

**Order of ... 2005**

**adopting provisions supplementing and amending the safety regulation to counter the risks of fire and panic in establishments open to the public**

The Minister of State, Minister for the Interior and Regional Planning,  
Having regard to the Construction and Housing Code, and in particular Article R. 123-12;  
Having regard to Directive 98/34/EC of the European Parliament and of the Council of 22 June 1998 laying down a procedure for the provision of information in the field of technical standards and regulations and of rules on Information Society services, and in particular Notification No ;

Having regard to the amended Order of 25 June 1980 adopting the general provisions of the security regulation to counter the risks of fire and panic in establishments open to the public;  
Having regard to the opinion of the Central Safety Committee,  
Hereby Orders:

**Article 1**

The specific provisions, annexed to this Order, regarding PS-type establishments (covered car parks) are hereby approved.

**Article 2**

This Order shall be published in the Official Gazette of the French Republic.

Done at Paris, on

ANNEX:  
CHAPTER VI

PS-TYPE ESTABLISHMENTS  
COVERED CAR PARKS

Section I  
*General*

Article PS 1  
Establishments subject to provisions

Article PS 2  
Capacity of a covered car park

Article PS 3  
Definitions

Article PS 4  
Authorised activities

Section II  
*Construction provisions*

Article PS 5  
Design and service

Article PS 6  
Structures

Article PS 7  
Applying fire behaviour engineering

Article PS 8  
Separation

Article PS 9  
Areas not accessible to the public

Article PS 10  
Roofing

Article PS 11  
Façades

Article PS 12  
Partitioning

Article PS 13  
Internal walkways, staircases and exits

Article PS 14  
Vehicle routes

Article PS 15  
Ducts and shafts

Section III  
*Fittings*

Article PS 16  
Materials

Article PS 17  
Flooring

Section IV  
*Technical and electrical installations*

Article PS 18  
Smoke extraction

Article PS 19  
Electrical installations

Article PS 20  
Electricity supply of safety installations

Article PS 21  
Normal lighting

Article PS 22  
Safety lighting

Article PS 23  
Charging electric vehicle batteries

Article PS 24  
Lifts, service lifts and goods lifts

Section V  
*Fire rescue*

Article PS 25  
Monitoring

Article PS 26  
Emergency post

Article PS 27  
Detection, alarm and alert systems

Article PS 28  
Fire prevention

Article PS 29  
Fire-fighting resources

Article PS 30  
Instructions

Section VI  
*Air quality*

Article PS 31  
Checking air quality

Section VII  
*Checks and inspections*

Article PS 32  
Maintenance and inspections

Article PS 33  
Safety committee inspections

Section VIII  
*Existing establishments*

Article PS 34  
Measures applicable to existing establishments

Section IX  
*Private car parks*

Sub-Section I:  
*Covered car parks with automatic parking*

Article PS 35  
General

Article PS 36  
Stability

Article PS 37  
Partitioning

Article PS 38  
Passages – emergency access

Article PS 39

Emergency resources

Sub-Section II:

*Covered car parks accessible to public transport vehicles*

Article PS 40

General

Article PS 41

Construction provisions

Article PS 42

Smoke extraction

Article PS 43

Emergency resources

## CHAPTER VI

### PS-TYPE ESTABLISHMENTS COVERED CAR PARKS

*Section I*

*General*

#### **Article PS 1**

*Establishments subject to provisions*

This Chapter of Book IV supplements the provisions of Book I of the Regulation to counter the risk of fire and panic in establishments open to the public.

Covered car parks linked exclusively to residential buildings and to buildings covered by the Employment Code shall be excluded from the scope of this Order.

It sets the requirements applicable to covered car parks that can accommodate more than 10 motor vehicles. The authorised total laden weight of each vehicle admitted into these parks must not exceed 3.5 tonnes.

The provisions of Book II, Title 1 of the Regulation shall not apply except for those relating to the articles expressly referred to in the rest of this Chapter and designated general provisions of the Regulation in the rest of the text.

## **Article PS 2**

### *Capacity*

The number of parking places taken into account in a covered car park shall take account of the following provisions:

- vehicles must only park in spaces reserved for this purpose and which are marked on the ground;
- five spaces for parking a two-wheeled motor vehicle equivalent to one parking space for parking a four-wheeled motor vehicle;
- open-air spaces on the roof shall be counted as part of the car park's capacity.

## **Article PS 3**

### *Definitions*

For the purposes of this Regulation, the following definitions shall be understood:

*Car-park*: covered establishment covered by a floor, a roof, a terrace roof or a covering of any kind. It is intended for parking motor vehicles and their trailers. The upper floor or terrace may also be intended for parking vehicles.

*Mixed car park*: a park with parking levels superimposed in infrastructure and superstructure.

*Well-ventilated car park*: car park with one or more levels, with open facades and meeting the following conditions:

- on each level the openings in the walls are located in at least two opposite facades. The area of these openings is at least equal to 50 % of the total surface area of the facades. The height considered is the clear height under the ceiling;
- the maximum distance between the opposite open facades is less than 75 metres;
- on each level, the openings in the walls correspond to at least 5 % of the surface area of the floor of a level.

*Covered car parks with automatic parking*: a car park that enables the automatic parking of vehicles. It is not publicly accessible beyond the reception area.

*Level*: vertical space separating the parking platforms. A roof terrace used for parking shall be considered a level.

*Split-level*: if the car park comprises split-levels, two consecutive split-levels shall be deemed to constitute a level.

*Reference level:* level of the road serving the building, which may be used by emergency service vehicles and fire engines.

Where there are several points of access by routes on different levels, the reference level shall be determined by the lowest route for infrastructure car parks and the highest for superstructure car parks.

In the case of a mixed car park, where there are several access points, the reference level shall be determined in accordance with the opinion of the competent safety committee.

If the level of the road, in vertical section, is in the middle of a parking level, the level shall be deemed as in the infrastructure if meets the following conditions:

- the underside of the upper floor is at least one metre above the road level;
- the lower floor is at most one metre beneath the road level.

*Motor vehicles:* motor vehicles means vehicles that run on petrol, diesel or biofuel, vehicles that run either on liquefied petroleum gas (LPG) or natural gas for vehicles (NGV), electrically-powered vehicles, fuel cell vehicles and hybrid vehicles.

*Passage unit:* the type of width referred to as “passage unit” is 0.60 metres. However, when a passage only comprises two passage units, the width shall be increased from 0.60 m to 0.90 m and from 1.20 m to 1.40 m respectively.

*Passage:* any part of the structure enabling the evacuation of occupants: door, exit, horizontal walkway, walking area, staircase, corridor, pedestrian ramp, pavement.

#### **Article PS 4**

##### Authorised activities

Paragraph 1. Only related activities linked to cars, listed below, shall be authorised within the framework of the normal operation of car parks, without additional safety measures:

- vehicle washing areas;
- fitting of small pieces of equipment and car accessories (radios, windscreens, trailers, etc.);
- rental of vehicles, rental and parking of bicycles;
- recharging of electric vehicle limited to three recharging appliances or boards across all levels.

The total surface area occupied by these activities shall be limited to 5 % of the surface area of the structure and shall not exceed 500 m<sup>2</sup> per activity.

Subsidiary activities must comply with the following provisions:

- the operator of the car park shall be solely responsible for safety;
- it shall be prohibited to use naked flames in these activities;
- the maximum volume of flammable liquid stored or used in a subsidiary activity shall be less than 5 litres in implementation of the provision of Article PS 28;
- setting up these activities must not hinder smoke extraction;
- the volume of a storeroom linked to a subsidiary activity shall be limited to 250 cubic metres;
- the storeroom shall have 1-hour firebreak or EI 60 walls and ½ hour firedoors fitted with door closers or EI 30-C doors, served by autonomous detectors or an automatic fire detection system where one exists;
- the heat potential of products and materials stored inside a storeroom shall not exceed 900 MJ per metre squared;
- portable extinguishers suitable for the risks to be countered, at a ratio of at least one 6-litre device per 200 m<sup>2</sup> of activity, shall be placed in activity areas.

Other activities shall only be authorised in a car park on receipt of a favourable opinion from the competent safety committee. However, fuel distribution service stations may be authorised in type M car parks provided that they comply with the provisions laid down for this type.

Independently of the provisions above, the areas referred to in Article PS 9(2) shall be authorised in car parks.

