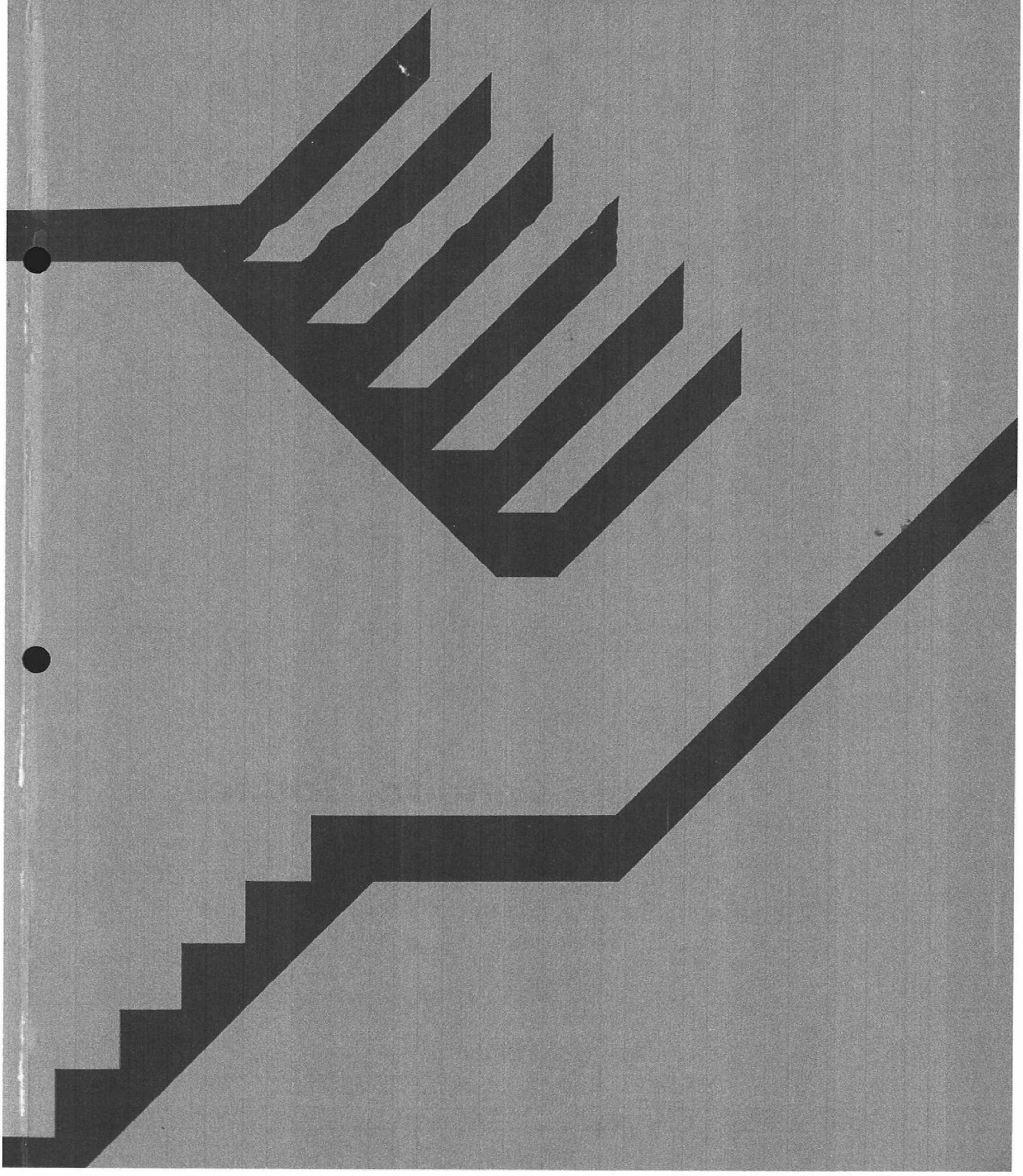
Greater London Council

Code of Practice Means of Escape in Case of Fire



Code of Practice
Means of Escape in Case of Fire

Greater London Council

This Code of Practice has been prepared in the Department of Architecture and Civic Design, Building Regulation Division in Collaboration with the London Fire Brigade

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Note *With effect from 1 January 1977, premises used for factory, office, shop and railway purposes have been designated under the Fire Precautions Act, 1971 and the relevant parts of the Factories Act, 1961 and the Offices, Shops and Railway Premises Act, 1963 relating to certification have been repealed. Applications for all certificates should now be made on the prescribed form FP 1 (Rev).*

Contents

Introduction

This Code of Practice has been prepared primarily for the guidance of persons requiring approval to their proposals for means of escape in case of fire under Part V of the London Building Acts (Amendment) Act 1939. It supersedes the Council's previous Code of Practice (Publication No. 3868) and is applicable to the construction of new buildings and extensions and/or alterations to existing buildings.

Except in the case of places of entertainment where the Code will apply throughout Greater London, it is otherwise relevant only to the Inner London Boroughs, that is to say the London Boroughs of Camden, Greenwich, Hackney, Hammersmith, Islington, Lambeth, Lewisham, Southwark, Tower Hamlets, Wandsworth, the Royal Borough of Kensington and Chelsea, the City of London and the City of Westminster.

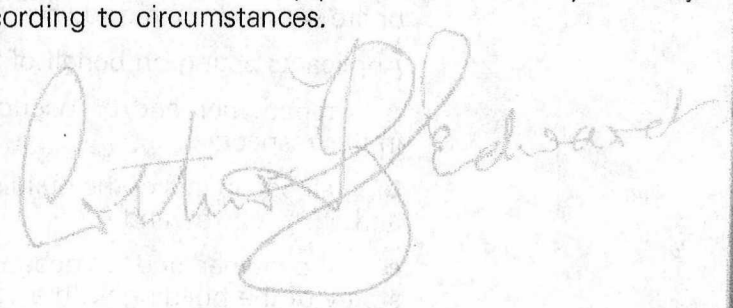
The Code does not embrace means of escape in case of fire in respect of flats and/or maisonnettes as the Council has, for the time being, adopted the standards contained in the British Standard Code of Practice CP3: Chapter IV: Part 1: 1971, extending its scope to include ground and first floors where appropriate.

Nor does it deal with a number of special uses such as schools, hospitals, old persons' homes, nursing homes, institutional buildings, premises for the chronically sick and disabled, inflatable and tented structures, multi-user complexes, shopping malls and similar types of development each of which require detailed consideration and individual scrutiny.

The Council, after full consideration of all the circumstances, deals with each case on its merits thereby allowing the maximum degree of flexibility to cater for any particular problems or design difficulties that may arise. Whilst the standards set out in the Code will be satisfactory in the majority of cases, it should be clearly understood that they may have to be varied to meet special situations and/or conditions. **Nothing herein, therefore, must be taken as derogating from the powers of the Council to alter the standards as may be appropriate to any particular building.**

Applicants are advised accordingly to seek early consultation with the Council's officers at Middlesex House, 20 Vauxhall Bridge Road, London SW1V 2SB.

For the convenience of applicants the British Imperial Units are given in brackets after the metric dimensions. The metric dimensions have been rounded off and, unless critical to the context of any particular item, may be subject to some flexibility according to circumstances.



Chairman, Public Services Committee

General Information

1 Means of Escape in Case of Fire

Means of escape in case of fire, in the context of this Code of Practice, should be construed as being the structural means whereby a safe route (or routes) is provided from any part of a building to a **final exit** thereby enabling any person to escape from fire or smoke by his own unaided effort.

In order to satisfy this basic principle applicants should ensure that escape routes are planned so that any person confronted by an outbreak of fire within a building can turn away from its seat and proceed, in the opposite direction to a storey exit, to a **protected staircase** or to a **final exit**

As a general principle, therefore, dead end situations should be avoided.

2 Rescue by Fire Brigade discounted

This Code of Practice generally discounts any possibility of rescue involving the use of external ladders etc., by the Fire Brigade (see item **12.14**). Traffic congestion can cause serious delay to the Fire Brigade in arriving at the scene of a fire and the parking of vehicles at the side of roads and, in many cases, 'sealed' air-conditioned buildings, with double glazing to windows, add to the problems of fire-fighting and inhibit the speedy mounting of rescue operations.

3 Maintenance of means of escape in case of fire approved by the Council

The importance of maintaining the approved means of escape once it has been provided cannot be over emphasised. Continuous maintenance is a responsibility placed upon the owner of the building under Section 133 of the London Building Acts (Amendment) Act 1939 and penalties can be imposed by the Courts in default. The lives of persons can be seriously prejudiced if, in fire conditions, for instance, the protection afforded to escape routes is damaged, or **fire-resisting self-closing** doors are fastened back in the open position or are wedged open or do not close tightly against their frames.

Applicants acting on behalf of a client should ensure that,

a the owner and/or occupier is made fully aware of his responsibility in this respect;

b all occupants of the building are fully acquainted with the routes of escape and **final exits**, and

c the owner and/or occupier establishes trained key personnel on each storey of the building with a view to the speedy marshalling of the occupants and the orderly evacuation of the various storeys should the need arise.

4 Multi-user schemes, comprehensive development schemes etc.

Large schemes incorporating multi-users are not dealt with specifically in this Code of Practice as conditions and circumstances vary considerably with each scheme. Such schemes are dealt with on their merits but it may be taken that the means of escape from those parts of the development used for one of the purposes referred to in the Code may be in accordance with the requirements of the Code. Routes of escape common to different parts of the development would be the subject of special consideration.

5 Change of use

Care should be taken at the application stage to indicate on the submitted plans the use of the building and of each part therof. Any change of use at a subsequent date could involve the necessity of providing additional means of escape in case of fire e.g. a normal factory use thereafter becoming a High Fire Risk Area (see item **4.04**) would involve a reduction in the [illegible] and may necessitate additional exits.

6 The application of the Code

Before applying the principles outlined in the Code of Practice to any particular building the **DEFINITIONS** in **PART 3** should be carefully studied as they are salient to the standards that follow.

Additionally attention is drawn to **Parts 10** to **13** (inc.) which are applicable to all buildings.

In order to assist applicants and to highlight their importance the definitions [illegible], except where indicated on the diagrams, as they occur throughout the Code e.g. [illegible].

7 Direct Distance and Travel Distance

Because it is not always possible to determine the [illegible] before a building is erected and occupied and because the future layout and internal arrangements within the respective [illegible] may not be known at the time plans are submitted for approval, the concept of a [illegible] is introduced to enable the designer to establish the positions of storey exits, [illegible] and [illegible].

In planning the internal arrangements of partitioning, corridors, furniture, fittings, machinery, etc., particular care should be taken to ensure that the [illegible] laid down in the Code are not exceeded. All such distances will be checked prior to occupation and before any building is granted a certificate under the relevant statutes.

8 The Diagrams

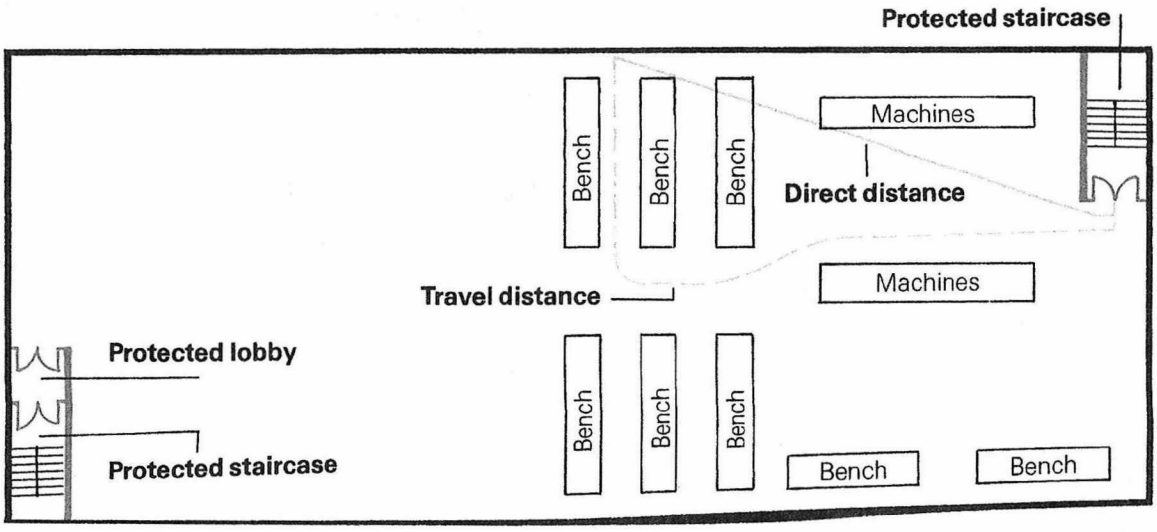
The diagrams are not drawn to scale. They have been kept simple and diagrammatic to illustrate a basic principle which can then be applied to the type of building under consideration.

[illegible] construction is shown in red, thus [illegible]

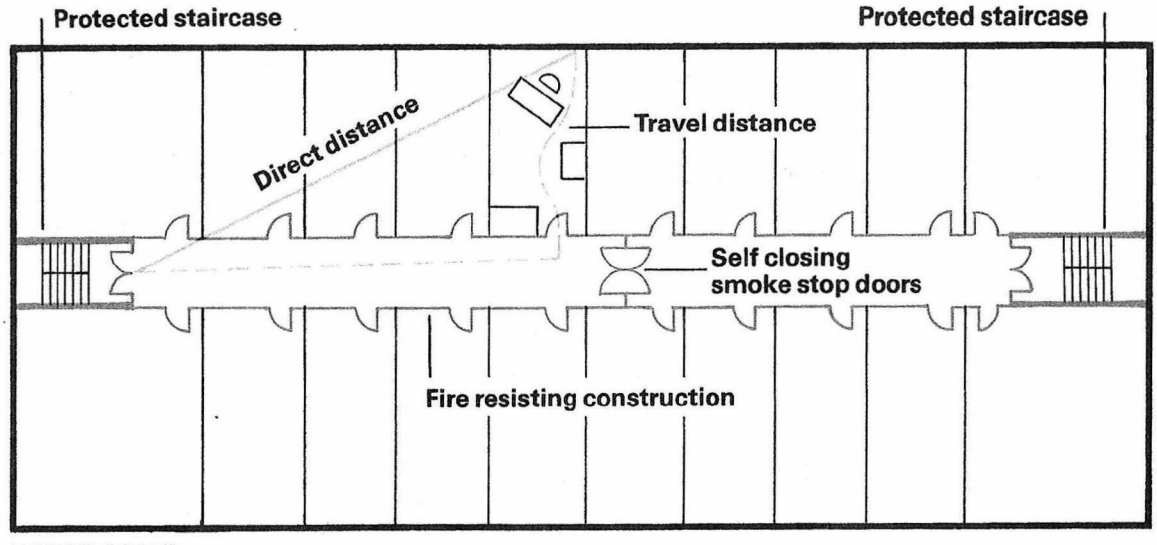
[illegible] (in **Part 8** 'distance') is shown by a blue line, thus

[illegible] is shown by a broken blue line, thus

Key to Diagrams



NOT TO SCALE



NOT TO SCALE

IMPORTANT NOTE

Applicants are advised of the desirability of obtaining any necessary approvals under the Town and Country Planning Acts from the local planning authority *before submitting plans* to the Greater London Council in respect of means of escape in case of fire.

The District Surveyor for the district concerned should always be consulted regarding the general application of legislation affecting buildings, particularly in connection with the extent of control under and compliance with the London Building Acts and the London Building (Constructional) By-laws. H.M. Inspector of Factories should likewise be consulted in respect of premises coming within the scope of the Factories Act, 1961.

Particular attention is drawn to buildings subject to control under Section 20 of the London Building Acts (Amendment) Act 1939 and to Section 26 of such Act ('Public buildings') as in either case a higher standard of construction than that relating solely to means of escape in case of fire may be required.

Part 1
Controlling Acts

Part 1

Controlling Acts

Introduction

The provisions of means of escape in case of fire from most buildings is a statutory responsibility of owners and/or occupiers, imposed by various legislation according to the use of the building, and in certain cases to the height or to the size of the building, or to the number of persons accommodated.

This part of the Code lists the principal statutes in force at the date of its publication under which the Council is empowered to ensure the provision of adequate means of escape in case of fire. The comments made are for general guidance only and ***applicants should in every case refer to the relevant Acts.***

Within Inner London (i.e., the administrative area of the former London County Council) new buildings are dealt with at design stage under Section 34 of the London Building Acts (Amendment) Act 1939, and unless the building is also subject to the provisions of Section 20 of the said Act (which requires the provision of fire alarms and appliances), recommendations may be included in the approval for the provision of a fire alarm system, fire appliances and other fire precautionary matters. These matters are not enforceable under Section 34 of the London Building Acts (Amendment) Act 1939, but they are enforceable in premises subject to the provisions of the Offices, Shops and Railway Premises Act 1963, the Factories Act 1961 and the Fire Precautions Act 1971. Applicants are therefore advised to provide these facilities in accordance with the Council's recommendations, or in the case of factories, H.M. Inspector of Factories recommendations, before a building is occupied.

In Outer London attention is drawn to control exercised under the Public Health Acts 1936 and 1961 and to the current Building Regulations applicable therein and the appropriate London Borough should be consulted.

Contents of this Part

1.01 The London Building Acts (Amendment) Act 1939

1 New buildings

Section 34 of the Act requires that certain new buildings shall be provided in accordance with plans approved by the Council with all such means of escape therefrom in case of fire as in the circumstances of the case can be reasonably required.

The special definition of new building (Section 33) should be noted; this includes buildings erected after 1 January 1940 and also certain old buildings which have been partially demolished and rebuilt, or extended or altered in certain respects.

The buildings referred to in Section 34 are:

Every new public building, every new building which is constructed to be used or is used in whole or in part as a church, chapel, or other place of worship, hall, meeting room, school, classroom, concert room, dancing room, or other place of assembly and every other new building:

a which, if of one storey, exceeds six squares (600 square feet) in area; or

b which, if of more than one storey, has in the aggregate a total floor area exceeding ten squares (1,000 square feet) (exclusive of any basement storey used solely for storage purposes); or

c which has a storey at a greater height than twenty feet; or

d in which more than ten persons are employed above the ground storey.

Note

i *As respects a building of the class referred to in* **1 c** *above, unless the building also comes within* **1 a**, **b** *or* **d** *above, means of escape can only be required from any storey which has a floor at a greater height than twenty feet.*

ii *These provisions of Section 34 do not apply to a dwelling house exclusively used for human habitation which does not contain a storey at a greater height than twenty feet unless it is constructed:*

a *to be let in self-contained flats or tenements or in habitable rooms in different occupations; or*

b *as an hotel or boarding house.*

2 Existing buildings

Section 35 of the Act provides that the Council 'may at any time serve upon the owner of a building a notice requiring him to provide such means of escape as in the circumstances of the case can be reasonably required'.

The buildings referred to are:

An old building:

a which contains any storey which is at a greater height than forty-two feet; or

b in which sleeping accommodation is provided for more than twenty persons or which is occupied by more than twenty persons or in which more than twenty persons are employed; or

c in which more than ten persons are normally employed at any one time above the first storey or on or above any storey which is at a greater height than twenty feet; or

d which exceeds two storeys in height and contains any storey which is at a greater height than twenty feet and—

i is let in flats or tenements; or

ii is used as an inn, hotel, boarding house, hospital, nursing home, boarding school, children's home or other institution; or

iii is used as a restaurant, shop, store, or warehouse and has on any storey above the ground storey any sleeping accommodation; or

1.01 cont.

e which contains a place of assembly having a superficial area of not less than five hundred square feet.

Note *As respects a building of the class referred to in* **2 a** *or in* **2 d** *above, means of escape can only be required from any storey which has a floor at a greater height than twenty feet, provided it is not also a building of any of the other classes referred to.*

3 Consent to alterations, etc.

Section 39 of the Act states that as respects any building to which Part V of the Act applies:

"**a** no substantial alteration or addition of a structural character of or to the building;

b no substantial increase in the number of persons occupied or employed or dwelling in the building; and

c no change of circumstances in or affecting the building or of the use to which the building is put;

which will substantially increase the risk of fire in the building or the difficulty of escaping therefrom in case of fire shall be made without the consent of the Council".

4 Miscellaneous provisions

A number of other Sections of the Act are concerned with matters relating to the provision of means of escape, including:

Section 33	Definitions
Section 36	Projecting Shops
Section 37	Means of access to roofs
Section 38	Parts of buildings used for storage of inflammable liquids
Section 40	Right of Appeal under Part V of the Act
Section 42	Appeals
Section 133	Maintenance of means of escape

1.02 The Factories Act 1961

Section 40 enacts that every factory to which the Section applies shall be certified by the Fire Authority as being provided with such means of escape in case of fire for the persons employed therein as may be reasonably required in the circumstances of the case.

The factories to which Section 40 applies (see Section 45) are:

a all factories in which more than twenty persons are employed;

b factories which were being constructed or converted as factories on 30 July 1937 or after that date and in which more than ten persons are employed in the same building on any floor above the ground floor;

c factories of which the construction was completed before 30 July 1937 and in which more than ten persons are employed in the same building above the first floor or more than twenty feet above ground level;

d those in or under which explosives or highly flammable materials are stored or used.

Note

i *By reason of Regulations made by the Minister (S.I. 762 of 1964) Section 40 also applies to any factory situate in a building in which the aggregate number of employees in factories and in premises subject to the Offices, Shops and Railway Premises Act 1963 exceeds the figures set out in* **a, b** *or* **c** *foregoing.*

ii *Appeal to a Magistrate's court is provided for in the case of any person aggrieved by a refusal to grant or amend a certificate or by being required to carry out alterations (see Section 43).*

1.02 cont.

iii Interpretation of the term 'highly inflammable' rests with H.M. Inspector of Factories. It includes petroleum, paraffin and white spirit, turpentine, cellulose solutions and all liquids having a flash point below 65°C (150°F). It may also include certain plastics and solids. (It should be noted that the use or storage of petroleum is also subject to licence by the Council under the Petroleum (Consolidation) Act 1928 and that various regulations made under the Factories Act 1961 refer to the use and storage of cellulose solutions, celluloid, cinematograph film, highly inflammable liquids and liquid petroleum gas which shall be to the satisfaction of H.M. Inspector of Factories).

1.03 The Offices, Shops and Railway Premises Act 1963

Section 28 enacts that all offices, shops and railway premises to which the Act applies shall be provided with such means of escape as may reasonably be required in the circumstances of the case.

Section 29 enacts that in any premises to which the Act applies it shall not be lawful to employ anyone in the following circumstances unless a fire certificate has been issued:

a if more than twenty persons are employed therein at any one time, or

b if more than ten persons are employed at any one time other than on the ground floor, or

c premises in which or under which are stored or used explosive or highly flammable materials of a kind prescribed in any regulation made by the Minister. (*Note* Regulations have not yet been made.)

Note

i *In the context of the Act the term 'premises' implies a separate tenancy rather than the building as a whole.*

ii *In assessing whether premises are subject to Section 29 by reason of the number of employees, an aggregation is to be made of the number of employees in all sets of such premises within the building. By reason of Regulations made by the Minister (S.I. 761 of 1964), the aggregation referred to is also to include the employees of any factory premises comprised in the building.*

iii *Appeal to a magistrate's court is available to any person who is aggrieved by a refusal to issue or amend a certificate or who is required to make alterations to premises (see Section 31).*

1.04 The Fire Precautions Act 1971

This Act makes provision for reasonable means of escape and related fire precautions in places of public entertainment and resort, and in certain kinds of residential premises. It provides that a fire certificate, issued by the Fire Authority, shall be required for those premises which are used in a manner as designated in an Order made by the Secretary of State; it is concerned with buildings as occupied and used, as distinct from new buildings under construction.

The first designating order under this Act (the Fire Precautions (Hotels and Boarding Houses) Order 1972) refers to premises used 'for providing, in the course of carrying on the business of a hotel or boarding house keeper, sleeping accommodation for staff or sleeping, dining room, drawing room, ballroom or other accommodation for guests', wherein:

a sleeping accommodation is provided in those premises for more than six persons being staff or guests; or

b some sleeping accommodation is provided in those premises for staff or guests on any floor above the first floor of the building which constitutes or comprises the premises; or

c some sleeping accommodation is provided in those premises for staff or guests below the ground floor of the building which constitutes or comprises the premises.

1.04 cont.

Note *Further designation orders falling within the classes of use specified in Section 1 (2) of the Act are likely to be made by the Secretary of State from time to time.*

1.05 The Licensing Act 1964

By the various provisions of this Act most premises, including restaurants and clubs, intending to sell or supply liquor are required either to obtain a licence from the Licensing Justices, or to seek registration from a Magistrate's Court.

In all such cases, the Council as Fire Authority is required to be satisfied with the general suitability of the premises, including the provision of means of escape in case of fire, and may object to the granting of the licence or the proposed registration.

1.06 The Gaming Act 1968

This Act is concerned with premises required to be licensed by the Betting and Gaming Licensing Committee. The Council as Fire Authority, may lodge an objection to the grant or renewal of such licence if it considers that, inter alia, the means of escape from the premises is unsatisfactory.

1.07 The Greater London Council (General Powers) Act 1968

Night cafes

This Act requires that certain premises used as 'night cafes' shall be registered with the appropriate Borough Council. Before registering any such premises the Borough Council must first consult the Greater London Council as to the suitability of the premises in certain respects, including means of escape in case of fire.

1.08 The Housing Acts 1961 and 1969

1 Section 16 of the Housing Act 1961 enacts that any house which, either wholly or in part, is let in lodgings or is occupied by members of more than one family shall be provided with such means of escape as may be considered necessary by the local authority, i.e., the appropriate London Borough Council.

2 Section 60 of the Housing Act 1969 empowers the local authority to make a closing order with respect to the whole or to part of the premises under certain circumstances relating to impracticability of providing satisfactory means of escape at a reasonable cost or it may accept an undertaking to the effect that parts of the premises will not be used for human habitation.

1.09 Acts relating to Entertainments, Exhibitions, etc.

1 **The London Government Act 1963**

2 **The Cinematograph Acts 1909 and 1952 and regulations made thereunder**

3 **The Private Places of Entertainment (Licensing) Act 1967**

4 **The Greater London Council (General Powers) Act 1966**

5 **The Theatres Act 1968 and**

6 **The Sunday Theatre Act 1972**

In general terms these Acts collectively deal with cinemas and theatres and other premises used for entertainment whether public or private and in (**4**) foregoing, certain specified premises when used for exhibition purposes.

1.09 cont.

In effect all such premises are required to be licensed by the Greater London Council as licensing authority. In dealing with such premises the Council looks for general conformity with its Technical Regulations for Places of Public Entertainment (Publication No. 0378X – See **Part 5**), which refer to a number of matters additional to means of escape in case of fire.

In addition, premises licensed for cinematograph exhibitions must also comply with the Cinematograph (Safety) Regulations of 1955, 1958 and 1965.

Note *It is unlawful to use any premises within Greater London for the public performance of stage plays or cinematograph exhibitions, for public dancing or music or any other public entertainment of the like kind, or for public boxing or wrestling except in pursuance of a licence granted by the Council. Additionally it is unlawful to use premises for private entertainment for the purpose of gain unless the premises are so licensed by the Council for such purposes or are licensed or registered for the sale of intoxicating liquor under the Licensing Act, 1964.*

1.10 The Petroleum (Consolidation) Act 1928

Attention is drawn to this Act and to the Orders and Regulations made thereunder which relate to the safe keeping of petroleum spirit and other flammable substances and which require to be licensed by the Council. Enquiries should be made to the Chief Officer, London Fire Brigade (Petroleum Branch), Drury House, 32 Vauxhall Bridge Road, SW1 V2SA, Telephone 01–633 4720.

1.11 The Chronically Sick and Disabled Persons Act 1970

In addition to the foregoing Acts regard should also be had to this Act which requires, inter alia, that, 'Any person undertaking the provision of any building or premises to which the public are to be admitted, whether on payment or otherwise, shall, in the means of access, both to and within the building or premises, and in the parking facilities and sanitary conveniences, make provision insofar as it is in the circumstances both practical and reasonable, for needs of members of the public visiting the building or premises who are disabled.'

Section 8 of the Act requires like provisions in university and school buildings.

Part 2

Applications

Part 2

Applications

Introduction

This Part of the Code of Practice indicates the particulars and plans required by the Council when considering applications for either approval or for certification (in connection with means of escape in case of fire) under the relevant Acts.

Applicants are advised to discuss schemes for new buildings, and for extensions to and alterations to existing buildings with the Council's officers before submitting a formal application for the consideration of the Council. Outline sketch drawings would suffice at this stage to enable the officers to indicate what the normal requirements were likely to be: these can then be incorporated in the final drawings prior to submission for approval.

Contents of this Part

2.01 General

The Procedures for obtaining approval to the means of escape in case of fire from buildings differs according to the legislation involved, and in certain cases the necessary application may need to be made to an Authority other than the Greater London Council.

The procedures under the various Acts are described briefly below.

2.02 The London Building Acts (Amendment) Act 1939 —Part V (New Buildings and Old Buildings)

1 Applications with plans in duplicate should be made to The Superintending Architect, Greater London Council, Department of Architecture and Civic Design, Building Regulation Division, Middlesex House, 20 Vauxhall Bridge Road, London SW1V 2SB except that in the case of 'old buildings' (see Section 33 of this Act) used solely as flats or tenements; the function of approving the means of escape in case of fire is delegated to the inner London Borough Councils to whom applications should be submitted.

2 An application to the Greater London Council should be made in writing by letter and the necessary plans should be on durable material (such as stout paper or linen) drawn to a scale adequate for the purpose – generally 1:100 (8 feet to an inch.)

3 The plans and the written particulars, as appropriate, should be in sufficient detail to show or indicate the general layout and construction of the building and should include (where applicable):

a the means of escape in case of fire proposed;

b the counters, stands, check-out points (as in super-markets), storage racks and similar fittings;

c the use, actual or proposed, on each floor or part of a floor and, in the case of multi-occupancy buildings, the extent of each occupancy; any High Fire Risk areas (see item **4.04**) should be identified on the plans in colour;

d the numbers of persons working, resorting to or sleeping on the various floors of the building and the method used for assessing the numbers of persons (see items **4.07**, **5.02**, **6.07**, **8.07** and **9.06** of this Code of Practice);

e the name and address of the owner;

f the height of the various floors measured in accordance with **Part 3** of this Code of Practice;

g details of Mechanical Ventilation systems, heating appliances, safety lighting, etc. (see **Part II**).

Note *In addition to the foregoing all staircases should be identified separately on the plans by a system of lettering or numbering.*

2.03 The Factories Act 1961 (Occupied Premises)

1 Applications for certificates should be made to the Greater London Council, as Fire Authority, on the prescribed form F2018 (obtainable from HM Factory Inspectorate or HM Stationery Office) and should be sent to the address quoted in item **2.02 1** above.

2 To assist the Council, plans of the factory, showing the use of all parts and the means of escape in case of fire provided, may be requested subsequently.

3 If after the grant of a certificate it is proposed to make any material extension to or material structural alteration of the premises, prior notice of the proposal must be given to the Council and plans showing the proposed extension or alteration should accompany such notice.

2.04 The Offices, Shops and Railway Premises Act 1963 (Occupied Premises)

1 Applications for certificates should be made to the Greater London Council, as Fire Authority, on the prescribed form OSR3 or in the case of Railway Premises Form OSR8 (obtainable from the Council or HM Stationery Office) and should be sent to the address quoted in item **2.02 1** above.

2 To assist the Council, plans of the 'premises' showing the use of all parts and the means of escape in case of fire therefrom may be requested immediately prior to the application being dealt with.

3 If, while a fire certificate is in force, it is proposed to make *a* material extension to, or material structural alteration of, the premises, prior notice of the proposal must be given to the Council and plans, showing the proposed extension or alteration should accompany such notice.

2.05 The Fire Precautions Act 1971 (Occupied Premises)

1 Applications for certificates should be made to the Greater London Council as Fire Authority, on the prescribed form FP1 (obtainable from the Council or from HM Stationery Office) and should be sent to the address quoted in item **2.02 1** above.

2 Section 5 of the Act empowers the Fire Authority to require the submission of plans and these should be submitted when formally requested by the Council. The plans should be up-to-date and should be submitted in triplicate and one of the copies should be translucent.

3 If, while a fire certificate is in force, it is proposed to make a material extension to or an internal alteration of the premises, or a material alteration in the internal arrangements or in the furniture or equipment of the premises, prior notice must be given to the Council as Fire Authority and such notice should be accompanied by plans showing the alterations.

2.06 The Licensing Act 1964/The Gaming Act 1968

1 Under these Acts the Greater London Council as Fire Authority can object to the appropriate Licensing Authority where means of escape in case of fire and/or general suitability of the premises are unsatisfactory.

2 Applications, in the first instance, should be made to the appropriate authority as indicated in items **1.05** and **1.06** respectively of **Part 1** of this Code of Practice.

2.07 Greater London Council (General Powers) Act 1968 —Night Cafes

1 Application should be made to the appropriate London Borough Council in the first instance.

2 Before registering such premises the London Borough Council must first consult the Greater London Council as to the suitability of the premises in certain respects including means of escape in case of fire.

