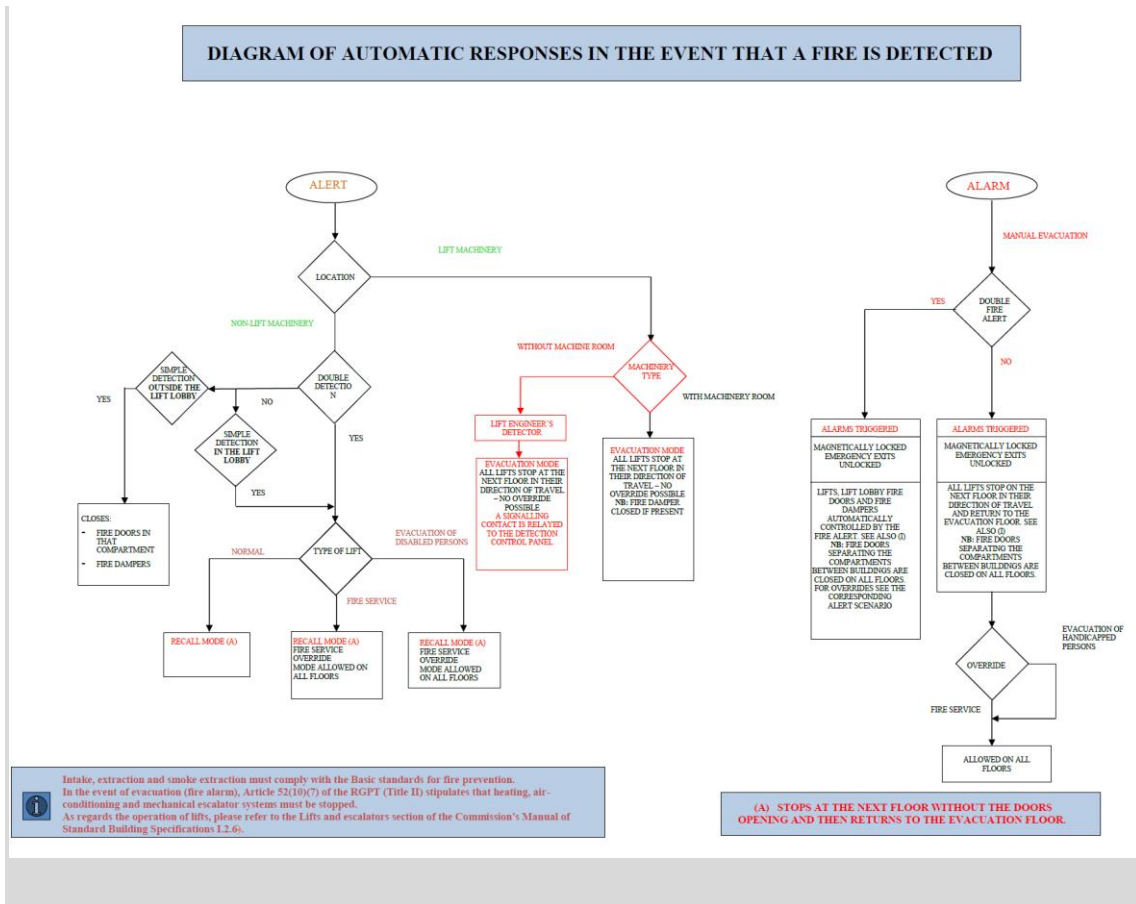
- Selective starting and stopping of the comfort ventilation systems (air supply and extraction).
- Selective closing and opening of the fire dampers.
- Starting and stopping the smoke-extraction and pressurising systems.
- Closing fire doors.
- Unlocking all emergency exit doors.
- Controlling lifts and escalators with:

- o One contact per set of lift machinery if the machinery is in a separate room.

- One contact per bank of lifts in the event of an evacuation alarm.
- One contact per bank of lifts in the event of double detection (two detectors or a combination of a detection and an alarm button in the building).

Note: if the lift machinery is in the shaft, the detector will be installed and checked by the lift engineer. The lift system must provide one potential-free contact per lift to the fire detection system which will transmit an alert signal to the main detection control panel.

- Closing the smoke curtains.
- Remote-control sensors (see Section I.2.1. Remote management, paragraph 1.5. Points to be connected).



1.2.2. Alarm operating principle (evacuation signal)

The evacuation alarm must be configured so that it can be triggered only by a deliberate action, e.g. manually pressing the alarm button (it must never be possible to set the alarms off automatically or by the accidental activation of an alarm button) unless the Commission decides to apply day/night programming for the signal transmitter.

If the manual alarm button is reset, it must trigger automatic resetting of the control panel without any need for intervention at the control panel.



Alarm (evacuation signal):

Alarm triggering command (evacuation signal):

A white push button which is located behind glass to be broken in the event of an emergency, which can be reset, which is labelled 'Evacuation', and which has a protective cover that can be sealed, must be available to trigger an alarm (evacuation signal).

The evacuation alarm signal control must comply with the following criteria. It must:

- be located at reception;
- be accompanied by a symbol or labelling in clear text (next to the button);
- be placed outside the panel or casing of the fire control panel;
- allow the buzzer to be stopped without a key or code.

Pushing this button must send a text to the fire control panel describing the event, so that the level of emergency can be calculated as with automatic alerts. It must be suitable for testing with a special key.

Evacuation warning systems:

Building occupants must be alerted to evacuation alarms or orders to leave the building by means of sirens, visual signals (flashing or rotating red lights, flashing green lights, etc., programmed with the building's evacuation signal) or other systems depending on requirements.

- Sirens must emit an uninterrupted audible signal and allow this signal to be broadcast uniformly (at a volume of between 65 dBA and 85 dBA) in any area where persons are likely to be present. In rooms where it will not be possible to emit signals with a volume above 65 dBA, buzzers may be installed in the bases of detectors and programmed with the building's evacuation signal.

Alarms must not be placed in:

- o lift lobbies;
- o entrance halls (a red flashing light must be installed instead);
- o stairwells;
- o places where the nature of the work being carried out means that loud alarms cannot be installed, such as daycare facilities, telephone switchboards, radio and TV studios and, in certain cases, computer rooms, conference rooms (a red flashing or rotating light must be installed instead);
- o places where a sudden burst of loud noise is liable to disrupt the activity or work taking place there, such as children's sleeping areas in daycare facilities, radio and TV studios, telephone switchboards.

- PA systems: alarms can be replaced or supplemented with a PA system which is audible throughout the building if there are valid reasons why an alarm system cannot be used.

The voice alarm control and indicating equipment (VACIE) for fire alarm systems must comply with the European standard EN 54-16 Fire detection and fire-alarm systems – Part 16: Voice alarm control and indicating equipment, and loudspeakers must comply with standard EN 54-24 Fire detection and fire-alarm systems – Components of voice alarm systems – Part 24 : Loudspeakers.

- Visual alarms:

- o Alarms located near emergency stairwells must be fitted with a green flashing light.
- o Alarms in noisy plant rooms must be fitted with a red flashing light.

2. PORTABLE OR MOBILE EXTINGUISHERS

The location, number and type of extinguishers will be stipulated by the Internal Service for Prevention and Protection at Work (part of the Office for Infrastructure and Logistics: OIB.SIPP), depending on the dimensions, circumstances and level risk in the relevant rooms; they must comply with the conditions laid down in the environmental licence (regarding the number of extinguishing units) and by insurance companies. Unless otherwise indicated, the extinguishers will be supplied by the Commission.

3. FIRE HOSE REELS AND WALL HYDRANTS



Location:

Fire hose reels must be placed in cases, cabinets or purpose-built fixtures. They must not protrude into corridors.

4. SPRINKLERS

The necessary arrangements for an automatic water-based fire suppression system must be put in place on the basis of risk assessments (e.g. in rooms with a high fire load containing equipment which is not at risk of damage from water, such as bin rooms, large storage rooms, etc.).



Signage:

See Section I.1.7. Information and signage.

Each overhead pipe valve must have a plate affixed to it which contains its identification number (the same as the identification number on the piping diagrams).

I.2.8. GAS DETECTION AND VENTING

The requirements outlined below must be met in addition to the applicable legislation and standards.

1. CARBON MONOXIDE DETECTION AND VENTING

Operating safety

A carbon monoxide (CO) detector must be installed in closed car parks (indoor or underground) in accordance with the following requirements:

- the number of carbon monoxide detectors on each level must be sufficient to cover the entire area of the car park;
- the system must allow automatic control of blower and/or extraction fans and audible and light indications, on the basis of thresholds stipulated by the Commission;
- the carbon monoxide detection control panel must be fitted with a stand-alone power source in the form of an integrated battery (providing at least one hour of power).

Maintenance and management

Remote management

- The carbon monoxide detection control panel must be linked to the centralised technical management system GTC (control panel alarms and malfunctions).



Carbon monoxide detection control panel:

The control panel must have two or three individually adjustable alarm thresholds and the relevant contacts for servo-controls.

Ventilation system for gas venting:

The carbon monoxide detection control panel must make it possible to control the ventilation system in the car park via the centralised technical management system, in accordance with the following requirements unless otherwise specified in the environmental licence:

- The ventilation system in the car park must be automatically put into full operation for 15 minutes as soon as one of the carbon monoxide detection sensors measures an instantaneous rate of over 50 ppm.
- Ventilation systems may be optionally put into partial operation when the carbon monoxide concentration exceeds 25 ppm.
- A visual and audio alarm must be triggered when the concentration exceeds 90 ppm.
- If the CO detection system malfunctions, the mechanical ventilation system must be automatically put into full operation until the carbon monoxide detection system has been repaired.