Paragraph 2. Where delivery areas are built into a car park, they shall comply with the following provisions:

- they shall not be accessible to vehicles over 3.5 tonnes;
- they shall be located on the parking level closest to the car park's reference level;
- their unitary surface area shall be limited to 100 m<sup>2</sup>;
- their volume shall be enclosed by 2-hour firebreak or EI 120 walls, or REI 120 in the case of load-bearing functionality, with 2-hour or EI-120-C firedoors with automatic closing, served by autonomous detectors or an automatic fire detection system where one exists;
- the areas of movement of the firedoors shall be marked on the ground;
- the doors shall be closed outside delivery hours;
- there shall be no direct link between two contiguous delivery areas;
- each delivery area shall have independent smoke extraction from the car park;
- smoke extraction of delivery areas:
  - shall be provided by vents specific to each delivery area;
  - shall be provided by mechanical extraction by means of ventilators and manual control devices that comply with the provisions of Article PS 18(4.3) and (4.4);
  - shall ensure an extraction rate of 1.5 m<sup>3</sup> per second for each delivery area.

If the delivery area is on the ground floor, smoke extraction may be natural and provided by means of a smoke evacuation device with a minimal free geometric surface area of at least 1 m<sup>2</sup>.

In implementation of the above provisions and those laid down in Article PS 1(3), a delivery area that can accommodate a single vehicle, the laden weight of which must not exceed 19 tonnes, shall be permitted in type M car parks provided that the specific provisions for this type of car park are respected.

## *Section II*

### *Construction provisions*

#### **Article PS 5**

##### *Design and service*

The floor of the highest level and that of the lowest level of a car park may not be situated more than 28 metres from the reference level. However, in order to allow firemen to quickly access each level, car parks with more than seven levels in infrastructure must have at least one lift with a fire service priority call.

Every car park shall be served, on the reference level, by at least one route that can be permanently used by fire engines and rescue vehicles in accordance with the provisions of Article CO2(1) of the general provisions of the Regulation.

#### **Article PS 6**

##### *Structures*

The load-bearing elements of a covered car park that is not surmounted by another building shall have 1-hour or R 60 fire stability, and intermediate floors shall have 1-hour or REI 60 firebreak capacity in the following cases:

- covered car parks in superstructure with a maximum of two levels above the reference level;
- covered car parks in infrastructure with two levels at most;
- mixed covered car parks in infrastructure with two levels at most.

The load-bearing elements of a car park shall have 1-hour or R 90 fire stability and the intermediate floors shall have 1.5 hour or REI 90 firebreak capacity in other cases.

However, in mitigation, the provisions of Articles CO 13(3) and CO 14 of the general provisions of the Regulation on principal elements of roof structures and on ground floor buildings shall apply.

### **Article PS 7**

#### *Applying fire behaviour engineering*

The use of fire behaviour engineering as defined by the Order of 22 March 2004 on the fire resistance of products, construction elements and structures shall be referred to the departmental subcommittee on fire and panic safety in establishments open to the public. Fire scenarios must be used within the regulatory framework of the aforementioned Order.

### **Article PS 8**

#### *Separation*

Within the meaning of this Regulation, car parks shall be considered standard risk establishments.

Paragraph 1. Separation of a car park in relation to an opposite third party building:

If the distance separating the façade of a car park of a third party building is less than 8 metres, one of the facades shall have 1-hour or E 60 flame resistance, with any openings sealed by elements with ½ -hour or E 30 flame resistance.

If the opposite building comprises sleeping areas above the first floor, the façade of one of the buildings shall have 1-hour or EI 60 firebreak capacity, or REI 60 in the case of load-bearing functionality, and any openings shall be sealed by elements with ½ -hour or E 30 flame resistance.

The above provisions shall not be required if the car park meets the following conditions simultaneously:

- it is separated from a third party building by a clear space of at least 4 metres;
- it has a low floor on the highest publicly accessible level, situated at least 8 metres from the ground.

Paragraph 2. Separation between a car park and a contiguous building or room accommodating another activity or used by a third party:

The firebreak capacity of the wall separating a covered car park and a contiguous building or room accommodating another activity or used by a third party shall be at least equal to the most stringent level of fire stability of the establishment, with a minimum of one hour. This duration shall be increased to 4 hours if the contiguous establishment is a high-rise building.

Paragraph 3. Separation between a car park and a superposed building or room accommodating another activity or used by a third party:

The minimum firebreak capacity of the floor separating a car park and a superposed building or room accommodating another activity or used by a third party shall be 1.5 hours or REI 90.

Paragraph 4. Intercommunication with a room or establishment accommodating another activity or used by a third party:

- Any intercommunications made in the walls or partitions shall be made by means of a firelock chamber with a minimum surface area of three metres squared with a width of at least 0.90 metres. Their sides shall have the same fire resistance capacity as the walls or partitions they cross. The firelock chamber shall have only two doors, at the ends of the firelock chamber, with a flame resistance capacity of half an hour, each fitted with a door closer or they shall be E 30-C doors, both opening inwards. Where these firelock chambers are likely to be used by persons with reduced mobility, their minimum surface area shall be 5 metres squared. The width of these firelock chambers and that of the passages connecting them to parking spaces reserved for persons with reduced mobility shall be at least 1.50 metres.

All other devices shall be authorised on receipt of an opinion from the competent safety committee.

An firelock chamber shall not contain stocks of equipment or electrical equipment boxes or fuse boxes.

Where a covered car park and a third party building are under different management, a contractual agreement defining the obligations of the parties with regard to the maintenance of crossing devices shall be drawn up and attached to the dossier laid down in Article R-123.24 of the Construction and Housing Code as well as to the establishment's safety register.

If the contiguous establishment is a high-rise building, the provisions of the specific legislation on these buildings regarding car parks shall apply.

### **Article PS 9**

#### *Areas not accessible to the public*

Access points to areas not accessible to the public shall be kept clear.

Where setting up a room in a covered car park is subject to the specific separation conditions defined below, it shall be easily identifiable by means of a safety signal that conforms to standard NF ISO 3864-2 on safety colours and signals, and affixed to the access door.

Paragraph 1) Areas necessary for operation of the car park:

Offices necessary for operation of the car park, the pay station and staff areas shall be authorised within the car park without any separation conditions.

Car park servicing and maintenance workshops as well as technical rooms (electricity service room, room housing the electricity generator, sprinkler room, ventilation room, lift machinery, etc.) shall be separated from the car park by walls with a 1-hour or EI 60 firebreak

capacity, REI in the case of load-bearing functionality, and 1-hour fire doorsets fitted with door closers, or E 60-C fire doorsets.

Paragraph 2) Technical rooms not linked to operation of the car park:

Technical rooms not linked to the activity of the car park such as boiler rooms, rooms for bins, an electricity generator room not linked to the activity of the car park, may be installed inside the car park. They shall be separated by walls with at least 1-hour or EI 60 firebreak capacity. Links between these rooms and areas of the car park reserved for parking shall have 1-hour or EI 60 firebreak capacity and the doors shall open towards the car park and be fitted with door closers. These rooms must not be ventilated on to the car park. They may be ventilated on the access ramp opening into open air.

Paragraph 3) Grouping of establishments:

Where the car park constitutes one of the activities of an establishment or group of establishments as defined in the general provisions of the Regulation, the technical rooms of this establishment or group of establishments shall be permitted to be in the car park. They shall be separated from the car park by walls with 1-hour, REI 60 in the case of load-bearing functionality, or EI 60 firebreak capacity with 1-hour fire doorsets fitted with door closers or E 60-C doorsets. These rooms must not be ventilated on to the car park. They may be ventilated on the access ramp opening into open air.

## **Article PS 10**

### *Roofing*

If the roof of the car park is overlooked by parts of the facades of buildings including glazed or open openings, it shall be made, over a distance of 8 metres measured in horizontal projection, from the nearest opening, of class M0 or A2-s3,d0 materials:

- with 1-hour or E 60 flame resistance capacity if the difference in height between the roof and the lower floor of the last level of the adjacent building is less than or equal to 8 metres;
- with 1.5-hour or E 90 flame resistance capacity in other cases.

Installation of an open-air car park level on the roof terrace shall be permitted.

Where such a level is overlooked by one or more facades of another building, vehicle routes and parking spaces shall be set out at more than 2 metres from any point located in line with the façade overlooking them.

Where the covering is located less than 12 metres from the edge of the plot, it shall have at least B<sub>ROOF</sub> (t3) classification within the meaning of the Order of 14 February 2003 on the performance of roofs and roof coverings exposed to an external fire or made of class M0 or A2-s3,d0 materials.

## **Article PS 11**

### *Façades*

Where the building comprises more than one level in superstructure, the facades of the car park shall comply with the following rule:  $C + D \geq 0.80$  metres, in application of the requirements laid down in technical instruction No 249.

However, with the exception of parts of façades located in line with floors separating an establishment housing another activity or used by a third party, this rule shall not apply if the

entire car park is fitted with an automatic sprinkler-type extinguisher system or a fire detection system as defined in Article PS 27(2-b).