2.08 Acts relating to Entertainments, Exhibitions etc.

1 An application for an entertainments licence must be made on a form provided by the Council which is obtainable from:

The Director General (Entertainments Licensing Section),
Greater London Council,
County Hall,
London SE1 7PB.

2.08 cont.

2 A copy of the rules governing applications for Entertainments Licences can be obtained from the same address.

3 The applicant is required to submit such plans and specifications of the premises concerned as may be required by the Council. However, before a formal application is made to the Council, the Architect to the Council at:

* *Middlesex House,*
20 Vauxhall Bridge Road,
London SW1V 2SB,

will, on request, advise on the suitability of the premises concerned for the grant of licences from the standpoint of public safety. If sufficient plans and specifications are submitted at this stage, no further submissions will be required when the formal application is made.

4 At least fourteen clear days notice must be given to the Council when application is made for an occasional licence

* ***Note*** *Advice, etc., on the suitability of premises located in Outer London can be obtained from the Council's Area Offices as follows:*

214 Kenton Road, *Kenton, Middlesex HA3 8BP.* *Tel: 01–907 0071, 2 or 3.*	*For the London Boroughs of Barnet, Brent, Ealing, Harrow, Hillingdon and Hounslow.*
450 High Road, *Ilford, Essex IG1 1UF.* *Tel: 01–478 5912.*	*For the London Boroughs of Barking, Enfield, Haringey, Havering, Newham, Redbridge and Waltham Forest.*
'Wedge House', *799 London Road,* *Thornton Heath, Surrey* *CR4 6XN. Tel: 01–684 9261.*	*For the London Boroughs of Bexley, Bromley, Croydon, Kingston-upon-Thames, Merton, Richmond-upon-Thames and Sutton.*

Part 3
Definitions Common to All Parts

Part 3

Definitions Common to All Parts

Note

The meanings of expressions used in the London Building Acts 1930–1939 should be carefully read as they are additional to those specified below. Particular attention is drawn to the definitions of **'Height', 'New Building',** *and* **'Plans'** *under Section 33 of the London Building Acts (Amendment) Act. 1939 which are reproduced hereunder for reference.*

*"'***Height'** *in relation to a storey of a building means the level of the surface of the highest point of the floor of that storey measured at the centre of that face of the building where the measurement is greatest from the level of the footway immediately in front of that face or if there is no such footway from the level of the ground before excavation."*

" **'New Building'** *means any building–*

a *of which the actual erection above the footings or supporting concrete has not been bona fide and substantially begun at the commencement of this Act i.e. 1 January, 1940; or*

b *which having been destroyed by fire or other casualty or demolished pulled down or removed from any other cause to an extent exceeding one-half of the aggregate of the superficial areas of the enclosures (excluding party walls) and of the roof and of the floors of the building and is on or after that date reconstructed or commenced to be reconstructed wholly or partly on the same site; or*

c *of which the cubical extent has been increased on or after that date by new building work of an extent equal to or exceeding the cubical extent of the building as existing before that date; or*

d *which having been an old building has by reason of any alteration thereof or addition thereto on or after that date a storey at a height greater than 42 feet."*

" **'Plans'** *means plans, sections and elevations."*

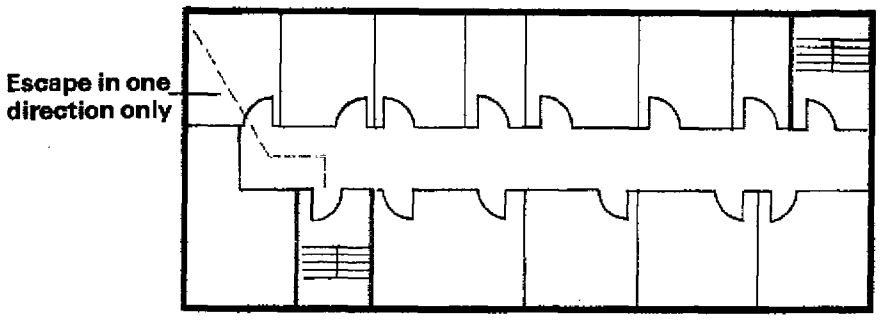
3.01 In this Code of Practice unless the context otherwise requires the expressions quoted have the meanings hereby respectively assigned to them.

1 **'Artificial lighting'** (sometimes referred to as 'Normal lighting'), means lighting provided within a building or within the curtilage of a building of a sufficient standard of illumination to enable persons to move about within the premises and to escape from any part of the premises to a final exit.

2 **'Building By-laws',** means the London Building (Constructional) By-laws currently in force at the date of application.

3 **'Dead end',** means any floor area or part of a floor area from which escape is possible in one direction only. (See **Diagram 1**)

Diagram 1 A DEAD END SITUATION



4 **'Direct distance',** means the shortest distance from any point within the floor area, measured within the external enclosures of the building, to the relevant exit ignoring walls, partitions and fittings other than the enclosing walls/partitions to **protected staircases** (see **Diagrams 2, 3 & 4**).

Diagram 2 OPEN FLOOR PLAN

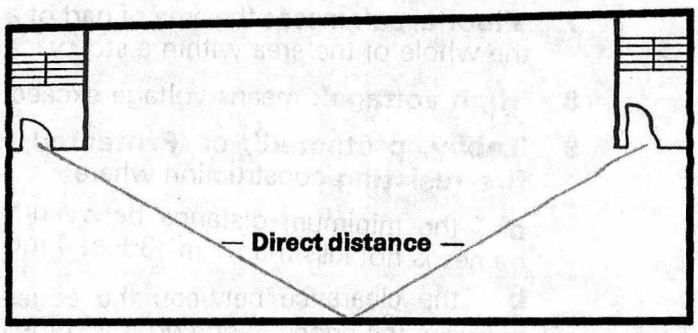


Diagram 3 DIVIDED FLOOR PLAN

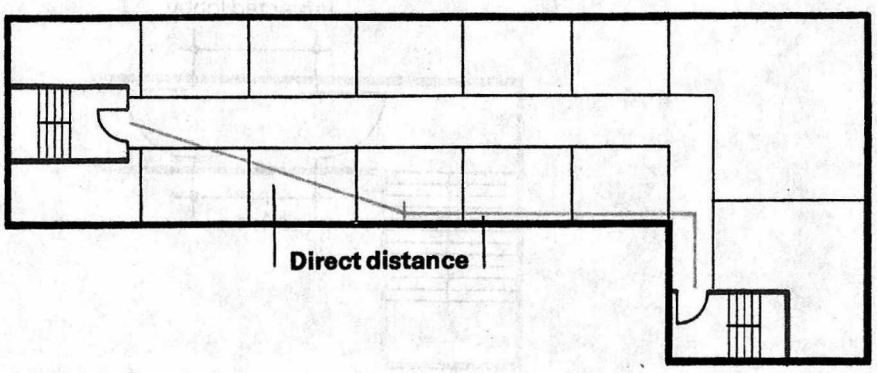
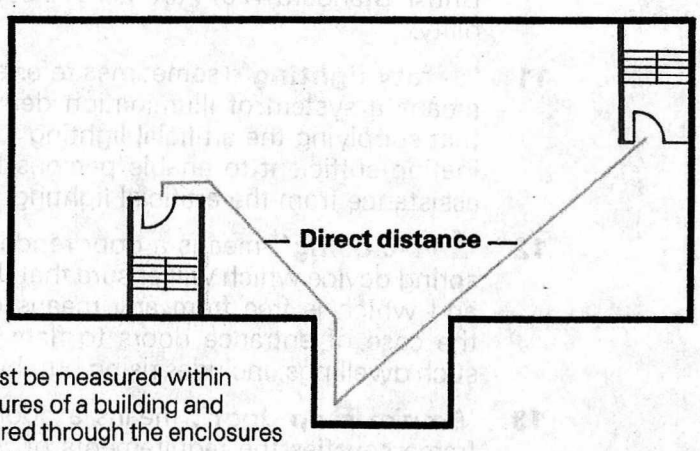


Diagram 4



Direct distance must be measured within the external enclosures of a building and must not be measured through the enclosures to a protected staircase

5 **'Final exit',** means the termination of an escape route from a building giving direct access to a street, passageway, walkway or open space sited so as to ensure the rapid dispersal of persons from the vicinity of a building so that they are no longer in danger from fire and/or smoke.

6 **'Fire-resisting',** means the construction so designated, including doors, has a minimum standard of fire-resistance of not less than one-half hour in accordance with the relevant Schedules of the current **Building By-laws** or which

3.01 cont. achieves such standard when tested in accordance with B.S. 476: Part 8: 1972 except that, in the case of the door(s):

a *i* the rebates to the door frame or the door stops whichever the case may be are not less than 25 mm (1 inch) deep, and

ii the door is hung on metal hinges having a melting point of not less than 800°C, and

b the door is rendered **self-closing.**

7 **'Floor area',** means the area of part of a storey, or, where a storey is undivided, the whole of the area within a storey.

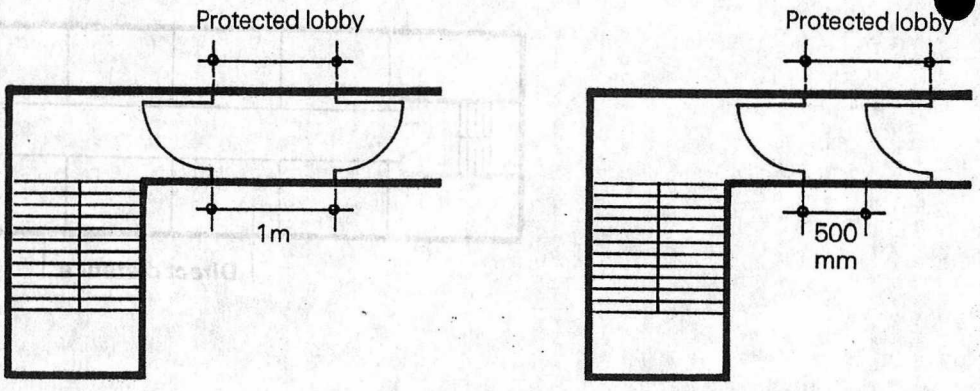
8 **'High voltage',** means voltage exceeding 650 volts.

9 **'Lobby, protected',** or **'Protected lobby'** means a lobby enclosed with **fire-resisting** construction where

a the minimum distance between the lines of the inner and outer door frames is not less than 1 m (3 feet 4 inches) and

b the clearance between the edges of such doors when fully open, or between the edges of one door and the line of the door frame of the other door is not less than 500 mm (1 foot 8 inches). (See **Diagram 5**).

Diagram 5 EXAMPLES OF DOOR ARRANGEMENTS TO A PROTECTED LOBBY



10 **'Non-combustible',** means material which when tested as prescribed by British Standard 476: Part 4: 1970 satisfies the requirements for non-combustibility.

11 **'Safety lighting'** (sometimes referred to as 'Emergency' or 'Escape' lighting) means a system of illumination derived from an approved source other than that supplying the artificial lighting to a building which affords a level of illumination sufficient to enable persons to leave all parts of the premises without assistance from the artificial lighting.

12 **'Self-closing',** means a door rendered effectively self-closing by means of a spring device which will ensure that the door is held firmly in the closed position and which is free from any means of holding it in an open position and, in the case of entrance doors to flats and maisonettes and of any door within such dwellings, includes rising butt hinges having machined bearing surfaces.

13 **'Smoke stop door',** means a door or pair of doors which when fitted in a frame satisfies the requirements of Section 7 of British Standard 476: Part 8: 1972 as to,

a freedom from collapse for not less than 30 minutes and

b resistance to the passage of flame and hot gases for not less than 20 minutes,

and which is fitted so that the clearance between the leaf and frame and in the case of double doors also between the two leaves, is as small as is reasonably practical, and except in the case of doors hung to open in both directions, is provided with a rebate to the door frame or with a door stop, which in either case is not less than 25 mm (1 inch) deep.

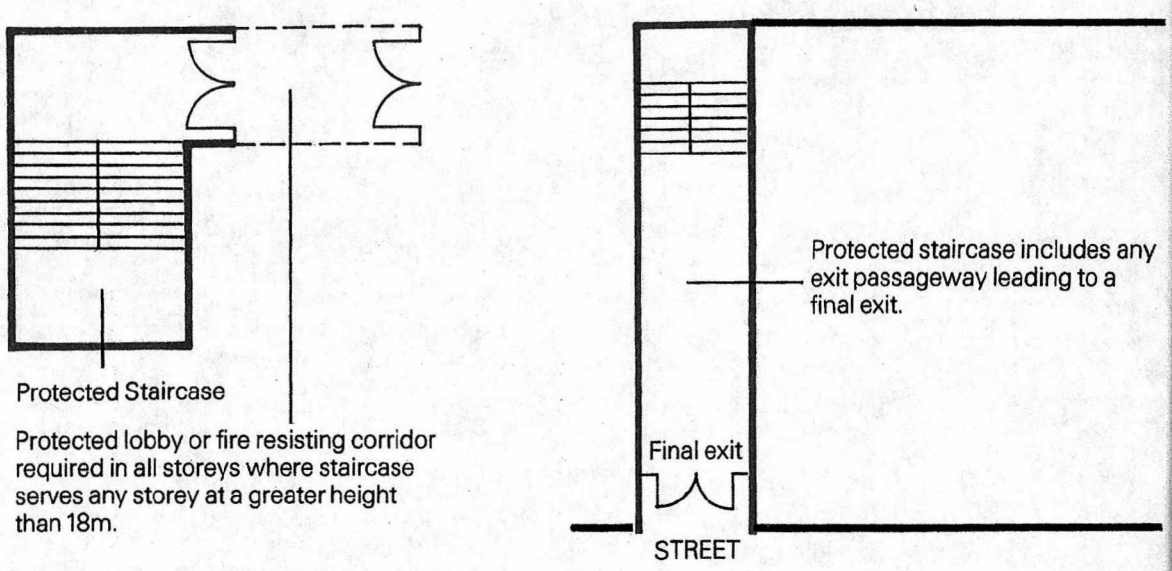
14 **'Staircase protected'** or **'Protected staircase',** means a staircase including any exit passageway leading therefrom to a **final exit,** enclosed with (other than any part which is an external wall of a building) **fire-resisting** construction and in which the enclosures

a are either carried up to the underside of the roof coverings or are separated from any roof spaces by ceilings of similar construction, and

b do not contain any glazing other than where any part of such enclosure is an external wall of a building or where permitted under item **12.02** of **Part 12** of this Code of Practice.

Where the staircase serves any storey at a greater **height** than 18 m (60 feet) above ground level it also means that it is additionally separated from all storeys by a **protected lobby** or by a corridor enclosed throughout with **fire-resisting** construction (see **Diagram 6**).

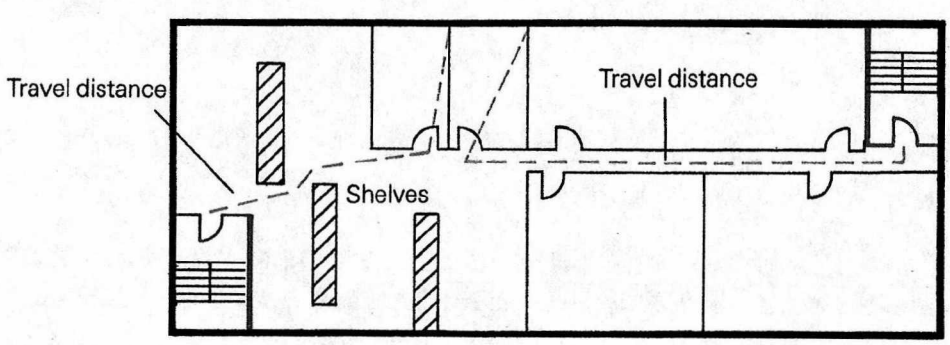
Diagram 6



15 **'Travel distance',** means the actual distance to be travelled by a person from any point within a floor area to the relevant exit having regard to the layout of walls, partitions and fittings (see **Diagram 7**).

Note *The permitted travel distance unless otherwise stated in the Code would normally be one and a half times the direct distance.*

Diagram 7



Part 4

Places Where People Work

Part 4

Places Where People Work

Offices, Factories, Warehouses and similar uses

Introduction

This Part of the Code is concerned with means of escape in case of fire from buildings in which people work and is primarily concerned with buildings used for office, factory and warehousing purposes.

It should be appreciated that most of these premises are also subject to the provisions of the Offices, Shops and Railway Premises Act 1963 and the Factories Act 1961 and, when occupied, will require to be certified by the Fire Authority as being provided with satisfactory and reasonable means of escape. It is an offence to occupy a building coming within the scope of these Acts without a certificate unless an application for a certificate has been made to the Fire Authority on the appropriate form prescribed by the Department of Employment (obtainable from H.M. Stationery Office or the Fire Authority).

New buildings are dealt with at the design stage under Section 34 of the London Building Acts (Amendment) Act 1939 and, unless the building is also one to which Section 20 of the London Building Acts (Amendment) Act 1939 applies (which requires the provision of fire alarms and fire appliances) recommendations may be included in the conditions of approval for the provision of a fire alarm system, fire appliances and other fire precautionary matters. These items cannot be enforced statutorily under Section 34 of the said Act (other than in respect of buildings to which Section 20 of the Act also applies) but they are enforceable under the Offices, Shops and Railway Premises Act 1963 and the Factories Act 1961. Applicants are therefore advised to provide them before a building is occupied. Provided that the conditions of approval and the recommendations referred to above are carried out and installed to the satisfaction of the Council, no additional requirements would normally be made prior to the issue of a certificate and always assuming that no alterations are made from the approved plans.

Attention is drawn to the required number and siting of exits and **protected staircases** which are based on the **direct** and **travel distances** (**4.05**), **dead-ends** (**4.06**) and the maximum number of persons to be accommodated (**4.07**). Buildings erected on a speculative basis should have regard to these and other relevant items in the Code generally, and particularly where the future internal layout of rooms, partitions, machinery and other obstructions may affect the permitted travel distances to the relevant exits, which also vary according to the use to which parts of a building may be put (see item **4.04**).

Contents of this Part

4.01 Method for determining exits and escape routes

The siting, number and appropriate widths of staircases and other exits within or from a building are determined by:

1 the category of the fire risk within each storey or part of a storey;

2 the **direct** and **travel distances** to a staircase or other exit;

3 **dead ends** (where permitted); and

4 the maximum number of persons to be accommodated.

4.02 Widths of escape routes within and exits from a storey

1 The minimum width of any escape route within a storey and of any exit leading therefrom should be not less than the width indicated in **Table 1.**

Table 1

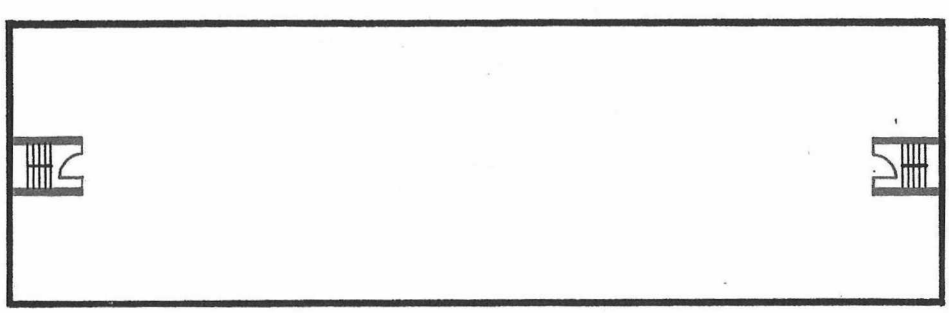
Maximum number of persons								
50	220	240	260	280	300	320	340	360
Width – (Metres)								
0·760	1·100	1·200	1·300	1·400	1·500	1·600	1·700	1·800
Width – (Imperial)								
2′ 6″	3′ 7″	3′ 11″	4′ 3″	4′ 7″	4′ 11″	5′ 3″	5′ 7″	5′ 11″

2 In calculating the widths required, regard should be had to the number of persons likely to use the route of escape and the exits from a storey or part of a storey in fire conditions assuming that one of the routes and exits may not be available due to fire and/or smoke (see also item **4.15** regarding special provisions for single staircase buildings).

4.03 Siting and number of exits

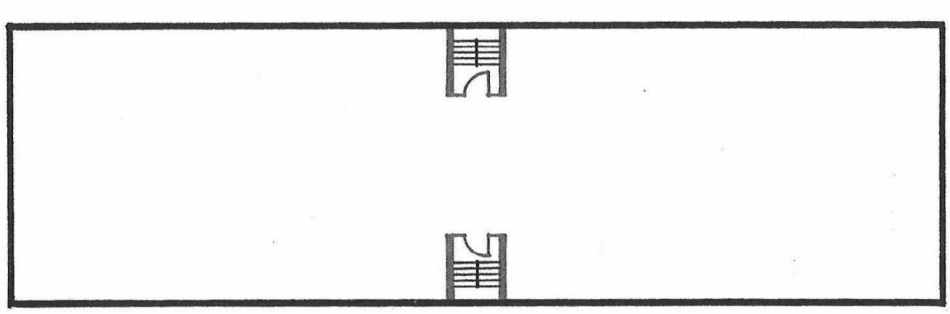
1 Except as permitted by item **4.15** (Buildings provided with one **protected staircase**) or as otherwise permitted by this Part of the Code, not less than

Diagram 8



ACCEPTABLE

Staircases sited at the extremities of the building



NOT ACCEPTABLE

Staircases not sited at the extremities of the building

4.03 cont.

two separate exits should be provided from each storey together with such additional exits as may be necessary to conform with items **4.05, 4.06** and **4.07**. The exits should be sited remote from each other and should be located at the extremities of the building so as to obviate **dead ends** (see **Diagram 8** and also item **4.03 3** hereunder regarding central core arrangements).

2 Each exit from a storey should give direct access to,

a a **final exit**, or

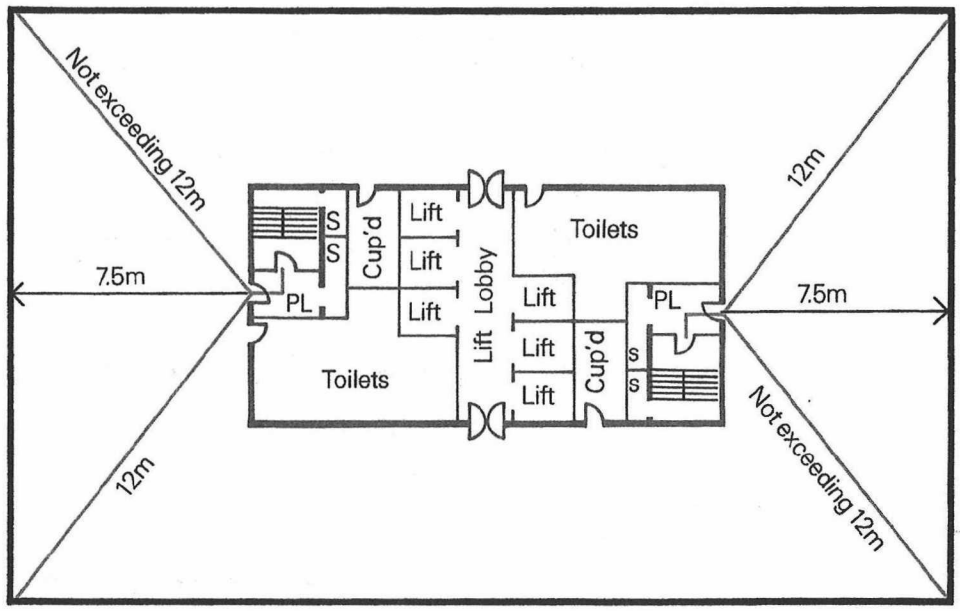
b a **protected staircase** *leading to a* **final exit**, *or*

c an external route leading to a **final exit**.

3 **a** In the case of **office buildings** incorporating a central core arrangement where it is proposed to locate the **protected staircases** away from the extremities of the building, the Council would have to be satisfied that in the event of access to one of the **protected staircases** being affected by fire and/or smoke the remaining **protected staircase(s)** and the access thereto would be available for escape purposes.

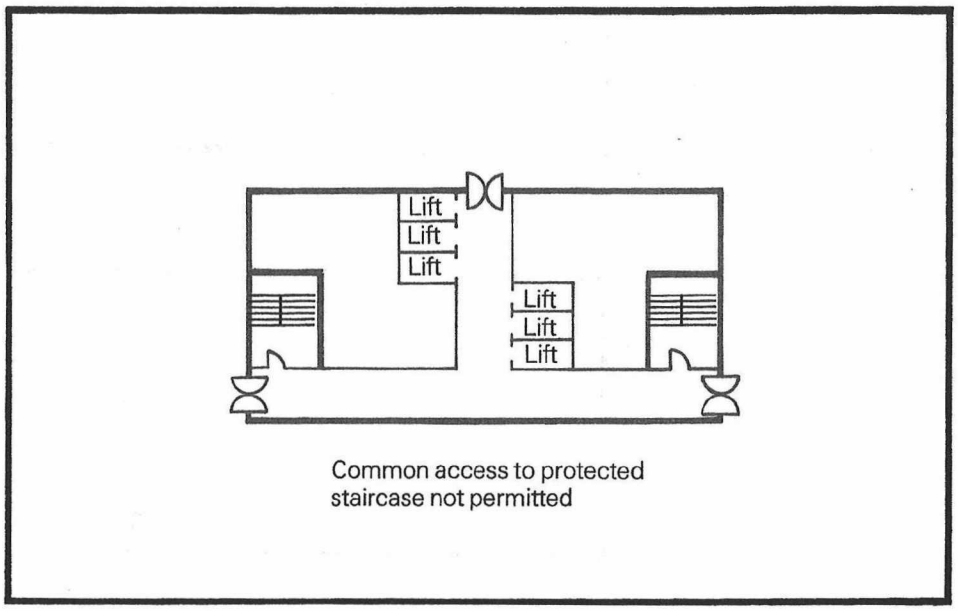
Diagram 9

S – Ventilation shaft PL – Protected lobby to protected staircase.



ACCEPTABLE

Diagram 10



NOT ACCEPTABLE

4.03 cont.

b Consideration would be given to the siting of the **protected staircases** being away from the extremities of the building provided that:

i the **direct distance** from any point in the ends of the building to the access doorway to the **protected staircase** does not exceed 12 m (40 feet).

ii the shortest distance from the ends of the building to the access doorway to the **protected staircase** is generally not greater than 7·5 m (25 feet), and

iii the access doorways to the **protected staircases** are sited remote from one another and are not approached from or linked by a lobby or a lift hall etc., common to the **protected staircases** (see **Diagrams 9** & **10**).

Note *Where a 'ring' corridor is permitted around a central core arrangement it should be in accordance with item* **4.05 3 (c).**

4.04 High Fire Risk areas and storage risk areas

The assessment of the type of fire risk within a **floor area** or part of a **floor area** depends upon a number of factors. The examples given only indicate the sort of risk coming within each category.

1 High fire risk area

a A place where liquids with a flash point below 65°C (150°F) are used, dispensed or stored.

b A place where highly combustible materials are manufactured, used or stored e.g., foam plastics, furniture manufacture, finely divided combustible substances (flour, pepper), etc., and any other material so designated by H.M. Inspector of Factories.

2 Storage risk area

An area used for the bulk storage of goods, materials, flammable liquids, etc., other than those referred to in **1 (a)** and **(b)** above.

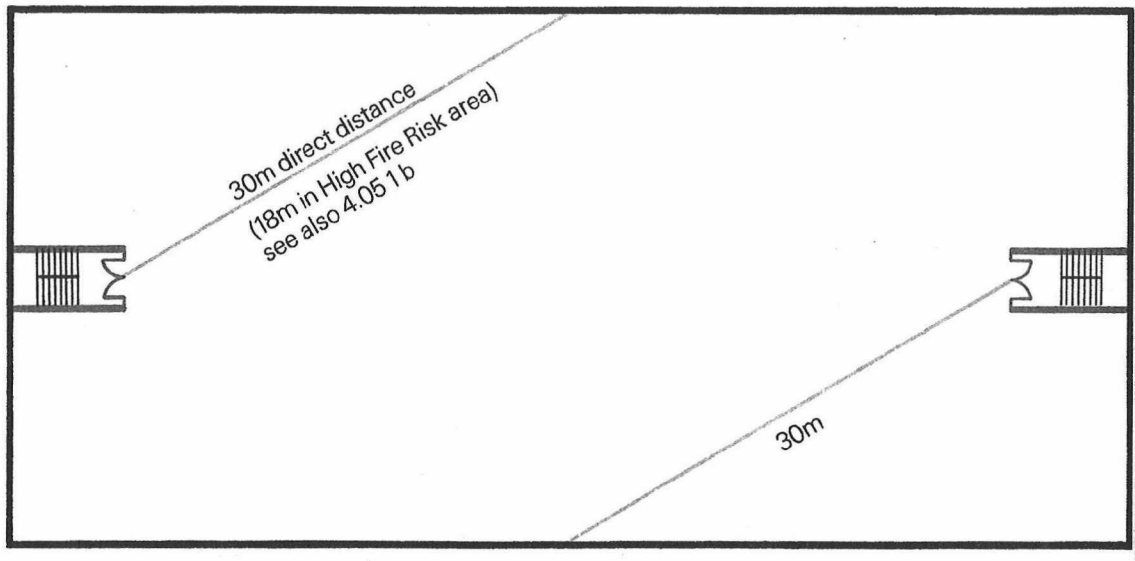
4.05 Direct distance and travel distance

1 **a** The **direct distance** to the nearest exit serving a storey should not exceed 30 m (100 feet) except in the case of a High Fire Risk Area (see item **4.04 1**) when the **direct distance** should not exceed 18 m (60 feet) (see **Diagram 11**).

b Where the fire risk is one of an exceptional hazard the **direct distance** should not exceed 12 m (40 feet).

2 The **travel distance** should not exceed one and a half times the **direct distance** in any case.

Diagram 11



3 **a** Where a storey is sub-divided into separate rooms and the exits from the storey are approached by a continuous corridor, the enclosures to the corridor, should be imperforate except for normal doorway openings (fitted with doors) to rooms. In addition a **self-closing smoke stop door**(s) should be provided across the corridor in a position approximately mid-way between the storey exits sited preferably on the line of partitions separating the rooms so as to prevent smoke by-passing such doors (see **Diagram 12**).

b *Where doors serving a room are sited on both sides of the* **smoke stop door**(s) across a corridor they should be rendered **self-closing** (see **Diagram 13**).

c In an **office building** where a corridor is permitted to be continuous around the core of a central core layout, at least two sets of **self-closing smoke stop doors** should be provided across the corridor roughly equidistant from each other when measured in either direction and so arranged that access to alternative staircases is available from each part of the corridor (see **Diagram 14**).

d **Self-closing smoke stop doors** should also be provided across corridors where they form a junction with other corridors (see **Diagram 15**).