See also Section I.2.3. Heating, ventilation, air conditioning (HVAC) for ventilation of the car parks.

2. METHANE (NATURAL GAS) DETECTION

Operating safety

The methane detection control panel must be fitted with a stand-alone power source in the form of an integrated battery (providing at least one hour of power).

Maintenance and management

Remote management

The carbon monoxide detection control panel must be linked to the centralised technical management system GTC (alert and alarm thresholds, control panel malfunction).

The status of the solenoid valve on the gas supply must also be reported to the fire service panel in accordance with the requirements of the Brussels Region Fire Service.



Detectors:

At a minimum, the boiler room and technical ducts containing gas pipes must be fitted with the following gas detectors at potential accumulation points:

- one sensor above each boiler, if justified by the size of the room;
- one sensor near the high ventilation grille;
- one sensor on the high ventilation grille in the gas metering and pressure-reducing room (if allowed by the gas distribution company);
- at the highest point of the shafts containing gas pipes;

- in horizontal ducts containing gas pipes (in adequate quantities).

Detectors must not be susceptible to air currents and must be easily accessible for maintenance purposes.

Detectors must have CE markings. Depending on the classification of the rooms where they are installed, they must be ATEX-certified.

Gas detection control panel:

It must have at least two alarm thresholds which can be adjusted independently per detector, or a closed loop of detectors and the relevant contacts for servo-controls.

First alarm level:

Programmed by default at 20% LEL⁸⁶:

- activates the alarm siren located close to the boiler room entrance;
- sends an alarm to the centralised technical management system.

Second alarm level:

Programmed by default at 40% LEL:

- cuts off the main gas feed by closing the gas solenoid valve;
- cuts off the electricity supply to the boiler room (all installations, including the centralised technical management system and lighting) by means of the main contactor on the boiler room switchboard;
- sends an alarm to the centralised technical management system;
- communicates the location of the gas solenoid valve via the centralised technical management system.

3. LIQUEFIED PETROLEUM GAS (LPG) DETECTION AND VENTING

Operating safety

Unless otherwise indicated, access to indoor car parks within Commission buildings is prohibited for LPG-powered vehicles. Vehicles of this kind must be parked in outdoor parking spaces, where available.

In the event that LPG-powered vehicles are permitted to park in a building's indoor car park on an exceptional basis, it is mandatory that an LPG gas detection and venting system be installed.

The alarm control panel and alarm devices must have a stand-alone power source in the form of a battery (lifetime of at least one hour).

Maintenance and management

Remote management

The LPG detection control panel must be linked to the centralised technical management system GTC (alerts, alarms and malfunction of the control panel).

Signage

The signage-related requirements set out in the applicable legislation must be observed.



⁸⁶ LEL (Lower Explosive Limit).

Gas detection control panel:


The control panel should ideally be located outside the detection zone and be linked to multiple remote detection sensors covering the entire area of the car park.

I.2.9. PROTECTION AGAINST MALICIOUS ACTS (SECURITY)

1. INSTALLATIONS OFFERING PROTECTION AGAINST MALICIOUS ACTS

The Commission's Security Directorate will stipulate the nature of systems and equipment offering protection against malicious acts (security) and approve these systems and equipment.

The proposed solutions must take into account the latest technological developments available.

The proposed solutions must also take into account the need for emergency evacuations of rooms. 

Buildings occupied by the Commission services in Brussels must be fitted with security systems which have been proven to be compatible with the systems used by the Commission, in line with the requirements to be supplied by the Security Directorate.

The access control system must cover all entry and exit routes (including the car park). It must also incorporate remote management options for safety installations and CCTV systems.

Communications with the Security Directorate's systems must be routed via the Commission's network (Ethernet TCP/IP).

The Security Directorate's systems will operate on a stand-alone basis and independently of the centralised technical management system.

The following principles must be observed:

- Doors, car park shutters and openable window frames accessible from the ground floor on all sides of the building or from accessible platforms and terraces must be fitted with an intrusion detection system which sends alerts to the building's control panel and which can be managed remotely from the Commission's Control Room.
- Access to the roofs, terraces and plant rooms must be restricted by means of an access control system.
- Emergency exit doors leading to the exterior must have a minimum height of 2.10 m. They must be fitted with mechanical opening/closing systems and electromagnets capable of resisting a tensile force of 600 kg. The system must be linked to a stand-alone power source within the building.

These installations must be designed in such a way as to meet all of the following requirements:

- information (display screen) concerning the status (open/closed) and power supply must be transmitted to the security desk in real time;
- each door must be individually unlockable and lockable;
- in an evacuation, the doors must unlock automatically;
- all emergency doors may be unlocked by pressing a button on the control desk;
- a green button-type switch with buzzer must be installed next to each door in the direction of evacuation;
- operation of a local alarm must indicate that the door has been open for longer than an authorised period or has been opened by means of the green button;

I.2.9. PROTECTION AGAINST MALICIOUS ACTS (SECURITY)

- all building entrances must either have a security guard or be linked to an access control system in order to monitor access and compliance with the procedures for accessing the building;
- all other entrance and exit points, including emergency exits, must be monitored around the clock by the anti-intrusion alarm system;
- management of electronic equipment must be centralised in a plant room which is monitored, protected, and managed remotely via the control panel in the central Control Room.

The space needed for the equipment to be installed must be identified during the technical solution development phase, to ensure that there is no risk of the space being earmarked for other purposes.

Specialised rooms (main distribution frame rooms LTG and cabling concentration rooms LR):

Access control:

- by personal card and appropriate card reader, ideally a proximity reader;
- number pad so that the cardholder can key in the validation code for his or her card, depending on requirements;
- biometric recognition, depending on requirements;
- connection to the central access control system;
- the access control system must provide for multiple levels of access to be programmed and for the establishment of time slots adapted to the various existing categories of staff;
- for normal access (entry and exit), the identification of an authorised card must deactivate the electromagnetic locking mechanism (with or without requesting a validation code);
- the emergency unlocking mechanism for evacuation purposes must take the form of a green button-style switch.

Autonomous battery-powered operation for 24 hours must be guaranteed for all the aforementioned mechanisms.

CCTV:

- cameras must be positioned according to the requirements of the Commission's Security Directorate and at a sufficient height to prevent them from being vandalised;
- the CCTV must be connected to the Commission's access control system and video control system;
- cameras must be positioned in such a way as to allow the recognition of individuals using the recorded images;
- surveillance cameras positioned outside the building and in the garages must be placed in protective boxes, with heating if necessary.

The system must be connected to a stand-alone power source (UPS or emergency unit).

I.3. SPECIFIC ZONES

The requirements set out below must be observed in addition to the provisions of Sections I.1. Architecture and construction and I.2. Specialised technical services.

I.3.1. SPECIALISED ROOMS

1. ENTRANCE HALLS

Safety of persons and property

A guard's booth and possibly a welcome desk must be located as close to the access as possible. See paragraph 8. Premises for security guards and/or receptionists.



Equipment:

Depending on requirements, each entrance hall must be fitted with:

- a room, niche or fixed cabinet housing the fire alarm control panel;
- a fixed stand for a directory board indicating the departments located on the various floors of the building;
- a place where safety equipment can be installed.

2. WELFARE FACILITIES

The building must incorporate welfare facilities which are appropriate to the activities carried out therein and which comply with the applicable legislation and standards.

Welfare facilities for areas other than offices (restaurants, kitchens, conference rooms, daycare facilities, warehouses, workshops, etc.) must meet the requirements to be supplied by the Commission.

The performance levels to be met by plumbing installations, taps and other sanitary appliances are stipulated in Section I.2.5 Plumbing.

2.1. Toilets

Toilets must be installed on each level containing office rooms and for each structural unit; they must be distributed uniformly and located in a central area.

Sinks must be supplied exclusively with cold water.

Accessibility for persons with reduced mobility (PRM)

In the event that a new office building is constructed upon request by the Commission, one toilet which is accessible for persons with reduced mobility must be installed on each level containing office rooms or similar.