## **Article PS 12**

### *Partitioning*

Paragraph 1. With the exception of well-ventilated car parks, every level shall be divided into compartments of less than 3000 metres squared. This value may be increased to the surface area of the level without exceeding 3600 m<sup>2</sup>. The surface area of a compartment may be increased to 6000 m<sup>2</sup> if it is fitted with a sprinkler-type automatic extinguisher system.

Partitioning shall be provided by walls with 1-hour, REI 60 in the case of load-bearing functionality, or EI 60 firebreak capacity, including for fixed glazed parts integrated into them. Any doors set into these walls shall have 1-hour flame resistance and be fitted with door closers. Where the car park comprises split-levels, a divider shall be required on every second split-level.

Paragraph 2. Vehicle passage openings in these walls shall be fitted with closing devices with 1-hour or E 60 flame resistance. These devices shall have automatic closing, manual control and conform to standard NF S 61-937, parts 3 and 4. The automatic closing control system shall be located on both sides of the closing device.

Paragraph 3. No closing device shall be required for access ramps whether they are intended for parking or not.

Paragraph 4. Where lock-up garages are installed in the car park, they shall comply with the following provisions:

- they are only used for parking vehicles;
- they do not have more than two parking spaces each;
- their lateral partitioning is ensured by full or gridded walls, made of M0 or A<sub>1</sub> materials;
- garage doors allow the whole interior of the garage to be viewed from the vehicle route;
- they do not compromise the smoke extraction of the car park.

The installation of lock-up garages is prohibited on a level with parking spaces that have ventilation and smoke extraction vents installed to the right.

## **Article PS 13**

### *Internal walkways, staircases and exits*

Paragraph 1. On each level, the distance to be travelled by users to reach a staircase or an exit outside parking areas shall not exceed:

- 40 metres if the users are between at least two opposite staircases or exits;
- 25 metres in other cases. However, where a dead-end part of the car park, not exceeding 25 metres, opens on to a walkway leading to at least two opposite staircases or exits, the total distance to reach a staircase must not exceed 40 metres.

The distances of 25 and 40 metres may be increased to 30 and 50 metres, respectively, for well-ventilated car parks.

Distances shall be measured in line with the vehicle routes from the line of the furthest parking space up to the door of the staircase or that of the corresponding firelock chamber or of the door of the nearest exit.

A staircase including several doors or several access firelock chambers on the same level, whether on opposite sides or not, shall not be considered as complying with the provisions of the first indent of this paragraph.

Paragraph 2. It shall be prohibited to place one or two isolated steps in walkways providing a path to staircases or exits.

Paragraph 3. Staircases shall be have straight flights when they serve more than four levels.

Staircases, access points thereto and corresponding firelock chambers shall be at least 0.90 meters wide and shall be kept clear on a permanent basis.

The enclosed volume of staircases serving basements shall not be directly linked to the enclosed volume of staircases serving the floors.

Paragraph 4. Staircases may either be enclosed or open air.

Where staircases are enclosed, the walls separating them from the rest of the car park shall:

- have 1-hour, REI 60 in the case of load-bearing functionality, or EI 60 firebreak capacity, generally;
- have ½ -hour, REI 30 in the case of load-bearing functionality, or EI 30 firebreak capacity, if the car park only comprises one ground floor level.

Open-air staircases shall have at least one façade that opens to the outside, including openings along its entire length at least equal to half the total surface area of this wall. Other walls shall comply with the above conditions.

Staircases shall be made of A1 materials.

Paragraph 5. Inside the car park, an access point to the staircases shall be constructed, depending on the case, in accordance with the following provisions:

- if the staircase is open-air or when it opens directly to the outside or into an open-air hall, by means of a ½ -hour firedoor fitted with a door closer or an E 30-C door, opening in the direction of the exit from the car park;
- in other cases, by means of a firelock chamber with a minimum surface area of 3 m<sup>2</sup> insulated in compliance with the conditions set out in paragraph 4 above and with doors that open inwards, with ½ -hour fire resistance fitted with door closers or E 30-C. The distance between the access door to the firelock chamber from the car park and the access door to the staircase shall be less than ten metres. However, a firelock chamber may be shared between a maximum of two contiguous compartments installed on the same level. It shall not contain stocks of equipment or electrical equipment boxes or fuse boxes.

Paragraph 6. If, on the exit level, car park staircases end at the same pedestrian walkway, this walkway shall be of width equal to as many passage units as there are staircases, ending with a width of at least 0.90 metres. This common pedestrian walkway shall include at least two exits carefully spaced apart and positioned so as to avoid cul-de-sacs. It shall be separated from the rest of the car park under the conditions laid down in paragraph 4 above.

If staircases end at a door opening into open air, this door must include an opening with a minimum surface area of thirty decimetres squared in the upper part.

Paragraph 7. The doors or crossing devices for use by pedestrians to exit the car park shall be able to be opened by a single simple manoeuvre from inside the car park.

However, it may be authorised to lock these doors or crossing devices for use by pedestrians on receipt of a favourable opinion from the safety committee subject to compliance with the measures set out below:

- each door shall be fitted with an electromagnetic locking system that conforms to the provisions of Annex A to standard NF S 61-937;
- doors fitted out in this manner may be controlled either by a manual control device (break-glass box, for example) with a breaker inserted into the remote control line and placed near the door or by an emergency exit control device that conforms to the provisions of Annex A to standard NF S 61-934 relating to them (also covering the implementation conditions), without duration of delay.

Paragraph 8. Doors that are not used for evacuation of the public must bear the indication “NO EXIT” in a clear manner, or the designation of the purpose of the room.

Paragraph 9. In car parks with a capacity less than or equal to 100 vehicles or those that only comprise a single level located immediately above or below the reference level, and where the ramp has a specific exit from the car park for pedestrians, a pathway at least 0.90 metres wide along the length of the ramp used by vehicles may replace a staircase, and only one where several are required.

#### **Article PS 14**

##### *Vehicle routes*

Ramps and vehicle routes shall be free of any obstacle over a height of at least 2 metres.

The maximum permissible height of vehicles shall be displayed at the entrance to the car park.

Parts of the car park reserved for the movement of vehicles and forming a tunnel of length of more than fifty metres shall comply with the following provisions:

- they shall be sufficiently wide so as to allow the occupants of any vehicle to leave the vehicle if it breaks down;
- the maximum distance to travel in order to exit from such a tunnel on foot or to reach an exit or a level of the car park shall be forty metres;
- where the car park has a mechanical smoke extraction system, the mechanical smoke extraction of a tunnel shall be taken into account at a ratio of 900 cubic metres per hour, per five linear metre section of the length of the tunnel. This value may be reduced to 600 m<sup>3</sup> per hour and per five linear metre section of the length of the tunnel if the car park has an automatic sprinkler-type extinguisher system. This smoke extraction shall be ensured by the smoke extraction installations on the level subject to being taken into account in the calculation of the rate of this level;
- they shall have safety lighting that conforms to Article PS 22;
- if the car park has a fire detection system or an automatic sprinkler-type extinguisher system, these systems shall extend to the volume of the tunnel.

#### **Article PS 15**

##### **Ducts and Shafts**

These provisions shall not apply to water pipes.

Paragraph 1 General provisions

Ducts and shafts shall be installed in such a way that they are protected from any impacts from vehicles.

Paragraph 2 Provisions applicable to ducts other than those intended for smoke extraction. Combustible gas pipes shall be subject to the provisions of paragraph 3 of this Article.

If they cross a firebreak wall between a covered car park and an establishment or room accommodating another activity or used by a third party, the crossing firebreak capacity of ducts and any shafts shall be equal to the firebreak capacity of the wall crossed.

Inside the car park, ducts shall have 30-minute or E 30 flame resistance ( $o \rightarrow i$ ) (*ve or ho*) when they cross walls for which fire resistance is required. This 30-minute or E 30 crossing flame resistance requirement ( $o \rightarrow i$ ) (*ve or ho*) shall be deemed to be met:

- for metal ducts with a melting point above 850°C;
- for M1-class PVC ducts with a nominal diameter less than or equal to 125 millimetres, with a reinforced thickness made as indicated in the below subparagraph. This reinforcement may however be omitted in the walls of buildings with one ground floor.

Any reinforcements of M1-class PVC ducts laid down in the above subparagraph shall comply with the following provisions:

- they shall be made of M1-class PVC;
- their thickness shall be at least equal to that of the ducts;
- their length shall be at least equal to that of the wall crossed, plus one times their own diameter;
- the part external to the wall crossed shall be located below the wall if its horizontal or on both sides of the wall if it is vertical.