Diagram 12

a – self-closing smoke stop doors

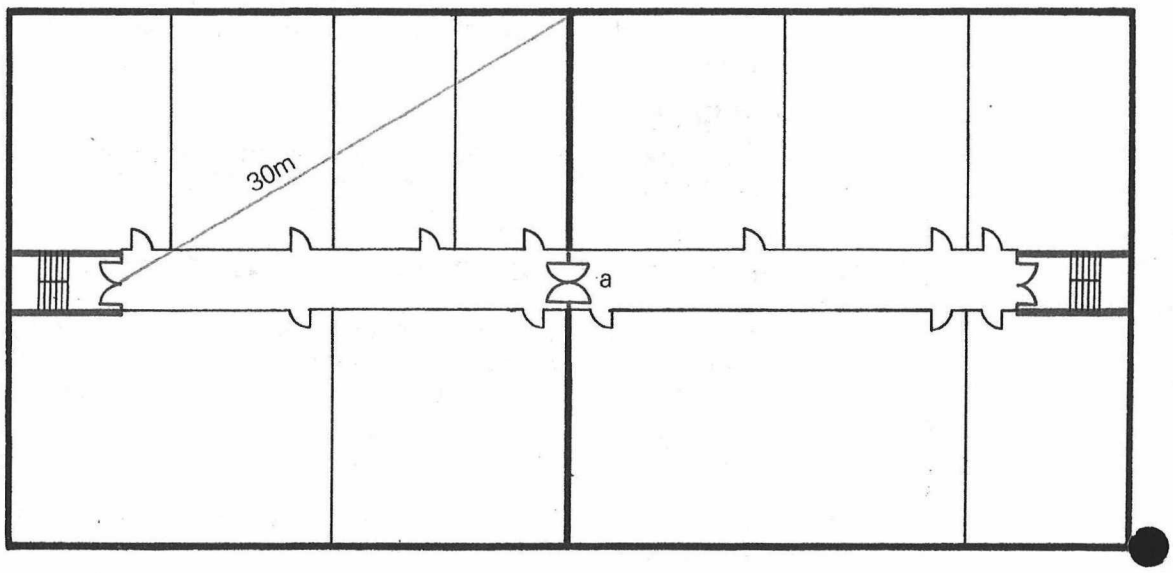


Diagram 13

sc – self-closing a – self-closing smoke stop doors

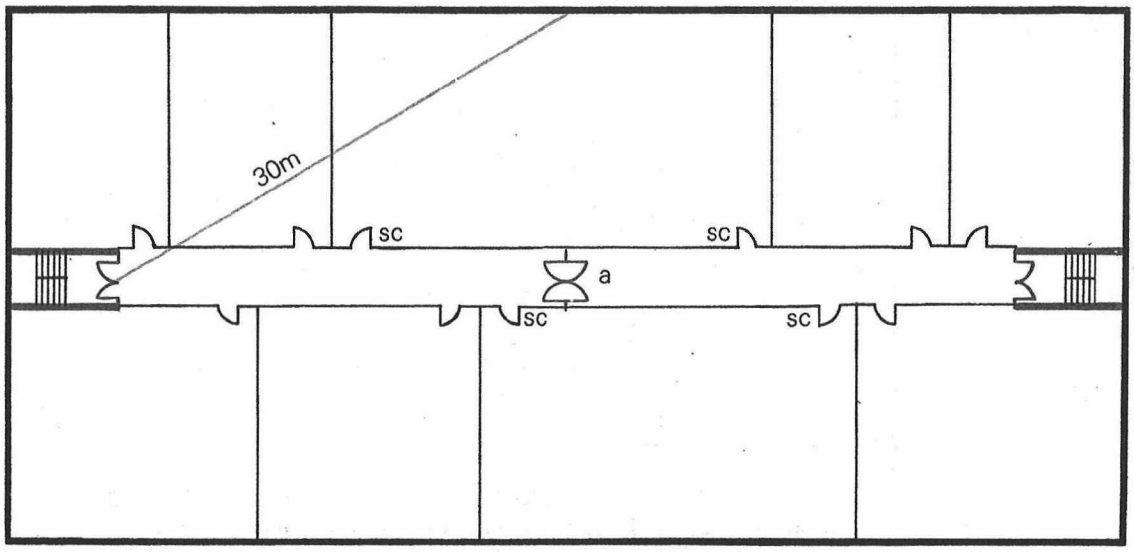


Diagram 14 a – self-closing smoke stop doors

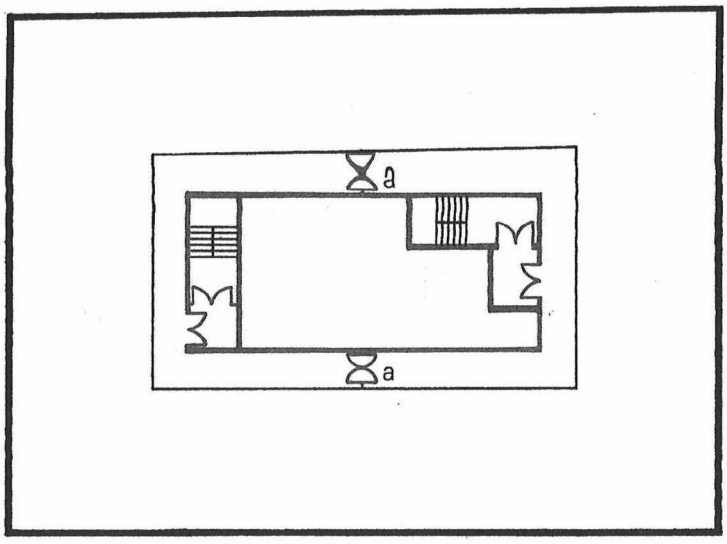
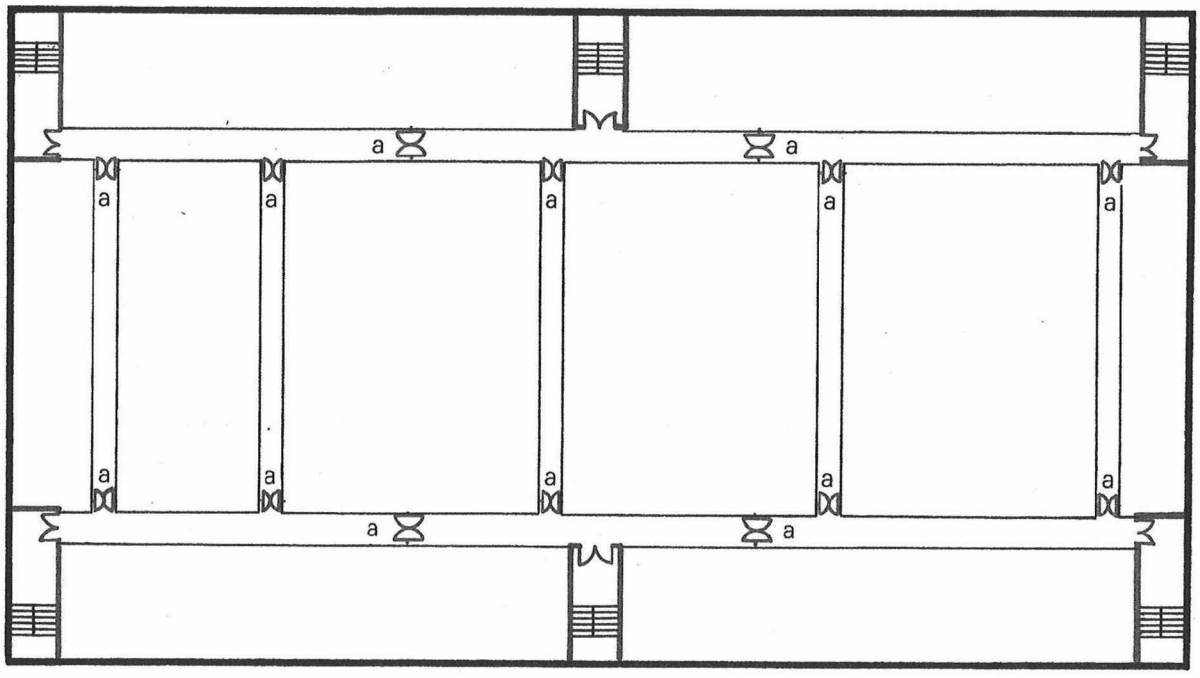


Diagram 15 a – self-closing smoke stop doors



(***Note*** *In all cases where* **self-closing smoke stop doors** *are provided across corridors care should be taken to ensure that the smoke stopping is carried up above any false ceilings which are not* **fire-resisting** *to complete the seal.*)

e Where a storey is undivided and is likely to remain so, consideration may be given to the **direct distance** to the nearest exit serving the storey exceeding 30 m (100 feet) other than in a **dead end,** provided that:

i the exits are remote from one another; are sited at intervals not exceeding 60 m (200 feet) apart, and are distributed uniformly around the perimeter of the storey; and

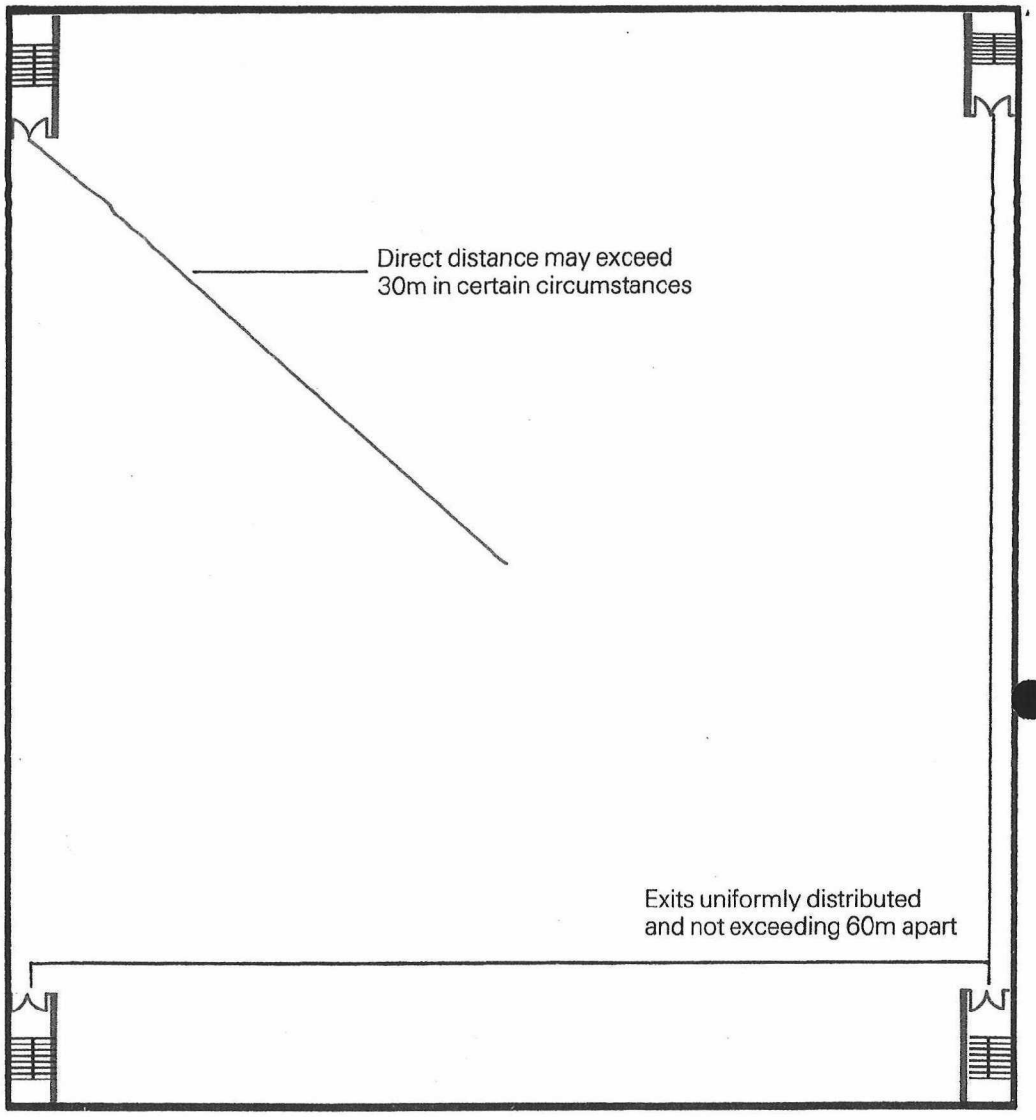
ii there is no High Fire Risk Area (see item **4.04 1**) within a storey*; and

iii the layout of racking, machinery, storage, furniture, etc., is arranged so as to ensure unobstructed access to the exits; and

iv the exits are clearly visible and are well indicated (see item **12.12** and **Diagram 16**).

****Note*** *Consideration will be given to small areas of High Fire Risk within a storey, each case being considered on its merits.*

Diagram 16



4.06 Dead ends and inner rooms

1 **Dead ends** should be avoided wherever possible and in a High Fire Risk Area (see item **4.04 1**) the exits should be positioned so that **dead ends** are eliminated.

2 Where because of site restrictions or practical planning difficulties a **dead end** (other than in a High Fire Risk Area) cannot be avoided, the maximum **direct distance** in a **dead end** to either ***(i)*** the nearest exit from the storey, or ***(ii)*** a point from which escape is available in separate directions to alternative exits, should not exceed:

a 12 m (40 feet) subject in the case of ***(ii)*** to the overall **direct distance** to the nearest exit from the storey not exceeding 30 m (100 feet) (see **Diagrams 17** & **18**).

b The **travel distance** should not exceed one and a half times the permitted **direct distance** and where a corridor is provided in a permitted **'dead end'** such corridor should be enclosed with **fire-resisting** construction; should connect with the nearest exit, and should also lead through a **fire-resisting** screen and door (as may be necessary to complete the separation), to the remainder of the **floor area** from which escape is possible to another exit. The **fire-resisting** screen and door should be sited across the corridor on the side of the staircase remote from the **dead end** and immediately adjacent to the staircase (see **Diagram 19**).

c Where a **dead end** corridor joins a main corridor from which escape is available in separate directions, the **dead end** corridor should be separated from both sections of the main corridor by **self-closing fire-resisting** doors (see **Diagram 20**).

Diagram 17

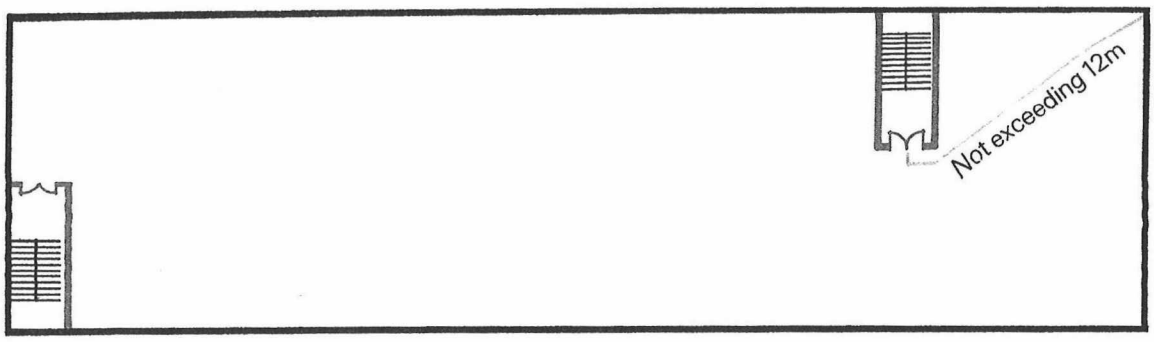


Diagram 18

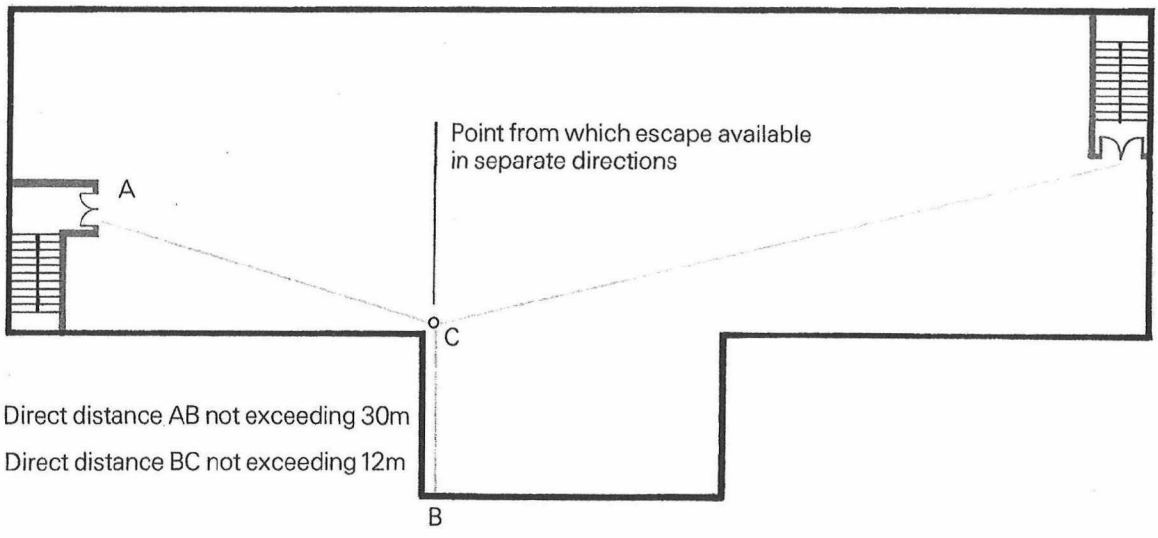


Diagram 19

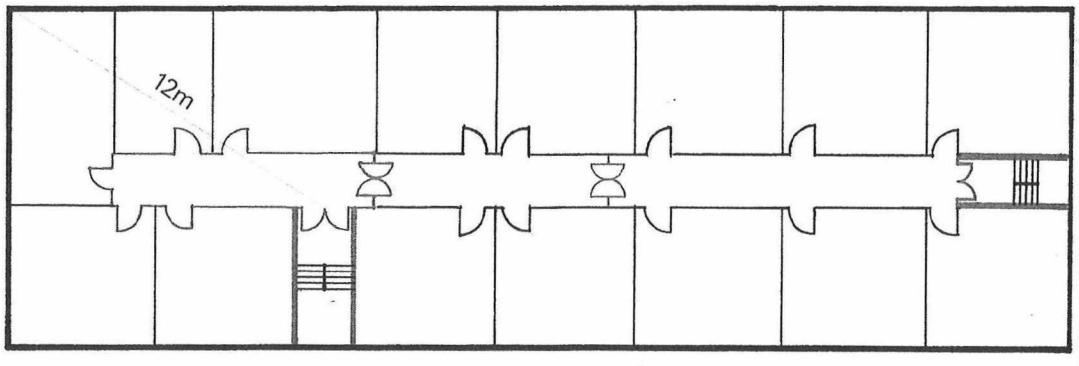
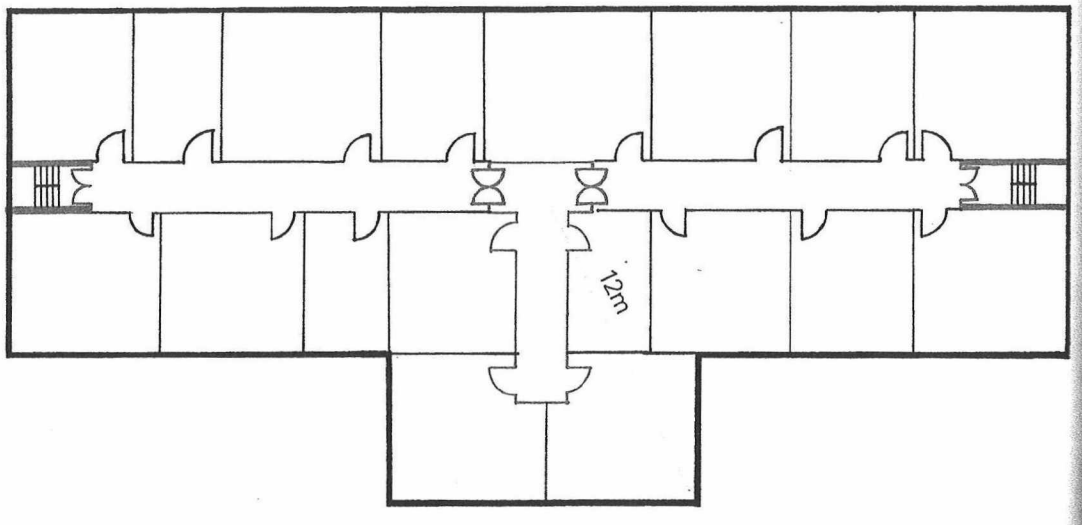


Diagram 20



3 **a** Any inner rooms should be so arranged that no person has to pass through more than one room or area in order to reach:

i a **final exit,** or

ii a **protected staircase,** or

iii an external route, or

iv a corridor leading to ***(i)***, ***(ii)***, or ***(iii)*** above.

Note *This would not apply to inner rooms or areas for storage or similar purposes where the rooms or areas are only occupied occasionally by persons connected with such use.*

b Inner rooms should be provided with a panel of clear glazing at a suitable height to enable persons within such rooms to obtain visual early warning of any emergency in the remainder of the **floor area** (see **Diagrams 21, 22** & **23**).

Diagram 21

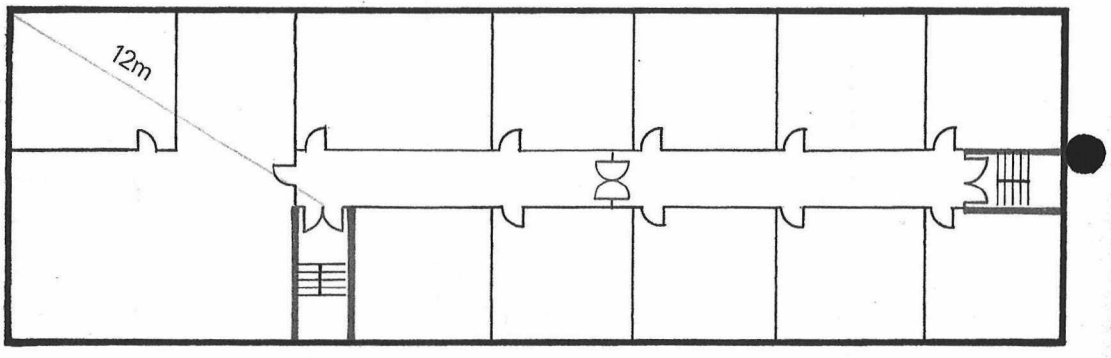


Diagram 22

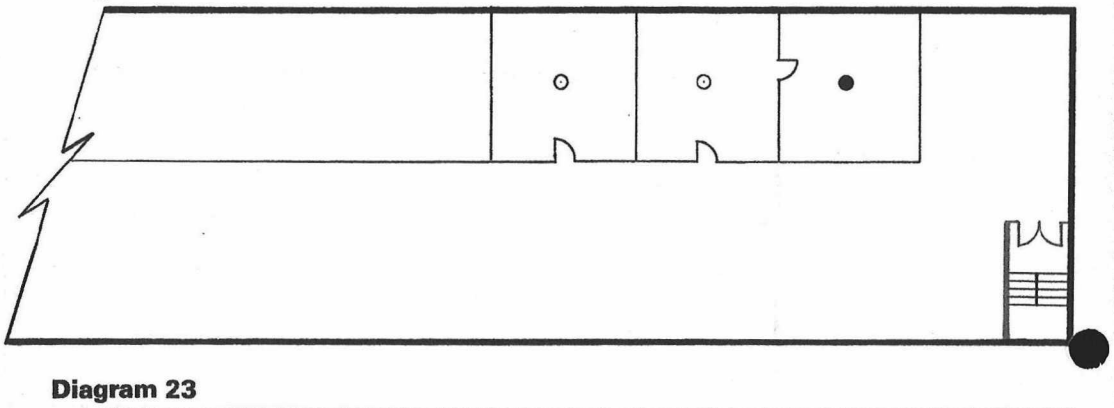
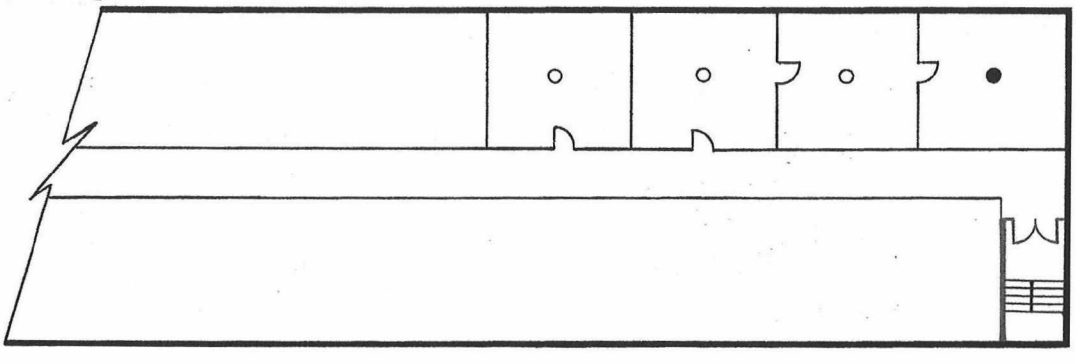


Diagram 23



○ Acceptable

● Not acceptable

4.07 Assessment of number of persons

1 Offices and factories

Where the maximum number of persons on each floor, is not known, it may be taken as one person for each 10 m² (100 square feet) calculated on the gross floor area but excluding staircases, lifts and sanitary accommodation. Should it be desired to occupy any floor area to the maximum permitted under the Factories Act 1961 or the Offices, Shops and Railway Premises Act 1963, the calculation for this purpose should be based on 5 m² (55 square feet) per person measured over the gross floor area as described above.

Note
When submitting an application for the consideration of the Council it should be clearly stated which of these methods it is proposed to adopt or alternatively the maximum number of persons to be accommodated on each floor should be indicated on the drawings.

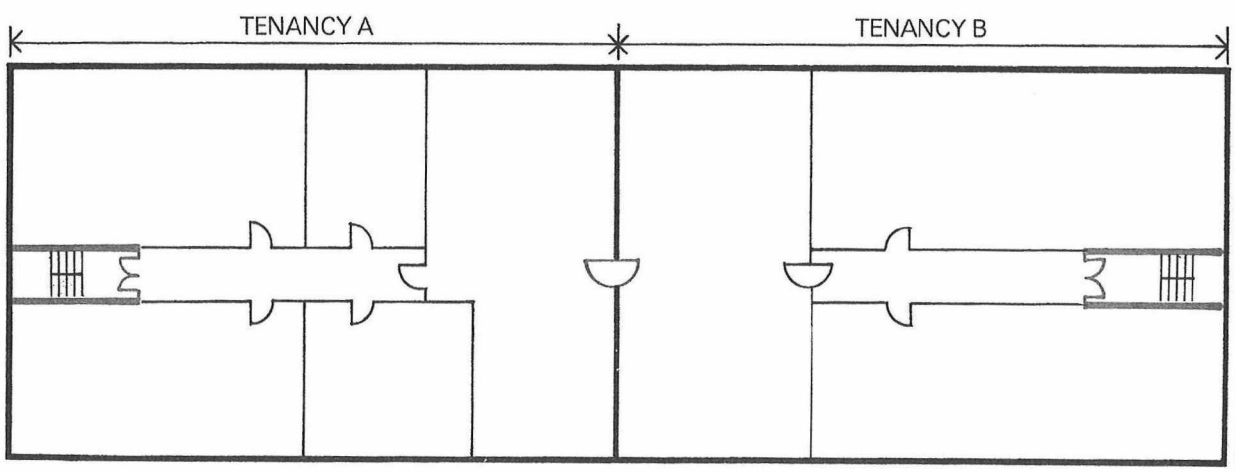
2 Warehouses

In warehouses or other low density occupations, the number and widths of exits when determined in accordance with items **4.02**, **4.05** and **4.06** will normally be adequate for the number of persons likely to be accommodated in any storey or part of a storey as the case may be.

4.08 Separate tenancies within the same storey

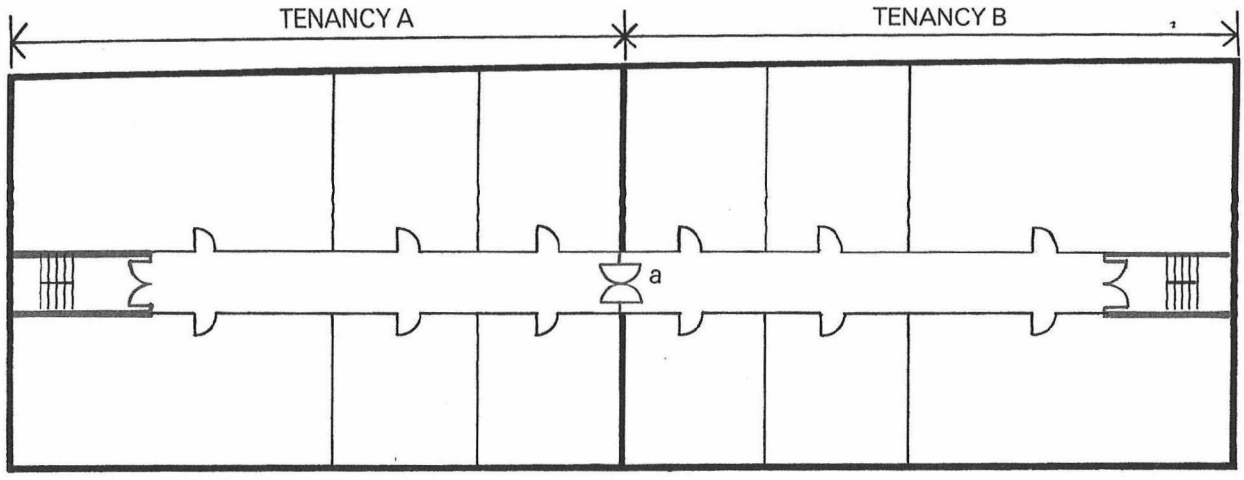
Where any storey is occupied by more than one tenant and it is necessary for persons in any of the tenancies to pass through the other(s) to reach an alternative exit from the storey, a corridor or lobby accessible to all persons on the floor area from the tenancies concerned should be provided giving access to the required exits (see **Diagrams 24**, **25** & **26**).

Diagram 24



SEPARATE TENANCIES – NOT ACCEPTABLE

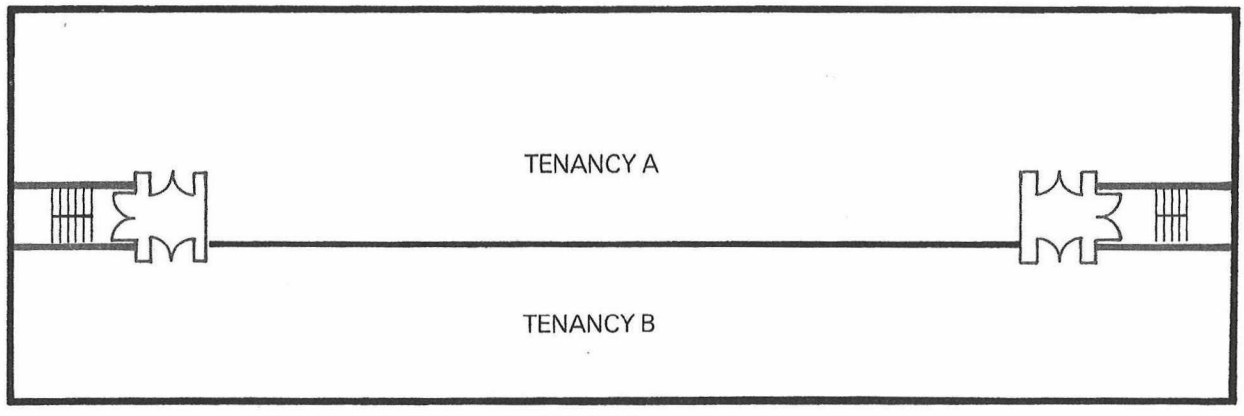
Diagram 25



SEPARATE TENANCIES – ACCEPTABLE

a – self-closing smoke stop door free from fastening

Diagram 26



SEPARATE TENANCIES – ACCEPTABLE

4.09 Number and Width of protected staircases

1 Buildings provided with two or more protected staircases

Every multi-storey building should be provided with a minimum of two **protected staircases** (unless it is a building coming within the scope of item **4.15** – Buildings permitted to be provided with only one **protected staircase**) sited remote from one another and located at the extremities of the building in order to obviate **dead ends**. The actual number of **protected staircases** required should be determined in accordance with items **4.05, 4.06** & **4.07**.

2 Siting and ventilation of protected staircases

a In a building used for **factory or warehouse** purposes the **protected staircases** should be located on the external walls of the building and should be provided with windows openable to the external air at each storey level. The windows should have a clear openable area of not less than 1 m² (10 square feet).

b In a building used for **office purposes** the **protected staircases** should be sited and ventilated as in (**a**) above, or they may be sited away from the external walls (see item **4.03 3**) in which case they should be provided at the head with a window or a panel not less than 1 m² (10 square feet) which could be opened manually or automatically on the throwing of a switch.

Any device or switch for such operation should be located adjacent to the entrance doorway in the ground storey or in a position acceptable to the Council and should be provided with a permanent notice marked **'SWITCH FOR STAIRCASE VENTILATION'** or **'OPERATE MANUALLY FOR STAIRCASE VENTILATION'**, in permanent plain letters 10 mm (½ inch) high.

4.09 cont.

Note *Attention is drawn to the siting and ventilation of staircases coming within the control of Section 20 of the London Building Acts (Amendment) Act 1939, details of which are contained in the Council's Code of Practice for 'Buildings of Excess Height and/or Additional Cubical Extent' – Publication No. 0542 1 obtainable from the Information Centre, Greater London Council, The County Hall (South Block), London SE1 7PB.*

3 Width of protected staircases

The minimum width of a **protected staircase** should be not less than the width required for any exit affording access to it (see item **4.02**) and in no case should it be less than:

a 1·100 m (3 feet 7 inches) in a building **not** exceeding 30 m (100 feet) in **height;**
or

b 1·400 m (4 feet 7 inches) in a building exceeding 30 m (100 feet) in **height.**

Note *Consideration will be given to a* **protected staircase** *having a minimum width of 900 mm (2 feet 11 inches) where the total population in any one storey does not exceed 50 persons and the staircase does not serve more than three storeys above the ground storey.*

4 Calculation of number and width of protected staircases

a Subject to the provisions of items **1** and **3** above, for buildings **not** exceeding 30 m (100 feet) in **height** the number and widths of **protected staircases** required should be determined in accordance with **Table 2,** except that for **office buildings** exceeding 18 m (60 feet) in **height** (i.e. where the **protected staircase** is additionally protected by a **protected lobby**), the assessment may be in accordance with **Table 3.**

Note

i *In every case one of the* **protected staircases** *should be assumed to be out of action and the remaining* **protected staircases** *should be of sufficient width and number to accommodate the relevant occupancy.*

ii *The tables are based on the assumption that persons will be distributed evenly on all floors; minor uneven distribution may be ignored but where a heavy concentration of persons is likely to occur on any particular floor, e.g. staff canteen, an adequate number of* **protected staircases** *of appropriate widths should be provided to cater for this.*

iii **Protected staircases** *should be of the same width but consideration will be given to such staircases being of different widths having regard to* (***i***) *above and to their disposition, each* **protected staircase** *being assessed in turn against the others.*

iv *Staircases exceeding 1·800 m (5 feet 11 inches) in width should be designed in double equal widths (e.g. two widths of 1·100 m (3 feet 7 inches)), 1·200 m (3 feet 11 inches) etc. and should incorporate a central handrail.*

b The number and widths of **protected staircases** serving basement storeys should be determined separately from the upper storeys, the assessment being determined from **Table 2.**

5 Application of Table 2 and Table 3

*(**Note** For **office** buildings **not** exceeding 30 m (100 feet) in height the designer has the choice of using either **Table 2** or **Table 3**).*

a **Table 2** is based on the **whole building being evacuated** and is computed on the evacuation capacity of a staircase of the width stated according to the number of storeys it serves and also takes account of the capacity of the staircase as well as its discharge rate through the final exit.

b **Table 3** has regard to the evacuation capacity of a staircase based initially on the **immediate evacuation of two floors** (other than basements) i.e. the floor on which the fire occurs plus the floor immediately above it, provided that the **protected staircases** are approached from each floor they serve by way of a **protected lobby** or corridor enclosed with **fire-resisting** construction.