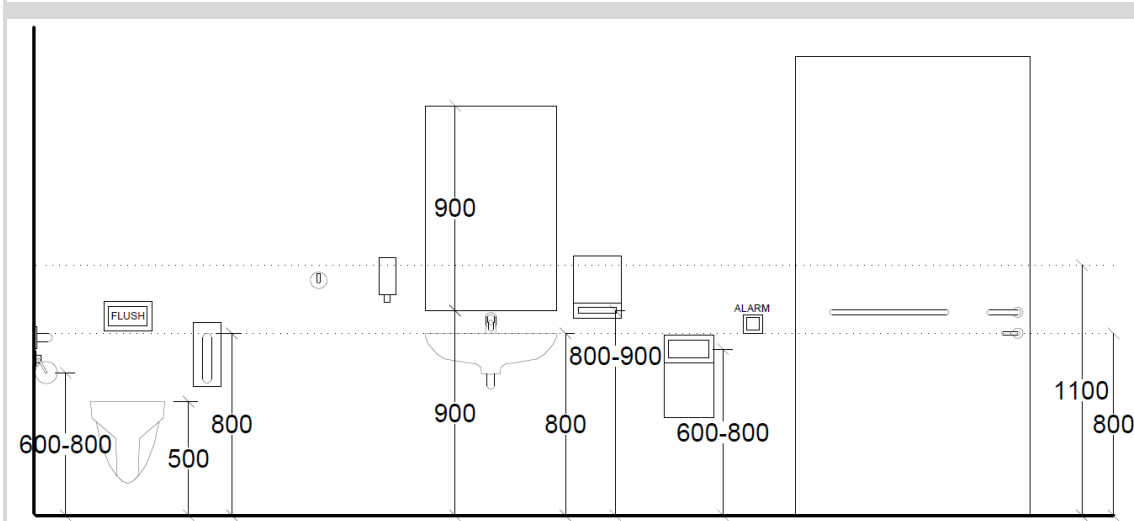
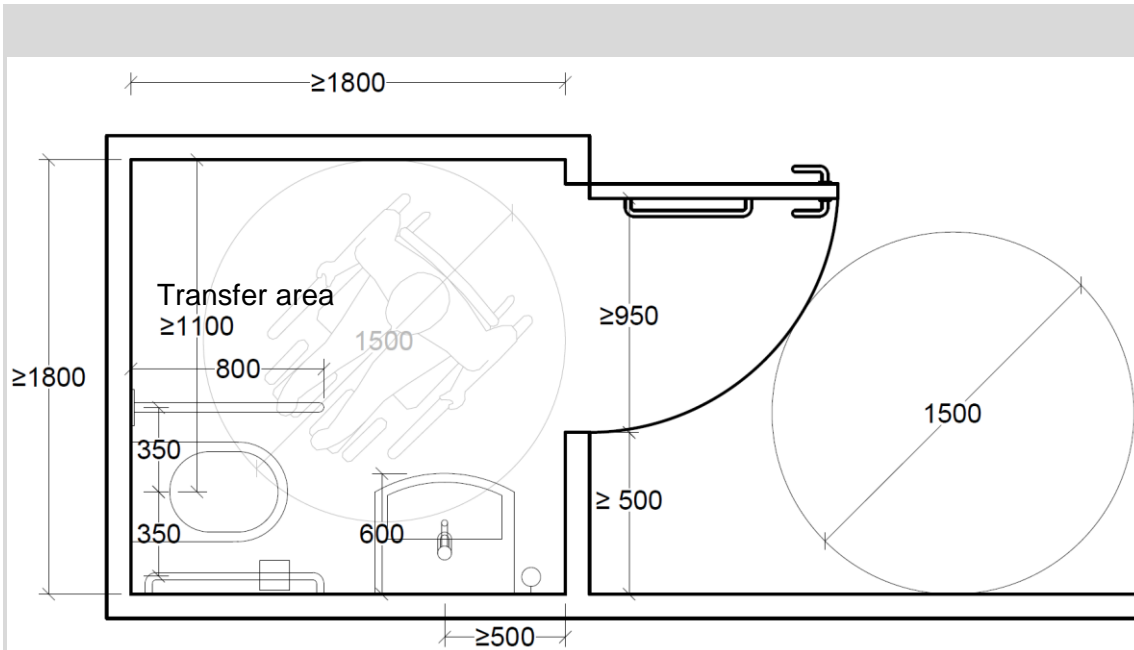
In other cases, the requirements of the applicable legislation must be observed.



The design requirements set out below for toilets accessible for persons with reduced mobility apply alongside the applicable legislation and standards.

The following model diagram illustrates a toilet accessible for persons with reduced mobility and which meets the current requirements⁸⁷.

⁸⁷ Toilets may be designed as a mirror image (left/right) of the model shown. It is recommended that these two different toilet designs (i.e. the model shown and its mirror image) be alternated. The position of the basin and the door (i.e. whether they are on the left- or right-hand side) can be significant for persons in wheelchairs who struggle to use one of their upper limbs.



In certain cases, toilets which are accessible for persons with reduced mobility may be integrated into the male/female toilet blocks. In such cases, the accessibility conditions apply to the doors used to access the toilet block, to the toilet cubicle which is accessible for persons with reduced and to one of the sinks.

Dimensions:

Unless technically impossible, the interior footprint must be at least 1.80 x 1.80 m.

Door which is accessible for persons with reduced mobility:

The door clearance should ideally be 0.95 m (door leaves of 103 cm).

The door lever must be easy to operate with a clenched fist.

Equipment which is accessible for persons with reduced mobility:

Toilets, sinks and taps which are accessible for persons with reduced mobility:

See Section I.2.5. Plumbing.

Liquid soap dispenser:

To be positioned ideally at a height of between 80 and 110 cm.

Paper towel dispenser:

To be positioned ideally at a height of between 80 and 110 cm.

Emergency call device:

See Section I.1.1. Functionality, paragraph 5.5.1. Emergency call devices.

Operating safety

Risk of slip and fall accidents

Floors must have anti-skid surfaces of at least R10 (DIN 51130), Class B (DIN 51097) or equivalent (see Section I.1.3. Occupational safety, paragraph 2.1. Risk of slip and fall accidents).



Layout of toilets:

Cubicle doors:

Cubicles must have a latch indicating on the outside whether the cubicle is vacant or engaged, and a device which allows them to be unlocked from the outside.

Equipment:

For specifications relating to sanitary appliances, see Section I.2.5. Plumbing.

Each toilet block must have at least:

- mirrors and shelves,
- liquid soap dispensers with a volume of at least 1 litre,
- paper hand-towel dispensers,
- lateral partitions to separate urinals,
- toilet-paper holders in the cubicles,
- coat hooks in the cubicles.

2.2. Changing rooms

Changing rooms must be available for workers who are required to change their clothes in line with the applicable legislation.

Changing rooms (male/female) must be available for individuals working within the building's maintenance services (cleaning, technical services), security services and cafeterias.

Operating safety

Risk of slip and fall accidents

Floors must have anti-skid surfaces of at least R10 (DIN 51130), Class B (DIN 51097) or equivalent (see Section I.1.3. Occupational safety, paragraph 2.1. Risk of slip and fall accidents).

2.3. Showers

Showers must be installed on a mandatory basis only if workers are exposed to excessive heat, carry out very dirty work, or are exposed to hazardous chemical or biological agents in line with the applicable legislation; in particular, this includes persons working in the following areas:

- kitchens,

- storage warehouses,
- locksmithing or joinery workshops,
- copy shops.

In addition, there must be shower rooms for cyclists available for the Commission’s staff in each building⁸⁸, in accordance with the requirements of the Commission’s mobility policy.


The rooms should ideally be located on the first basement level, close to the bicycle parking spaces.

Use of the showers should not be reserved for cyclists only. Other building occupants should also be encouraged to use the showers.

Operating safety

Risk of slip and fall accidents

Floors must have anti-skid surfaces of at least R10 (DIN 51130), Class B (DIN 51097) or equivalent (see Section I.1.3. Occupational safety, paragraph 2.1. Risk of slip and fall accidents).



Layout of showers:

Shower cubicles should ideally include an individual changing area as well as a shower.

In the event that shower cubicles do not include an individual changing area, separate communal changing rooms (male/female) must be provided. These communal changing rooms must include a communal changing area, one or more shower cubicles and a toilet if there is no toilet block nearby.

Equipment:

If there is a communal changing room, it must be designed to include the following:

- a sink (see Section I.2.5. Plumbing)
- benches
- coat hooks
- a mirror
- a shelf upon which personal belongings can be placed

⁸⁸ The following details concerning the recommended number of showers for office buildings in line with the criteria set out in the BREEAM environmental standard are provided for information purposes only:

Building occupants	Showers for cyclists
≤ 100	1
101-200	2
201-360	3
361-600	4
601-850	5
851-1100	6
1101-1350	7
≥ 1351	8

In the event that shower rooms are grouped, they must be separated into male/female shower rooms; the number must be rounded to the higher even number.

- a liquid soap dispenser
- a paper hand-towel dispenser
- a wall-mounted electrical socket

Individual changing room:

- it must be possible to lock the shower cabinet from the inside and unlock it from the outside
- bench or shelf where personal belongings may be placed out of reach of water
- coat hook

Shower:

- a tap and a shower head (see Section I.2.5. Plumbing)
- a shower tray measuring at least 90 x 90 cm
- a shower gel or soap holder
- a shower curtain or separator
- a grating made from a synthetic material

Clothes drying room:

- an adequately ventilated or heated clothes drying room may be installed near to the showers.

2.4. Canteens

Individuals working within the building's maintenance services (cleaning, technical services) and security services must be able to use the cafeterias or canteens in the building.

2.5. Rest and care rooms

A rest and care room must be provided in accordance with the applicable legislation.

The rest and care room should ideally be located on the ground floor, close to the reception desk.



Equipment:

One telephone for making emergency calls, and emergency numbers such as 2 22 22 (general emergency number) and 070/245 245 (poison unit).

The equipment and first aid kit will be provided by the Commission.

3. KITCHENETTES

There must be kitchenettes on each level, with the number to be determined on the basis of the floor space occupied by offices.



The kitchenettes must be equipped with at least the following:

- sink (see Section I.2.5. Plumbing)
- electric water heater (see Section I.2.5. Plumbing)
- refrigerator
- microwave oven

- cupboard for storing crockery
- cupboard for storing foodstuffs
- cupboard for storing cleaning materials
- work surface.

4. MEETING ROOMS

Meeting rooms (small rooms inside or next to office spaces or large rooms designed for use by the services accommodated in the building) must be installed in accordance with requirements to be supplied by the Commission and with the applicable legislation.

5. QUIET ROOMS IN COLLABORATIVE SPACES

Quiet rooms in collaborative spaces must comply with the acoustic requirements for partitioned offices.

The technical installations must be identical to those in collaborative spaces in order to allow future changes in layout.

6. TRAINING ROOMS

Rooms where training courses can be held may be installed on the basis of specifications to be supplied by the Commission.

They must comply with the requirements which apply to meeting rooms.