These reinforcements may, for example, be made by two semi-ducts cut in accordance with a generating line and plated against the duct to be protected.

Paragraph 3 Provisions applicable to combustible gas pipes:

Combustible gas installations shall comply with the provisions of Chapter VI or Title 1 of Book II (GZ Articles) of the general provisions of the Regulation.

In addition to these provisions, the routing of combustible gas pipes within the car park, within the parking area, ramps and vehicle routes, shall be in a shaft or that is open at one end, have 2-hour or EI 120 firebreak capacity ( $o \rightarrow i$ ) (*ve or ho*), or simultaneously comply with the following provisions:

- a) the pipe shall be supplied either:
  - at medium pressure (MP): in this case, it shall always be fitted, before first entering the building, with an automatic cut-off device;
  - at low pressure (LP) from a pressure regulator-reducer or from a collective pressure regulator block of a building located outside the building, fitted with a safety system cutting off the injection of gas in the event of a sharp drop in the downstream pressure;
  - at low pressure (LP), from a LP network, subject to the presence, before it enters the building, of a low pressure trigger valve automatically cutting off the flow of gas when this flow exceeds a calibrated value. This value may not be higher than 1.5 times the maximum flow corresponding to the operation of the installations supplied;
- b) it shall be made from steel pipes welded together and shall not comprise any accessories such as: cut-off devices, mechanical connectors, etc.;
- c) it shall be placed in pedestrian or walkway areas, outside vehicle parking areas. However, where the entrance or rise of the pipe into the car park is vertical from a parking space, the part of the pipe shall be permitted to pass toward or from the walkway area, in line with

- one or two contiguous spaces, if a protective thermal screen is installed, which covers the pipe by 20 cm on both sides;
- d) it shall be placed at least two metres up, out of reach of vehicles and as far as possible in the corner between walls and the ceiling or beams and the ceiling;
  - e) in infrastructure car parks, the pipe shall follow the first level of the car park accessible to vehicles from the level of the external ground;
  - f) in the case of a complex comprising several buildings, the pipe shall be permitted to pass into the common car park provided that there is a cut-off device before it enters the car park and an additional cut-of device outside the car park and before it enters each building;
  - g) the pipe shall be identified by means of conventional colours and its presence shall be indicated on the site plan of the car park and near the smoke extraction controls, if there are any.

*Section III*  
*Fittings*

**Article PS 16**  
*Materials*

The walls of car parks shall be made of category M0 or A2-s2, d0 materials.

The internal coverings of walls, ceilings and false ceilings shall be made of category M1 or B-s3, d0 materials.

If the thermal or acoustic insulation products used are not made of materials of at least category:

- A2 – s2, d0 in vertical partitions, ceilings or in roofs;
- A2<sub>FL</sub>-s1 on floors and on the ground,

they shall be protected by a screen that meets the requirements of Article AM8(1-b) of the general provisions of the Regulation. This screen must also comply with the requirement required by this Article for coverings inside car parks.

In car parks with one ground floor ,the only requirement relating to materials shall be to use class-E products as coverings.

**Article PS 17**  
*Flooring*

Floors shall be sufficiently inclined so that water and any liquid, accidentally spilled, runs easily towards a trough fitted with a separation device or towards any other system capable of contained spilled liquids. This trough shall have a capacity of 0.5 cubic metres for a car park with a capacity of less than 250 vehicles, and 1 cubic metre in other cases.

In order to avoid liquids running from one level of the car park down to lower levels, the floor of the ramp shall be raised by 3 cm in relation to the floor of the level.

Floors shall be made of category M0 or A2<sub>FL</sub>S2 materials.

Floor coverings may be made of category M3 or C<sub>FL</sub>S2 materials.

*Section IV*  
*Technical and electrical installations*

**Article PS 18**  
*Smoke extraction*

### Paragraph 1. General.

Smoke extraction installations shall enable the evacuation of smoke and hot gases in the event of fire.

Car park smoke extraction and ventilation installations may be shared.

The smoke extraction of the car park may be provided by means of natural or mechanical extraction.

Installation of an anti-intrusion device such as a grille, installed in line with openings in a well-ventilated car park or smoke extraction vents for other car parks, must not reduce the effectiveness of smoke extraction.

### Paragraph 2. Natural smoke extraction.

Natural smoke extraction shall be provided by smoke outlets and natural air intakes that are connected to the outside either directly or by means of ducts.

Natural smoke extraction shall be authorised in covered car parks with only one level, located on the reference level, if the air intake openings in the lower part and smoke outlets in the upper part have a minimum free surface area of 12 decimetres squared per vehicle for each of these two functions.

This provisions shall also be permitted for the level located immediately above and that located immediately below the reference level in any covered car park if the maximum distance between air intake and smoke evacuation vents is less than 75 metres.

Well-ventilated car parks as defined in Article PS 3 shall be deemed as having natural smoke extraction regardless of the number of levels they have.

### Paragraph 3. Mechanical smoke extraction.

Smoke extraction shall be performed mechanically on levels located below the reference level as well as on level of superstructure car parks, with the exception of the cases laid down in subparagraphs 3 and 4 of paragraph 2 above, and in specific cases where the car park has levels that meet natural smoke extraction conditions, justified by a study, by means of smoke extraction engineering, and only on these levels.

Mechanical smoke extraction shall be performed per compartment and ensure a minimum extraction rate corresponding to 900 m<sup>3</sup> per hour, per vehicle and per compartment. This value may be reduced to 600 m<sup>3</sup> per hour, per vehicle and per compartment if the compartment has an automatic sprinkler-type extinguisher system installed.

Air intakes may be natural or mechanical. In the case of mechanical air intakes, the air intake rate must be approximately 0.75 times the extraction rate, with a tolerance of more or less 10 %.

Activation of the mechanical smoke extraction in a compartment shall cause the car park's mechanical ventilation to stop. This measure shall not impair the functioning of smoke extraction in other compartments by means of manual priority controls.

## Paragraph 4. Technical provisions.

### 4.1 Natural and mechanical smoke extraction vents:

Smoke extraction vents shall be installed so as to enable satisfactory sweeping and to obtain the expected rate.

Air intake vents shall be located at the bottom of the compartment. These air intakes shall consist of openings in the façade or of ducts.

Extraction vents shall be installed in the upper part of the space to have smoke extraction. Ramps shall be prohibited.

### Paragraph 4.2 Smoke extraction ducts:

#### 4.2.1 Natural smoke extraction ducts:

Natural smoke extraction ducts shall comply with the following provisions:

- their cross-section shall be at least equal to the free surface area of the vents they serve on each level;
- the ratio of the largest and smallest dimension of the cross-section of ducts and vents shall be less than or equal to 2.

These provisions shall also apply to the natural air intake ducts of mechanical smoke extraction systems.

In the latter case, air intake openings shall have a minimum surface area of 9 dm<sup>2</sup> per vehicle where the required extraction rate is 900 m<sup>3</sup> per hour, and a minimum surface area of 6 dm<sup>2</sup> per vehicle where the required extraction rate is 600 m<sup>3</sup> per hour.

Vertical evacuation ducts shall not have more than two diversions. The angle to the vertical of these diversions shall not exceed 20 degrees.

The length of horizontal floor connections of evacuation ducts, known as side flues, shall not exceed two metres, unless the efficiency of smoke extraction is proven under the conditions laid down in subparagraph 5 below.

These provisions shall also apply to the natural air intake ducts of mechanical smoke extraction systems.

In the latter case, air intake openings shall have a minimum surface area of 9 dm<sup>2</sup> per vehicle where the required extraction rate is 900 m<sup>3</sup> per hour, and a minimum surface area of 6 dm<sup>2</sup> per vehicle where the required extraction rate is 600 m<sup>3</sup> per hour.

#### 4.2.2 Natural and mechanical smoke extraction vents:

Smoke extraction ducts shall be made of category M0 or A2 s2 d0 materials and shall have ¼-hour smoke stability as defined in paragraph 1.2 of Annex 5 to the Order of 22 March 2004 on the fire resistance of products, construction elements and structures.

In crossing the car park, smoke extraction ducts and their inspection hatches and doors shall have ½-hour or EI<sub>multi</sub> (*ve or ho*) firebreak capacity, except in the compartment served. If they cross other rooms, they shall have the same firebreak capacity as the partitions crossed.

The car park's smoke extraction ducts shall be independent per level and per compartment both with regard to the intake of fresh air and the evacuation of smoke. They may open into a collection system in the case of mechanical extraction, provided that the height of the covering is at least equal to the height of the level.

The vents of outlets and evacuation ducts shall be located outside parts of the roof for which specific protection is required in Article PS 10.