Table 2

Buildings NOT exceeding 30 m (100 feet) in height and all basement storeys

	Width of staircase							
Metres	1·100	1·200	1·300	1·400	1·500	1·600	1·700	1·800
Imperial	3′ 7″	3′ 11″	4′ 3″	4′ 7″	4′ 11″	5′ 3″	5′ 7″	5′ 11″
Number of floors served	**Number of persons one staircase can accommodate**							
1	220	240	260	280	300	320	340	360
2	260	285	310	335	360	385	410	435
3	300	330	360	390	420	450	480	510
4	340	375	410	445	480	515	550	585
5	380	420	460	500	540	580	620	660
6	420	465	510	555	600	645	690	735
7	460	510	560	610	660	710	760	810
8	500	555	610	665	720	775	830	885
9	540	600	660	720	780	840	900	960
10	580	645	710	775	840	905	970	1035

Note

i *For buildings used for hotel purposes exceeding 30 m (100 feet) in* **height** *see* **Table 8** in **Part 8** *of the Code of Practice.*

ii *Special consideration will be necessary under Section 20 of the London Building Acts (Amendment) Act 1939 in respect of any proposal to erect a building with storeys over 30 m (100 feet) in* **height** *to be used for factory or trade purposes, and buildings used for the bulk storage of combustible goods are restricted to a* **height** *of 24 m (80 feet).*

Table 3

Office building of unlimited height but excluding Basement Storeys.

(Where **protected staircases** are approached through a **protected lobby** or corridor enclosed by **fire-resisting** construction.)

Applicable to **office buildings exceeding 18 m (60 feet)** in **height** but can be used as an alternative to **Table 2** for office buildings below this height. **Table 3** is based on the immediate evacuation of two floors only (see item **4.09 5(b)**) and, if used, regard should also be had to the necessity for a two stage fire alarm system (see **Part 13**).

Maximum number of persons per storey	**Width of staircase**	
	Metres	Imperial
120	1·100	3′ 7″ *
130	1·200	3′ 11″ *
140	1·300	4′ 3″ *
150	1·400	4′ 7″
160	1·500	4′ 11″
170	1·600	5′ 3″
180	1·700	5′ 7″
190	1·800	5′ 11″

***Note**

i *Where a building exceeds 30 m (100 feet) in* **height** *the minimum width of the* **protected staircase** *should be not less than 1·400 m (4 feet 7 inches).*

4.09 cont.

ii The actual number of **protected staircases** *will also depend on the siting requirements governed by the* **direct distances** *(see item* **4.05***) and any* **dead end** *situations (see item* **4.06***).*

Examples based on Tables 2 and 3

Note *The actual number of* **protected staircases** *will also depend on the siting requirements governed by the* **direct** *and* **travel distances** *(see item* **4.05***) and any* **dead end** *situations (see item* **4.06***).*

Example A

Number of floors in building (excluding ground and basement storeys) = 8
Total population of building (excluding ground and basement storeys) = 760

From Table 2

Look at first column for the number of floors to be served i.e., 8, follow the line along until nearest figure to number of persons in building occurs i.e., 775 in this example.

This occurs under the width of 1·600 m (5 feet 3 inches). Assuming one staircase unavailable a minimum of two **protected staircases** each 1·600 m (5 feet 3 inches) wide required (or three **protected staircases** each 1·100 m (3 feet 7 inches) wide).

Example B

Number of floors in building (excluding ground and basement storeys) = 8
Total population (excluding ground and basement storeys) = 1240
Proposed number of **protected staircases** = 3

But one staircase must be assumed out of action, therefore each staircase must accommodate $\frac{1240}{3-1} = 620$.

From Table 2

Look at first column for number of storeys to be served i.e., 8, follow along line to find width of staircase to accommodate

665 persons = 1·400 m (4 feet 7 inches).

Therefore each of the three **protected staircases** must be 1·400 m (4 feet 7 inches) wide (or four **protected staircases** each at 1·100 m (3 feet 7 inches) wide).

From Table 3

Alternative method for office buildings only, with **protected lobbies** or **fire-resisting** corridors to staircase;

Number of persons per storey $= \frac{1240}{8} = 155$ persons.

From first column, nearest number of persons = 160
Required width of **protected staircase** = 1·500 m (4 feet 11 inches).

But one staircase assumed to be out of action, therefore two **protected staircases** to be provided, each at 1·500 m (4 feet 11 inches) wide or three **protected staircases** each 1·100 m (3 feet 7 inches) wide.

Example C (office buildings only)

Number of persons per floor = 120

Building 53 m (175 feet) in **height** (i.e. exceeding 30 m (100 feet) in **height**). From Table 3 one staircase 1·100 m (3 feet 7 inches) wide will cater for this number of persons, but the minimum width of **protected staircase** in a building exceeding 30 m (100 feet) in **height** is 1·400 m (4 feet 7 inches).

Assuming one staircase out of action therefore two **protected staircases** required each 1·400 m (4 feet 7 inches) wide.

Example D (office buildings only)

Number of persons per floor = 400

Building 60 m (200 feet) in **height**

The minimum width of a **protected staircase** exceeding 30 m (100 feet) in **height** is 1·400 m (4 feet 7 inches).

From Table 3

One staircase 1·400 m (4 feet 7 inches) wide would accommodate 150 persons.

Three staircases 1·400 m (4 feet 7 inches) wide would accommodate 150 x 3 = 450 persons.

One staircase assumed out of action, therefore number of **protected staircases** required = 3 + 1 = 4 each 1·400 m (4 feet 7 inches) wide.

6 Open accommodation staircases and open wells

Except in the case of a building provided with only one **protected staircase** (see item **4.15**), open accommodation staircases and open wells (where permitted) may be provided to serve not more than two storeys. Each case will be considered on its merits having regard to the siting of such staircases in relation to escape routes and **protected staircases**.

7 Pressurised staircases and lobbies

Special consideration will be necessary for any schemes incorporating the provision of pressurised staircases and/or lobbies as a means of protecting vertical escape routes. Research is still being carried out in this field and applicants should discuss their proposals with the Council's officers at an early stage before preparing any detail **plans**

4.10 Basement storeys for all buildings in this part

1 Every basement storey should be provided with two or more exits in accordance with item **4.03** except that where there is only one basement storey and such storey does not contain a High Fire Risk Area (see item **4.04 1**) and the **direct distance** to a **final exit** from such storey does not exceed 12 m (40 feet), only one exit need be provided.

2 A High Fire Risk Area (see item **4.04 1**) should not be located within any sub-basement storey, nor in any basement storey where it would prejudice the means of escape from the storeys below.

3 Where a basement or sub-basement storey is sub-divided into rooms, the exits from the rooms should discharge into a corridor enclosed with **fire-resisting** construction.

4 **a** Where a **protected staircase** serving the upper floors continues downwards to serve a basement storey, the basement storey should be separated from the **protected staircase** by a **protected lobby** or corridor enclosed with **fire-resisting** construction.

b Where a High Fire Risk Area (see item **4.04 1**), a garage or a car park is permitted to be located in a basement storey, at least one of the **protected staircases** serving separate wings or parts of the upper floors should not communicate with such storey. The other **protected staircases** communicating with a basement storey should have a **protected lobby** referred to in **4(a)** above and the lobby should be provided with natural ventilation to the external air having an area of not less than 0·4 m² (4 square feet).

c Any lift connecting with a basement or sub-basement should be protected as described in **4(a)** and (**b**) above.

4.11 Separation of fire risk areas

The following areas or users should be separated from the remainder of the building in which they are located by **fire-resisting** construction:

1 Areas of High Fire Risk (see item **4.04 1**).

2 Storage, Packing and Despatch (see item **4.04 2**).

3 Boiler chambers and fuel stores (see **Part 10**).

4 Transformer chambers (see **Part 10**).

5 Kitchens (see item **6.13**).

6 Car parks and garages (see **Part 9**).

Note *Regard should also be had to the London Building (Constructional) By-laws and to the Council's Code of Practice for 'Buildings of Excess Height and/or Additional Cubical Extent' (Publication No. 0542 1) where a higher standard may be required.*

4.12 Flammable materials and liquids

1 Flammable liquids in quantities not exceeding 23 litres (5 gallons) and which are not subject to Petroleum or Factories Act regulations may be kept in metal bins within areas of normal risk. The metal bins should have hinged lids and should be suitably marked 'FLAMMABLE LIQUIDS' to indicate the nature of the contents and also 'KEEP LOCKED AND REMOTE FROM EXITS' in 25 mm (1 inch) letters in a prominent position.

2 Where flammable liquids are stored in larger quantities than referred to in 1 above, they should be kept within an enclosure constructed of **fire-resisting** materials; the floor, walls and any door(s) should be bunded so as to retain any liquids in the event of leakage and the enclosure should be ventilated permanently to the external air.

3 Any bin or **fire-resisting** enclosure used for the storage of flammable liquids within a building should be sited in a position remote from the exits of the storey in which the liquids are stored.

4 Gas cylinders should be stored in the open air in shaded positions and should be kept in an upright position. Cylinders containing oxygen should not be stored in close proximity to other gases. If stored in a store building, the building should be constructed of **non-combustible** material; should be ventilated permanently to the external air and should be used solely for the storage of the gas cylinders.

4.13 Lifts

1 Lifts should normally comply with the constructional requirements contained in **Part 12** of this Code of Practice.

2 Where a lift connects with an area of High Fire Risk (see item **4.04 1**) (other than on the topmost storey) or a car park or garage, the lift shaft should be separated from the **floor area** by **fire-resisting** construction. The separation should be either imperforate or, where this would be impractical, the lift shaft should be separated from the **floor area** by a ventilated **protected lobby** as in **4.10 4(b)**.

4.14 Safety lighting

Artificial lighting and **safety lighting** should be provided in accordance with **Part 11** of this Code of Practice.

4.15 Buildings provided with ONE protected staircase

Where because of site restrictions it would be impractical to provide two or more **protected staircases,** one **protected staircase** may be permitted, subject to the safeguards described hereunder according to the **height** of the building (see items **4** and **5** below).

1 The **protected staircase** should be in accordance with items **4.02 1** and **4.09 2**(**a**) and (**b**).

2 No High Fire Risk Area (see item **4.04 1**) should be provided in any storey below ground level.

3 High Fire Risk Areas, where permitted, should be provided with alternative means of escape independent of the **protected staircase** and should be located in the topmost storey (see **Diagram 27**).

Diagram 27

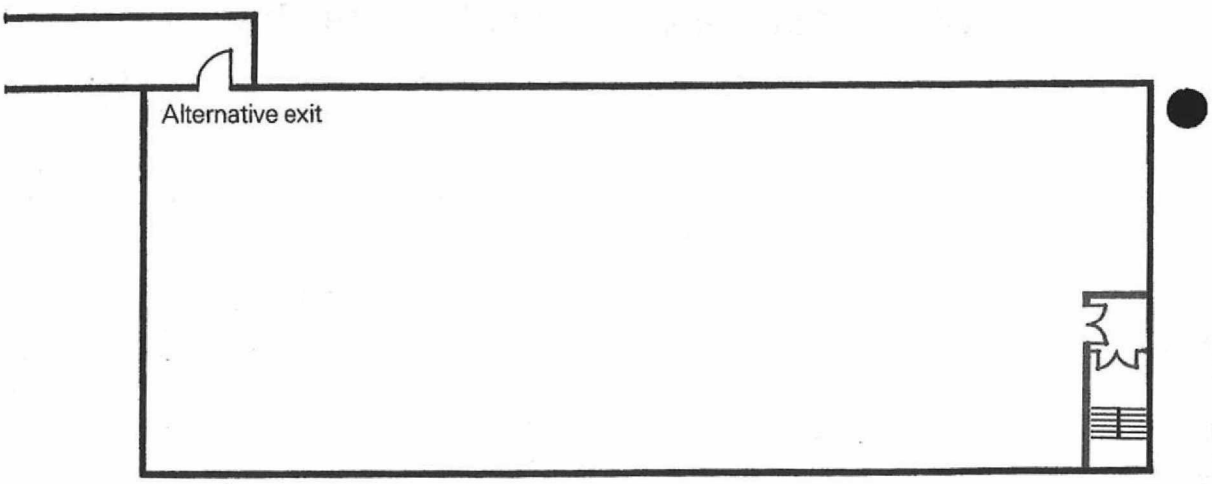
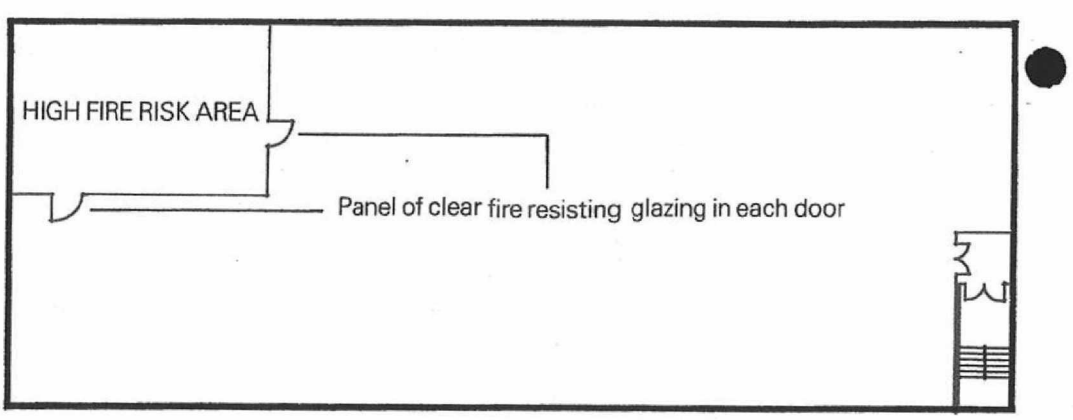


Diagram 28



Note *Consideration will be given to small areas of high fire risk within other storeys provided that they are enclosed and separated from the remainder of the storey by* **non-combustible fire-resisting** *construction and that they are sited so as not to prejudice the means of escape from the storey. Such areas should* ***not*** *connect directly to the* **protected staircase** *or its* **protected lobby** *and should be provided with alternative means of escape. A panel of clear* **fire-resisting** *glazing fixed at a suitable height to give early visual warning of an emergency in the remainder of the storey should be provided in the doors (see* **Diagram 28**).

4 Buildings NOT exceeding four storeys in height above ground level and in which no storey exceeds 350 m² (3650 square feet) in area

a The **direct distance** to the exit door affording access to the **protected staircase** should not exceed 12 m (40 feet).

b All **floor areas** (other than in an undivided topmost storey) should be separated from the **protected staircase** by:

i a **protected lobby** (see **Diagrams 5, 29** & **31**) or

ii a corridor enclosed with **fire-resisting** construction (see **Diagrams 30** & **31**);

and the **protected lobby** and/or the **fire-resisting** corridor should not be used for any purpose other than to provide access to the **protected staircase**.

Note *The* **protected lobby** *to the* **protected staircase** *serving a basement storey may be provided by a* **fire-resisting** *screen and door located at the head and at the foot of the* **protected staircase** *(see item* **4.10 4(a)***);*

c Any corridor affording access to a storey exit should be enclosed with **fire-resisting** construction.

d The **protected staircase, protected lobby** or **fire-resisting** corridor should be not less than:

i 0·900 m (2 feet 11 inches) in width where the area on any floor does not exceed 200 m² (2150 square feet); or

ii 1·100 m (3 feet 7 inches) in width where this area is exceeded;

e Where the escape route from the ground and/or basement storeys discharges into the same escape route serving the upper storeys, the width of the combined escape routes in the ground storey exitway should be in accordance with the exit widths set out in **Table 1** (see item **4.02**) to cater for the total population of the building;

f Inner rooms within a storey or floor area should be in accordance with item **4.06 3**;

Diagram 29

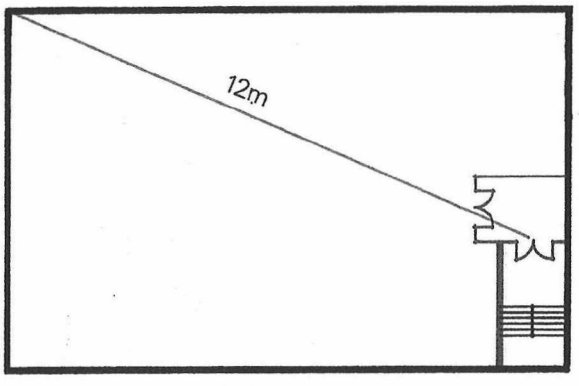


Diagram 30

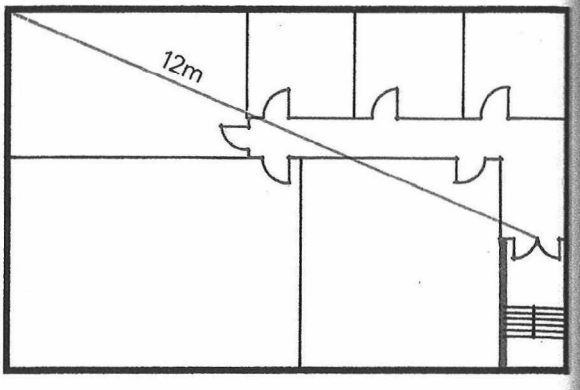
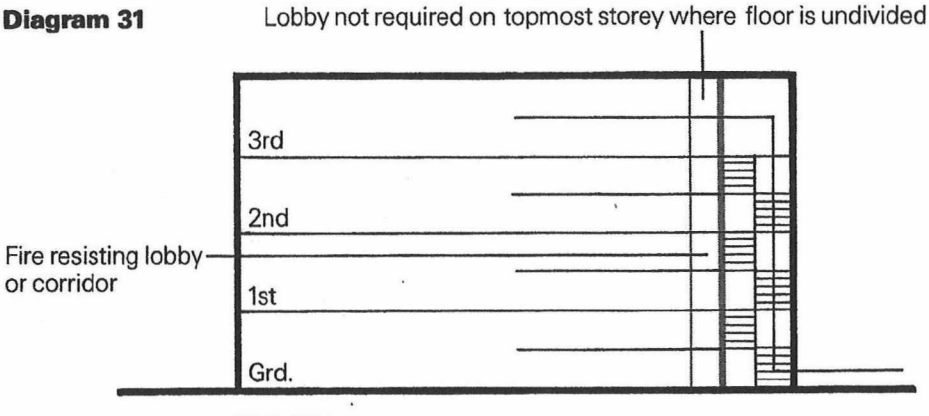


Diagram 31



SECTION

g In any basement storey the number and siting of exits, the **direct distances** and the requirements for the **protected staircase** in such storey should be in accordance with item **4.10.**

5 Buildings exceeding four storeys but not exceeding seven storeys in height above ground level and in which no storey exceeds 350 m² (3650 square feet) in area.

a The minimum width of the **protected staircase** should be not less than 1·100 m (3 feet 7 inches).

b For the storeys up to four storeys above the level of the ground the requirements contained in item **4.15 1, 2, 3** & **4** should be complied with.

c For the storeys above four storeys above the level of the ground:

i the **protected staircase** should be continued up to the topmost storey;

Note Protected lobbies enclosed with **fire-resisting** construction need not be provided to the **protected staircase** in the storeys exceeding four storeys above the level of the ground.

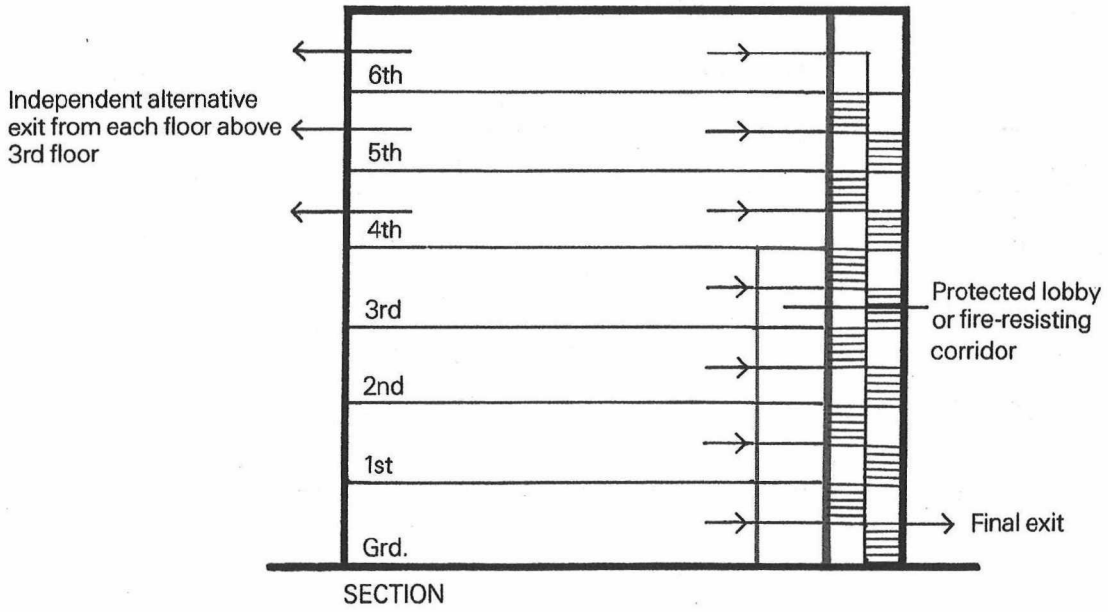
ii an alternative means of escape should be provided from each storey (so arranged as to obviate **dead ends**) over the fourth storey above ground level which may be:

by direct access through a protected opening in a party wall affording access to an adjoining building having a staircase leading to a **final exit,** or

by an external balcony affording access to an adjoining building and thence by a staircase leading to a **final exit,** or

by an external staircase leading to a **final exit** (see **Diagram 32**).

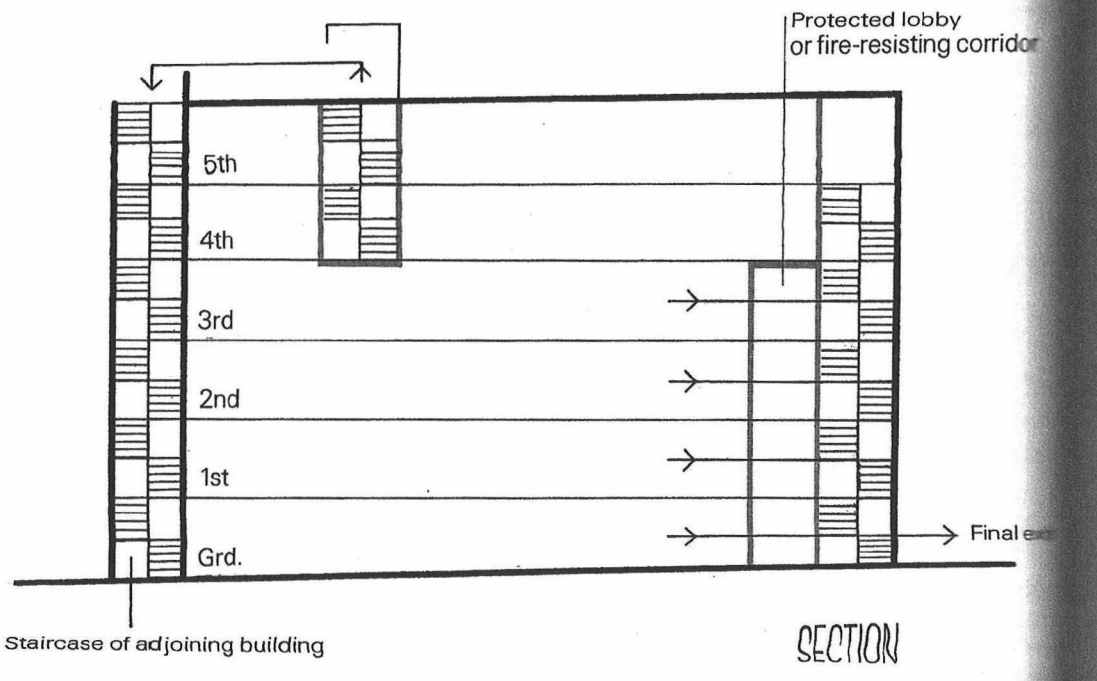
Diagram 32



iii as an alternative to ***ii*** foregoing, where there are not more than two storeys exceeding four storeys above the level of the ground and not more than 25 persons in aggregate on the two uppermost floors, a secondary **protected staircase** serving these two storeys, and sited so as to obviate **dead ends,** may be provided leading to the topmost storey and/or to the roof and thence to a **final exit** (i.e., by way of an adjoining building or other route satisfactory to the Council) (see **Diagram 33** & item **12.07 3**).

d The number and siting of exits, **direct distances** in a basement storey, and the requirements for the **protected staircase** in such storey should be in accordance with item **4.10.**

Diagram 33



Note *In each case there should be a written agreement with all interested parties which will ensure that access is available whenever necessary; the future use of all upper storeys would be dependent upon such agreement being maintained.*

Part 5

Places Where People Resort

Part 5

Places Where People Resort

Places of public and private assembly

Introduction to Part 5

This Part of the Code of Practice is primarily concerned with the means of escape in case of fire from buildings or parts of buildings used for the purposes of entertainment and/or assembly and includes theatres, cinemas, concert halls, lecture halls, dance halls, exhibitions, auditoria and similar halls of assembly. **It does not include restaurants, public houses, bars etc., for which reference should be made to Part 6 of this Code of Practice.**

Attention is drawn to the Places of Public Entertainment Technical Regulations (Publication No. 0378X obtainable from the Information Centre, Greater London Council, The County Hall (South Block) London SE1 7PB) and to other relevant legislation such as the Cinematograph Acts 1909 and 1952.

It should also be noted that Places for Public Entertainment situated within the Inner London Boroughs are, by definition under Section 4 of the London Building Acts (Amendment) Act 1939 'public buildings', and attention is drawn to the powers of district surveyors in regard to the construction of public buildings under Section 26 of that Act, which are exercised independently of the Council as licensing authority. **Premises in the outer London boroughs need to comply with the requirements of the local authority under current building regulations.**

Contents of this Part

5.01 Height and depth of premises in relation to ground level

1 The level of any part of any floor used as a place of assembly should normally not be:

a more than 12 m (40 feet) above, nor

b more than 6 m (20 feet) below

the principal street or ground level.

2 Premises above or below the levels referred to in **1** above would require special consideration by the Council and, where permitted, may necessitate provision of the following:

a exits in excess of the minimum number and/or widths of exits required by item **5.03** hereunder based on the number and/or widths of the exits which would be required to accommodate the actual number of persons permitted plus 10 per centum.

b **protected lobbies** provided with permanent ventilation between all **floor areas** and the **protected staircases**, and

c extended landings to enable persons to rest when either ascending or descending the **protected staircases**.

5.02 Assessment of number of persons

Where the permanent provision for a closely seated audience is not indicated on the drawings submitted for approval, the assessment of the accommodation would be determined in relation to the net area utilized for the purpose stated, in accordance with the following values;

One person for each

1 0·5 m² (5 square feet) for a closely seated audience.

2 0·55 m² (6 square feet) in a dance hall or floor area used for dancing, and

3 1·5 m² (15 square feet) in an exhibition.

***Note** The permitted accommodation would be decided when the final relevant details are known.*

5.03 Siting, number and width of Exits

1 Except as provided for in **5.21** (Smaller Premises) not less than two separate exits should be provided from every floor, storey or tier in premises incorporating permanent provision for seating, and in every storey for other premises, together with such additional exits as may be necessary to conform with items **5.01 2(a), 5.02, 5.05, 5.06** and, where applicable, **5.09.** The exits from each floor, storey or tier should be sited remote from and independent of each other; should be located so as to obviate **dead ends** and, so far as practicable, should be distributed uniformly around the perimeter of the **floor area**, storey or tier they serve.

2 Each exit should deliver to the open air by way of,

a a **final exit**, or

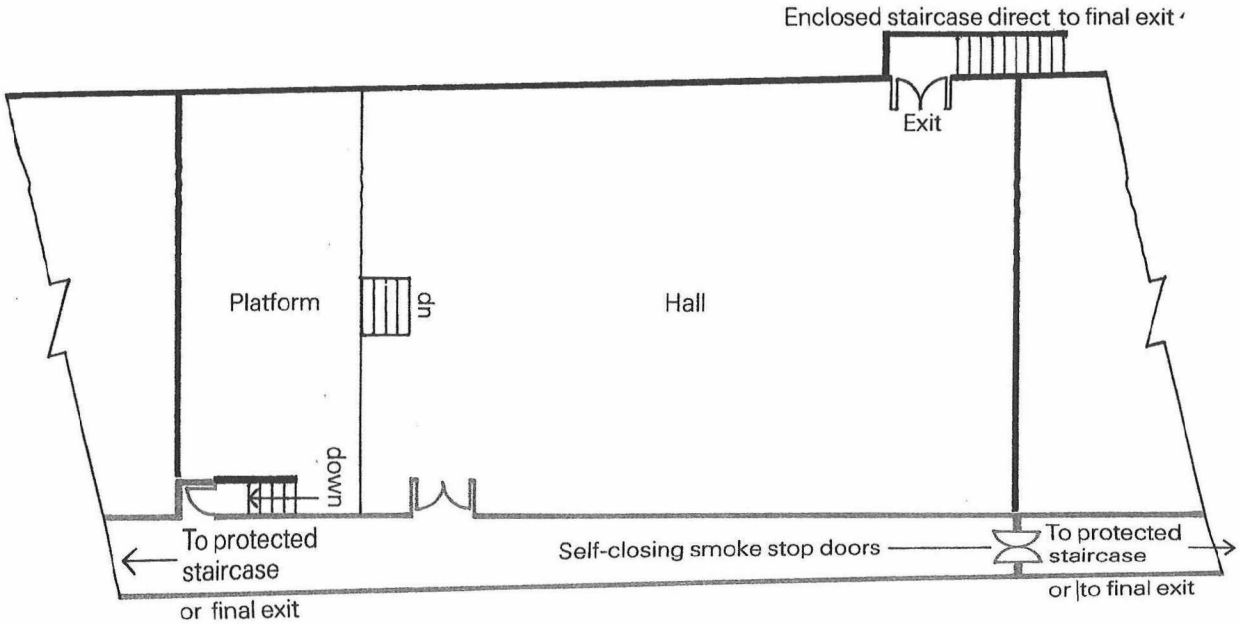
b a **protected staircase** leading to a **final exit**, or

c a corridor enclosed by **non-combustible fire-resisting** construction leading direct to a **final exit** or to a **protected staircase** (see **Diagram 34**).

***Note** External staircases are not normally accepted in places of entertainment.*

3 Notwithstanding the provisions of **1** and **2** above consideration would be given to not more than half the required number of exits being permitted to discharge into a common route of escape.

Diagram 34 FIRST FLOOR HALL FOR NOT MORE THAN 500 PERSONS

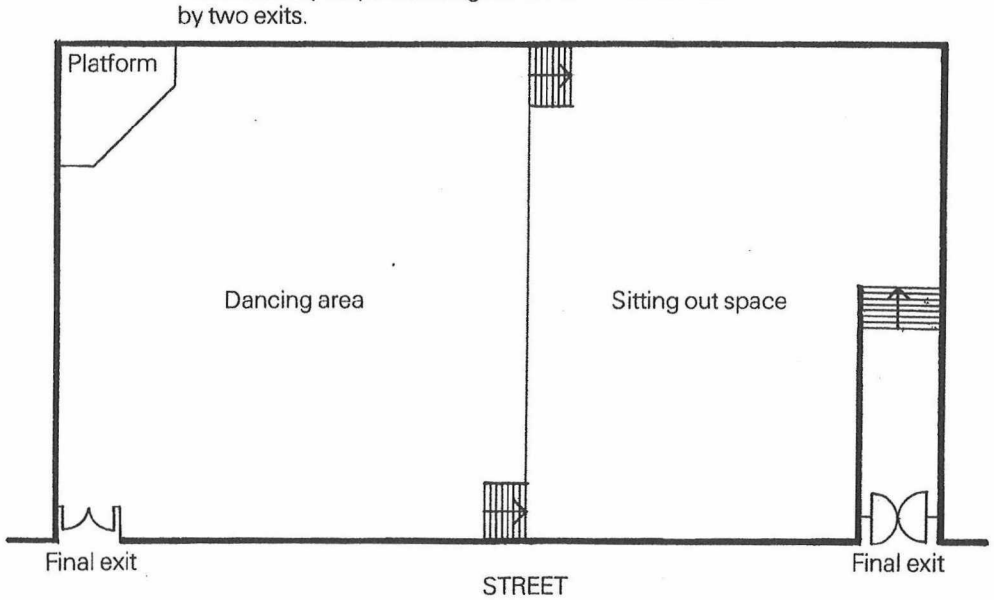


4 Where a stage is provided not less than one-half the exits for the audience should be sited remote from the stage.

5 Where any floor or tier is divided into two or more parts, exits should be provided from each part unless there is adequate access between such parts (see **Diagram 35**).