Equipment:

Depending on requirements, these rooms must be equipped with:

- desks;
- two electrical sockets (computer, supplementary lights) and one data socket per workstation in training rooms with IT facilities.

7. CAR PARKS

7.1. Layout and activities carried out therein

Indoor and outdoor car parks and delivery areas must meet the requirements set out below, in addition to the applicable legislation and standards.

The number of vehicle parking spaces provided (for cars, motorbikes and bicycles) must also meet the requirements set out in the Commission's mobility policy.



An area for storing bags of antifreeze road salt must be installed close to the entry point from the street. See paragraph 11. High-risk rooms.

Facilitating access for cyclists:

Sheltered parking spaces for bicycles should ideally be located as close as possible to the guard's booth, on the ground floor or the first underground deck.

Buildings must have showers for cyclists. See Section I.3.1. Rooms for a specific purpose, paragraph 2.3. Showers.

7.2. Layout

7.2.1. Safety of persons and property

The specific safety assessment carried out by the Commission's Security Director will establish the requirements which apply in respect of safety of persons and property.

A guard's booth must be present at each access route to the car park, with a clear view of the access route and the car park barrier. See paragraph 8. Premises for security guards and/or receptionists.



Internal requirements:

The general principles outlined below apply to all new projects. They will be adapted on a project-by-project basis depending on the future use of the building and the level of danger, as assessed at the planning stage.

- Car park entrances and exits must be in the same place.
- The entrance and exit ramps must be physically separate.
- There must be a security guard's booth at each entrance/exit to and from the car park (see Section 8.2).

Design elements:

- There must be barriers controlling the entrance and exit of vehicles into and from the car parks (level with the security guard's booth). The barriers must operate in accordance with the applicable standards; the barrier mechanism must, in particular, open the barrier to incoming vehicles for an adjustable length of time before closing it automatically, and open and close it automatically when vehicles leave the car park. Opening must be controllable from the security guard's booth and at the barrier itself. Closing must always be automatic. The barrier must have photoelectric safety cells and floor loops.
- However, it must be possible to block the barrier in the open or closed positions by means of a control panel.
- The shutters of the car park must be of the sectioned type with manual and automatic control and with secure locks operated from the inside as well as from the security guard's booth (the same type of security locks as those on the exterior doors of the building). The system for opening and closing these doors must be operable from the main reception desk. The system for unlocking the doors must be out of reach of pedestrians.

7.2.2. Operating safety

7.2.2.1. Access for cars to closed car parks

Unless otherwise indicated, access to indoor car parks within Commission buildings is prohibited for LPG-powered vehicles. Vehicles of this kind must be parked in outdoor parking spaces, where available.

In the event that LPG-powered vehicles are permitted to park in a building's indoor car park on an exceptional basis, it is mandatory that an LPG gas detection and venting system be installed. See Section I.2.8. Gas detection and venting, Section 3. LPG (liquefied petroleum gas) detection and venting.

7.2.3. Protection against malicious acts (security)

The Commission's Security Directorate will define and approve the type of system and security devices (protection against malicious acts) to be installed.



A video door phone between the building entrance and the car park exit must be used by those leaving the building outside opening hours. This video door phone must operate the opening and closing of the car park shutters.

Car park access doors/shutters must be opened/closed remotely from the central Control Room outside normal office hours.

8. PREMISES FOR GUARDS AND/OR RECEPTIONISTS

8.1. Main reception

A security guard's booth must be located as close as possible to the access point to the building.

In accordance with the requirements of the Commission's Security Directorate, adequate space must be available in the entrance hall at the level of the security guard's booth for the installation of any surveillance equipment required (X-ray gates, luggage scanners, etc.).

The hall area must be designed in such a way that security guards can monitor access to the open area (where people mingle) and the administrative area (lifts and stairways) at the same time.

Wherever possible, the booth must be located in such a way that the security guards can monitor both the main entrance and access to the car park.

There must be a waiting area in front of the access control point which can be supervised by the security guard.

The security guard's booth must be adequately ventilated and heated in line with the applicable legislation.

The desk must be dimensioned in accordance with the size of the building and designed in such a way as to ensure acceptable working conditions (no draughts). A protective glass structure must be installed if necessary.

The desk must have a design and structure allowing any modifications to installations and any extensions to be executed easily.



Guard's desk:

- Raised flooring of 10 cm must be provided for technical installations, if necessary. Space for at least two computers and two screens.
- The communication desk must have a minimum surface area of 0.5 m² per guard with a minimum length of 1 m and a minimum depth of 0.35 m.
- The desk space for each guard must be at least 2 m in length and 0.65 m in depth and allow a clear view of the entrance under surveillance.
- The whole area must have a minimum length of 2 m and a minimum width of 1.5 m.
- The main reception desk must have a key case which can hold 30 keys.
- The desk must be suitable for greeting wheelchair users in accordance with the applicable legislation (see Section I.1.1. Functionality, paragraph 5.4.2. Counters and kiosks).

- For electrical sockets and data points, see Sections I.2.2. Telecommunications, paragraph 1.6. Data and telephone sockets and I.2.4. Electricity and lighting, paragraph 3.1. Electrical sockets.

8.2. Guard's booths in the car park

A guard's booth must be present at each access route to the car park, with a clear view of the access route and the car park barrier.

The room must have a surface area which is appropriate to the building's dimensions and be designed in such a way as to guarantee acceptable working conditions.



Guard's booth:

- Raised flooring of 10 cm must be provided for technical installations, if necessary.
- The booth must have a minimum length of 2 m and a minimum width of 1.5 m.
- A window measuring at least 1 m² must be fitted in the observation wall at a height of 0.8 m from the floor.
- A door with a minimum width of 0.7 m must be fitted in the observation wall. This door must not cover more than 35% of the length of the wall.
- In the event that the surface area of the booth is less than 5 m², there must be only one door (either a sliding door or a door opening towards the outside).
- The door must be lockable.
- For electrical sockets and data points, see Sections I.2.2. Telecommunications, paragraph 1.6. Data and telephone sockets and I.2.4. Electricity and lighting, paragraph 3.1. Electrical sockets.

Equipment:

- Clean-air intake (see Section I.2.3. Heating, ventilation, air conditioning, paragraph 1.2.1. Quality of interior air – Permanently occupied areas) and an independent heating system must be provided in the booth.
- The booth must be fitted out with at least three telephone sockets, two data sockets and at least five 230 V sockets (or more, depending on the building's dimensions).
- Space for two standard computers and two screens.
- A shelf (minimum dimensions: 1.0 m long and 0.4 m wide) must be placed below the observation window.
- The booth must be fitted with an additional table with minimum dimensions of 0.3 m x 1.0 m, and with two coat hooks.
- The floor covering must be waterproof (linoleum or similar).
- If the booth is located outside, it must be insulated and have a reflective or tinted film on the windows.

9. PREMISES FOR USE BY DOCUMENTATION SERVICES

9.1. Archives and file registries

The Commission's buildings must contain areas designed for the local storage of archived documents and publications. These areas should generally be situated in windowless parts of the building or where there is little natural light.

Each area designated for use as archives must first be assessed in light of the permissible floor loading, which (in the event that limits apply in relation to the values indicated in Section I.1.1 Functionality, paragraph 4. Structural resistance) must be visibly indicated on the access doors to the area in question.

10. PREMISES FOR MAINTENANCE SERVICES

Several rooms in the building must be reserved for use by maintenance services (cleaning, technical staff) and other services.

See paragraph 2. Welfare facilities (changing rooms, showers, etc.) for use by staff working for the maintenance services and other services.

10.1. Premises for cleaning services

Premises must be provided for the storage of cleaning products (detergents, acids etc.) and paper products (toilet paper, paper towels, etc.) and for a washing machine and boiler with electrical sockets and appropriate supply lines and drainage, with ad hoc signage.

On each floor there must be at least one room for cleaning equipment with a tap, an overflow and a floor drain.

A sufficient number of water points must also be installed, inter alia in the following locations:

- plant and service rooms;
- car parks (one water point per 300 m² with hose connectors and a sign reading 'Not suitable as drinking water');
- outdoors, depending on requirements (it must be possible to drain these water points if there is a risk of frost).

10.2. Premises for maintenance services (plant rooms)

Plant rooms must be provided as required (ventilation systems, refrigerating systems, generator set, etc.).

The fire control panel and the fire service panel must be located in an area which is easily accessible for the fire service or other emergency services.

The centralised technical management system (GTC) may be located in a technical control centre, potentially together with the fire control panel and the fire service panel.

See Section I.3.2. Specialised main distribution frame rooms and cabling concentration rooms.

An adequate space or (ideally) a room must be provided for the Security Directorate's equipment used to protect against malicious acts.

If necessary, an office must be provided for the team manager appointed by the maintenance company.

Rooms must be provided for the storage of maintenance equipment or for hazardous products if necessary.

Ideally, none of these rooms should be directly accessible from any part of the building used as office space or similar (entrance hall, passageways to office).

10.3. Outreach team room

The building must have a working area for an outreach team if necessary.

10.4. Areas for collecting and sorting refuse (dustbin area)

Buildings must have an area for the collection of refuse.

The area will be used to collect and store different types of waste and prepare them for removal. As such, it represents the heart of the waste sorting system.

The area must have access to the building's loading bay or area, if necessary by means of a goods lift.

The area must be sufficiently spacious to accommodate skips for various types of waste (paper, recyclable paper, cardboard, organic waste, solid objects, liquids, plastic, oil, food packaging, general waste, etc.) and, where appropriate, equipment for compressing and bundling waste.

If there is a catering service in the building, separate rooms should ideally be provided for combustible waste and putrescible waste.