The vents of evacuation ducts of car parks with a capacity less than or equal to 100 vehicles may be installed if there is no opening at least 8 metres above them or below them, or within a 4-metre area on either side. This shall also apply to the vents of natural air evacuation ducts that are directly connected to the outside.

#### Paragraph 4.3 Smoke extraction fans:

Extractor fans shall operate for 2 hours at 400°C or have F<sub>400</sub> 120 classification. These requirements may be reduced to 2 hours at 200°C or F<sub>200</sub> 120 if the compartment is fitted with an automatic sprinkler-type extinguisher system.

Every fan shall be supplied by its own circuit under the conditions laid down in Article EL 16(1) and (2) of the general provisions of the Regulation.

- To avoid the effects of a problem affecting their operation, extractor fans, including their motors, shall be spaced at least 3 metres away from any parked vehicle. Where this distance cannot be respected directly, the installation of a construction element that complies with the below provisions shall be deemed satisfactory: it shall be made of incombustible materials with a flame resistance equal to the firebreak capacity of the upper floor of the level, corresponding to a maximum of 1 hour, REI 60 in the case of load-bearing functionality, or EI 60;
- the distance of 3 metres laid down above shall be ensured on all sides, regardless of the plan selected.

#### Paragraph 4.4 Manual control devices:

In car parks with a capacity less than or equal to 1000 vehicles, and in those with a capacity of more than 1000 vehicles fitted with an automatic sprinkler-type extinguisher system, a system of manual controls, both priority and selective, sufficiently signposted to enable the fans to be stopped and restarted, shall be installed on the reference level, near each vehicular access point. In any case, the manual control system shall be signposted in such a way that it can be located easily in the day and at night.

In the case of a car park with several manual control systems, use of one these systems shall cause the others to stop functioning.

For other car parks, smoke extraction control shall be grouped inside the emergency post defined in Article PS 26.

#### Paragraph 4.5 Smoke extraction of staircases serving car parks shall not be compulsory.

Paragraph 5. The application of smoke extraction engineering shall be authorised for covered car parks. In this case, the client shall call on a body recognised as competent by the Minister for the Interior. After receiving the agreement of the departmental safety subcommittee to

counter the risks of fire and panic in establishments open to the public and high-rise buildings, regarding the hypothetical situations and scenarios in question, this body shall draft a study report specifying in particular:

- the calculation models and codes used;
- the risk assessment criteria;
- conclusions regarding these criteria.

### **Article PS 19**

#### *Electrical installations*

Electrical installations shall conform to the provisions of Decree No 88-1056 of 14 November 1988 of the Minister responsible for Employment on the protection of workers in establishments that use electric currents and its implementing orders, as well as to the standards to which they refer.

Electrical installations in parking areas shall be constructed under the conditions required by standard NF C 15-100 with regard to areas posing fire risks (outside influencing factors BE 2). Electrical installations shall be installed at least 1.5 metres from the ground and shall be constructed under the conditions required by standard NF C 15-100 with regard to areas posing mechanical risks (outside influencing factors AG4).

### **Article PS 20**

#### *Electricity supply of safety installations*

Paragraph 1 The following installations shall have a safety electricity supply:

- non-autonomous automatic fire detection installations and equipment they serve;
- car lifts;
- lifts to be used by disabled persons in case of fire and those defined in Article PS 5;
- emergency water resources;
- means of communication intended to raise the alarm;
- fans motors of the mechanical smoke extraction installation.

Paragraph 2 The electricity supply of safety installations shall be supplied in category CR 1 cables.

Supply cables to smoke extraction installations in a compartment shall not be placed above parking spaces unless they meet one of the following two conditions:

- they shall be placed in shafts with a 1-hour or EI 60 firebreak capacity (*ve or ho*) (o→i);
- the compartment shall be protected by an automatic sprinkler-type extinguisher system.

Paragraph 3 If the holding capacity of the car park is larger than 500 vehicles, the electricity supply of safety installations shall be provided by means of a safety electricity supply that conforms to NFS 61-940. In this case, it shall be permitted that, for the purposes of dimensioning, only the total electric power of the mechanical smoke extraction fan motors of the smallest compartments be taken into account.

Where the safety electricity supply is provided by an electricity generator, the switching time may not exceed 15 seconds in accordance with the provisions of standard NF EN 37-312.

In the absence of fire detection in the car park, it shall be permitted to not automatically neutralise safety linked to the functioning of the generator. This neutralisation shall be controlled locally or remotely, manually, in case of fire and simultaneous absence of the normal electricity supply.

Paragraph 4 If the holding capacity of the car park is less than or equal to 500 vehicles, the electricity supply of safety installations shall be provided from a shunt branching directly from the main switchboard of the building or establishment.

Paragraph 5 The establishment's safety switchboard shall be installed in an electricity service room insulated by walls and a high floor with 1-hour, EI 60, or REI 60 in the case of load-bearing functionality, firebreak capacity, with ½ -hour or EI 30 firedoors.

#### **Article PS 21**

##### *Normal lighting*

All car parks shall have normal lighting provided in accordance with the provisions of Article EC 6 of the general provisions of the Regulation.

#### **Article PS 22**

##### *Safety lighting*

All car parks shall have safety lighting, limited to evacuation purposes, conforming to the provisions of Articles EC 7 to EC 15 of the general provisions of the Regulation.

White signals on a green background shall be reserved for marking out passages. Evacuation lighting shall comprise of safety light sources spread out along the top and bottom of the pedestrian walkways. Each light source shall provide a luminous flux of 45 lumens for a minimum duration of one hour.

Light sources placed along the bottom shall be at most 0.50 m from the ground and enable location of the walkways to follow for evacuation. The distance between two light sources on the top or bottom shall be no more than 15 metres.

Lower light sources may be embedded in the ground provided that they have the required mechanical resistance characteristics. By way of derogation to Article EC 9 of the general provisions of the Regulation, if they are embedded in the ground and have electroluminescent diodes, the luminous flux shall produce, for at least one hour, a minimum luminous intensity of 7 candelas at an angle of 15 degrees on both sides of the walkway. The colours of the diodes must not cause confusion in the event of evacuation.

#### **Article PS 23**

##### *Charging electric vehicle batteries*

Where a car park comprises more than three electric vehicle-charging boards, their maximum total or cumulative power shall be 10 kW.

Recharging equipment and boards may be installed in car parks with mechanical ventilation, and well-ventilated car parks. Other parks that can prove sufficient ventilation so as not to reach the hydrogen concentration limits laid down below shall be deemed to meet these requirements.

Parking spaces where this equipment and these boards are installed shall be fitted with a hydrogen detection system in the upper part.

The sensitisation of a hydrogen detector calibrated at 25% of the lower explosivity limit (4 % in volume) shall cause battery-charging devices to stop and cause high-speed ventilation to

start. This sensitisation shall be signalled in the monitoring room or at the emergency post where applicable.

## **Article PS 24**

### *Lifts, service lifts and goods lifts*

Paragraph 1. Lifts, service lifts and goods lifts shall be constructed and installed in accordance with the specifications of Directive 95/16/EC.

In car parks with an infrastructure of more than seven levels, public emergency and fire services shall be able directly to access each level of each unaffected compartment by means of at least one lift of priority use for fire services.

Lifts and goods lifts shall be isolated from the rest of the car park under the same conditions as staircases. However, the staircase area may be shared with a lift or group of lifts. In addition, the provisions of the first point of Article PS 13 Paragraph 5 shall apply if the lift or group of lifts is outdoors or installed in an area shared with a staircase.

Paragraph 2. Where lifts accessible to disabled persons are required, they shall also be useable in the event of fire for the evacuation of those persons. They shall also conform to the following provisions:

- they shall lead directly to the public thoroughfare, a hall or a walkway leading to the outside;
- they shall be linked to a staircase or to an exit to the outside, either directly or by means of a closed walkway without the need to cross the car parking area;
- in addition to Article PS 13 Paragraph 5, access fire-lock chambers shall have a minimum area of 5 square metres with a minimum width of 1.5 metres, including walkways;
- a waiting area shall be provided opposite these lifts. The total area of a waiting area on a given level shall be proportional to the number of parking spaces provided for disabled people on that level, on the basis of one square metre per space with a minimum of 2 square metres;
- the waiting area shall not encroach on the walkway leading to a staircase or an exit to the outside;
- they shall have safety markings and appropriate and correct signposting, easily visible from the parking spaces reserved for disabled people.

On each level, the distance to be travelled by disabled people from the reserved parking space to a lift to be used in the event of fire or an exit to the outside shall conform to the provisions of Article PS 13 Paragraph 1.

Paragraph 3. Service lifts used to move cars to their parking level shall be constructed and installed in accordance with the specifications of the Directive 95/16/EC.