Note *Alternative exits would not be required from individual 'Boxes' in normal circumstances.*

Diagram 35 GROUND FLOOR DANCE HALL FOR NOT MORE THAN 500 PERSONS
Dancing area and sitting out space at different levels connected by steps enabling the whole to be served by two exits.



6 No floor or tier should be constructed with a slope of more than 35° to the horizontal.

7 The minimum number and clear widths of the exits required from any **floor area,** storey or tier in relation to the maximum number of persons involved should be determined from **Table 4,** or, such other number of widths and exits as would, in the opinion of the Council, provide equivalent means of escape, regard also being had to items **5.01 2(a), 5.05** and, where applicable, **5.09.**

Table 4

Number of persons	Minimum number of exits required	Minimum width of each exit
Up to 200	2	1·100 m (3′ 7″)
200 to 300	2	1·200 m (3′ 11″)
300 to 400	2	1·400 m (4′ 7″)
400 to 500*	2	1·600 m (5′ 3″)

* Add an additional exit not less than 1·600 m (5 feet 3 inches) in width for every additional 250 persons or part of 250 persons.

5.04 Width of staircases, lobbies, corridors or passages

The width of any staircase, lobby, corridor or passage used as an escape route should be not less than the width of the exit which delivers into it, and where serving more than one exit, should not be less than the aggregate widths of such exits.

5.05 Distance to exits

1 In premises or parts of premises where provision is made for a closely seated audience by permanent or occasional seating the distance to be traversed in gangways and seatways should be in accordance with item **5.08** or, where applicable, **5.09** hereunder.

2 In premises or parts of premises **not used for closely seated audiences** the **direct distance** to an exit from the **floor area** or storey should not exceed 30 m (100 feet) and the **travel distance** should not exceed one and one-half times the **direct distance.**

3 Where a storey is undivided and is likely to remain so, e.g. large exhibition areas, consideration may be given to the **direct distance** to the nearest exit serving the storey exceeding 30 m (100 feet) other than in a **dead end**; provided that

a the exits are remote from one another; are sited at intervals not exceeding 60 m (200 feet) apart and are distributed uniformly around the perimeter of the storey (see **Diagram 16**) and,

b any exhibition stands and/or display areas are arranged so as to ensure unobstructed access to the exits to the satisfaction of the Council (see item **5.20**) and

c the exits are clearly visible and well indicated.

5.06 Ancillary areas used by the public or performers and staff

1 Ancillary areas used by the public

Ancillary areas used by the public e.g. restaurants, tea rooms, bars, lounges etc., should be provided with not less than two separate exits sited remote from one another; the actual number and width of exits would depend upon the number of persons likely to be involved and their disposition. Such exits and widths should be determined by reference to **Part 6** of this Code of Practice.

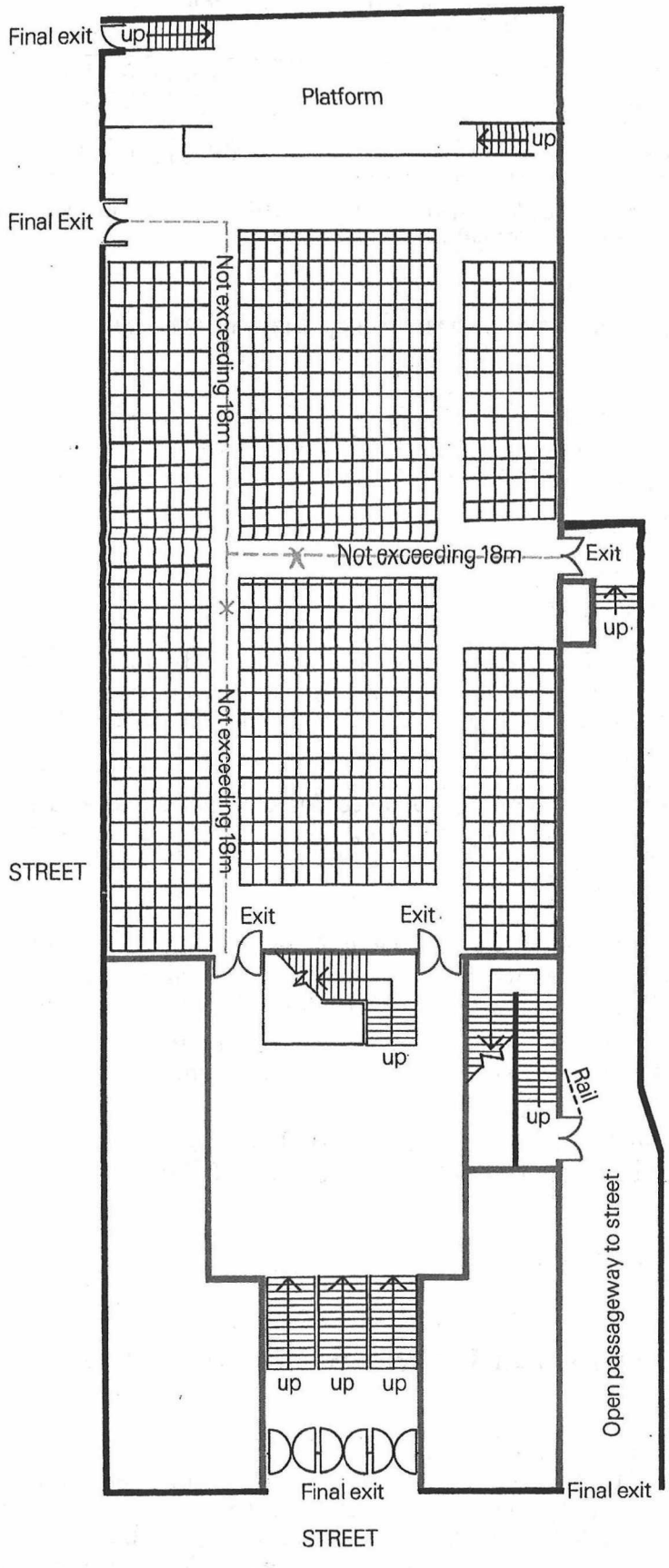
2 Ancillary areas used by performers and staff

a Ancillary areas used by performers and staff e.g. kitchens, dressing rooms, work rooms, scene stores, store rooms, wardrobe rooms etc. should be provided with alternative means of escape, sited remote from one another, in any of the following cases:

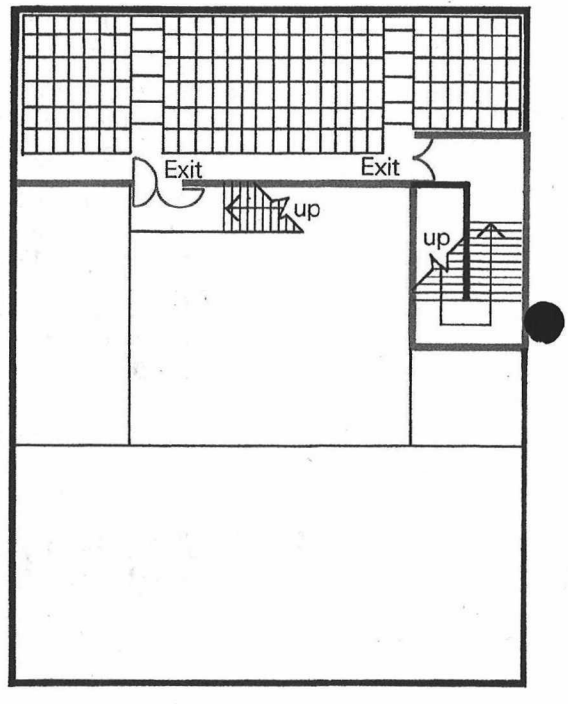
Diagram 36

ASSEMBLY HALL ON SLOPING GROUND FLOOR FOR 750 – 1,000 PERSONS AND 150 IN STEPPED GALLERY.

Showing distribution and separation of exits, arrangements of gangways and blocks of seating.



GROUND FLOOR



GALLERY

5.06 cont.

i where the distance to be travelled from any point in such rooms to the exit doorway therefrom exceeds 7·5 m (25 feet),

ii where they are occupied by more than 15 persons,

iii where they have direct access to a platform or stage, or a stage basement or any other area constituting a fire risk,

iv where they are situated in a **dead end** and have no direct access to a corridor enclosed with **fire-resisting** construction leading to a **protected staircase** or a **final exit**, or are situated at the end of a corridor enclosed with **fire-resisting** construction where the distance from the exit door from such accommodation to the nearest **protected staircase** or **final exit** exceeds 7·5 m (25 feet).

b *i* All dressing rooms should be connected with means of egress leading to *at least two* ***final exits*** *and one of such means of egress should be independent* of any means of egress by way of the platform or stage.

ii Access between a separated stage and the dressing rooms or corridor or staircase serving the dressing rooms should be by way of a **protected lobby**.

3 Communication with auditorium or hall

No openings should be provided

a directly between any dressing room and an auditorium or hall, or

b in premises where permanent provision is made for a closely seated audience, between the auditorium or hall and any cloakroom, kitchen, or servery.

5.07 Boiler chambers, transformer chambers, electrical apparatus, car parks etc.

The means of escape requirements in connection with car parks, boiler chambers, transformer chambers, electrical apparatus, etc., are contained in **Parts 9** and **10** respectively of this Code of Practice but consideration will need to be given to their siting in relation to any place of assembly in order to ensure that the routes of escape used by the public would in no way be prejudiced in the event of an outbreak of fire.

5.08 Seating and gangways

1 Seats and gangways in the auditorium or hall should be so arranged as to allow free and ready access direct to the exits from the auditorium or hall.

2 No portion of any gangway should be more than 18 m (60 feet) from an exit from the auditorium or hall measured along the line of the gangway (see **Diagram 36**).

3 The seating area assigned to each person should be not less than:

a *i* 760 mm (2 feet 6 inches) **deep** where backs are provided to the seats;

ii 600 mm (2 feet) **deep** where backs are **not** provided to the seats;

b *i* 500 mm (1 feet 8 inches) **wide** where arms are provided to the seats;

ii 450 mm (1 foot 6 inches) **wide** where arms are **not** provided to the seats.

4 **a** There should be a clear seatway or space at least 300 mm (12 inches) measured between perpendiculars from the back of one seat unit to the front of the seat unit immediately behind (see **Diagram 37**).

b Where seats tip up automatically, the clear seatway should be measured between the back of one seat unit and the maximum projection of the seat unit behind when the seat is in the 'up' position and such seats should be actuated by weights (see **Diagram 38**).

Diagram 37 FIXED SEATS

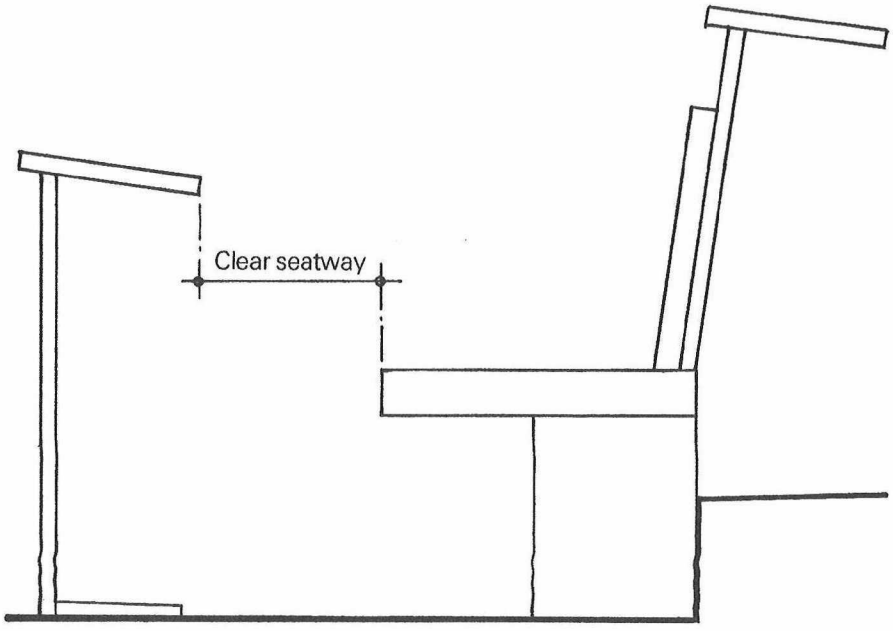
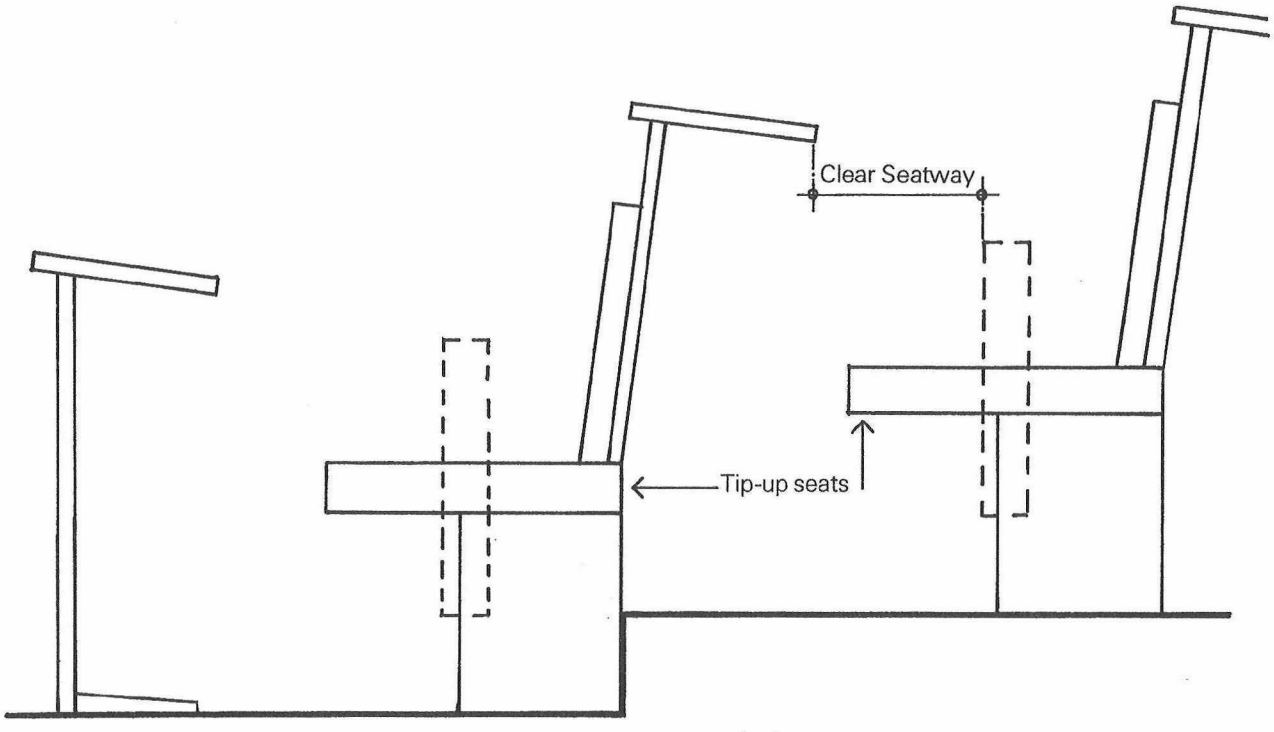


Diagram 38 TIP-UP SEATS



5 Subject to the provisions of item **5.09** hereunder, the number of seats in a row should not exceed:

a ***i*** seven seats where there is a gangway at one end only;

ii eleven seats where there is a gangway at one end only provided that the seatway referred to in **4** (**a**) above is increased by 25 mm (1 inch) for each additional seat over seven.

b ***i*** fourteen seats where there is a gangway at each end;

ii twenty two seats where there is a gangway at each end provided that the seatway referred to in **4** (**a**) above is increased by 25 mm (1 inch) for each additional pair of seats and/or any odd seat over fourteen.

5.09 Continental seating

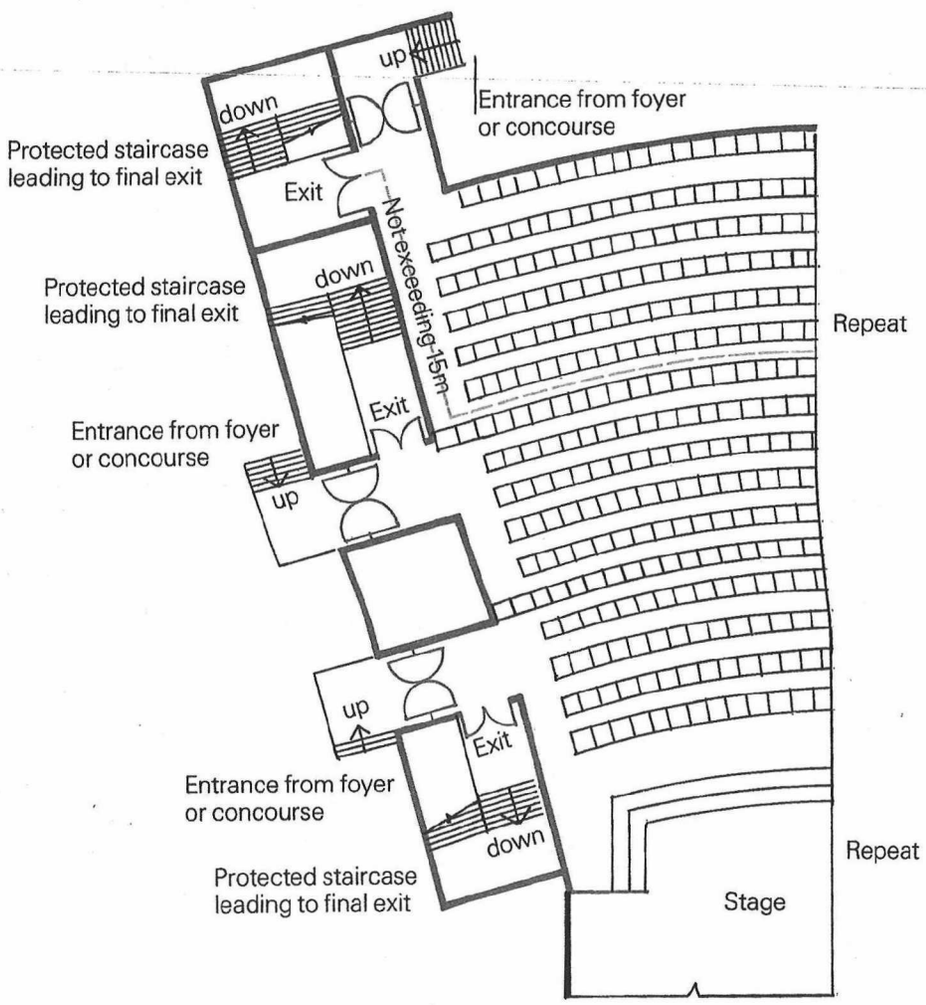
Continental seating refers to rows in which there are more than twenty two seats. This arrangement of seating may be permitted subject to the following additional requirements to those detailed in item **5.08**.

1 No seat should be more than 15 m (50 feet) from an exit measured along the line of travel.

2 Gangways or exits should be provided at each end of a row of seats. Where gangways are provided, the position of the exits and seating should be arranged so that the streams of persons leaving the seatway move in the gangways in a direction away from the stage or platform (see **Diagram 39**).

3 The clear seatway should be not less than 400 mm (1 foot 4 inches) and not more than 500 mm (1 foot 8 inches).

Diagram 39 CONTINENTAL SEATING AND EXITS



5.10 Fixing of seating

1 Where permanent provision is made for a closely seated audience and in all cases of stepped tiers, all seating (except for chairs in boxes or other approved enclosures) should be fixed firmly to the floor.

2 In other situations:

a all chairs or other single seats (except chairs in boxes or other approved enclosures) should be secured together in lengths of not fewer than four seats and

5.10 cont.

b provision should be made for fixing to the floor the rows of seating flanking the front, the back and the cross gangways and the seats near exits, except that:

i only the end seats of such rows need be fixed to the floor if all seats in each row are secured together, or

ii only the end seats of each length of seating referred to in (a) above which form such row need be fixed to the floor.

Note *In premises intended to be used only occasionally for closely seated audiences where the fixing of seating to the floor is impractical or undesirable (e.g. on polished dance floors), the use of floor bars instead of floor screws, may be permitted. Such floor bars should have a cambered top surface so as to avoid the risk of tripping persons using the seatways and should extend from the row to be fixed to at least two adjacent rows* ***but must not extend across any gangways.***

5.11 Gangways

1 Gangways should be of adequate width for the number of seats served but should in no case be less than 1·100 m (3 feet 7 inches) wide.

2 There should be no projection which would diminish the clear width of the gangway, and the ends of all rows and seats should be so aligned as to maintain a uniform width of gangway throughout its length.

3 Stepped side gangways should be provided with a handrail fixed at a height of 840 mm (2 feet 9 inches) measured vertically from the centre of the step and projecting not more than 75 mm (3 inches) from the wall.

5.12 Wall and ceiling linings, acoustic or thermal insulation linings

1 Material used for wall and ceiling linings, acoustic or thermal insulation linings should normally be **non-combustible** or be rated Class 1 for surface spread of flame when tested in accordance with the appropriate provisions of British Standard 476: Part 7: 1971, and be inherently throughout its thickness, which should not exceed 13 mm ($\frac{1}{2}$ inch), of no greater flammability than its surface. The material should be fixed directly to brickwork or concrete, or be backed by asbestos insulating board or plaster board or should have all cavities filled in solid with **non-combustible** material.

2 **a** The use of certain other materials or other thicknesses of materials may be accepted subject to limitations on quantity and position. Materials used as wall linings should in all cases be secured in position in such a manner so as to avoid large or continuous cavities between wall and linings.

b Any curtains, fabrics or other drapes, where permitted by the Council, should be inherently non-flammable or be durably flame-proofed.

Note *Notwithstanding* **1** *and* **2** *above the use of any plastics materials would necessitate special consideration by the Council.*

5.13 Artificial and Safety Lighting

Artificial and **Safety Lighting** should be provided in accordance with **Part 11** of this Code of Practice.

5.14 Notices

Notices should be provided in accordance with **Part 12** of this Code of Practice (see item **12.12**).

5.15 Stage and stage area

1 Separated stage

Note *A separated stage is one that is separated from the remainder of the premises in accordance with the Council's Technical Regulations for Places of Public Entertainment (Publication No. 0378X) including the provision of a safety curtain in the proscenium opening and the means for releasing smoke and hot gases in the event of fire in the stage area, and where the use of non-durably treated canvas scenery is permitted.*

a Safety curtain

i The proscenium opening should be provided with a safety curtain and the space above the stage should be of a sufficient height to allow the safety curtain to be raised above the top of the proscenium opening in one piece.

ii The safety curtain should be of robust and rigid construction, should consist entirely of **non-combustible** materials, should be able to withstand damage by scenery, properties or falling debris, and should be of such strength and stiffness as to resist the pressure of air likely to be caused by fire in the stage area without such distortion as would cause its withdrawal from its retaining guides, should provide adequate seal against the passage of smoke between the movable curtain and the fixed structure, should be able to withstand the effect of fire for a sufficient period of time to allow the complete evacuation of the building, and should be capable of closing the opening within 30 seconds.

iii The words 'SAFETY CURTAIN' should be painted conspicuously on the curtain so as to be clearly visible to the audience from all parts of the auditorium.

iv The curtain and the curtain guides should be protected by a hand-operated drencher system which should be fitted with suitable heads adequate to spray the whole of the stage face of the curtain and to keep such curtain and guides cool in the event of fire. Hand release gear, to cause the descent of the curtain and the operation of the curtain drencher system, should be provided in duplicate. One such release should be on the working side of the stage and the other in a position outside the stage readily accessible to firemen or authorised staff.

b Haystack lantern light (Ventilation)

i An outlet should be provided at high level over the stage of sufficient area to allow the escape of smoke and hot gases in the event of fire in the stage area and should comprise a haystack lantern light equal at its base to one-tenth of the area of the stage. The sashes at the sides of such lantern light should be glazed with thin sheet glass, should be bottom hung to open outwards to an extent equal at least to the superficial area required for the base of the lantern light, and should be of a type that cannot be rendered inoperative by warping or settlement, or by frost, snow or dirt.

Note *Safety chains may be fitted to the sashes provided that they are arranged to allow the sashes to open to the extent required above.*

Mechanical ventilation should be provided at high level over the stage (see item **5.18**).

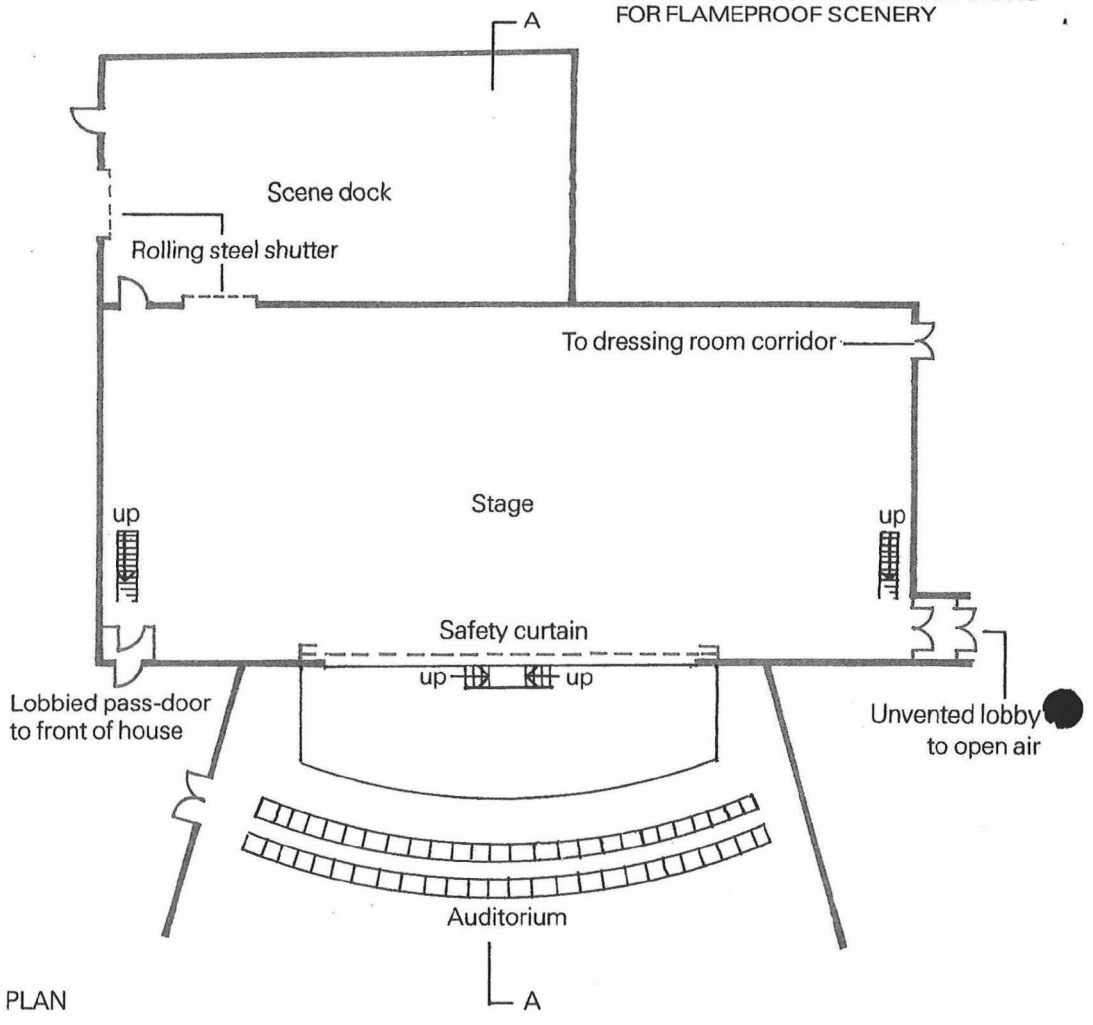
ii Where the lantern light is provided with a glass roof, such roof should be of wired glass.

iii Provision should be made for the simultaneous release of all the sashes by the fusing at a temperature not exceeding 74°C (165°F) of a link of approved pattern placed under the grid, and by a hand operated quick-release device positioned near to the safety curtain release at stage level. Hand winding-gear should be provided for opening the sashes for test purposes. Releases should be indicated by conspicuous notices.

iv Permanent ventilation should be provided to a scene store and, in addition, provision should be made for smoke extraction by means of a lantern light, or a window, having an effective area equal to 1/10th of the area of the floor, or by means of a flue having an effective area equal to 1/20th of the area of the floor normally closed by a drop-shutter and arranged to open by the fusing of a link of approved pattern at a temperature not exceeding 74°C (165°F) (see **Diagram 40**).

Diagram 40

A SEPARATED STAGE SHOWING EXITS, SMOKE-OUTLETS AND SEPARATIONS FOR FLAMEPROOF SCENERY



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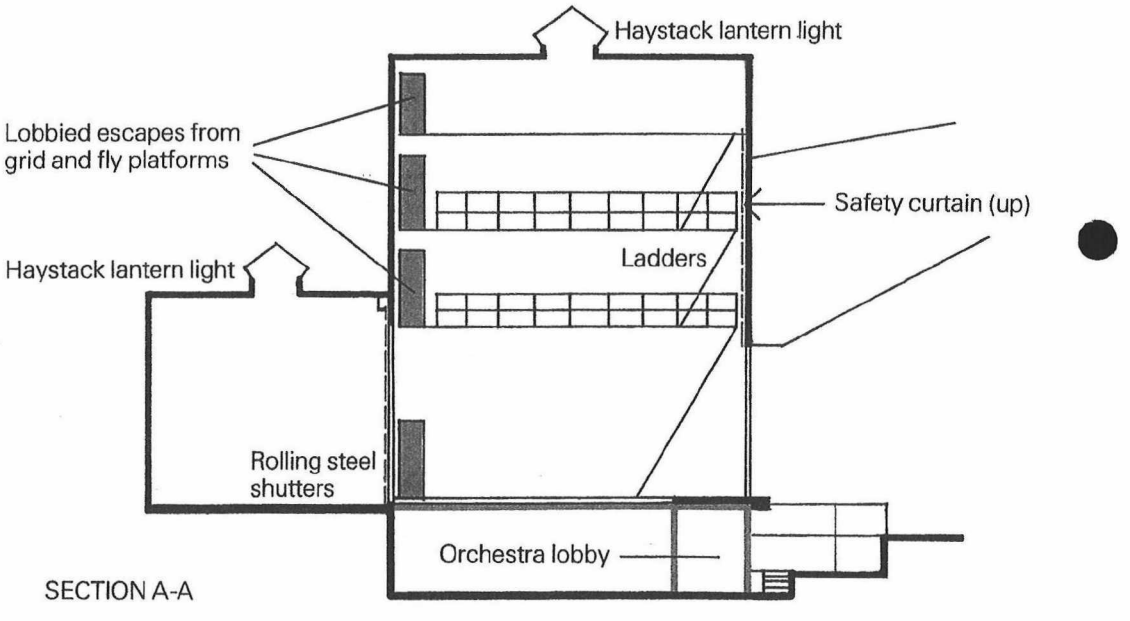


SECTION A-A

Note *Some relaxation of the standards in* **1** *above may be considered where the accommodation is on one floor level only at or near ground level for not more than 500 persons.*

2 Open stage

Note *An open stage is one that is not separated from the remainder of the premises in the manner described in* **1** *above.*

5.15 cont.

The scenery and properties used on an open stage should only be constructed of the following:

a **Non-combustible** material;

b inherently non-flammable material;

c timber, hardboard or plywood rendered flame resistant by an acceptable process of impregnation;

d durably flame-proofed fabric, or

e **subject to special consideration,** 'self-extinguishing' plastics material having an acceptable flame resistance.

5.16 Under-Stage areas

1 Any area under the stage used in conjunction with a stage presentation should be regarded as part of the stage and should have at least two exits, one of which should be independent of the stage. In this situation a stage floor constructed of timber should be of tongued and grooved timber boarding not less than 29 mm (1 $\frac{1}{8}$ inches) finished thickness supported by steel and timber members of sufficient strength which need not be protected.