The area must have an impervious floor and skirting boards and a drain.

It must also have a water point and a washer with an automatic rewind mechanism.

See Section I.2.7 Fire safety, Section 5. Sprinklers.

For ventilation, see Section I.2.3. Heating, ventilation, air conditioning (HVAC).

10.5. Mail sorting office

Mail sorting offices are areas for sorting the mail delivered to the building (depending on requirements).

These offices should ideally be situated near a lift and be equipped with furnishings designed specially for the sorting of mail. The offices must be large enough to allow the incoming mail to be sorted easily.

A room must also be provided for the storage of sensitive but non-classified documents awaiting destruction.

11. HIGH-RISK PREMISES

Measures must be put in place on the basis of risk assessments to limit the hazards associated with high-risk premises.



'High-risk' premises are premises which contain objects posing one or more of the main hazards listed below:

- physical hazard,
- health hazard,
- environmental hazard.

Risk limitation measures:

The measures and specifications which apply to the various types of high-risk premises are summarised in the following table and must be adapted on a case-by-case basis and on the basis of specific risk assessment (technical and other requirements and activities carried out).

See Section I.1.3. Occupational safety, paragraph 1. Safety in the event of a fire and Section I.2.7. Fire safety.

See also paragraph 7. Car parks and Section I.3.4. Catering.

PREVENTIVE MEASURES	ROOM TYPE										
	Storage of solid combustible products	Storage of liquid combustible products	Storage or use of special liquid products	Presence of combustible gases	Rooms for high-voltage/low-voltage electricity transformers	Battery rooms	Copy shops, print shops using offset presses	Storage of salt	Generator sets	Locksmithing, mechanical and joinery workshops	Storage of putrescible waste
Special floor coating ⁸⁹		X	X		(1)	(1)	X	X	(1)	(1)	X
Gullies							(1)				X
Raising of thresholds or containment trays		X	X		(1)	(1)		X			
CO ₂ extinguisher					X	X	X		X	X	
Water-spray extinguisher	X	X	X	X			X			X	
Sprinklers	(1)										X
Gas detection				X							
Mechanical or natural ventilation, depending on requirements	X	X	X	X	X	X	X		X	X	X
Signage:											
Naked flames prohibited	X	X	X	X	X	X	X		X		
No smoking	X	X	X	X	X	X	X		X	X	X
Risk of explosion			(1)	X		X			X	(1)	
Flammable substances		X	(1)				X			X	
Toxic substances		(1)	(1)		(1)		(1)				
Corrosive substances		(1)	(1)								
Electrical hazard					X	X	(1)		X	X	

(1) where applicable

12. PREMISES INTENDED FOR VARIOUS SERVICES

If service requirements so dictate, areas allocated to other uses may be reassigned on the basis of a specific assessment, in particular:

- premises intended for document reproduction services, print shops, etc.;
- premises intended for welfare services (centres, sports rooms, 'well-being' facilities, leisure centres, libraries, etc.);
- rooms accessible to the public (welcome desks, information offices or info shops, exhibition areas, etc.);

These premises are accessed through an entrance separated from the building's controlled access;

- commercial outlets (bookshops, ticket distributors/machines, etc.).

⁸⁹ Impermeable floor, electrostatic sink, etc. according to requirements.

I.3.2. SPECIALISED ROOMS

The requirements outlined below must be met in addition to the applicable legislation and standards.

1. COMPUTER ROOM (LSU)

1.1. Definition

Computer rooms (local server unit, LSU) must be suitable for housing any machines required to supply IT services to the Directorate-Generals.

In future, local IT rooms will no longer be accommodated in Commission buildings, since centralised IT services make it possible to provide a higher level of performance.

2. MAIN DISTRIBUTION FRAME ROOMS (MAIN AND SECONDARY MAIN)

2.1. Definition

The main distribution frame room is the area which accommodates the equipment needed to connect the different levels of the building and the different telecommunication networks used by the Commission, namely:

- PABX (telephone switchboard),
- switches/router,
- operators' infrastructure,
- cable television,
- satellite reception.

It also serves as the starting point for the supply of power to the specialised premises.

Depending on the requirements to be specified by the Commission (DG DIGIT), a secondary main distribution frame room (LTG'), with the same characteristics and specifications as the main distribution frame room (LTG), must be installed to guarantee redundancy of structured cabling and the option of a second point for operators' services to enter the building.

2.2. Architecture and construction

Protection against malicious acts (security)

Location of the room

- The room must not be located behind a street-level window looking directly on to the street, unless this is unavoidable for technical reasons.
- It must only be possible to identify the room using the customary addressing system.

Structural elements

- The internal and external walls must extend from the structural floor to the structural ceiling.
- The internal and external walls must be resistant to intrusion (solid concrete block of at least 14 cm or an equivalent solution to be approved by the Security Directorate).
- There must be no external windows, unless this is unavoidable for technical reasons.

Access control

The access control system must comply with the specifications of the Commission's Security Directorate (see Section I.2.9. Protection against malicious acts).

Maintenance and management

The room must not be close to a potential source of flooding, strong vibrations, magnetic fields or strong radio-frequency emissions.

The room must be located:

- close to shafts, avoiding or minimising any routing of cables through the car park;
- close to existing cable entries (for telephone or cable television, etc.).

Raised flooring must be installed with a view to accommodating technical installations; it must incorporate protection against electrical shocks (anti-static and dissipative) and be adequately resistant to mechanical damage and abrasion.

Fire safety

The room itself (including the cable feed-throughs and ducts) must be a fire-resistant compartment in accordance with the applicable regulations.

The fire-resistant properties of the coverings for the vertical partitions, ceilings, flooring or raised flooring must correspond to those of the plant rooms, in accordance with the applicable regulations.

Acoustic comfort

The noise levels in the rooms adjacent to the main (LTG) or secondary (LTG') distribution frame room must not exceed the limit values stipulated in Section I.1.4 Occupational well-being, Section 3. Acoustic comfort.



Physical design:

The surface area of the room must comply with the Commission's requirements and must be at least 40 m².

The minimum surface area for secondary main distribution frame rooms is 20 m².

Layout:

Doors:

Doors must have a height of at least 2.10 m, with a single leaf, opening to the exterior and fitted with door closers on the interior.

Raised flooring:

- Available height of at least 15 cm.
- Mechanical resistance class 6A in accordance with standard NBN EN 12825 (useful load of 6 kN).
- Protection against electric shocks (electrical leakage resistance above $5 \times 10^4 \Omega$ in accordance with VDE 0100/T.610 or equivalent), dissipative in nature (maximum electrical leakage resistance below $10^9 \Omega$ in accordance with standards EN 14041, EN 1081, ISO 10965 or equivalent), with equipotential bonding connected to the computer earth.
- The tiles must measure 60 x 60 cm.
- The raised flooring must be earthed, which requires the connection of at least one quarter of the metal floor supports and all the other metal parts under the raised flooring (such as cable supports, inert-gas pipes, etc.) to the earth.

2.3. Remote management

The points to be connected to the centralised technical management system (GTC) are stipulated in Section I.2.1. Remote management, paragraph 1.5. Points to be connected.

2.4. Access control installations

Safety of persons and property

The room must be equipped with an access control system and remote surveillance in line with the requirements of the Commission's Security Directorate (see Section I.3.3 Sensitive rooms).

2.5. Heating, ventilation, air conditioning (HVAC)

2.5.1. Treatment type

Air conditioning is required on a round-the-clock basis in the main distribution frame room LTG for the network of specialised rooms LR (main distribution frame room, cabling concentration room), separate from the HVAC installations in the building.

Humidity regulation is not required in the main distribution frame room.



Air-conditioning cabinet:

The air-conditioning cabinet must have an anti-vibration base.

Water distribution circuits:

No pipework may be placed above racks. Feed-throughs of pressurised pipes will only be permitted in raised flooring.

2.5.2. Hygrothermal conditions

Calculation conditions on the basis of the ASHRAE 2011 recommendations:

- Maximum setpoint temperature⁹⁰ for cooling: 25 ± 1 °C

These conditions must be reviewed on the basis of DG DIGIT's requirements in the case of specific or very old equipment.

The installation's power rating must be equivalent to the maximum heat emitted by the machines and be determined in consultation with DG DIGIT; the minimum power rating is 300 W/m².

2.5.3. Ventilation

Minimum air flow rate:

- Fresh air supply: 130 m³/h.
- Air extraction: 100 m³/h

The design of the feed-throughs for air ducts must incorporate fire dampers to ensure that the room remains a fire compartment.

2.5.4. Redundancy

Air-conditioning installations must comply with one of the following redundancy scenarios in order to guarantee continuity of operation in the event of malfunctions and during maintenance operations:

⁹⁰ Temperature of the air entering the computer equipment.

(a) a cold-water air-conditioning system which functions independently of the building's installations, with the following equipment in duplicate:

- Cold water production: the following must be installed:
 - (1) an additional emergency supply from the building's cold-water production system;
 - (2) or an additional stand-alone source of cold water.
- Cold water distribution: the water circuit must incorporate two pumps connected in parallel.
- Terminal units: two redundant cabinets must be connected in parallel in the room. Each cabinet must supply 100% of the maximum power required.

(b) Two redundant stand-alone air-conditioning systems which operate independently of the building's installations.

All the HVAC installations in the specialised rooms must be supplied with power from a stand-alone power source, e.g. an emergency unit or (if not available) an alternative stand-alone power source (see Section I.2.4. Electricity and lighting).

2.5.5. Regulation

The air-conditioning installation must restart automatically after a brief power cut.