They shall conform to the following provisions:

- the fire-break capacity of the walls of the shaft shall be equal to the fire-break capacity of the floors;
- landing doors shall have a fire-resistance capacity of ½ hour or E 30;
- a projection of three centimetres from the ground shall be provided in front of each landing door of the car park in order to prevent any spillage of liquid into the enclosure;
- a fire detection system shall be installed throughout the car park; its triggering shall lead to the sounding of a general alarm and the return of the lift to the reference level;
- in the cabin, unmodifiable signs using pictograms, visible to the driver, shall indicate the obligation to turn off the vehicle engine.

In a car park employing one or more service lifts for moving vehicles, at least one staircase installed in accordance with Article PS 13 shall serve all levels in order to allow emergency services to intervene.

**Section V**  
**Fire safety**

**Article PS 25**  
*Monitoring*

Paragraph 1. The monitoring of one or more covered car parks with a unit capacity less than or equal to 1000 vehicles shall be arranged by the operator in accordance with the provisions of Article R 123-11 of the Building and Housing Code.

Paragraph 2. The monitoring of a covered car park of a capacity greater than 1000 vehicles shall be carried out from an emergency post as defined in Article PS 26, by at least one trained person able to carry out the tasks laid down in Article MS 46 Paragraph 1 of the general provisions of the regulation.

However, for car parks with a storage capacity greater than 1000 vehicles with an automatic generalised sprinkler-type extinguisher system, the monitoring may be carried out from the operations room.

Paragraph 3. The monitoring of a car park of a capacity greater than 1000 vehicles or of several covered car parks of which one at least has a capacity greater than 1000 vehicles may be carried out from an emergency post outside of the monitored establishment(s), following consultation of the competent safety committee. In this case, the safety team shall consist of at least two trained persons and have the means simultaneously to:

ensure the permanent supervision of the centralised emergency post;

to carry out the tasks laid down in Article MS 46 Paragraph 1 of the general provisions of the regulation on all car parks with a capacity greater than 1000 vehicles which it is monitoring.

If the total capacity of the car parks monitored is greater than 3000 vehicles, the safety team shall consist of at least two trained people, one of whom is S.S.I.A.P.2 qualified.

Paragraph 4. The monitoring of a car park may be carried out jointly with other activities, following consultation of the safety committee, and under the following minimum conditions: the monitoring shall be carried out from an emergency post as defined in Article PS 26;

- in the event that the operators of the car park and other activities are different, a contractual agreement shall define the obligations of the parties with regard to joint monitoring, the conditions for maintaining and checking the safety equipment grouped in the joint emergency post, and the organisation of the safety team. This provision shall also apply to the joint monitoring of several car parks with different operators.

**Article PS 26**  
*Emergency post*

The emergency post shall be:

- easily accessible and installed at most on the first level reserved for parking located above or below the reference level;

- permanently accessible from the emergency services access level by means of a walkway or staircase which shall conform to the provisions of Article PS 13 Paragraph 4 or an equivalent provision;
- able to receive restricted alarms communicated by telephone points, manual alarm triggers, automatic detection and/or extinguishing installations. Furthermore, the alarm control devices, partitioning and smoke extraction systems defined in Article 18 Paragraph 4.4 second sub-paragraph shall be grouped within it;
- protected by means of walls with a fire-break capacity of one hour, REI 60 in the event that they act as doors, or EI 60 and equipped with door(s) with a fire-resistance capacity of 1 hour or E 60. If for operational reasons glazed parts are installed, they shall have a flame-resistance capacity of 1 hour or E 60. These provisions do not apply to façades.

It may be installed in the operations room of the car park.

### **Article PS 27**

#### *Detection, alarm and alert systems*

Paragraph 1. Each car park shall have audible and visual alarm equipment perceptible from all points of the compartments and walkways.

The alarm equipment shall be, within the meaning of Article MS 62 of the general provisions:

- of type 1 in car parks for more than 1000 vehicles other than well-ventilated car parks;
- of type 3 in other cases, including well-ventilated car parks, and in car parks with a capacity greater than 1000 places fitted with an automatic sprinkler-type extinguisher system.

Manual alarm triggers shall be located on each level, in the walkways immediately next to each staircase, and on the ground floor close to the exits. They shall be placed at a maximum height of 1.3 metres above ground level and shall not be obscured by any open door. Furthermore, they shall not protrude by more than 0.1 metre.

The triggering of the general alarm shall lead to:

- the release of locked exits throughout the car park;
- the indication at the vehicle entrance that access is prohibited;
- the broadcasting of a pre-recorded message where the car park has public address equipment.

Paragraph 2. a) In car parks with a capacity less than or equal to 1000 vehicles, partitioning systems shall be controlled by autonomous detector triggers or an automatic fire detection system.

b) Car parks with a capacity greater than 1000 vehicles, other than well-ventilated car parks and parts located on flat roofs, shall be equipped with a fire detection system.

This detection system shall be linked to the emergency post of the car park and shall conform to the provisions of paragraphs 2, 3 and 4 of Article MS 56 of the general provisions of the regulation.

Detectors shall be suitably distributed in parking areas and in technical areas and areas for related activities. Their activation shall lead to:

- the triggering of the restricted alarm to the emergency post;
- the security positioning of the partitioning systems in the compartment affected;
- the activation of smoke extraction in the compartment or area in question;
- the triggering of the general alarm throughout the car park. A time delay 5 of minutes maximum is only permitted if, while the public is present, the car park has a member of staff trained to operate the restricted alarm directly;
- the opening of the toll barriers shall be controlled by the triggering of the general alarm.

c) If the entire car park is fitted with an automatic sprinkler-type extinguisher system, a generalised automatic fire detection system shall not be required. The partitioning shall be activated by autonomous detector triggers; the smoke extraction controls shall be located close to accesses, in accordance with Article PS 18 Paragraph 4.4.

Paragraph 3. When the operator of a car park with a capacity of less than or equal to 1000 vehicles installs equipment conforming to a level of safety greater than that recommended by the present regulation, the central controls for this equipment shall be grouped either in a place isolated by means of walls with a fire-break capacity of 1 hour, REI 60 in the event that they operate as doors, or EI 60 with a fire door with a fire-resistance capacity of 1 hour equipped with a door-closing device or E 60-C or in the operations room, if there is one. Nevertheless, smoke extraction controls shall be installed under the conditions laid down in Article PS 18 Paragraph 4.4.

Paragraph 4. A telephone link by local landline for alerting the emergency services shall be installed in the emergency post if it exists or, where appropriate and in the absence of an emergency post, in the operations room.

#### Article PS 28 **Fire prevention**

Paragraph 1 . Within the car park it shall be prohibited:

- to store combustible materials or inflammable products, including in storage units;
- to fill vehicle fuel tanks;
- to smoke or to carry naked flames.

No repair or refurbishment work leading to increased risks (the use of a flame or a hot source, draining of circuits...) shall be carried out without written authorisation and where relevant a "fire permit" drawn up and signed by the operator or by a person expressly designated by them. When the work is carried out by an external company, these documents shall be co-signed by the operator and company or persons expressly designated by them.

Paragraph 2 . A safety register conforming to the provisions of Article R 123-51 of the Building and Housing Code shall be created and kept up to date. Where necessary, it shall contain the agreements laid down in Articles PS 7 and PS 25.

Paragraph 3 . On any request for a building permit or works authorisation not subject to building permit, the documents laid down in Article R. 123-24 of the Building and Housing Code shall be supplied with a note listing the measures taken in order to meet the requirements laid down in the present regulation.

Documents listing the technical installations laid down in Article R. 123-25 of the Building and Housing Code shall be able to be supplied by the builder or operator before the commencement of the work on these installations; they shall be communicated to the safety committee.

#### **Article PS 29** *Fire-fighting resources*

The following fire-fighting resources shall be required:

Paragraph 1 a) – portable extinguishers of 6 kilograms or 6 litres suitable for the level of risk; the operator may opt for either of the following formulas:

- either to have one extinguisher on each level, next to each exit and ten additional extinguishers close to the emergency post or the operations room;
- or to distribute the extinguishers appropriately on the basis of one per fifteen vehicles.

b) – a container of 100 litres of loose sand for each level, together with a shovel, placed close to each ramp.

Paragraph 2 – an automatic sprinkler-type extinguisher system shall be installed in covered car parks from the third level above or below the reference level. However, this measure shall not be obligatory in the following cases:

a) – where it is a well-ventilated car park;

b) – where the following conditions are in place:

- the car park does not have more than three levels immediately above or below the reference level;
  - the capacity of each extreme level (R+3 and R-3) is less than or equal to 100 vehicles.
- c) – the car park has a capacity less than or equal to 250 vehicles and the following requirements are met on levels located immediately below the reference level:
- the number of those levels is not greater than five;
  - they are equipped with one dry riser per stair enclosure;
  - the smoke extraction rate is 900 m<sup>3</sup> per hour or per vehicle where it is mechanical;
  - the capacity is less than or equal to 100 vehicles on the third level below the reference level and less than or equal to 50 vehicles on the fourth and fifth levels below the reference level.