2 Any area under a stage used for other purposes, e.g. storage, should be separated from the stage by a solid **non-combustible fire-resisting** floor.

5.17 Exits from stages and associated flies and grids

1 At least two exits sited remote from each other should be provided from the stage.

2 In the case of a separated stage one of the exits should lead direct to the open air through an unventilated **protected lobby.**

3 The flies and grid should be provided with alternative means of escape either:

a direct to the open air, or

b to another part of the premises (other than the auditorium) through ventilated **protected lobbies.**

5.18 Mechanical ventilation

1 Mechanical ventilation provided to the public portions of premises should be independent of the remainder of the building.

2 Mechanical ventilation in premises used for stage performances should be such that the direction of air movement is from the auditorium towards the stage.

3 In premises incorporating a separated stage the mechanical extract ventilation should be provided at high level over the stage and the system should be entirely independent of the auditorium system (see also item **11.06** in **Part 11** of this Code of Practice.)

5.19 Projection and Rewind rooms

1 **a** Each projection room and rewinding room in which celluloid (flammable) film is proposed to be used should be separated from each other by **fire-resisting** construction and each room should have two means of escape one of which should be by way of a doorway; the other may be by way of a door, hatch or window.

b One of the means of escape from a projection room should open direct to the open air.

5.19 cont.

c One of the means of escape from a projection room or rewinding room may be via the other room.

2 In premises where non-flammable film only is used each projection room and any rewinding room should have a means of escape by way of a doorway which should be either in a position where it can be reached from any point in the room without the necessity of having to pass closely alongside projectors, etc., or, where this is not possible, a secondary escape by means of a doorway, hatch or window should be provided.

3 Any communication between a portion of the premises used by the audience and a projection room or rewinding room should be through a permanently ventilated **protected lobby.**

5.20 Exhibitions

1 Gangways in exhibitions should be arranged to provide alternative routes of escape and should be of sufficient width to serve the exits to which they lead, such exits being determined in accordance with item **5.03** foregoing.

2 The space allocated to exhibition stands should not be greater than twice that allocated to gangways.

3 The construction and finishings of stands should generally be as described for scenery and properties on open stages (see item **5.15 2**).

5.21 Smaller premises where relaxation of the foregoing standards may be accepted in certain cases

(e.g. Church Halls, Meeting Rooms and similar uses)

1 Smaller premises in this context may be regarded as those having a superficial area not exceeding 165 m² (1800 square feet) for the accommodation of **not more than 300 persons** and in which **no permanent provision is made for a closely seated audience.**

2 The minimum width and number of exits should be in accordance with Table 5 hereunder.

Table 5

Maximum number of persons	Number of exits	Minimum width of exits	Minimum width of one exit (where permitted)*
Up to 50	2	760 mm (2′ 6″)	760 mm (2′ 6″)
Up to 75	2	760 mm (2′ 6″)	900 mm (2′ 11″)
Up to 100	2	760 mm (2′ 6″)	1·100 m (3′ 7″)
Up to 150	2	900 mm (3′)	—
Up to 200	2	1·100 m (3′ 7″)	—
Up to 300	2	1·200 m (3′ 11″)	—

* A single exit would only be permitted in the case of premises at ground floor level where:—

i. there is adequate frontage and direct access to a street, passageway or open space satisfying the requirements for a **final exit** (see item **3.01 5** of **Part 3** of this Code of Practice).

ii there are no special hazards involved;

iii the **direct distance** to the **final exit** is not greater than 18 m (60 feet), and

iv the wall and ceiling linings are of **non-combustible** construction except for decorative finishes (other than nitro-cellulose or similar highly flammable coatings) not exceeding 1 mm (1/25 inch) in thickness applied direct to a **non-combustible** surface.

Part 6

Places Where People Resort

Part 6

Places Where People Resort

Departmental stores, shops, restaurants, cafes, bars and public houses

Introduction

This Part of the Code of Practice is primarily concerned with the means of escape in case of fire **from the areas open to the public** in Shops, Departmental Stores, Restaurants, Cafes and Bars; it also deals with means of escape from kitchens.

Principal storage, packing and despatch, and office areas are dealt with in **Part 4** of this Code.

The means of escape arrangements in this Part take into account the variable fire risks due to the wide range of the flammability of merchandise, etc., which is displayed and stored in shops. Materials and flammable liquids coming within the High Fire Risk category referred to in item **4.04** should not be displayed in **dead end** situations and only the minimum quantity of such materials or liquids necessary for normal trade should be kept on view and replaced from store rooms as required.

Attention is drawn to the siting and ventilation of staircases, compartmentation, etc., in buildings coming within the scope of Section 20 of the London Building Acts (Amendment) Act 1939, details of which are contained in the Council's 'Code of Practice for Buildings of Excess Height and/or Additional Cubical Extent' – Publication No. 0542 1 obtainable from the Information Centre, Greater London Council, The County Hall (South Block), London SE1 7PB.

For those premises where an entertainments licence may also be required, e.g. restaurants, cafes, public houses, etc., with music and dancing, attention is drawn to the 'Places of Public Entertainment Technical Regulations' (Publication No. 0378X) obtainable from the Information Centre, Greater London Council, The County Hall (South Block), London SE1 7PB.

It should be appreciated that as soon as a building is completed and occupied it may require a certificate which, inter alia, would control floor areas and their uses, etc., under the Offices, Shops and Railway Premises Act 1963 which will necessitate the provision of a fire alarm system, fire appliances, etc., and it is suggested that provision should be made for their inclusion during the course of construction. The Council's officers should be consulted in this respect having regard also to **Part 13** of this Code.

Contents of this Part

6.01 Method for determining Exits and Escape Routes

The siting, number and appropriate widths of staircases and other exits within or from a building are determined by:

1 the **direct distance** to a staircase or other exit,

2 **dead ends** (where permitted),

3 the maximum number of persons to be accommodated, and

4 the location and disposition of any High Fire Risk areas (see item **4.01**).

6.02 Width of Escape Routes and Exits from a Storey

1 The minimum width of any escape route within a storey and of any exit leading therefrom should be not less than the width indicated in **Table 6.**

Table 6

Maximum number of persons	50	220	240	260	280	300	320	340	360
Width (metres)	0·760	1·100	1·200	1·300	1·400	1·500	1·600	1·700	1·800
Width (Imperial)	2′ 6″	3′ 7″	3′ 11″	4′ 3″	4′ 7″	4′ 11″	5′ 3″	5′ 7″	5′ 11″

2 Except in the case of certain small premises (see items **6.17** to **6.21** inclusive), in calculating the widths required, regard should be had to the number of persons likely to use the route of escape and the exits from a storey or part of a storey in fire conditions **assuming that one of the routes and exits may not be available due to fire and/or smoke.**

3 Where a storey exit or a **final exit** is approached through a check-out point (e.g. as in a supermarket), the combined width of the check-out passageways should be not less than twice the required width of the storey exit or the **final exit** unless a further exit independent of the check-out points is provided, and each check-out passageway should be not less than 500 mm (1 foot 8 inches) in clear width.

4 Adequate areas should be made available for the storage of baskets, trolleys, perambulators, etc., and such areas should be fenced off and separated from escape routes so as to prevent their becoming obstructed.

6.03 Siting and Number of Exits

1 Except as permitted by items **6.17** to **6.20** (small premises), not less than two exits should be provided from each storey together with such additional exits as may be necessary to conform with items **6.04**, **6.05**, **6.06** & **6.07**. The exits should be remote from each other, should be sited at the extremities of the building and should be distributed uniformly around the perimeter of the building as may be necessary so as to obviate **dead ends.**

2 Each exit from a storey should give direct access to

a a **final exit,** or

b a **protected staircase** leading to a **final exit,** or

c an external route leading to a **final exit.**

6.04 High Fire Risk areas and Storage Risk areas

For details of these areas see item **4.04.**

6.05 Direct distance and travel distance

1 The **direct distance** to the nearest exit serving a storey should not exceed 30 m (100 feet), except in the case of areas intended for the bulk storage of High Fire Risk goods (see item **4.04**) when the **direct distance** should not exceed 18 m (60 feet).

2 The **travel distance** should not exceed one and a half times the permitted **direct distance** in any case (see **Diagram 41**).

3 Where a storey is undivided and is likely to remain so, consideration may be given to the **direct distance** to the nearest exit serving the storey exceeding 30 m (100 feet) other than in a **dead end** provided that,

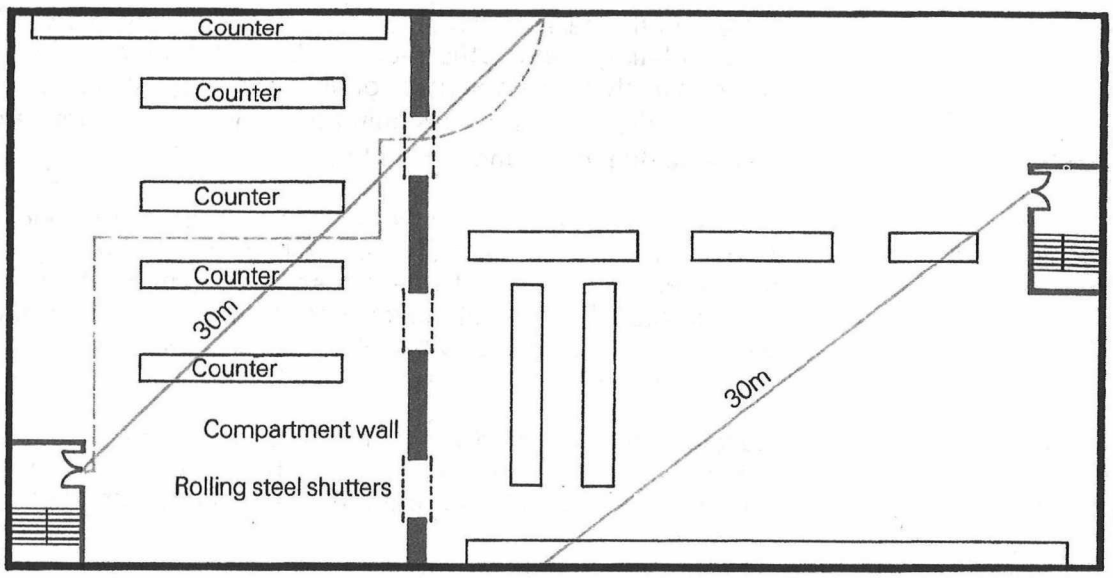
a the exits are remote from each other; are sited at intervals not exceeding 60 m (200 feet) apart and are distributed uniformly around the perimeter of a storey; and

b any High Fire Risk Area (see item **4.01 1**) within the storey is separated adequately from the remainder of the storey by an appropriate standard of **non-combustible fire-resisting** construction; and

c the lay-out of racking, display stands, furniture, etc., is arranged so as to ensure unobstructed direct access to the exits from a storey; and

d the exits are clearly visible and are well indicated (see item **12.12**).

Diagram 41



4 Where a storey is divided into more than two **floor areas** consideration would be given to the exits from a **floor area** being by way of openings in a compartment wall, division wall or other structural fire separation provided that:

a all such openings do not lead into the same **floor area;**

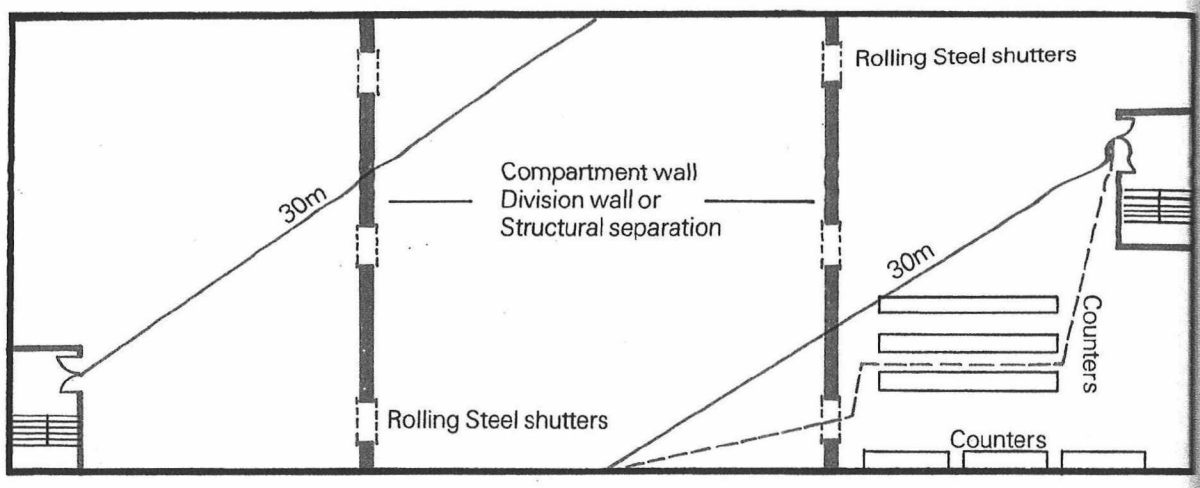
b the openings are sited remote from one another and access therefrom is afforded to storey exits in conformity with item **6.03 2** in adjacent **floor areas,** and

c the separate **floor areas** into which the openings discharge have their own storey exit, and

d the **direct distance** and the **travel distance** are in accordance with items **6.05 1** and **2** (see **Diagram 42**), i.e. measured to a storey exit and not to an opening in a compartment wall, division wall or other structural fire separation.

5 Storeys should not be divided in any way which would entail any member of the public having to pass through areas normally used only by staff, e.g. store rooms, loading bays, offices, kitchens, boiler rooms, etc.

Diagram 42



6.06 Dead ends

1 **Dead ends** should be avoided in the planning of escape routes wherever possible and in High Fire Risk Areas (see item **4.04**) the exits should be positioned so that **dead ends** are eliminated.

2 Where because of site restrictions or practical planning difficulties a **dead end** (other than in a High Fire Risk Area) cannot be avoided, the maximum **direct distance** in a **dead end** to either the nearest exit from the storey or to a point from which escape is available in separate directions to alternative exits, should not exceed 12 m (40 feet) subject to the overall **direct distance** to the nearest exit from the storey not exceeding 30 m (100 feet) (see **Diagram 18**).

6.07 Assessment of number of persons

The number of persons, including staff, likely to resort to premises coming within the scope of this Part of the Code of Practice should be assessed on the following allowances of **floor area** per person calculated over the gross **floor area**, exclusive of staircases, lifts and sanitary accommodation, commensurate with the category of use;

1	Shops and Showrooms . . .	7 m² (75 square feet)
2	Supermarkets and Bazaar type stores .	2 m² (20 square feet)
3	Departmental stores (Main sales area) . . . . . (sparsely occupied areas – e.g. furniture sales floor)	2 m² (20 square feet) 7 m² (75 square feet)

Note
Basement, ground and first storeys would normally be assessed on the basis of 2 m² (20 square feet).

4	Restaurants and Lounges . . .	1 m² to 1·5 m² (10 square feet to 15 square feet)

according to layout of seating, etc., whether closely or widely spaced.

5	Bars	0·3 m² to 0·5 m² (3 square feet to 5 square feet)

depending upon the amount of seating and tables to be provided.

Note
When submitting applications for the consideration of the Council it should be clearly stated which of these factors it is proposed to use and the layout should be shown on the deposited plans.

6.08 Number and width of protected staircases

1 Buildings provided with two or more protected staircases

Every multi-storey building should be provided with the minimum of two **protected staircases** (unless it is a building comprising small premises coming within the scope of item **6.17**) sited remote from one another and located at the extremities of the building in order to obviate **dead ends.** The actual number of staircases required should be ascertained in accordance with items **6.04, 6.05, 6.06** & **6.07.**

2 Siting and ventilation of protected staircases

The **protected staircases** should be located on the external walls of the building and should be provided with windows openable to the external air at each storey level. The windows should each have a clear openable area of not less than 1 m² (10 square feet).

3 Width of protected staircases

The minimum width of a **protected staircase** should be not less than the width required for any exit affording access to it (see item **6.02**) and in no case should it be less than 1·100 m (3 feet 7 inches).

4 Calculation of number and widths of protected staircases

a Subject to the provisions of **6.08 1** and **3** above, the number and width of **protected staircases** should be determined in accordance with **Table 2** in **Part 4** of this Code of Practice.

b Where a **protected staircase** is required to serve more than ten storeys above ground level special consideration would be necessary as to whether a greater width of staircase would satisfy the circumstances or whether additional staircases would be required, each case being treated on its respective merits.

Note

i *In every case one of the* **protected staircases** *should be assumed to be out of action and the remaining staircases should be of sufficient width and number to accommodate the relevant occupancy.*

ii **Table 2** *is based on the assumption that persons will be distributed evenly on all floors; minor uneven distribution may be ignored but where a heavy concentration of persons is likely to occur on any particular floor, e.g. restaurant, staff canteen or major sales area, etc., an adequate number of* **protected staircases** *of appropriate widths should be provided to cater for this.*

iii **Protected staircases** *should be of the same width but consideration will be given to such staircases being of different widths having regard to (i) above and to their disposition, each* **protected staircase** *being assessed in turn against the others.*

iv **Table 2** *referred to above is based on the whole building being evacuated and is computed on the evacuation capacity of the staircase of the width indicated according to the number of storeys it serves; it also takes account of the capacity of the staircase as well as its discharge rate through the* **final exit.**

c The number and width of staircases serving basements should be determined separately from the upper storeys.

d In large supermarkets or bazaar-type store buildings exceeding 2000 m² (20 000 square feet) on any one floor the evacuation value contributed by open accommodation staircases from a **first basement storey** and a **first floor storey** may be taken into account provided that:

i they do not exceed more than one third of the total widths and number of **protected staircases** required for that storey, and

ii they are sited remote from one another and

iii they discharge at a distance not greater than 6 m (20 feet) from a ground storey **final exit.**

e The **final exit** from a staircase should not be less than the width of the flights of stairs it serves or the aggregate width of the flights of stairs from above and below where they converge through it.

f Not less than two thirds of the requisite exits in the ground storey should discharge direct through a **final exit(s)** independently of any staircase exitway; the remaining one third of such exits may discharge through a **final exit** serving a staircase provided that its exitway and **final exit** is increased in width to accommodate the flow of persons into and through it.

Example

*[**Note** The actual number of* **protected staircases** *will also depend on the siting requirements governed by the* **direct** *and* **travel distance** *(see item* **6.05***) and any* **dead end** *(see item* **6.06***).]*

To determine the number and width of protected staircases from a building having the following accommodation.

Basement storey	2000 persons
Ground storey	2000 persons
First storey	2000 persons
Second to fifth storeys	530 persons per floor

i Assume in the first instance that there are 530 persons evenly distributed on each storey above the ground storey, i.e. on each of five storeys (1st to 5th).

530 × 5 = 2650 persons.

Consider a staircase width of 1·5 m (4 feet 11 inches).

From **Table 2** look in first column for number of storeys to be served = 5 and follow along to the column under a staircase 1·5 m (4 feet 11 inches) wide and it will be seen that the number of persons accommodated = 540.

To accommodate 2650 persons the number of staircase $= \frac{2650}{540} = 5$

But it is necessary to assume that one of the staircases is out of action, therefore 5 + 1 = 6 staircases each 1·5 m (4 feet 11 inches) in width required.

ii But there are 2000 persons accommodated on the first storey so that additional staircases will be required from this storey for 2000 — 530 = 1470 persons.

From **Table 2** a staircase 1·5 m (4 feet 11 inches) in width serving one floor will accommodate 300 persons, therefore the number of additional staircases required $= \frac{1470}{300} = 5.$

As an allowance for one staircase being out of action has already been made the number of staircases required to serve the first storey = 6 + 5 = 11 each 1·5 m (4 feet 11 inches) in width.

iii A basement storey must be separately assessed; this accommodates 2000 persons. From **Table 2** a staircase 1·5 m (4 feet 11 inches) wide serving one storey will cater for 300 persons.

Number of staircases required therefore $= \frac{2000}{300} = 7$

But it is necessary to assume that one of the staircases is out of action therefore 7 + 1 = 8 staircases each 1·5 m (4 feet 11 inches) wide required.

Note *The number of staircases could be reduced by increasing their widths provided that the requirements relating to* **direct distance** (item **6.05**) *and* **dead ends** *(item* **6.06***) were also met. A proportion of the staircases serving the first basement and/or first storey may be open accommodation staircases if provided in accordance with item* **6.08 4(d)**.

iv For the determination of widths and numbers of the **final exits** from the ground storey see items **6.02** & **6.08 4(f)**.

5 Communication of protected staircases with basement storey(s)

a At least one of the **protected staircases** serving each storey and/or

separate wings of the upper storeys should not communicate with any basement storey.

b Where a **protected staircase** serving the upper floors is permitted to continue downwards to serve a basement storey such storey should be separated from the **protected staircase** by a **protected lobby** or a corridor enclosed with **fire-resisting** construction.

c Where a High Fire Risk Area, a storage area, packing or despatch area, or car park is permitted to be located in a basement storey any **protected staircase** permitted to serve such areas should have the lobby protection referred to in (**b**) above and the **protected lobby** should be provided with natural ventilation having an area of not less than 0·4 m² (4 square feet).

6.09 Open accommodation stairs, open wells and escalators

Special consideration will need to be given to any proposal incorporating open accommodation staircases, open wells and escalators but where permitted they should be sited so as not to prejudice the means of escape.

6.10 Basement storeys

1 A High Fire Risk Area (see item **4.01 1**) should not be located within any sub-basement storey nor in any basement storey where it would prejudice the means of escape from any sub-basement storey below it.

2 Where a basement or sub-basement storey is sub-divided into rooms, the exits from the rooms should discharge into a corridor enclosed with **fire-resisting** construction connected with the exits from the storey.

6.11 Separation of fire risk areas

The following areas should be separated from the remainder of the storey in which they are located by **fire-resisting** construction:

1 Areas of High Fire Risk (see item **4.04 1**).

2 Storage and packing and despatch areas (see item **4.04 2**).

3 Boiler chambers and fuel stores (see **Part 10**).

4 Transformer chambers (see **Part 10**).

5 Kitchens (see item **6.13**).

6 Car parking areas and garages (see **Part 9**).

Note *Regard should also be had to the London Building (Constructional) By-Laws and the Council's Code of Practice for 'Buildings of Excess Height and/or Additional Cubical Extent' (Publication No. 0542 1) where a higher standard may be required.*

6.12 Large displays, exhibitions and special features

Construction and finishings of fitments for large displays, exhibitions, cubicles, childrens bazaar features, etc., should generally be of the following materials;

1 **Non-combustible** material.

2 Inherently non-flammable material.

3 Timber, hardboard or plywood rendered flame-resistant by an acceptable process of impregnation.

6.12 cont.

4 Durably flame-proofed fabric.

Note *Although the Council would not normally seek to control the usual shop fittings and counters, the above standards would also be applied to individually let spaces incorporating stands and enclosures.*

6.13 Kitchens and cooking arrangements

1 Kitchens should be enclosed with **fire-resisting** construction (see item **6.11 5**) and where they exceed 6 m (20 feet) in either length or breadth they should be provided with two separate exits sited remote from each other so as to eliminate any **dead end**, one of which may be by way of the associated restaurant or adjacent **floor area.**

2 Consideration will be given to unenclosed cooking arrangements where they are sited remote from any storey exits or **floor area** exits and are located so as not to prejudice the means of escape from such storey.

6.14 Lifts

1 Lifts should comply with the constructional requirements contained in **Part 12** of this Code of Practice (see item **12.11**).

2 Where a lift connects with an area of High Fire Risk (see item **4.04 1**), a car parking area or storage and packing area, the lift shaft should be additionally separated from such areas by a **protected lobby** which should be provided with permanent ventilation to the external air having an area of not less than 0·4 m² (4 square feet).

6.15 Arcades and shopping malls

Notwithstanding the definition of a **final exit** in **Part 3** of this Code of Practice (see item **3.01 5**) consideration would be given to a proportion of **final exits** discharging into an arcade or shopping mall associated with a building provided that there are a sufficient number of alternative exits discharging independently thereof to the open air and being located remote from the arcade or mall.

Note *Large shopping complexes associated with shopping malls or arcades require special consideration and the Council's officers should be consulted at the earliest opportunity.*

6.16 Wall and ceiling linings, acoustic and or thermal insulation linings

1 Material used for wall and ceiling linings, acoustic and/or thermal insulation linings should normally be **non-combustible** or be rated Class 1 for surface spread of flame when tested in accordance with the appropriate provisions of BS 476: Part 7: 1971, and be inherently throughout its thickness, which should not exceed 13 mm (½ inch), of no greater flammability than its surface. The material should be fixed directly to brickwork or concrete, or be backed by asbestos insulating board or plaster board or should have all cavities filled in with solid **non-combustible** material.

2 **a** The use of certain other materials or other thicknesses of materials may be accepted subject to limitations on quantity and position.
Materials used as wall linings should in all cases be secured in position in such a manner so as to avoid large or continuous cavities between wall and linings.

b Any curtains, fabrics or other drapes, where permitted by the Council, should be inherently non-flammable or be durably flame-proofed.

6.16 cont.

Note *Notwithstanding* **1** *and* **2** *above the use of any plastics materials would necessitate special consideration by the Council.*

6.16A Artificial and safety lighting

Artificial and **safety lighting** should be provided in accordance with **Part11** of this Code of Practice.

Small Premises
Shops, Restaurants, Cafes and Bars

6.17 General

1 In small shops, restaurants, cafes and bars comprising not more than basement, ground and first storeys, the foregoing standards may be modified in respect of the number of exits and **protected staircases** required and so far as relates to the siting of such staircases on external walls provided that:

a the **floor areas** are generally undivided (except for kitchens, ancillary offices and stores) to ensure that exits are clearly visible from all parts of the **floor areas**;

b the premises are not used for the storage and/or sale of highly flammable liquids or materials (see item **4.04**);

c store rooms are enclosed with **fire-resisting** construction (see item **6.11**);

d sufficient clear glazing is provided in any partitioning separating a kitchen or ancillary office from the open **floor area** to enable any person within such rooms to obtain visual early warning of an outbreak of fire;

e where an open staircase is permitted under these modified standards it does not connect with those parts of the premises in different occupations;

f any kitchen or other approved open cooking arrangements is sited at the extremity of any **dead end** and is remote from the exit(s).

6.18 Small shops not exceeding 280m² (3000 sq. ft.) in any storey and comprising not more than a basement, a ground storey and a first storey in one occupation

Subject to the provisions of item **6.17** the following standards may be adopted:

1 Basement storey shop premises only

A single exit may be provided, either

a direct to external air (i.e., a basement area) and thence by a flight of stairs delivering at ground level (see **Diagram 43**) or,

b by way of a **protected staircase** the enclosures of which are imperforate to the ground storey and which leads direct to its own **final exit** at ground level,

provided that the **direct distance** to the basement exit or to the foot of the **protected staircase** does not exceed 12 m (40 feet) (see **Diagram 44**).

2 Ground storey shop premises only

A single **final exit** may be provided where the **direct distance** thereto does not exceed 18 m (60 feet).

Diagram 43

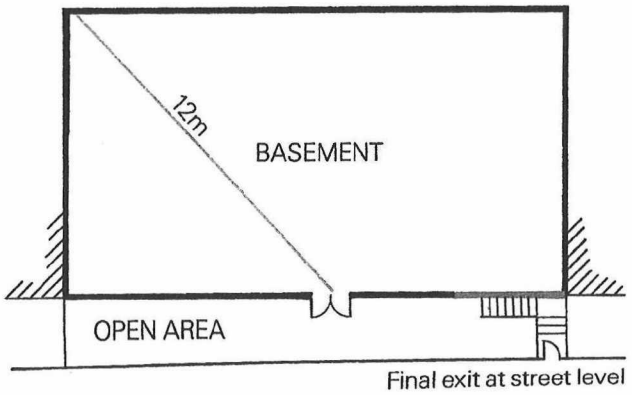


Diagram 44

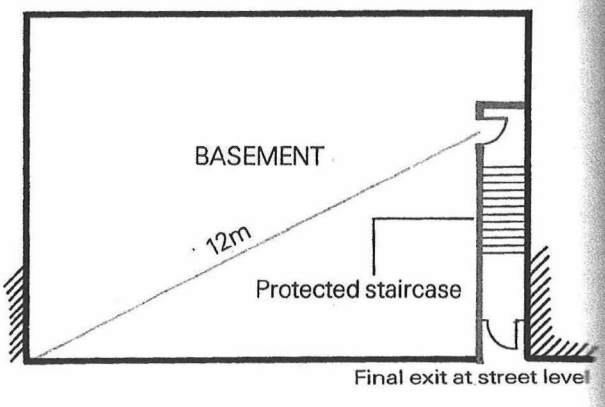


Diagram 45

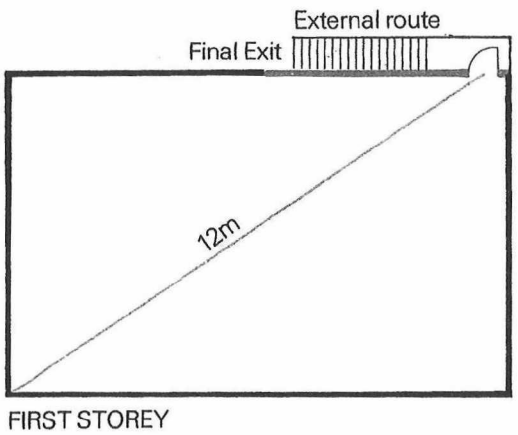


Diagram 46

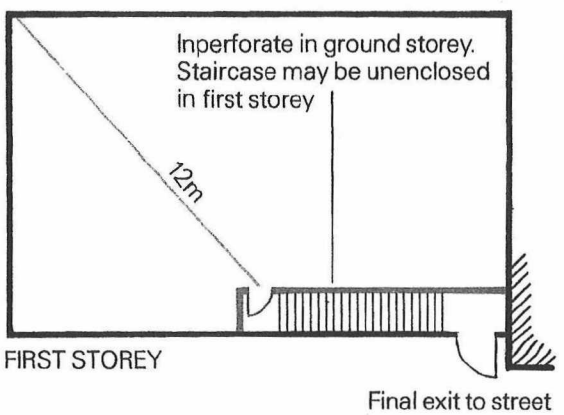


Diagram 47

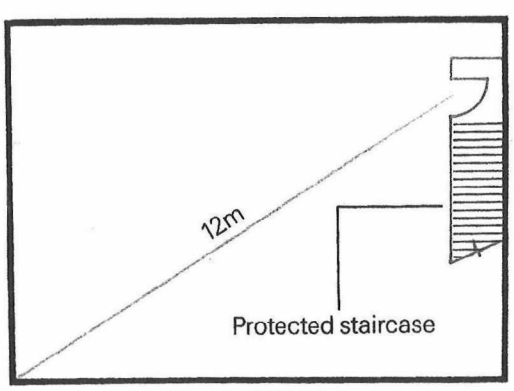
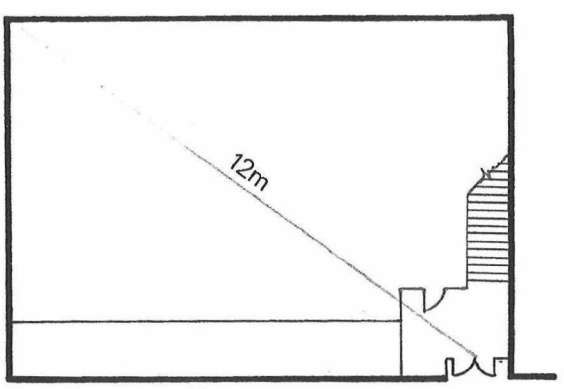


Diagram 48



3 A first storey premises only

A single exit to a staircase or to an external route leading direct to a **final exit** at ground level may be provided so long as

a the internal staircase or the external route, as the case may be, is separated entirely from their respective storeys by imperforate **fire-resisting** construction having no glazing therein, and

b the **direct distance** to the head of the **protected staircase** or to the **final exit** to an external route does not exceed 12 m (40 feet) (see **Diagrams 45** & **46**).

4 A basement storey and a ground storey shop premises only, or a ground storey and a first storey shop premises only, in one occupation

a A single **protected staircase** discharging to a **final exit** at ground level may be provided when the **direct distance** to either the foot of the **protected staircase** in the basement storey or to the head of the **protected staircase** in the first storey does not exceed 12 m (40 feet) (see **Diagram 47**).

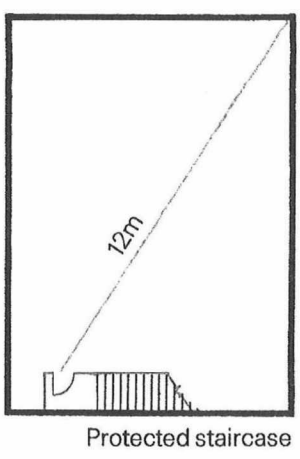
b the **direct distance** in the ground storey to a **final exit** does not exceed 12 m (40 feet) (see **Diagram 48**).