If the fire alarm is activated:

- the fire dampers must close;
- the air-conditioning and ventilation systems must cease operation.



Air-conditioning cabinet:

The general alarm signal must be reported to the centralised technical management system (GTC) and must be visible on the front of the cabinet.

An auxiliary switch must enable the fire detection control centre to turn off the air-conditioning cabinet.

2.6. Electricity and lighting

2.6.1. Normal lighting

Visual comfort

Normal lighting must guarantee an average horizontal lighting level (E_m) of 500 lux measured at 0.85 m from the floor (see Section I.2.4. Electricity and lighting).

Control and regulation of lighting installation

The lighting system must incorporate manual switches (non-timed) at the entrances to rooms.

2.6.2. Emergency lighting

Emergency lighting must be provided in rooms in accordance with the applicable regulations (see Section I.2.4. Electricity and lighting).

2.6.3. Electrical installations

Operating safety

On the basis of the relevant risk assessments, the active equipment in the main (LTG) and secondary (LTG') distribution frame rooms must be supplied with power by two redundant circuits:

- normal power supply or stand-alone power source operating on the basis of an emergency unit, if available in the building (see Section I.2.4. Electricity and lighting, paragraph 3.2. Electrical circuits);
- supply of power from a stand-alone power source (UPS) designed to be used solely by computer equipment in specialised rooms (main distribution frame rooms, cabling concentration rooms) (see paragraph 4. Uninterrupted static power supply – UPS).

Telephone or cable television switchboards must be supplied with power from one of the stand-alone power sources.

Earthing

A separate equipotential earth circuit must be installed for computer equipment. The computer racks and connection circuit boards must be connected to this circuit.



The sockets and cables must be indelibly marked (at each end of the cable); as a minimum, the mark must state the number of the corresponding circuit.

The design must incorporate a supply of power to the racks (normal power and UPS) with two rails of eight sockets (230 V) and no switch, installed in accordance with the Commission's requirements.

The passive racks accommodating the horizontal FTP cabling must also be equipped with two eight-socket rails (normal power current and UPS) installed in accordance with the requirements to be supplied by the Commission.

2.7. Fire detection and automatic extinguishing installations

Fire safety

Fire detection system connected to the building's central panel (see Section I.2.7. Fire protection, paragraph 1. Fire detection, alerts and alarms).

3. CABLING CONCENTRATION ROOM (LR)

3.1. Definition

This is the area where the horizontal cabling from one or more floors is brought together.

3.2. Architecture and construction

Protection against malicious acts (security)

Location of the room

- The room must not be located behind a street-level window looking directly on to the street, unless this is unavoidable for technical reasons.
- It must only be possible to identify the room using the customary addressing system.

Structural elements

- The internal and external walls must extend from the structural floor to the structural ceiling.
- There must be no external windows, unless this is unavoidable for technical reasons.

Access control

The access control system must comply with the specifications of the Commission's Security Directorate (see Section I.2.9. Protection against malicious acts)

Maintenance and management

Location:

- near to existing shafts;
- avoiding proximity to pressurised water pipes or areas where large amounts of paper are stored.

Raised flooring must be installed to accommodate technical installations, in compliance with the requirements set out in paragraph 3.2.

Fire safety

Even if the room is not a compartment, the vertical partitions must have at least a fire resistance of EI 30, and the doors must have a fire resistance of EI₁ 30.

Acoustic comfort

The noise level within the rooms adjacent to the cabling concentration rooms must not exceed the limit values stipulated in Section I.1.4. Occupational well-being, paragraph 3. Acoustic comfort.



Physical design:

Dimensions: depending on the number of points which are brought together and the number of racks to be installed, the surface area in each cabling concentration room may vary between 8 m² (for 400 points) and 12 m² (for 900 points).

Layout:

Doors:

Doors must have a height of at least 2.10 m, with a single leaf, opening to the exterior and fitted with door closers on the interior.

3.3. Remote management

The points to be connected to the centralised technical management system (GTC) are stipulated in Section I.2.1. Remote management, paragraph 1.5. Points to be connected.

3.4. Access control installations

See paragraph 2.4.

3.5. Heating, ventilation, air conditioning (HVAC)

3.5.1. Treatment type

See paragraph 2.5.1.

3.5.2. Hygrothermal conditions

See paragraph 2.5.2.

3.5.3. Ventilation

Minimum air flow rate:

- Fresh air supply: 130 m³/h.
- Air extraction: 100 m³/h

3.5.4. Redundancy

Redundancy at the level of the terminal units must be guaranteed by means of:

- a) two redundant terminal units (fan convectors) on the chilled-water circuit of the specialised rooms;
- b) or with a terminal unit and a back-up ventilation system (extraction flow rate of 250 m³/h).

3.5.5. Regulation

See paragraph 2.5.5.

3.6. Electricity and lighting

See paragraph 2.6.

3.7. Fire detection and automatic extinguishing installations

See paragraph 2.7.

4. STATIC UNINTERRUPTIBLE POWER SUPPLY (UPS)

Operating safety

The amount of power to be supplied by the UPS must be determined on the basis of risk assessments. By default, it must supply at least 20 minutes of power at full load. In the event that stand-alone power source on the basis of an emergency power unit is not be available in the building, the UPS must supply at least 60 minutes of power.

Remote management

See Section I.2.1. Remote management, paragraph 1.5. Points to be connected.



The power supply to specialised rooms (main distribution frame rooms LTG, secondary main distribution frame rooms LTG' and cabling concentration rooms LR) should ideally be centralised.

The UPS should ideally be located in a main distribution frame room LTG.

Technical specifications:

The oscillator must be of an online type and fitted with a 'manual' external bypass so that it can be isolated to allow maintenance operations to be carried out on all these components. This operation must have no effect on the charge (output voltage must be synchronised with the bypass network unless the voltage at the bypass input is unstable).

It must comply with the following technical requirements:

- Output > 90% from 25% load upwards.
- Total harmonic distortion (THD) < 10%.
- Input voltage: 3 x 400 V + N.

Connection of the UPS:

The UPS room must be fitted with three separate electrical boards:

The normal/emergency N/S UPS board:

- must be powered by the building's normal/emergency network (if a generator set is available in the building) or by the normal power supply (default option);
- supplies the rectifiers of the UPS and the UPS bypass panel.

The bypass UPS board:

- is powered by the normal/emergency network;
- powers the UPS bypasses;
- a lockable circuit-breaker must make it possible to power the TEG UPS board without going via the UPS (external manual bypass).

The TEG UPS board (UPS general board):

- is powered by the UPS and the external bypass;
- supplies the various UPS network outputs (computer rooms, cabling concentration rooms, control centre, etc.);
- must be fitted with a system allowing circuits to be added without a shut-down (Polybloc system); sufficient spare capacity for this must be provided on the board;
- a multimeter must be placed at the front of the board; the minimum information to be displayed comprises: voltages, currents, power levels, harmonics.

A communication bus must enable the various UPS devices present to phase and distribute the charge.

Two UPS devices must never be connected in series.

I.3.3. SENSITIVE ROOMS

The protection arrangements for sensitive rooms (specialised main distribution frame rooms LTG and cabling concentration rooms LR, secure areas) must correspond to the level of risk associated with the area (custom-designed walls, anti-intrusion doors/windows, separate alarm system, adapted security locks, etc.).

The specific safety assessment carried out by the Commission's Security Director will establish the requirements which apply in respect of safety of persons and property. See also Section I.2.9. Protection against malicious acts (security).

The proposed solutions must also take into account the emergency evacuation arrangements for the rooms.

1. SPECIALISED ROOMS (MAIN DISTRIBUTION FRAME ROOMS AND CABLING CONCENTRATION ROOMS)

See Section I.3.2. Specialised rooms.

2. SECURE AREAS

The requirements for secure areas will be set out in the specific safety assessment to be carried out by the Commission's Security Directorate.

I.3.4. CATERING

The requirements outlined below must be met in addition to the applicable legislation and standards.

1. SPATIAL ORGANISATION AND ACTIVITIES CARRIED OUT WITHIN BUILDINGS

In the event that rooms are provided for use by catering services, they must comply with the guidelines set out below.

The communal catering facilities in the building must take into account its size and type and the availability of other facilities in the vicinity.

The capacity and surface area of rooms for use by catering services must be tailored to the catering facilities that will be present in the building, in line with the requirements to be supplied by the Commission.

The design of catering areas, and in particular of self-service restaurant kitchens, must comply with the following requirements:

- guarantee that the kitchen is accessible with reference to the building's unloading area;
- establish separate working areas for different activity types with a view to maintaining high standards of food safety;
- minimise the distances to be travelled by both materials and staff between activities, while ensuring that both can circulate easily and rapidly;
- follow the 'forward flow' principle; the various kitchen-based activities must be organised such as to avoid any backtracking or criss-crossing between the 'clean' area and the 'dirty' area⁹¹. A logical and rational sequence must be followed from the time when the goods are delivered through to consumption and disposal.
- Where applicable, and upon request by the Commission, installations must be adapted to meet the requirements of the occupational well-being and environmental policies as regards catering facilities.