Paragraph 3 – for car parks with at least three levels immediately above or below the reference level, dry risers of 65 millimetres shall be installed in staircase enclosures or in fire-lock chambers and fire-lock chambers on each level shall have one outlet of 65 millimetres and two outlets of 40 millimetres. This provision shall require the installation of one or more fire hydrants of a diameter of 100 millimetres, leading from conduits of at least an equal diameter and installed no more than 60 metres from the supply orifices of the dry risers.

### **Article PS 30**

#### *Instructions*

Instructions shall be displayed on an unmodifiable support. They shall indicate:

- close to exits and access to stairs: the various general prohibitions and the action to be taken in the event of fire;
- at the upper part of vehicle access ramps, in the hall of the building if the exits for pedestrians open onto it or in the exit to the outside and close to the exit closest to the public thoroughfare: the plans of the whole of the car park (installation, levels, emergency resources,...);
- at the entrance to the car park: general instructions on the action to be taken in the event of fire, plan of the entire building, methods for alerting the emergency and fire services.

*Section VI*  
Air quality

**Article PS 31**  
*Ventilation and checking of air quality*

Paragraph 1 – Ventilation in covered car parks shall be carried out and monitored in such a way as to effectively prevent the stagnation of noxious or inflammable gases, including locally.

In accordance with the provisions of Article PS 18 Paragraph 1, ventilation and smoke extraction installations may be joint.

Paragraph 2 – Outlets and ducts for evacuating the air originating from the ventilation of the car park and, where relevant, the exhaust gases from the emergency generator shall be installed in accordance with the provisions of Article PS18 Paragraph 4.2.2..

The air from the car park shall not be used for the ventilation of other sites.

Where there is an operations room or an emergency post in the car park, it shall be installed with independent mechanical ventilation.

*Section VII*  
*Checks and inspections*

**Article PS 32**  
*Maintenance and inspections*

Electrical installations, mechanical smoke extraction systems, signalling systems, alarm, detection and fire safety systems, fire-fighting resources, fire-break closing devices as well as devices for monitoring air quality shall be maintained regularly by a qualified professional.

On these occasions, operating tests shall be carried out at least once every two years for car parks with a capacity of less than or equal to 250 vehicles and once every year for other car parks.

These installations, except for air quality monitoring devices, shall be checked when they are put into service and then at least once every five years by an approved body.

Technical inspections of lifts shall be carried out in accordance with Article AS 9 of the general provisions of the regulation.

**Article PS 33**  
*Safety committee inspections*

The application for permission to open presented by the operator in accordance with Article R. 123-45 of the Building and Construction Code shall be communicated to the safety committee, which will carry out an approval inspection in the case of car parks with a capacity greater than 250 vehicles or on the request of the mayor.

The only committee competent in the case of car parks with a capacity greater than 1000 vehicles shall be the departmental sub-committee for safety to counter risks of fire and panic in public and high-rise buildings.

The operator shall be able to communicate to the committee the detailed information concerning the technical installations updated following the carrying out of work and the reports by bodies or persons responsible for the technical inspections laid down in the present regulation.

The frequency of the inspection visits by safety committees shall be established as follows:

- for covered isolated car parks: once every five years for car parks of more than 250 vehicles;
- for car parks annexed to one or more establishments open to the public: on the regular inspection of establishments open to the public the least frequently inspected with a minimum of once every five years.

The frequency of inspections may be amended, if deemed necessary, by order of the mayor or the prefect following consultation of the safety committee.

*Section VIII*  
*Existing establishments*

**Article PS 34**  
*Measures applicable to existing establishments*

Existing car parks operational on the date of application of the present order, regardless of their capacity, shall be considered to conform to the provisions to counter the risks of fire and panic provided that they conform to the provisions of the regulations applicable to them at the time of their construction and their commissioning or to which they have become subject subsequently.

The provisions of Articles PS 32 and PS 33 are applicable to existing establishments.

*Section IX*  
*Private car parks*

Sub-section I :  
Covered car parks with automatic parking

**Article PS 35**  
*General*

The provisions of the present sub-section shall be applicable to car parks with automatic parking as defined in Article PS3, and complement the provisions laid down in sections I to VII of the present order. They shall replace with provisions of the provisional technical instruction of the Minister for Home Affairs of 25 October 1989 on covered car parks with automatic parking not subject to the legislation on classified installations or that regulating housing.

These provisions are intended:

- to restrict the occurrence of incidents;
- to restrict the spread of the incident;
- to allow the emergency services to intervene.

Access to the vehicle storage area shall be prohibited to the public. All possible steps shall be taken to restrict access to the storage area solely to persons qualified to carry out maintenance and checks.

Parking installations shall be constructed and installed in accordance with the specifications of Directive 98/37/EC.

### **Article PS 36**

#### *Stability*

The minimum level of fire stability of the elements making up the car park shall be 1 hour or RE 60, regardless of the number of levels. However, there shall be no fire stability requirement for covered car parks with automatic parking with a superstructure not exceeding three levels.

### **Article PS 37**

#### *Compartments*

The parts intended for the parking of vehicles shall be divided at least every 1500m<sup>2</sup> by vertical partitions REI 60.

They shall be divided horizontally at least every three levels by REI 60 floors, except for stair cavities necessary for the movement of systems for moving of the automatic storage installation.

A protective screen shall restrict the vertical spread of combustion gases through stair cavities necessary for the movement of the automatic storage installation. It shall consist of:

- structural elements (roofing, girders, walls);
- fixed or flexible screens, with a fire stability capacity of 1/4 hour or DH 30 and of materials of category M1 or B s3, d0;
- mobile screens (activated safety devices), rigid or flexible, with a fire-stability capacity of 1/4 hour or DH 30 and of materials of category M1 or B s3, d0.

### **Article PS 38**

#### *Passages – emergency access*

A staircase of a minimum width of one passage unit shall allow access for emergency and fire services to all levels intended for the parking of vehicles. The staircase shall be enclosed by walls with a fire-break capacity equal to the level of stability of the building, and shall be supplied with an outlet of a minimum useable surface of one square metre in the upper part. It shall conform to the provisions of Article PS 8 Paragraph 4. The maximum distance to be covered in order to reach all points of the car park from the staircase shall not exceed 40 metres.

Routes of at least 0.90 metres shall allow access to each vehicle to each of the levels and for accessing technical equipment.

To this end, there shall be a guardrail or an equivalent anti-falling device to protect against the risk of falling in vertical stair cavities.

All possible steps shall be taken to prevent users from entering levels intended for the storing of vehicles.

### **Article PS 39**

#### *Emergency resources*

A generalised automatic extinguisher system of a sprinkler type shall be installed in order to restrict the spread of the fire. This provision shall not apply to car parks with a maximum of three levels.

A device for the emergency shut-off of the vehicle parking system shall be installed and shall conform to the following requirements:

- it shall be provided with the extinguishing system laid down in Article 9;
- it shall be activated by means of a manual control device located on the emergency service access level and remaining visible.

### **Sub-section II :**

Covered car parks accessible to public transport vehicles

### **Article PS 40**

#### *General*

The provisions of sub-section II shall be applicable to establishments or parts of establishments of type PS accommodating public transport vehicles and shall supplement the provisions laid down in sections I to VII of the present order.

### **Article PS 41**

#### *Construction provisions*

Compartments accommodating public transport vehicles shall be reserved exclusively for that purpose.

The maximum area of a compartment used for the parking of public transport vehicles shall be restricted to 3000 square metres.

In the event that a compartment is accessible to the public using public transport vehicles, it shall have passages conforming to the provisions of Articles CO 35 to CO 39 and CO41 to CO 42 of the safety regulation. The measures laid down in Article CO 39 Paragraph 2 shall not be applicable. This calculation shall be based on fifty persons per parking space.

The vehicle routes for public transport vehicles shall be free of all obstacles to a minimum height of four metres.

The volume of the trough laid down in Article PS 17 shall be one cubic metre in all cases.

### **Article PS 42**

#### *Smoke extraction*

The smoke extraction of a compartment for the parking of public transport vehicles shall be:

- natural in the case of well-ventilated car parks;

- mechanical in other cases. The ventilation flow shall be ten times the volume of the compartment per hour.

**Article PS 43**  
*Emergency resources*

In addition to the provisions of Article PS 29 Paragraph 1a), portable extinguishers shall be distributed appropriately on the basis of one extinguisher for every four vehicles.