5 A basement storey, a ground storey and a first storey shop premises only in one occupation

a A single **protected staircase** discharging immediately adjacent to its **final exit** at ground level may be provided when the **direct distance** to either the foot of the **protected staircase** in the basement storey or to the head of the **protected staircase** in the first storey does not exceed 12 m (40 feet) (see **Diagrams 49, 50, & 51**).

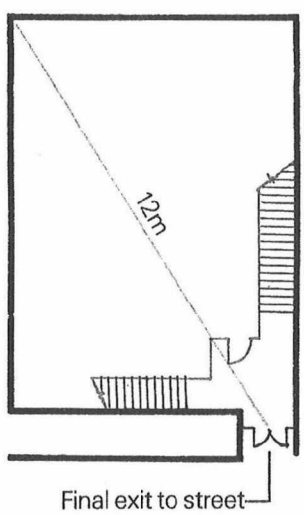
b the **direct distance** in the ground storey to a **final exit** does not exceed 12 m (40 feet) (see **Diagram 50**).

Diagram 49



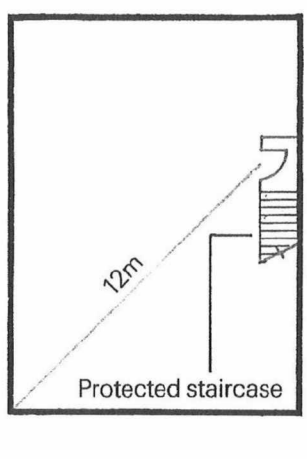
BASEMENT STOREY

Diagram 50



GROUND STOREY

Diagram 51



FIRST STOREY

Note *In any storey wherein the* **direct distance** *exceeds 12 m (40 feet) alternative means of escape therefrom should be provided; in this connection, consideration will be given to the use of unenclosed flights of stairs, subject to the general planning arrangements and to the discharge of such stairs immediately adjacent to a* **final exit** *being to the satisfaction of the Council.*

6.19 Small shops not exceeding 90m² (1000 square feet) in any storey and comprising not more than a basement, a ground and a first storey, in one occupation

Subject to the provisions of item **6.17** the following standards may be adopted:

1 A basement storey shop premises only or a ground storey shop premises only in one occupation

A basement storey shop premises only or a ground storey shop premises only should be all in accordance with items **6.18 1** or **2** respectively.

2 A basement storey and a ground storey shop premises only or a ground storey and first storey shop premises only in one occupation

Where there are no serious fire hazards on the premises a single unenclosed staircase and/or flight of stairs may be provided when;

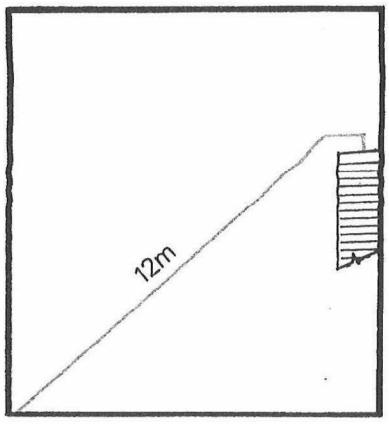
a the **direct distance** to the unenclosed staircase or flight of stairs does not exceed 12 m (40 feet) and

6.19 cont.

b the staircase or flight of stairs delivers in the ground storey at a point not more than 3 m (10 feet) from a **final exit** (see **Diagrams 52** & **53**).

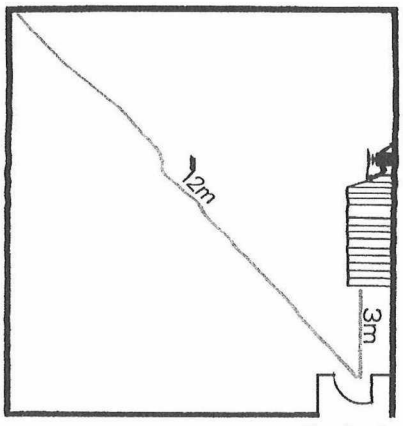
c the **direct distance** to a **final exit** in the ground storey does not exceed 12 m (40 feet).

Diagram 52



BASEMENT OR FIRST STOREY

Diagram 53



GROUND STOREY

3 A basement, a ground storey and a first storey shop premises only, in one occupation

Where there are no serious fire hazards in the premises a single staircase or flights of stairs delivering in the ground storey but unenclosed in certain storeys would be permitted provided that:

a the **direct distance** to the staircase or flight of stairs in the basement and first storeys does not exceed 12 m (40 feet) and

b the staircase or flights of stairs deliver in the ground storey at a point not more than 3 m (10 feet) from a **final exit** (see **Diagram 55**), and

c the **direct distance** to a **final exit** in the ground storey does not exceed 12 m (40 feet) and

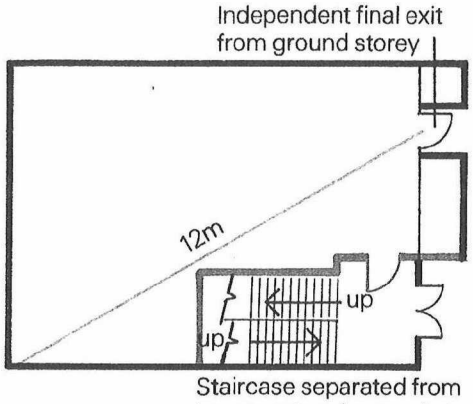
d either:

i where the means of egress comprises a staircase, such staircase and the exitway therefrom are enclosed and separated from the basement and ground storeys by **fire-resisting** construction (see **Diagram 54**).

or

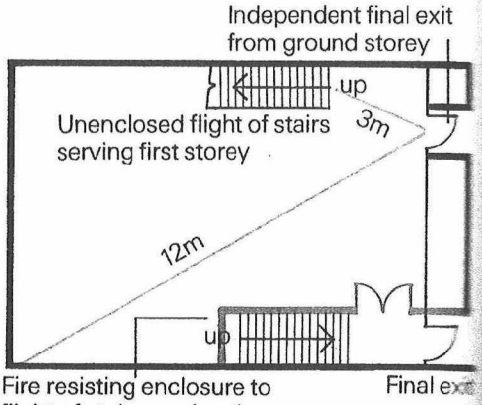
ii where the means of egress is by way of flights of stairs, the flight connecting the basement and ground storeys together with the exitway therefrom is enclosed and separated from the ground storey by **fire-resisting** construction, and the ground storey has access to a separate **final exit** independent of that serving the basement (see **Diagram 55**).

Diagram 54



Staircase separated from basement and ground storey by fire resisting enclosure

Diagram 55



Fire resisting enclosure to flight of stairs serving the basement storey.

Final ex

6.20 Small restaurants and bars having limited accommodation and being in one occupation only

Subject to the provisions of item **6.17** the following standards may be adopted:

1 A ground storey restaurant and/or bar premises only

A single **final exit** may be provided when

a the **direct distance** to the **final exit** does not exceed 18 m (60 feet). and

b the seating accommodation or the assessed standing accommodation (see items **6.07, 4** & **5**) does not exceed 100 persons.

2 A basement storey restaurant and/or bar premises only

A single exit may be provided either

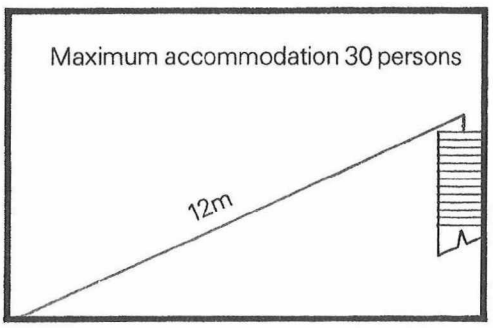
a direct to the external air (a basement area) and thence by a flight of stairs delivering at ground level (see **Diagram 43**), or

b by way of a **protected staircase**, imperforate in the ground storey and leading direct to its own **final exit** (see **Diagram 57**)

provided that the **direct distance** to either the exit from the basement storey to the external air or to the foot of the **protected staircase** does not exceed 12 m (40 feet), and

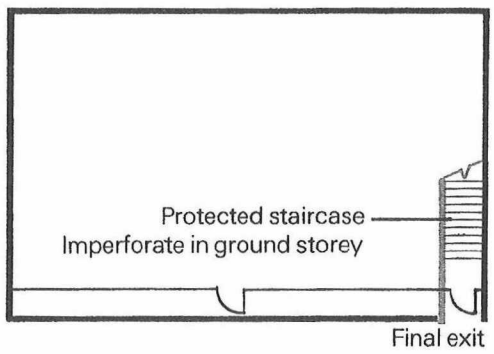
c the planned seating accommodation or assessed standing accommodation (see items **6.07, 4** & **5**) does not exceed 30 persons.

Diagram 56



BASEMENT STOREY OR FIRST STOREY

Diagram 57



GROUND STOREY

3 A first storey restaurant and/or bar premises only

A single exit may be provided by way of a staircase leading direct to a **final exit** where the staircase and exitway therefrom are separated from the ground storey and basement by imperforate **fire-resisting** construction provided that:

a the **direct distance** to the head of the staircase in the first storey does not exceed 12 m (40 feet), and

b the planned seating accommodation or assessed standing accommodation (see items **6.07, 4** & **5**) does not exceed 30 persons (see **Diagram 56**).

4 A basement storey and a ground storey, or a ground storey and a first storey, or a basement storey a ground storey and a first storey restaurant and/or bar premises only

A single exit to a **protected staircase** would be permitted provided that;

a the **direct distance** to the **protected staircase** in the basement storey or the first storey and to the **final exit** in the ground storey does not exceed 12 m (40 feet) and

b the ground storey is provided with an independent **final exit**, and

6.20 cont.

c the planned seating accommodation or assessed standing accommodation (see items **6.07, 4** & **5**) does not exceed 30 persons in each of the basement and first storeys and 100 persons in the ground storey (see **Diagram 58**).

Diagram 58

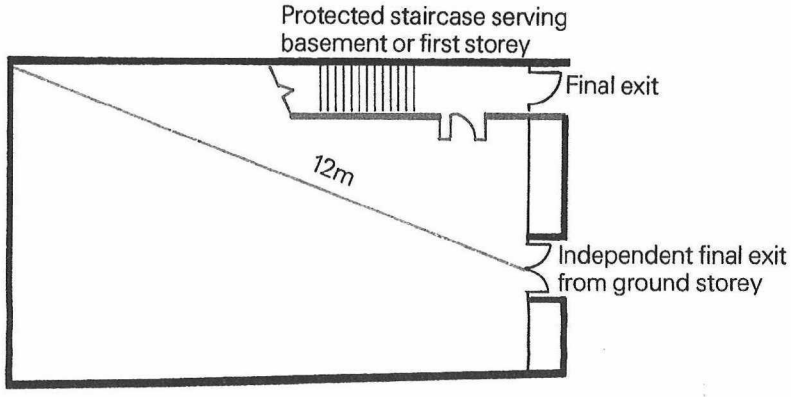
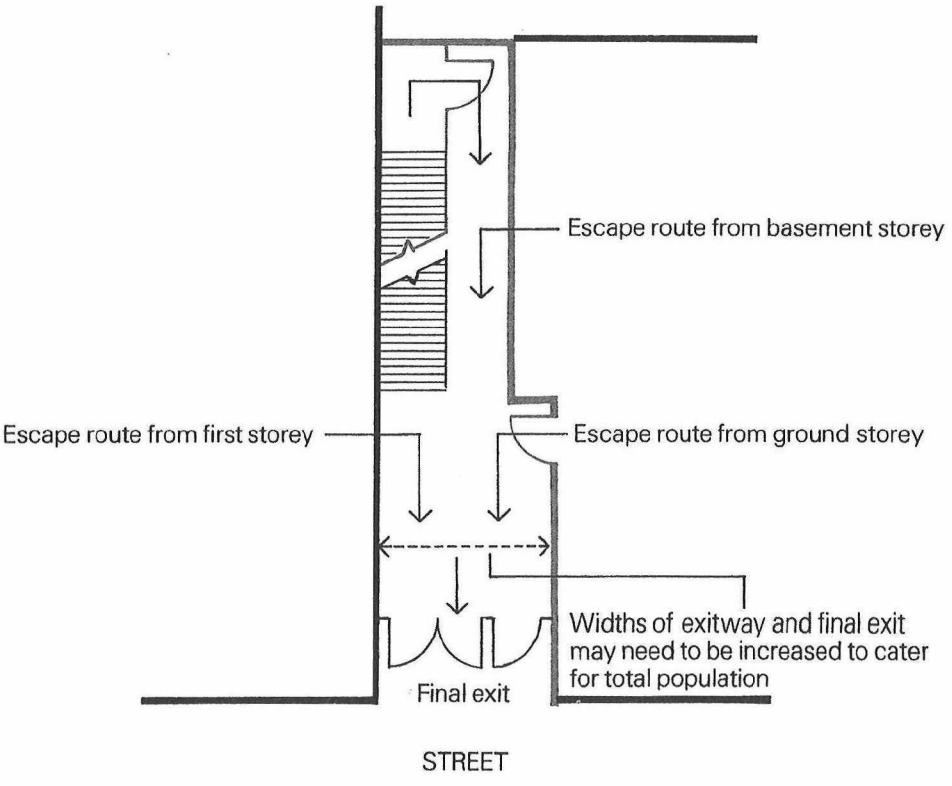


Diagram 59



6.21 Width of staircases for small premises

1 The width of the staircases for small premises described in items **6.17, 6.18, 6.19** & **6.20** should be not less than 1·100 m (3 feet 7 inches) except that where the number of persons using the staircase does not exceed 50 persons the staircase may be not less than 900 mm (2 feet 11 inches).

2 Where an exitway serves more than one storey the width of the common exitway to a **final exit** should be determined in accordance with **Table 6** (item **6.02**) in order to cater for the combined population of the building (see **Diagram 59**).

Part 7

Places Where People Sleep

Part 7

Places Where People Sleep

Dwelling Houses in Single Family Occupation

Note

Means of Escape in Case of Fire in respect of flats and/or maisonettes does not form part of this Code. The Council has adopted the BS Code of Practice CP3: Chapter IV: Part 1: 1971 for this purpose extending its scope to include ground and first floors where appropriate.

7.01 Dwelling houses of four or more storeys in height above ground level

1 A **protected staircase** delivering to a **final exit** in the ground storey should be provided and should connect with all storeys (see also item **7.03**).

2 Any cupboard within a **protected staircase** should be enclosed with **fire-resisting** construction and the door thereto should be rendered **self-closing** or be permanently marked 'KEEP SHUT'.

3 Any garage should be separated from the dwelling by **fire-resisting** construction and the floor of the garage should be not less than 100 mm (4 inches) below the level of the sill of any doorway connected with the dwelling.

4 An alternative means of escape should be provided to serve those storeys above the second storey (i.e. the third storey above ground level) which may be by way of:

a an additional **protected staircase,** independent of the main **protected staircase** or an external staircase delivering to a **final exit** at ground level (see **Diagrams 60** & **61**), or

b a linking balcony connecting with an adjoining building with ingress thereto (see **Diagram 62**), or

c access to the roof either direct or by way of a flight of stairs and a dormer doorway, and thence to the roof of an adjoining building with ingress thereto by a safe and easy route (see **Diagram 63**).

DWELLING HOUSE IN SINGLE FAMILY OCCUPATION – ALTERNATIVE MEANS OF ESCAPE

Diagram 60

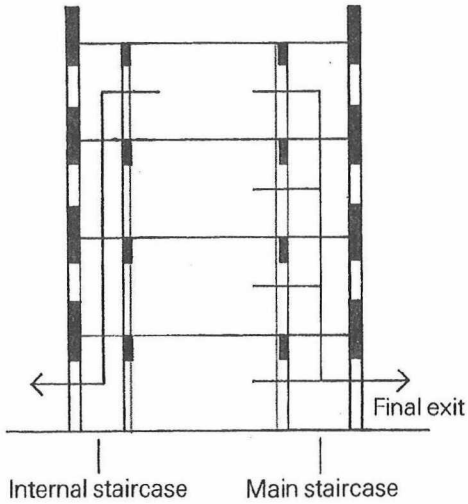


Diagram 61

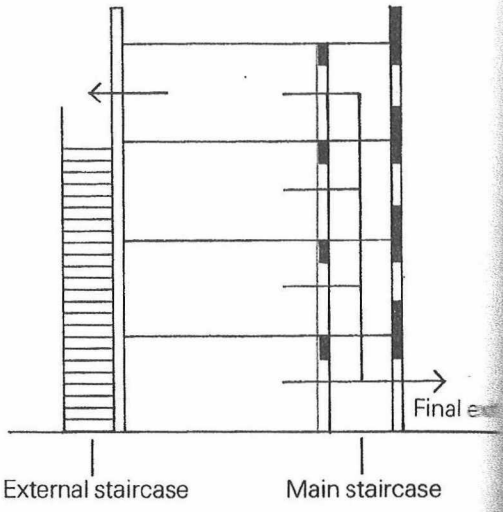


Diagram 62

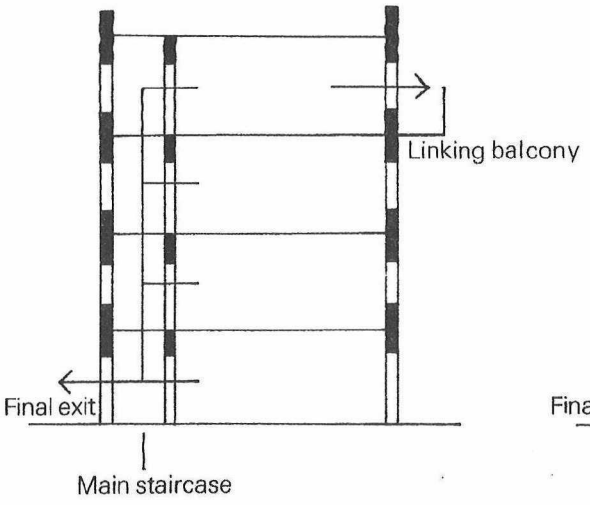
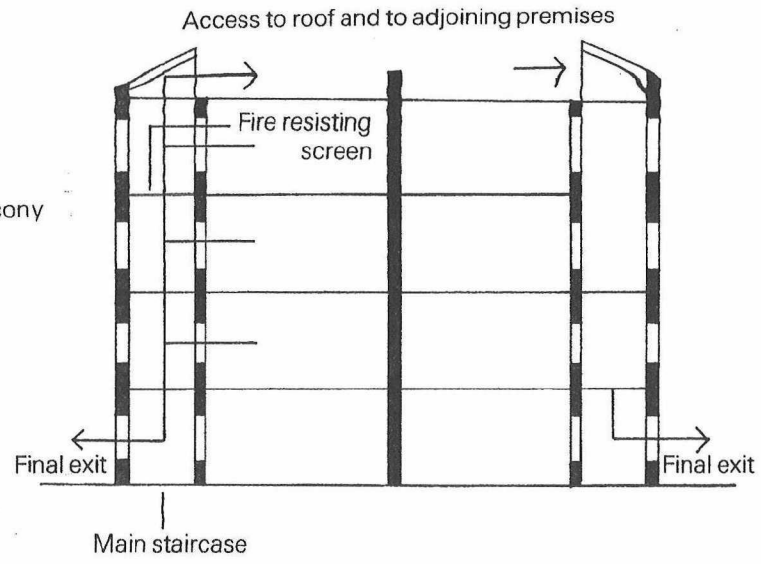


Diagram 63



Where the approach to the alternative means of escape necessitates entering the main **protected staircase,** a **fire-resisting** screen and **fire-resisting self-closing** door should be provided across the staircase at third floor level in order to separate the flight of stairs serving the storeys above the second storey from those below.

Note *Should it be proposed to implement the alternative means of escape by either (***b***) or (***c***) above, the Council would require written evidence of consent to the arrangements from all interested parties.*

7.02 Dwelling houses not exceeding three storeys in height above ground level and which have a storey at a greater height than 6 m (20 feet) above ground level

In the case of a dwelling not exceeding three storeys in **height** above ground level but which has a storey at a greater **height** than 6 m (20 feet) above ground level the principles of items **7.01 1, 2** & **3** should be complied with.

7.03 Open-Planning

No staircase serving any upper floor should deliver into an open-planned storey unless:

1 such open-planned storey is separated completely from the storeys above by **fire-resisting** construction and a **fire-resisting self-closing** door at the head of the staircase in the open-planned storey, and

2 the staircase is protected by **fire-resisting** construction throughout its remaining **height,** and

3 an alternative means of escape is provided from the storey above the open-planned storey in accordance with item **7.01 4**.

Part 8

Places Where People Sleep

Part 8

Places Where People Sleep

Hotels, boarding houses, hostels and similar uses

Introduction

This Part of the Code of Practice is concerned with means of escape in case of fire from hotels, boarding houses, hostels and other premises in similar use.

All new hotels and similar buildings are dealt with by the Council under Section 34 of the London Building Acts (Amendment) Act 1939, but upon completion and occupation, would also be subject, either in whole or in part, to other legislation.

Hotels and Boarding Houses (as defined in Statutory Instrument No. 238: 1972) have already been designated by the Secretary of State as requiring certification under the Fire Precautions Act 1971 and would thus be required to be provided with effective fire alarms and fire precautionary measures in addition to the means of escape. Portions of the premises might also be subject to the provisions of the Factories Act 1961, the Offices, Shops and Railway Premises Act 1963, the Licensing Act 1964 and other legislation dealing with specific users.

It should also be borne in mind that any part of premises used for music and dancing or other public entertainment would be required to be licensed by the Council. **For the standards considered appropriate for this purpose and for any other purpose not involving a sleeping risk, reference should be made to the relevant Parts of this Code of Practice.**

If it is proposed to use any part of a hotel building for exhibition purposes, the areas allocated for this use should be clearly shown on the submitted drawings, together with their location in relation to the sleeping risk, to enable the Council to assess any additional fire hazard.

Attention is drawn to the special provisions for 'distance' within bedrooms, suites of rooms and bedroom corridors which is not treated in the same way as the 'direct distance' in other Parts of the Code. All corridors serving the bedroom floors are required to be of **fire-resisting** construction and 'distance' is measured from any point along the corridor from the room exit door to the storey exit (e.g., a **protected staircase**).

Likewise attention is drawn to **Part 13** of this Code of Practice (see item **8.10**) regarding the provision of fire fighting equipment, fire alarm systems, fire and smoke detection systems and fire instructions to staff and guests.

Contents of this Part

8.01 Method for determining exits and escape routes

The siting, number and appropriate widths of staircases and other exits within or from a building are determined by:

1 the distance from any point within a bedroom or other room on a sleeping floor to the exit from such rooms and thence to a storey exit, and

2 the **direct distance** and **travel distance** as defined in **Part 3** of this Code of Practice in other parts of the premises, e.g., bars, restaurants, dining rooms, ballrooms, etc.

3 **dead ends** (where permitted), and

4 the maximum number of persons to be accommodated within the building and/or storey or **floor area**.

8.02 Width of escape routes within and exits from a storey

1 The minimum width of any escape route within a storey and any exit leading therefrom should be not less than the width indicated in **Table 7.**

Table 7

Maximum No. of persons per floor	50	220	240	260	280	300	320	340	360
Width – Metres	0·760	1·100	1·200	1·300	1·400	1·500	1·600	1·700	1·800
Imperial	2′6″	3′7″	3′11″	4′3″	4′7″	4′11″	5′3″	5′7″	5′11″

2 In calculating the widths required, regard should be had to the number of persons likely to use the route of escape and exits from a storey or part of a storey in fire conditions assuming that one of the routes and exits may not be available due to fire and/or smoke (see also item **8.09** regarding the special provisions for small buildings).

8.03 Siting and number of exits

1 Except as permitted by item **8.09** (special provisions for small buildings), not less than two exits should be provided from each storey, together with such additional exits as may be necessary to conform with items **8.04, 8.05, 8.06** and **8.07**. The exits should be sited remote from each other and should be located at the extremities of the building so as to obviate **dead ends**.

2 Each exit from a storey should give direct access to:

a a **final exit**, or

b a **protected staircase** leading to a **final exit**, or

c an external route leading to a **final exit**.

8.04 Measurement of 'distance' to exits

1 Where a bedroom is provided with only one exit, the 'distance' – measured in a straight line – from any point within the bedroom to its exit door to a common corridor should not exceed 9 m (30 feet) (see **Diagram 64**).

2 **a** Except as provided for in (**b**) hereunder, in suites of rooms the distance from any point in an inner room through a communicating doorway to a common corridor should not exceed 9 m (30 feet) and in all cases any room used as a bedroom should connect direct to the common corridor (see **Diagram 65**).

Diagram 64

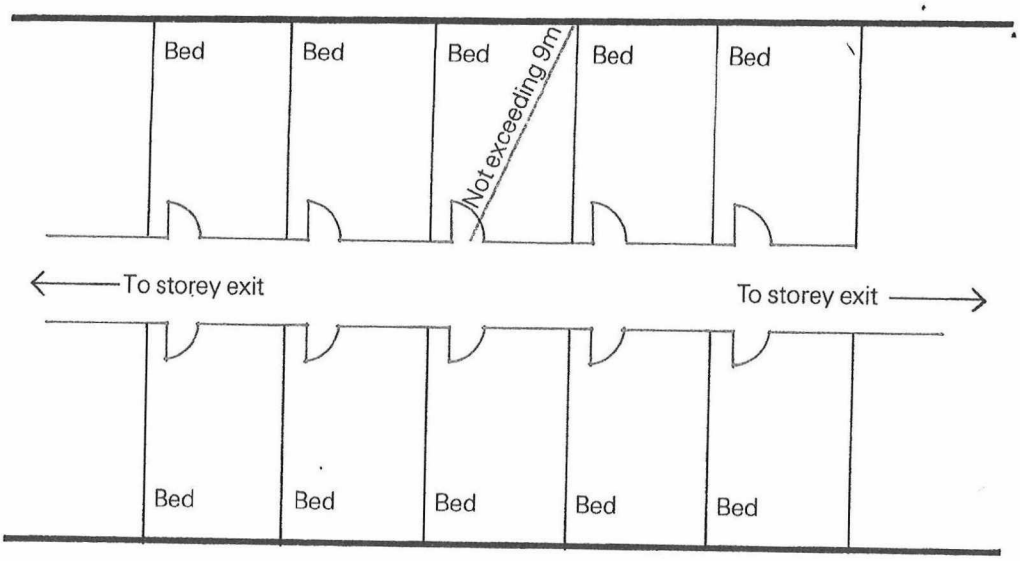


Diagram 65

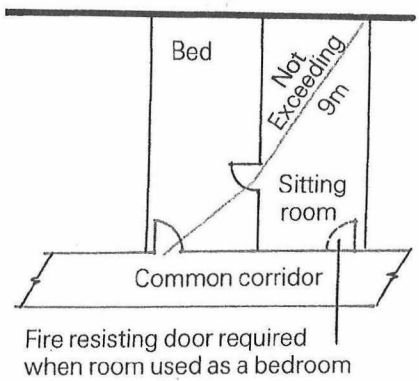
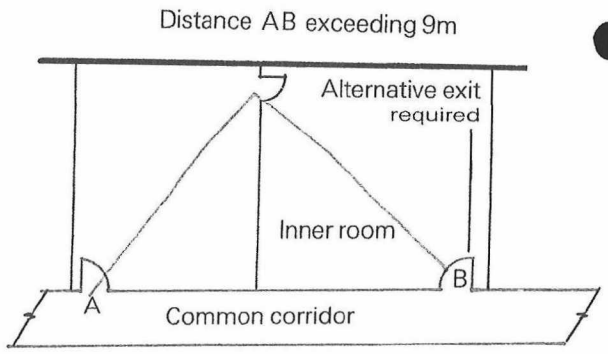


Diagram 66



b Where this distance is exceeded an additional means of escape from the innermost room direct to the common corridor or other approved route of escape should be provided (see **Diagram 66**).

3 **a** In suites of rooms incorporating an entrance hall enclosed with **fire-resisting** construction the entrance hall may be regarded as a common corridor provided that it complies with items **8.05** and **8.06** (see **Diagram 67**).

b Where the length of the entrance hall exceeds that permitted in a **dead end** corridor (see item **8.06**), an alternative means of escape should be provided from the suite of rooms independent of the entrance hall (see **Diagram 68**).

4 The distance to the nearest storey exit from any point in a corridor forming an exit route in which escape is possible in two opposite directions, should not exceed 30 m (100 feet) (see **Diagram 69**).

8.05 Special provisions relating to corridors

1 Bedrooms should communicate with a corridor and such corridor, together with:

a any other corridor communicating therewith, and

b any corridor within a basement storey;

should be enclosed with and separated from all adjoining rooms, including service kitchens and any other ancillary accommodation, by **fire-resisting** construction.

Diagram 67

ESCAPE POSSIBLE IN OPPOSITE DIRECTIONS FROM COMMON CORRIDOR

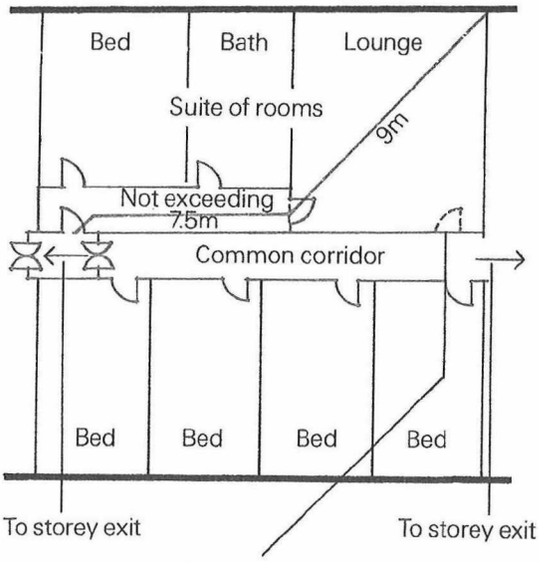


Diagram 68

ESCAPE POSSIBLE IN ONE DIRECTION ONLY FROM COMMON CORRIDOR

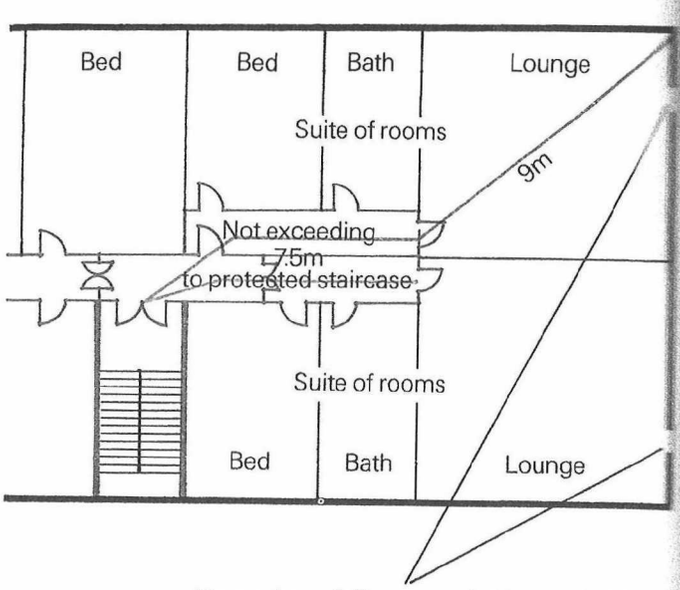
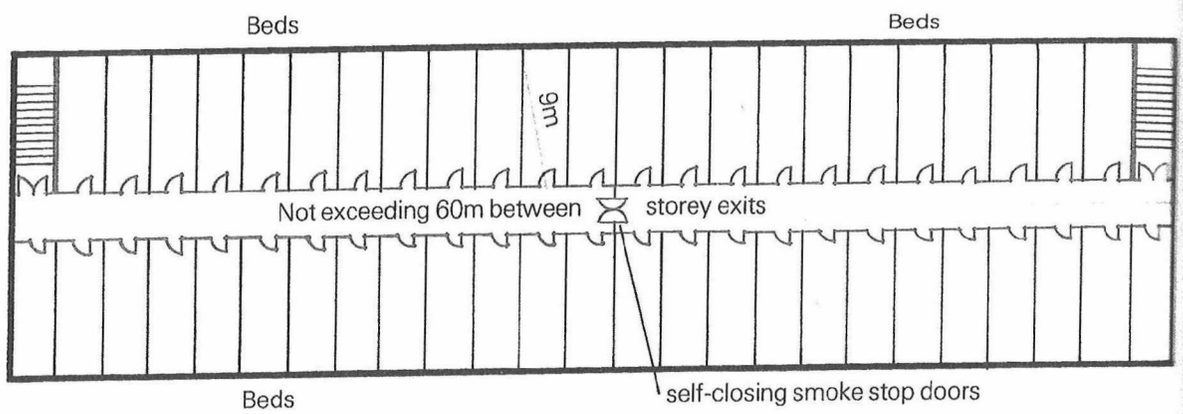


Diagram 69



2 The corridors referred to in item **8.05 1** above should connect directly with the exits from the storey (see item **8.03 2**).

3 **Self-closing smoke stop doors** should be provided across the corridors in positions approximately midway between the storey exits and in such a manner that no undivided length of corridor exceeds 30 m (100 feet). Where corridors form a junction with other corridors, similar doors should be provided at the point where the junction is formed (see **Diagrams 69** & **15**).