The following requirements must be met:

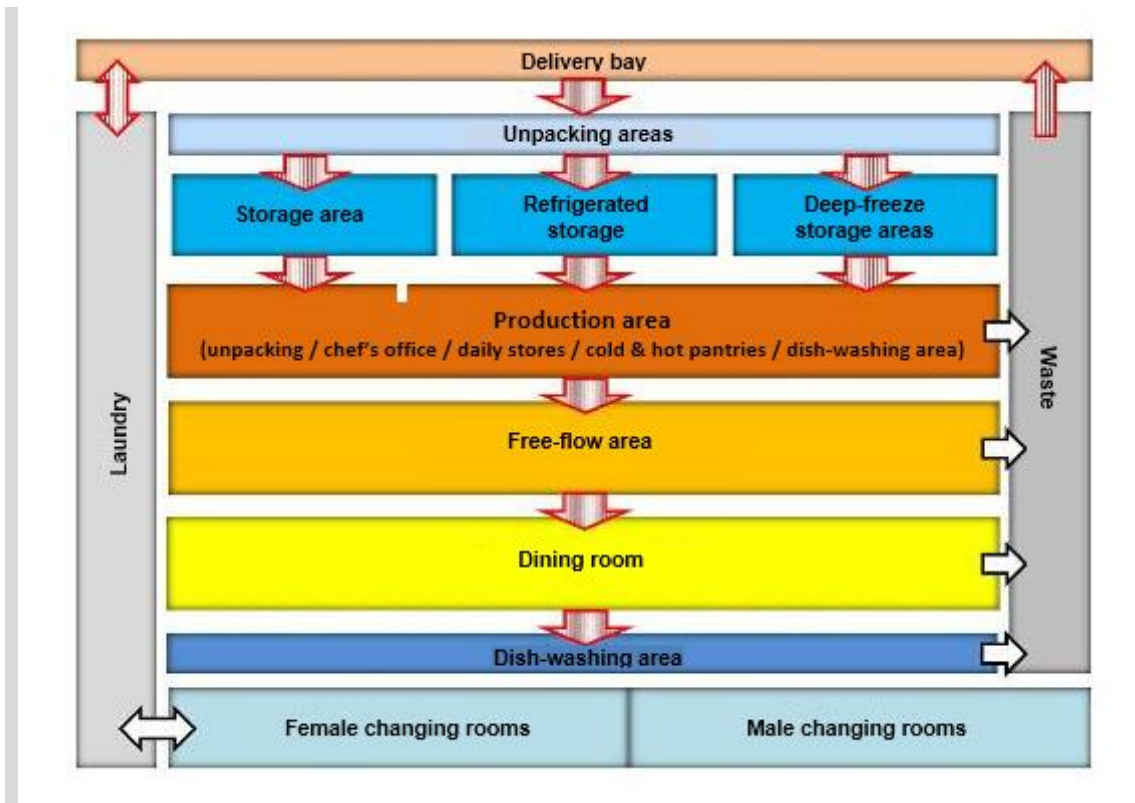
- accessibility from the main entrance to the building;
- friendly and welcoming atmosphere in restaurants and cafeterias;
- access to the outside of the building or a terrace is preferred (whereby this space must not be accessible to the public).



Activities carried out in self-service restaurants:

Example of activities in self-service restaurants

⁹¹ The term 'dirty area' means premises or locations in which serious contamination could arise (e.g. vegetable cleaning area, sink block/dish-washing area, waste-disposal area, etc.), while the term 'clean area' means premises where meals are put together and ready-to-serve hot and cold dishes are prepared (e.g. cold meals, cooking area, etc.).



The standard Commission canteen is organised on a self-service basis, with a free-flow area, a dining room and a kitchen with cooking, dish-washing and storage areas.

The configuration and floor areas of rooms to be used by catering services will be specified by the Commission on the basis of a specific assessment.

By way of reference, the standard capacity of a dining room in terms of seats (based on two meal services per seat) should be calculated on the basis of one sixth of the number of occupants in the building and the neighbouring buildings.

The standard surface unit for a dining room is 2 m² per seat.

The capacity must be revised upwards in buildings with a conference centre.

The areas listed below must be incorporated:

- Delivery bay:

An accessible unloading area must be available for delivery vehicles, if possible separated from the bay used for the collection of waste (bin containers) or others.

- Unpacking area:

An unpacking area must be provided on this level so that outer packaging (boxes etc.) can be removed as soon as the goods arrive in the kitchen.

- Storage area:

The distance between the unloading bay and the stores must be as short as possible with easy access for transporting goods by trolley.

o "FOOD" store

The food store is a storage area for non-perishable foodstuffs which must be located near the delivery bay or close to the kitchen.

If it is located at a distance from the kitchen or on a different floor, a 'daily food store' for non-perishable foodstuffs must also be provided near the kitchen.

- “NON-FOOD” store

For the storage of cleaning products and other products which might contaminate food.

- Refrigerated/deep-freeze storage:

To be specified by the Commission depending on requirements.

- Production area:

- unpacking area just in front of the entrance to the kitchen;
- chef’s office with windows which provide a view of the entire kitchen;
- cold & hot kitchens (pantries);
- sink block, either as an integral part of the dish-washing area or located near the kitchen;

- Free-flow area.

- Dining room:

The return flow of dirty dishes from the restaurant must not pass through the area where food is served to diners or intersect with the food preparation line.

Crockery must be cleared by a conveyor belt taking trays directly to the dish-washing area; it must be spacious enough to avoid bottlenecks.

- Dish-washing area:

The dish-washing area must also be equipped with dishwashers. A waste disposal area equipped with a refrigerated cabinet or (where applicable) pulpers must be located at the entrance to the dish-washing area.

- Linen.

- Toilets, changing rooms and showers.

- Bin room, close to the bay.

Cafeteria:

The purpose of the cafeteria will be to serve hot and cold drinks, sandwiches, cakes and pastries.

The cafeteria must be spacious and equipped with seats calculated on the basis of the number of occupants of the building and of the nearby buildings if they do not already have a cafeteria.

The areas listed below must be incorporated:

- Room
- Counter
- Office
- Dish-washing area
- Storage area
- Toilets and changing rooms, for four people (to be shared with the self-service restaurant if there is one).

Snack bar:

The snack bar must be designed with seats, calculated on the basis of the number of occupants of the building and of the nearby buildings if they do not already have a cafeteria.

The areas listed below must be incorporated:

- Room
- Counter
- ‘Hot pantry’ and ‘cold pantry’
- Dish-washing area
- Storage area
- Toilets, changing rooms (for four people) and showers for staff.

Automatic vending machines for drinks and snacks:

Automatic vending machines must be located in an easily accessible position on a main passageway. They should not impede evacuation routes or get in the way of the building’s occupants.

The vending machines must be installed by a company under contract to the Commission.

Provision must be made for water and power supplies and for data network connection points.

The floor covering in the area where the vending machines are installed must be resistant to water and to any wear and tear caused by movement of the vending machines (e.g. linoleum or tiles).

2. LAYOUT

The specified performance levels below must be observed in addition to the requirements set out in Sections I.1. Architecture and construction and I.2. Specialised technical services.

2.1. Architecture and construction

2.1.1. Layout of working areas

Workstations must be ergonomically designed, in particular workstations at counters.

2.1.2. Accessibility for persons with reduced mobility (PRM)

See Section I.1.1, Functionality, paragraph 5.4.2. Counters and kiosks.

2.1.3. Maintenance and management

The finishings of rooms where foodstuffs are prepared and stored must allow for simple and efficient physical and hygienic maintenance (hard-wearing materials with smooth surfaces, without any narrow angles or recesses).

The floors of rooms where foodstuffs are prepared or stored must have gullies with a grating and drain, be impervious and be designed with the required incline (1%) to ensure that water used for rinsing and cleaning flows away easily.

Walls must be smooth and impermeable to water.

See also Section I.1.6. Structural elements and finishes, paragraph 6. Coverings.

Corners between walls and floors must be rounded (sanitary skirting board) in rooms where foodstuffs are prepared and stored.

Where necessary, walls and doors must be protected against collisions with trolleys.



Floors:

Kitchens and dish-washing areas: tiles, poured epoxy resin or (ideally) methyl acrylate.

Floors should ideally be seamless.

If floors are tiled, a waterproofing membrane or layer must be installed below the screed.

Walls:

The dividing walls between premises should ideally be constructed in masonry. The air-tightness of the substrate must be guaranteed at all times.

The walls in the cafeteria production areas (pantry, dish-washing area, etc.) must be tiled.

Protection of walls and doors against impacts:

Protection against collisions by trolleys must also be installed: horizontal protection by means of strips 20 cm and 90 cm above the floor and vertical protection in the corners, as required.

Spring-loaded swing doors (non-latching, with a porthole and protection against collisions by trolleys and protection from floor cleaning by means of a stainless-steel plate at the bottom of the door to 90 cm above ground level) must be used.

Wall fittings:

Waste pipes and water pipes must be embedded in the wall.

If such fittings are fixed on to the wall, the distance between them and the wall must be large enough to permit cleaning of the wall behind them.

2.1.4. Safety of persons and property

A micro-perforated electrical shutter with control device behind the counter must be installed in the cafeterias and snack bars.

2.1.5. Operating safety of kitchen equipment

Gas appliances are prohibited and must be replaced by electric appliances.

2.1.6. Risk of slip and fall accidents

Floors in rooms where foodstuffs are prepared or stored and in high-traffic areas must be adequately non-slip (see Section I.1.3. Occupational safety, paragraph 2.1. Risk of slip and fall accidents).

2.1.7. Acoustic comfort

See Section I.1.4. Occupational well-being, paragraph 3. Acoustic comfort.



Wherever possible, access to the dish-washing area must be at the end of the dining room, through a double-door entry system, to prevent the noise affecting customers.

2.1.8. Hygiene

Hygiene arrangements:

- Hygiene arrangements must comply with the requirements set out in the “Guide d’autocontrôle pour le secteur des cuisines de collectivités et les maisons de soins” (Guide to self-checking systems in communal kitchens and the nursing home sector) published by the Belgian Federal Agency for the Safety of the Food Chain [Agence fédérale pour la sécurité de la chaîne alimentaire, AFSCA].