In addition to the provisions of Article PS 29 Paragraph 2, the establishment shall be provided with a generalised automatic extinguisher system of a sprinkler type except in the case of a well-ventilated car park.

**Proposed amendments relating to different types of high-rise building:**

**Article U 5**  
Isolation

Paragraph 1 . The installation of the establishments covered by the present chapter shall be prohibited below and above establishments considered to be of special risk within the meaning of Article CO 6.

Paragraph 2 . Only communications with type J, type U **or type PS** establishments shall be authorised.

An intercommunication between these establishments may be permitted on the emergency access level following consultation of the safety committee. This functional link **with an establishment of the same type or a type J establishment** shall be made up of systems involving automatically closing doors in accordance with Article CO 10.

A limited number of intercommunications may be authorised between two establishments of the present type following consultation of the safety committee.

**Any intercommunications between an establishment covered by the present chapter and a type PS establishment shall be subject to the provisions of Article U 6.**

In all other cases any communication with another third-party is prohibited, even if it consists of an additional passage.

Paragraph 3 . In derogation of Articles GN 2 and GN 5, sites intended for activities covered by Chapter XIV of Heading II of Book II as well as establishments receiving families, including hospitals, shall be subject solely to the provisions of the present order.

**Article U 6**  
Covered car park

A covered car park may be installed beneath an establishment of the present type provided that it is under the same direction.

**Intercommunications shall be authorised and shall conform to the provisions of Article PS 8 Paragraph 4 first sub-paragraph.**

**Article J8**

*Covered car parks*

**Any intercommunications between an establishment covered by the present chapter and a type PS establishment shall be subject to the provisions of Article PS 8 Paragraph 4, first sub-paragraph.**

**The covered car park shall be under the same direction as the type J establishment.**

**Article S5**

*Covered car park*

**Any intercommunications between an establishment covered by the present chapter and a type PS establishment shall be subject to the provisions of Article PS 8 Paragraph 4.**

**Intercommunicating fire-lock chambers may link the levels of a car park and stairs, lifts, escalators or moving walkways of an establishment of the present type located on different levels.**

**Article Y4**

*Covered car park*

**Any intercommunications between an establishment covered by the present chapter and a type PS establishment shall be subject to the provisions of Article PS 8 Paragraph 4.**

**Intercommunicating fire-lock chambers may link the levels of a car park and stairs, lifts, escalators or moving walkways of an establishment of the present type located on different levels.**

**Article R4**

*Covered car park*

**Any intercommunications between an establishment covered by the present chapter and a type PS establishment shall be subject to the provisions of Article PS 8 Paragraph 4, first sub-paragraph.**

**The covered car park shall be under the same direction as the establishment covered by the present chapter.**

**Article L4**

*Covered car park*

**Any intercommunications between an establishment covered by the present chapter and a type PS establishment shall be subject to the provisions of Article PS 8 Paragraph 4.**

**Article N4**

### *Covered car park*

**Any intercommunications between an establishment covered by the present chapter and a type PS establishment shall be subject to the provisions of Article PS 8 Paragraph 4.**

### **Article O4**

#### *Covered car park*

**Any intercommunications between an establishment covered by the present chapter and a type PS establishment shall be subject to the provisions of Article PS 8 Paragraph 4.**

### **Article P6**

#### *Covered car park*

**Any intercommunications between an establishment covered by the present chapter and a type PS establishment shall be subject to the provisions of Article PS 8 Paragraph 4.**

### **Article W7**

#### *Covered car park*

**Any intercommunications between an establishment covered by the present chapter and a type PS establishment shall be subject to the provisions of Article PS 8 Paragraph 4.**

### Proposal for type M :

The current provisions are generally in line with the needs of the retail profession and the new type PS. The last paragraph of Article M 4 may be removed and the issue of whether fire-lock chambers and staircases leading to them are additional passages within the meaning of Article M5 a) must be examined by operators.

### **Article M 4**

#### *Isolation from third parties*

Paragraph 1. Establishments of the present type shall be considered to be establishments of special risk, within the meaning of Article CO 6. However, where they are protected by a sprinkler system, they shall be considered to be of normal risk.

Paragraph 2. A third party, except for type R or U establishments, may communicate with a shop or shopping centre under the conditions laid down in Article CO 10 provided that the fire-lock system is automatically closing and that the store or shopping centre is protected by an automatic sprinkler system.

The latter provision shall not be obligatory in the case of a covered car park of a capacity less than or equal to 250 vehicles.

However, crèches shall be authorised if they are dependent on the store or shopping centre and operate solely during the operating hours thereof.

### **Article M 5**

#### *Intercommunication with a covered car park*

Intercommunications between stores or malls and covered car parks shall be authorised provided that the fire-lock systems (fire-lock chambers) conform to the following provisions:

a) General provisions applicable in all cases:

- the fire-lock chambers and any staircases leading to it shall be considered to be additional passages;
- the fire-lock chamber may have a protected emergency staircase of one passage unit leading to the outside or a protected passage. The door to this staircase, with a fire-break capacity of half an hour, shall open towards the outside and shall be fitted with a door-closing device;
- area of between 6 square metres et 10 square metres ;
- the openings of the fire-lock chamber shall be fitted with automatically closing fire doors conforming to the requirements of Article CO 47 (paragraphs 1, 2 and 3); these doors shall be located at a minimum distance apart of 3 metres and they may be sliding;
- the detectors controlling the closure of the doors of the fire-lock chamber shall be installed in the car park and in the store, in the ceiling, each side of doors and approximately 2 metres from them;
- the activation of one of these detectors shall firstly cause the closure of all of the fire doors on the ‘fire’ side of the fire-lock chamber, then of the other fire doors of the fire-lock chamber, after a maximum time period of one minute, except for lift landing doors;
- if, for the purposes of heat, sound or other kind of insulation, sliding doors are used to close the openings of the fire-lock chamber, those doors shall be face laterally and open up the full width of these openings in the event of failure of the control device or of power supply;
- all commercial or storage activities shall be prohibited.

b) Special provisions applicable in particular cases:

*b 1.* Fire-lock chamber solely for people without trolleys, store and car park located on the same level:

The characteristics of the fire-lock chamber shall be as follows:

- non-combustible walls with fire-break capacity of two hours;
- the fire-lock chamber shall be fitted with two doors of one passage unit with a fire-break capacity of one hour and automatically closing. If these doors are hinged, they shall open towards the inside of the fire-lock chamber.

*b 2.* Fire-lock chamber used by people with or without trolleys, store and car park located on the same level:

The provisions of sub-paragraph *b 1* above shall be applicable.

The width of the doors of the fire-lock chamber shall be two passage units.

*b 3.* Fire-lock chamber solely for people without trolleys, store and car park located on different levels:

- the intercommunication between the store and the car park may be by means of lifts, escalators, staircases or moving walkways located within an enclosure with non-combustible walls with a fire-break capacity equal to that of the fire stability of the building. This enclosure shall provide access to the fire-lock chamber ;
- the fire-lock chamber may be located at car park or store level. Its characteristics shall be as follows:
  - non-combustible walls with a fire-break capacity of two hours;
  - it shall have two doors of one passage unit with a fire-break capacity of one hour with automatic closing. If these doors are hinged, they shall open towards the inside. (*Order of 21 June 1982.*) « However, the doors may only have a fire-break capacity of half an hour if the floor separating the store and the car park has a fire-break capacity of one hour » ;

- furthermore, the surface of the fire-lock chamber shall be increased, in the event that several staircases, escalators, moving walkways or lift cabins lead to it. In the latter case, the surface area of the fire-lock chamber shall be greater than the total surface of the cabins ;
- the information collected by the detectors laid down in Article CO 47 shall be communicated to the central emergency post, if there is one, or any other place allowing the operator to stop the lifts, escalators and moving walkways leading to the fire-lock chamber, in the event of fire;
- the fire-lock chamber shall be provided with an audio device allowing communication with the location to which the information collected by the detectors is communicated;
- in the event of link by lifts, the landing doors of lifts conforming to Article CO 53 (Paragraph 3) may close one of the sides of the fire-lock chamber, the other side being closed by means of doors with a fire-break capacity of one hour and a half.

*b 4.* Fire-lock chamber used by people with or without trolleys, store and car park located on different levels:

The provisions of sub-paragraph *b 3* above shall be applicable.

However, the width of the doors of the fire-lock chamber shall be two passage units.

Proposal relating to Article PE 6 Paragraph 4 of the amended order of 22 June 1990:

**" Any intercommunications between an establishment of the second group and a type PS establishment shall be subject to the provisions of Article PS 8 Paragraph 4."**