Toilets, changing rooms and showers:

- Special toilets and changing rooms for catering personnel must be installed close to the kitchen and must meet the requirements set out in Section I.3.1. Rooms for a specific

purpose, paragraph 2. Recreational facilities. These must not have any doors or windows which connect directly to the kitchen area.

- Self-service restaurants and snack bars must also have showers.



Hands-free sinks:

Toilets for catering or kitchen staff must have one (or more) washbasins supplying hot and cold water which are not used as sinks and which are fitted with hands-free taps (optoelectronic controls or knee-controlled).

Changing rooms:

Personal and work clothing must be strictly separated and stored in separate lockers.

A storage container must be provided for dirty linen awaiting collection.

Bin storage area:

See Section I.3.1. Rooms for a specific purpose, paragraph 10.4. Rooms for the collection and sorting of waste (bin storage area) and Section I.2.3. Heating, ventilation, air conditioning (HVAC).

2.1.9. Energy efficiency

With regard to the energy efficiency of kitchen installations and equipment (including dish-washing installations and equipment), preference must be given to those which will entail the lowest possible operating and maintenance costs (including energy consumption).

2.1.10. Sustainable use of natural resources

Water-saving appliances

Domestic water infrastructures designed specifically for use in kitchens must be fitted with water-saving technologies.

Polluting emissions

Further details of the requirements which apply to refrigerants used in equipment can be found in Section I.2.3. Heating, ventilation, air conditioning, paragraph 4.2.

2.1.11. Information and signage

The various areas in the building should be identified by means of a rigid, washable pictogram (storage areas, changing rooms, offices, production areas, laundry areas, dustbin areas, etc.).

2.2. Specialised technical services

2.2.1. Telecommunications

An emergency communications system must be installed in the kitchen (outside any cooking areas) and in the cafeterias in line with the requirements to be supplied by the Internal Service for Prevention and Protection at Work (OIB.SIPP, part of the Office for Infrastructure and Logistics).

For further details of the data points to be installed, see Section I.2.2. Telecommunications, paragraph 1.6. Data and telephone sockets.

2.2.2. Heating, ventilation, air conditioning (HVAC)

The ventilation system in the kitchen must ensure the extraction of the various cooking vapours and the smells associated with them. This function must essentially be performed by suction through the extractor hoods.



Ventilation (extractor hoods):

The power and airflow of the extractor hoods used for extraction purposes must be strong enough to ensure the extraction of the various cooking vapours and the smells associated with them and to renew the air effectively.

Kitchen extraction ducts:

The kitchen extraction ducts must be manufactured from stainless steel sheet. Access hatches must be installed every two stories.

Ventilation network for restaurants:

The flow rate of the supply air to the restaurant must ensure that a slight overpressure is maintained compared to the kitchen. The extraction network for restaurants must be completely ducted in order to avoid inconveniencing occupants of the dining room in any way by smells from the kitchens, dish-washing areas etc.

Production of hot tap water for kitchens:

Hot tap water for kitchens must be produced using a plate heat exchanger connected to the building's primary hot water circuit. If necessary, an electric boiler (made of stainless steel) should also be installed to produce hot water when the circuit is switched off. The boiler must be placed as close as possible to the water points.

To enable intervention in the event that bacteria develops in the storage boilers, the pipework must be fitted with tapping points and valves to allow a chlorination system to be installed, as well as taps for taking water samples.

Kitchen:

The following temperature requirements must be observed:

- Hot food preparation areas: See Section I.2.3. Heating, ventilation, air conditioning (HVAC)
- Cold food preparation areas: ≤ 14 °C.

Insulated doors, if possible swing doors which are completely transparent or equipped with a porthole.

Cold food preparation areas:

All cold food preparation areas must have walls which are impermeable to water.

No floor gullies may be placed in these areas to avoid any reflux of air from the mains drainage system.

The refrigerating set must have a refrigerating temperature capacity of 1 to 4 °C.

By default freezer rooms must be accessed via cold rooms at positive temperatures.

It is planned that energy will be generated in future using cold production plants.

It will be necessary for these to be permanently monitored using temperature sensors which trigger an alarm in the event that certain thresholds are exceeded, and which are incorporated into the remote management system (see Section I.2.1. Remote management).

2.2.3. Electricity and lighting

Operating safety

A manual switch-off option must be available for electrical kitchen appliances (with the exception of refrigerating equipment).



A manual key-operated control must be provided for this purpose.

2.2.4. Plumbing



Water softener

Softened water (4 to 7 French degrees of hardness) must be available in the restaurants and cafeterias.

Drainage:

Drains must be designed with a companion flange.

Extraction of greasy water – grease trap:

- The system for the disposal of greasy water must comprise a grease trap located at a level below that of the kitchen. The grease trap must be fitted with a reheating mechanism, a motorised agitator and a level indicator. Fats are to be removed by pumping through a suitable system of pipes, valves and joints and discharged into the gully emptier.

2.2.5. Lifts and escalators

Where necessary, vertical transport between the kitchen and the distribution area must be by two separate goods lifts clearly identified as ‘dirty’ and ‘clean’, with separate controls, serving the kitchen only.

Where necessary, vertical transport between the delivery bay and the kitchen must be by at least one goods lift, serving the kitchen only.

See Section I.2.6. Lifts and escalators, paragraph 2. Goods lifts.

2.2.6. Fire safety

Automatic extinguishing system for deep-fat fryers and (where applicable) other equipment (chip pan fire or grease fire):

The system must not contain any extinguishing agent comprising carbon dioxide or dry powder. Preference must be given to extinguishing agents such as water with a special flame-retardant additive which is neither harmful nor irritant.

The operation of the extinguishing mechanism must not cause burning oil to spit out of the fryers and must not endanger personnel in any way.

As soon as the extinguishing system is activated, the electric current to the machine must also be cut.

Fire detection system:

Optical detectors must be avoided in areas where steam is produced (dish-washing area, steam ovens, etc.)

Other fire-fighting equipment:

Water-spray and CO₂ extinguishers and fire blankets will be supplied by the Internal Service for Prevention and Protection at Work (OIB.SIPP, part of the Office for Infrastructure and Logistics).

Safety signs:

- The manual activation mechanism for the automatic extinguishing of deep-fat fryers must be clearly indicated.
- The emergency shut-off buttons for appliances must be clearly indicated.

3. APPLIANCES

The appliances and the space between them must be tailored to the services to be provided, in line with the requirements to be supplied by the Commission.

A professional kitchen designer must be asked to draw up a layout plan for the appliances.

GLOSSARY

This glossary contains definitions for a number of the terms and acronyms used in this document.

ATEX	Atmosphères Explosives [explosive atmospheres]
ATG	Agrément Technique [technical approval]
BB, BM, BE	Bâtiments Bas, Bâtiments Moyens, Bâtiments Elevés [low-rise, medium-rise, high-rise buildings]
BELAC	Belgian Accreditation Organization
BT	Basse Tension [low voltage]
CE	European conformity marking indicating that the product complies with all the prescribed safety requirements
CEN	European Committee for Standardization
CFC	chlorofluorocarbons (gases which damage the ozone layer)
CSTC	Centre Scientifique et Technique de la Construction [scientific and technical construction centre, or Belgian Building Research Institute BBRI]
CVC	heating, ventilation, air conditioning (HVAC)
DIGIT	European Commission's Directorate-General for Informatics
DIN	Deutsche Institut für Normung
DS	European Commission's Security Directorate
Grey water	waste water from toilets and showers
EMAS	EU Eco-Management and Audit Scheme
EN	European standard
EUROVENT	Association Européenne de Fabricants d'Équipement de Conditionnement d'Air et de Réfrigération [European Association for Indoor Climate, Process Cooling and Food Cold Chain Technology]
GT	Gestion Technique [technical management]
GTC	Gestion Technique Centralisée [centralised technical management]
HR-DS.1	Direction générale des ressources humaines et de la sécurité - Unité de Protection et de gestion de crise [European Commission's Directorate-General for Human Resources and Security, Crisis Management and Protection Unit]
HT	Haute Tension [high voltage]
ISO	International Organization for Standardization
LPG	liquefied petroleum gas
LR	Local de Reconfiguration [cabling concentration room]
LSU	computer room (local server unit)
LTG	Local de Télécommunication Général [main distribution frame room]

NBN	registered standards of the Belgian Bureau for Standardisation NBN
NIT	Notes d'Information Technique [technical information notes, published by the CSTC]
OIB	Office Infrastructures et logistique Bruxelles [Office for Infrastructure and Logistics, European Commission, Brussels]
OIB.SIPP	Service Interne de Prévention et de Protection au travail (SIPP) [Internal Service for Prevention and Protection at Work, European Commission, Brussels]
PABX	Private Automatic Branch eXchange.
PEB	Performance énergétique des bâtiments [energy performance of buildings]
PMR	person with reduced mobility (PRM)
RIA	Robinet d'Incendie Armé (dévidoir) [fire hose reel]
STS	Spécifications Techniques publiées par le Service Agrément et Spécifications dans la Construction (Service Public Fédéral Economie) [technical specifications, published by the Construction Specifications and Approval Service (Federal Public Service Economy)]
UBAtc	Union Belge pour l'Agrément technique dans la construction [Belgian Union for Technical Approval in the Construction Industry]
ULT	Unité locale d'acquisition et de traitement de données [Control devices or local data collection and processing units]
VDE	Verband Deutscher Elektrotechniker

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MANUAL OF STANDARD BUILDING SPECIFICATIONS

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