4 No corridor should pass through any **protected staircase** which would result in a circulation area becoming part of a staircase enclosure.

8.06 Dead end corridors

1 **Dead end** corridors should be avoided wherever possible but where the provisions of a **dead end** corridor is unavoidable it should not exceed 7·5 m (25 feet) in length measured from the door of the furthermost room in the **dead end** to either:

a the storey exit (see **Diagram 70**) or

b a point from which escape is available in opposite directions (see **Diagram 71**).

Diagram 70

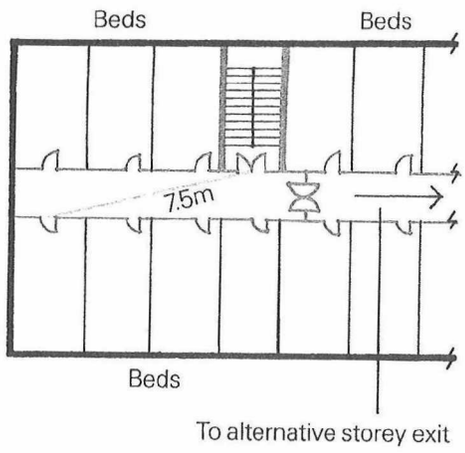


Diagram 71

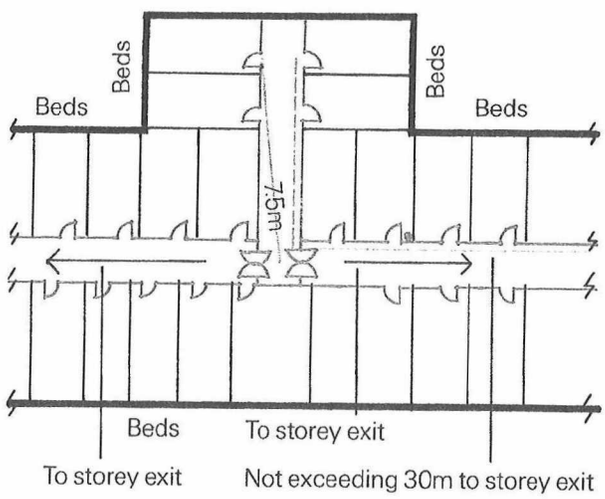
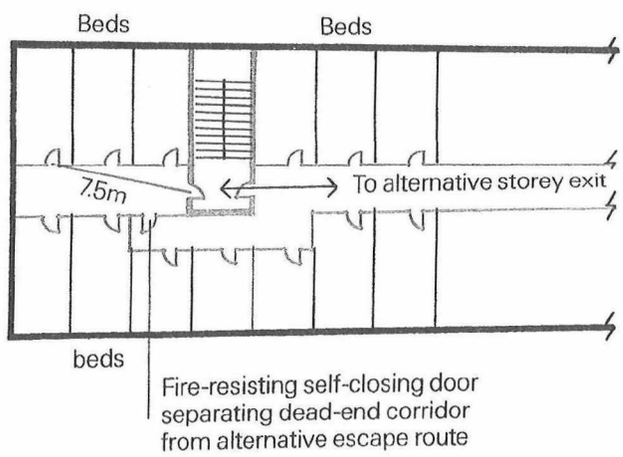


Diagram 72



2 Dead end corridors should be enclosed with fire-resisting construction.

3 **a** Where a dead end corridor (or entrance hall of a suite of rooms) joins a main corridor from which escape is possible in two opposite directions, it should be separated from both sections of the main corridor by self-closing smoke stop doors and no doors other than doors to bedrooms, bathrooms and toilets should open off the dead end corridor (see **Diagram 71**).

b The overall distance from the furthermost door in the dead end corridor to a storey exit should not exceed 30 m (100 feet).

4 **a** Except as permitted by item **8.09** (special provisions for small premises), no dead end corridor should connect directly with a protected staircase unless provision is made to by-pass such staircase so as to provide a route of escape to an alternative storey exit without having to pass through the protected staircase.

b In this case the dead end should be separated from the protected staircase and the alternative means of escape by fire-resisting construction (see **Diagram 72**).

8.07 Assessment of number of persons

1 Accommodation of bedroom floors would be assessed on the number of bedrooms provided and it would be assumed (in the absence of information to the contrary) that not less than two persons would be accommodated in any bedroom exceeding 10 m² (110 square feet).

2 The accommodation of other areas would be assessed on their merits and reference should be made to other Parts of this Code of Practice as necessary (e.g., **Part 5** for Assembly and public rooms, **Part 6** restaurants, etc.).

8.08 Number and width of protected staircases

1 Every multi-storey building should be provided with a minimum of two **protected staircases** (unless it is a building coming within the scope of item **8.09** – Special provisions for Small Buildings) sited remote from one another and located at the extremities of the building in order to obviate **dead ends.** The actual number of **protected staircases** required should be determined in accordance with items **8.04, 8.05, 8.06** & **8.07.**

2 **a** At least one of the **protected staircases** serving each storey and/or separate wings of the upper storeys should be sited on the external walls of the building; should not communicate with any basement storey, and should be provided with windows openable to the external air at each storey level to an extent of 1 m² (10 square feet).

b The remaining **protected staircases** may be sited away from the external walls in which case they should be provided at the head with a window or a panel not less than 1 m² (10 square feet) which could be opened manually or automatically on the throwing of a switch. Any device or switch for such operation should be located adjacent to the entrance doorway in the ground storey or in a position acceptable to the Council and should be provided with a permanent notice marked 'SWITCH FOR STAIRCASE VENTILATION' or 'OPERATE MANUALLY FOR STAIRCASE VENTILATION' in permanent plain letters 10 mm (½ inch) high.

Note *Attention is drawn to the siting and ventilation of staircases coming within the control of Section 20 of the London Building Acts (Amendment) Act 1939, details of which are contained in the Council's 'Code of Practice for Buildings of Excess Height and/or Additional Cubical Extent' – Publication No. 0542 1 obtainable from the Information Centre, Greater London Council, The County Hall (South Block), London, SE1 7PB.*

The Code of Practice requires, inter alia, the siting of staircases to be within 7·5 m (25 feet) of the extremities of the building with additional requirements relating to ventilation.

3 **a** Where a **protected staircase** serving the upper floors is permitted to serve a basement storey (see item **8.08 2(a)**), such storey should be separated from the **protected staircase** by a **protected lobby** or a corridor enclosed with **fire-resisting** construction.

b Where a High Fire Risk Area, a garage or a car park is permitted to be located in a basement storey, any **protected staircase** permitted to serve these areas (see item **8.08 2(a)**) should have the lobby protection referred to in (**a**) above and the lobby should be provided with natural ventilation having an area of not less than 0·4 m² (4 square feet).

4 In premises exceeding 18 m (60 feet) in **height** the **protected staircases** should be separated from each storey by either a corridor enclosed with **fire-resisting** construction or by a **protected lobby.**

5 Width of a protected staircase

The minimum width of a **protected staircase** should be not less than the width required for any exit affording access to it (see item **8.02**) and in no case should it be less than:

a 1·100 m (3 feet 7 inches) in a building **not** exceeding 30 m (100 feet) in **height,** or

b 1·400 m (4 feet 7 inches) in a building exceeding 30 m (100 feet) in **height.**

6 Calculation of number and width of protected staircases

a Subject to the provisions of items **1** and **5** above, the number and widths of protected staircases required should be determined in accordance with **Table 8.**

Note

i *One of the protected staircases should be assumed to be out of action and the remaining protected staircases should be of sufficient width and number to accommodate the relevant occupancy.*

ii **Table 8** *is based on the assumption that persons will be distributed evenly on all floors; minor uneven distribution may be ignored but where a heavy concentration of persons is likely to occur on any particular floor, e.g., banqueting rooms, ballrooms, etc., an adequate number of protected staircases of appropriate widths should be provided to cater for this.*

iii **Protected staircases** *should be of the same width but consideration will be given to such staircases being of different widths having regard to* ***(i)*** *above and to their disposition, each protected staircase being assessed in turn against the others.*

iv *Staircases exceeding 1·800 m (5 feet 11 inches) in width should be designed in double equal widths (e.g., two widths of 1·100 m (3 feet 7 inches) etc.), and should incorporate a centre handrail.*

b The number and widths of staircases serving basement storeys should be determined separately from the upper storeys, the assessment being determined from **Table 8.**

c **Table 8** is based on **the whole building being evacuated** and is computed on the evacuation capacity of a staircase of the width stated according to the number of storeys it serves and also takes account of the capacity of the staircase as well as its discharge rate through the **final exit.**

Table 8

	Width of staircase							
Metres	1·100	1·200	1·300	1·400	1·500	1·600	1·700	1·800
Imperial	3′ 7″	3′ 11″	4′ 3″	4′ 7″	4′ 11″	5′ 3″	5′ 7″	5′ 11″
Number of floors served	**Number of persons one staircase can accommodate**							
1	220	240	260	280	300	320	340	360
2	260	285	310	335	360	385	410	435
3	300	330	360	390	420	450	480	510
4	340	375	410	445	480	515	550	585
5	380	420	460	500	540	580	620	660
6	420	465	510	555	600	645	690	735
7	460	510	560	610	660	710	760	810
8	500	555	610	665	720	775	830	885
9	540	600	660	720	780	840	900	960
10	580	645	710	775	840	905	970	1035
For each additional storey add	———	———	———	55	60	65	70	75

Note *In buildings exceeding 30 m (100 feet) in* **height,** *no escape staircase should be less than 1·400 m (4 feet 7 inches) in width irrespective of the number of persons to be evacuated.*

8.09 Special provisions for small buildings

Notwithstanding the provisions of items **8.03** & **8.08** foregoing, where it is impracticable due to site restrictions to provide a minimum of two **protected staircases, but subject to conformity with the remaining items of this Part of the Code of Practice,** small premises comprising not more than four storeys

8.09 cont.

above ground level, i.e., ground storey plus three storeys over, and containing not more than six bedrooms per floor may be provided with a single **protected staircase** in accordance with the following:

1 **a** The distance to be traversed from any bedroom door to the **protected staircase** should not exceed 7·5 m (25 feet) (see **Diagrams 73** & **75.**)

b The **direct distance** from any other part of the premises, e.g., lounge and other rooms in common use to a **final exit** or a **protected staircase** should not exceed 12 m (40 feet).

2 The **protected staircase** should be not less than 900 mm (2 feet 11 inches) in width and should discharge at ground level by way of a **final exit** (see **Diagrams 74** & **76.**)

3 **a** No bedroom, other room or reception area, etc. should communicate directly with the **protected staircase**; where such staircase is not approached by way of a corridor enclosed with **fire-resisting** construction it should be separated from any room or other area by a **protected lobby** (see **Diagram 74**).

b Any other staircase between the ground storey and the basement storey should have a screen and door of **fire-resisting** construction at either the head or the foot of the staircase (see **Diagram 74**).

Diagram 73

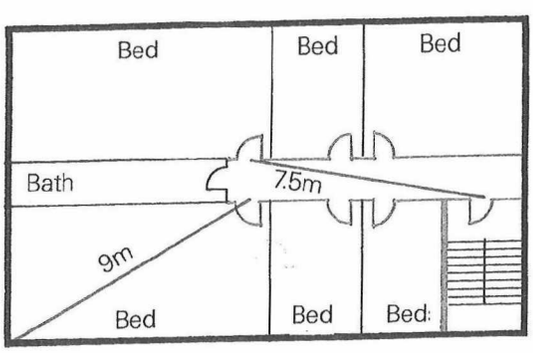


Diagram 74

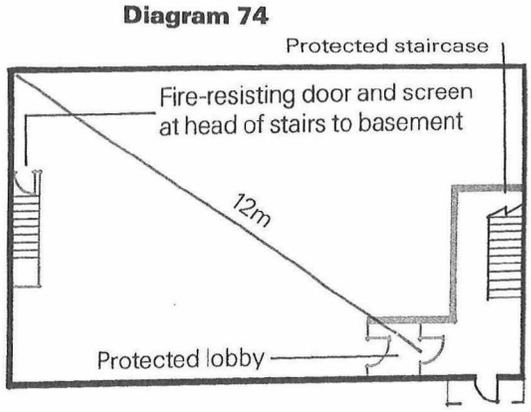


Diagram 75

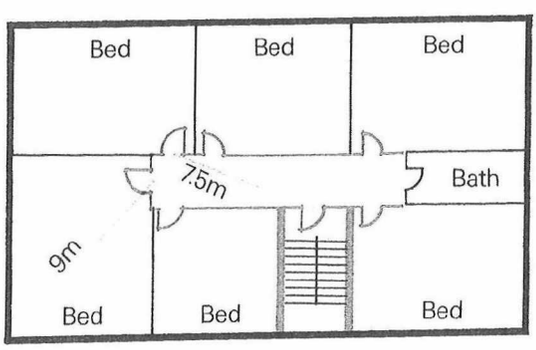
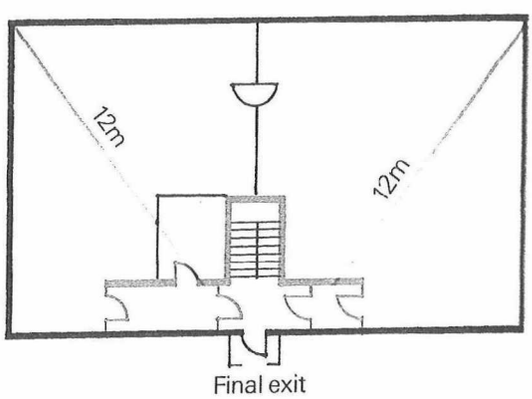


Diagram 76



4 Cupboards, service ducts or any other fire risks should not be provided within or be accessible from the **protected staircase** (see items **12.06 1** & **12.09 1**).

5 **a** Where the **protected staircase** continues down to serve a basement storey, the **protected lobby** to the **protected staircase** may be provided by a **fire-resisting** screen and door located at the head and at the foot of the **protected staircase** (see **Diagrams 77** & **78**).

b Any basement storey should be provided with at least two separate means of escape one of which should be direct to the open air (see **Diagrams 77** & **78**).

8.09 cont.

6 No car park, garage or other High Fire Risk area (see item **4.04**) should communicate with the remainder of the building.

8.10 Generally for all buildings in this part

1 **Artificial lighting** and **safety lighting** should be provided in accordance with **Part 11** of this Code of Practice.

2 Fire fighting equipment, fire alarms and automatic detection systems (e.g., smoke detection), together with fire instructions to staff and guests, should be provided in accordance with **Part 13** of this Code of Practice.

3 Adequate provision should be made for the storage of unused furniture, mattresses, linen, refuse awaiting disposal, etc. Storerooms and cupboards utilised for this purpose and other rooms containing fire risks should be totally enclosed by **fire-resisting** construction and **fire-resisting self-closing doors** to such rooms should be kept locked shut when not in immediate use and be permanently marked 'KEEP LOCKED SHUT' in 25 mm (1 inch) plain letters.

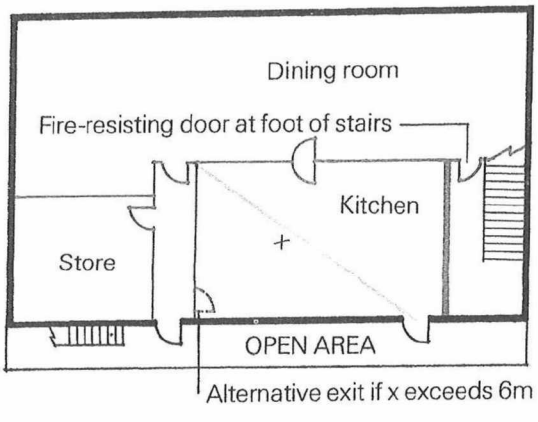
4 **a** Lifts should comply with the Constructional requirements contained in **Part 12** of this Code of Practice.

b Where lifts deliver directly into corridors serving bedroom floors, and such lifts also communicate with storeys containing fire risk areas below, e.g., kitchens, lounges, storage, etc., the lifts should be separated from the fire risk areas by **protected lobbies.**

c Any lift connecting with a basement storey or sub-basement storey should be separated from such storey(s) by a **protected lobby** which should be provided with natural ventilation having an area of not less than 0·4 m² (4 square feet).

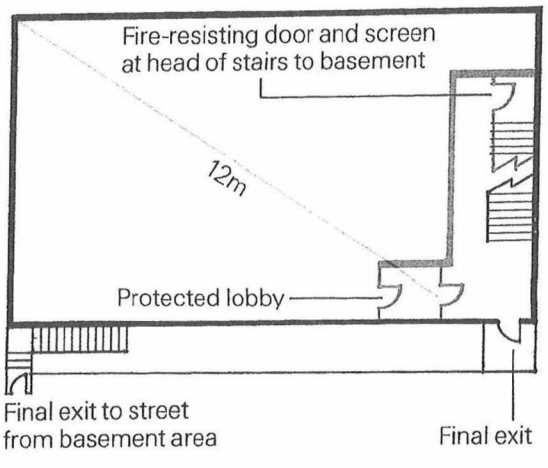
Note *Where by provision of item* **8.08 2(a)** *a staircase is not permitted to communicate with a basement storey, any lift in association therewith should also not communicate with the basement.*

Diagram 77



BASEMENT STOREY

Diagram 78



GROUND STOREY

Part 9

Garages, Car Parks and Vehicle Service Areas

Part 9

Garages, Car Parks and Vehicle Service Areas

Introduction

This Part of the Code of Practice applies to buildings or parts of buildings used for vehicle parking and for loading and unloading goods from vehicles. For those parts of a garage used for servicing and/or repair of vehicles reference should be made to **Part 4** of this Code of Practice which relates to Places where People Work.

Note *For the purpose of this Part of the Code of Practice the expression 'Floor area' shall include any level of vehicle parking.*

Contents of this Part

9.01 Method for determining exits and escape routes

The siting, number and appropriate widths of staircases and other exits from any **floor area** are determined by:

1 the **direct distance** to a **protected staircase** or other exit;

2 **dead ends,** where permitted, and

3 the maximum number of persons to be accommodated.

9.02 Width of escape routes within and exits from a floor area

1 The minimum width of any escape route within a **floor area** and of any exit leading therefrom should be not less than the width indicated in **Table 9.**

Table 9

Number of persons	50	220	240	260	280	300	320	340	360
Width (Metres)	0·760	1·100	1·200	1·300	1·400	1·500	1·600	1·700	1·800
Width (Imperial)	2′ 6″	3′ 7″	3′ 11″	4′ 3″	4′ 7″	4′ 11″	5′ 3″	5′ 7″	5′ 11″

2 In calculating the widths required, regard should be had to the number of persons likely to use the route of escape and the exits from a storey or part of a storey in fire conditions assuming that one of the routes and exits may not be available due to fire and/or smoke.

9.03 Siting and number of exits

1 Except as otherwise permitted by items **9.04 3** & **9.08 1** not less than two exits should be provided from each **floor area** together with such additional exits as may be necessary to conform with items **9.04** and **9.05.**

2 The exits should be remote from each other and should be sited at the extremities of the building so as to obviate **dead ends.**

3 The layout of the parking bays and/or service vehicle loading bays should be arranged with unobstructed access leading to the exits which should be clearly visible and well indicated.

4 Each exit from a **floor area** should lead directly to:

a a **final exit,** or

b a **protected staircase** leading to a **final exit,** or

c an external route leading to a **final exit.**

9.04 Direct distance and travel distance

1 The **direct distance** to the nearest exit serving a **floor area** should not exceed 30 *m* (100 feet).

2 The **travel distance** should not exceed one and a half times the permitted **direct distance** in any case.

3 Wherever a car park is arranged with split levels each level should be provided with alternative exits one of which should be in accordance with item **9.03 4** and the others may be by way of an adjoining level to another exit as described in item **9.03 4.** The **travel** and **dead end distances** to such exits should be within the limits specified in items **9.04 1** and **2** & **9.05** (see **Diagram 79**).

9.05 Dead ends

Where because of site restrictions or practical planning difficulties a **dead end** cannot be avoided the maximum **direct distance** in a **dead end** to either:

1 the nearest exit serving the **floor area**, or

2 a point from which escape is available in separate directions, should not exceed 12 m (40 feet) provided that in the latter case the overall **direct distance** to the nearest exit does not exceed 30 m (100 feet) (see **Diagram 80**).

9.06 Assessment of number of persons

The number of persons likely to resort to premises coming within the scope of this Part should be assessed as follows:

1 Public car parks — — two persons per car parking space

2 Private car parks — one person per car parking space

3 Mechanical car parks — nominal — limited to operations and maintenance staff

4 Loading areas — — two persons per vehicle loading space.

9.07 Number and width of protected staircases

1 Except as permitted by item **9.08** every multi-storey car park should be provided with not less than two **protected staircases** sited remote from one another and located at the extremities of the building. The **protected staircases** should be located on the external walls of the building and, where above ground, should be provided with windows openable to the external air at each floor level, to an extent of not less than 1 m² (10 square feet).

2 The width and number of **protected staircases** should be determined by reference to **Table 2** in **Part 4** of this Code of Practice

Notwithstanding the foregoing, where the number of persons on any **floor area** or any two adjoining split levels is unlikely to exceed 50 persons the minimum width of the staircases may be 900 mm (2 feet 11 inches) provided that the staircases do not serve more than four storeys.

Note *In every case one of the* **protected staircases** *should be assumed to be out of action and the remaining staircases should be of sufficient width and number to accommodate the relevant occupancy.*

3 Where a ground floor exit also discharges through a staircase **final exit** the **final exit** may require to be increased in width by the extent of the ground floor exit width. Similarly where a basement staircase connects with a staircase from above an increased width of **final exit** may be necessary.

4 Where access is provided from a basement storey to a **protected staircase** which serves

a upper storeys of the building, or

b more than one basement storey of car parking

a **protected lobby** should be interposed between the **protected staircase** and the basement storey. The lobby should be permanently ventilated with an opening or shaft direct to the external air not less than 0·4 m² (4 square feet) in area and any shaft for this purpose should be enclosed with fire-resisting construction.

9.08 Single level parking or loading

1 Where the accommodation is provided only on the level next above or next below the vehicle entrance level, one of the required routes of escape may be by way of a vehicle ramp.

Diagram 79

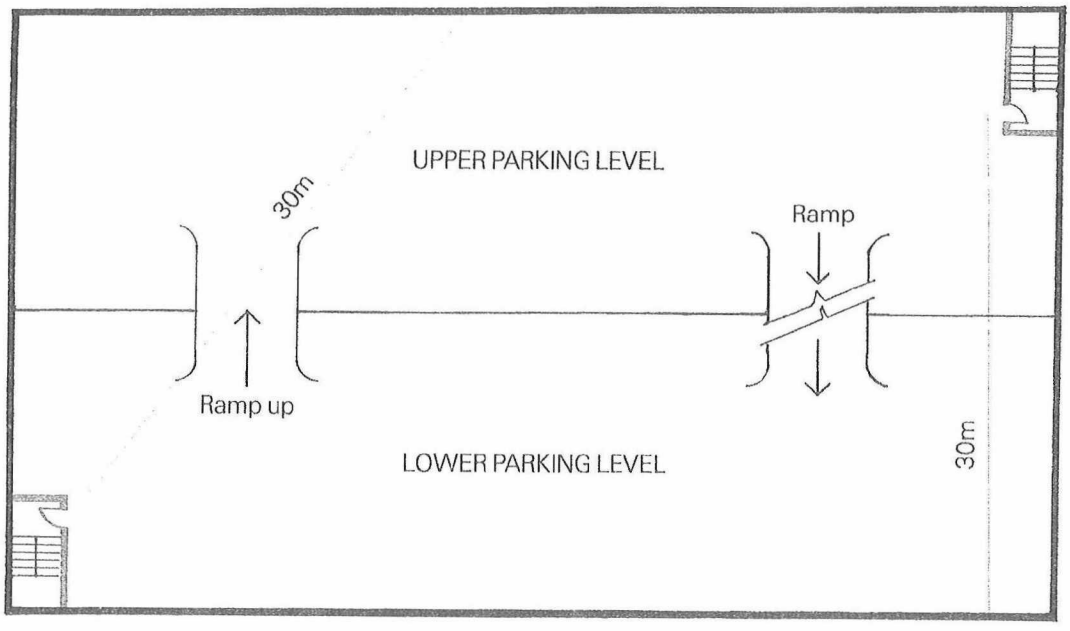


Diagram 80

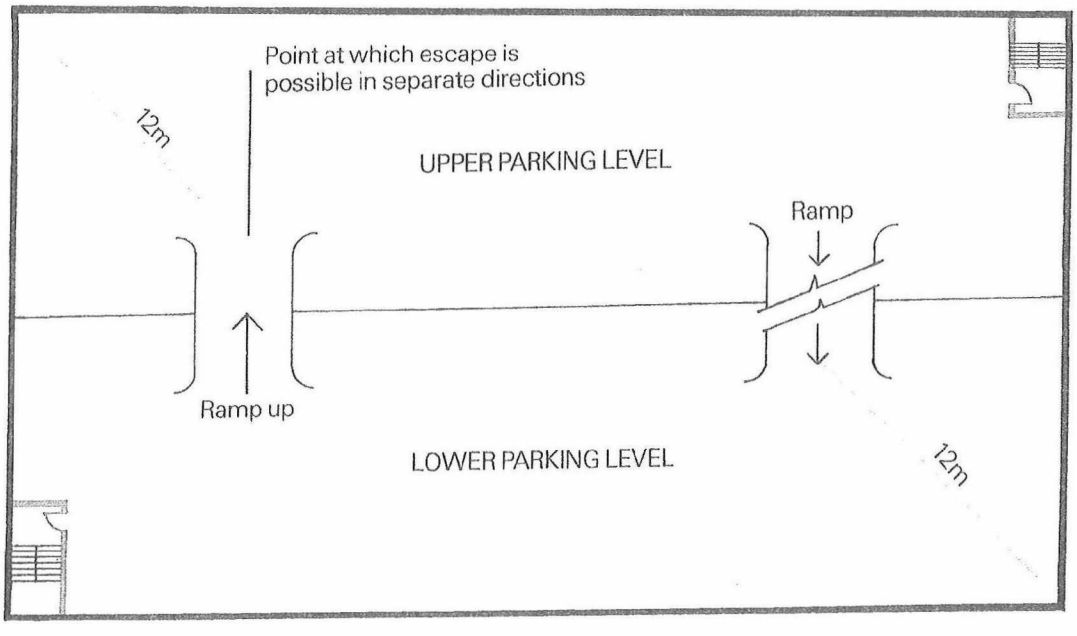
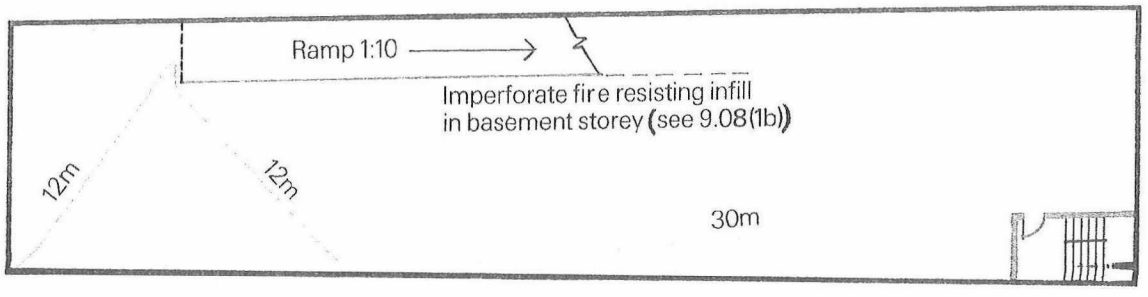


Diagram 81



For the purpose of items **9.04 1** & **2** where an escape route is permitted to be via an internal vehicle ramp to a **final exit** at another level, the start of the ramp in the level under consideration may be considered as an exit serving that **floor area** provided that:

a the **direct distance** to such exit does not exceed 12 m (40 feet), and

b the sides of the ramp from the basement storey are filled in with imper-

9.08 cont.

forate **fire-resisting** construction so as to separate the ramp from the basement storey parking and/or loading area (see **Diagrams 81** & **82**).

2 Notwithstanding the provisions of item **9.03 1** a single exit may be permitted where:

a the parking or loading **floor area** is at first basement, ground or first floor level only,

b the maximum **direct distance** from any point on the **floor area** to a **protected staircase** or a **final exit** does not exceed 12 m (40 feet) in the case of a loading area, a basement or first storey vehicle parking area and 18 m (60 feet) in the case of vehicle parking at ground level (see **Diagram 83**).

Diagram 82

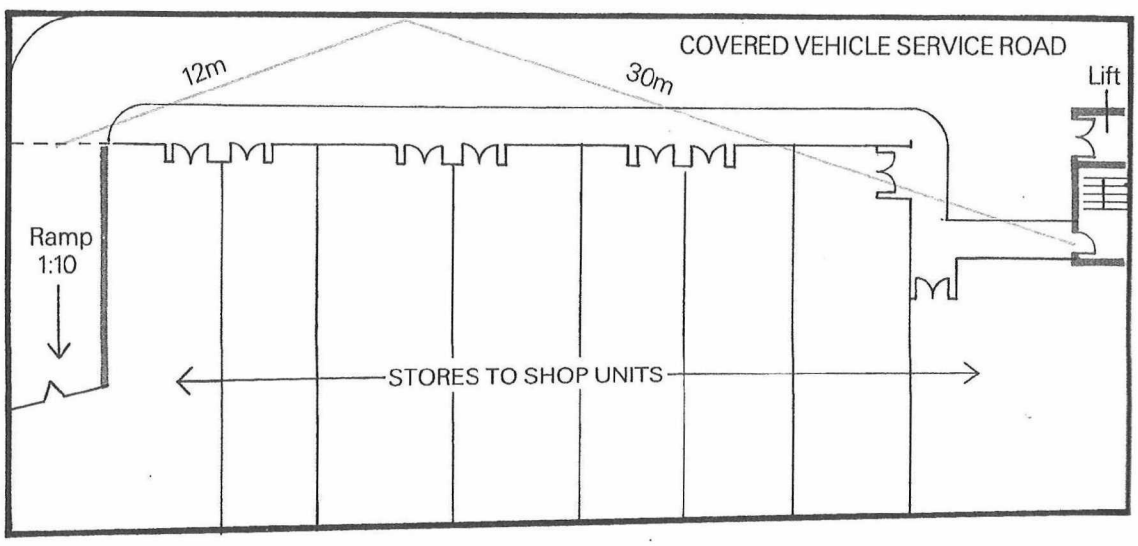
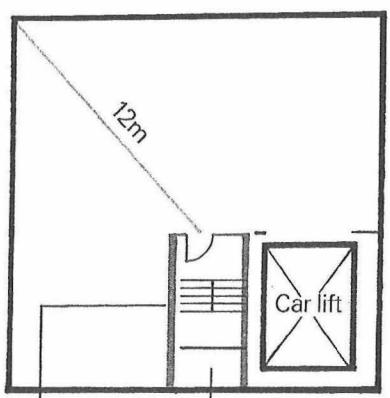


Diagram 83 LOADING AREA OF A BASEMENT CAR PARK



9.09 Mechanical parking

In the case of a mechanical car park where the public are not admitted to the parking levels, consideration would be given to the provision of a single **protected staircase** if the ends of parking levels remote from the **protected staircase** are connected by ladders with adequate guard rails linking the various levels and delivering to the entrance level. Each scheme would be considered on its merits.

9.10 Artificial and Safety lighting

Artificial and Safety lighting should be provided in accordance with **Part 11** of this Code of Practice.

Part 10

Ancillary Accommodation

Part 10

Ancillary Accommodation

Battery charging plant rooms, boiler chambers, fuel stores, generator rooms, pump rooms, refrigeration plant areas, refuse rooms, switch gear rooms, transformer chambers and any other plant or apparatus being part of the services of a building.

Introduction

This Part of the Code of Practice applies to those portions of any building which house boiler chambers, fuel stores, switch gear rooms, transformer chambers, refrigeration plant, generators, pumps, battery charging rooms, refuse rooms or any other plant or apparatus provided as part of the services of a building.

The standards which follow are also applicable to outbuildings used for such purposes but where extensive installations are proposed e.g., large boiler chambers for an institutional complex or for a district heating scheme, reference should be made to **Part 4** of the Code of Practice which relates to Places where People Work.

Whilst the standards outlined in this Part of the Code apply to the ancillary accommodation referred to above, they should also be considered in conjunction with the standards contained in other Parts of the Code of Practice where special requirements may appertain to such matters as siting and fire separation in relation to the remainder of the building.

Attention is also drawn to the Council's 'Code of Practice for Buildings of Excess Height and/or Additional Cubical Extent' (Publication No. 0542 1) in connection with buildings coming within Section 20 of the London Building Acts (Amendment) Act 1939; the Technical Regulations in connection with Places of Public Entertainment (Publication No. 0378X), and the current edition of the London Building (Constructional) By-laws (Publication No. 0451 4) where higher standards of fire separation may also apply.

Contents of this Part

10.01 Separation from the remainder of the building

Ancillary accommodation should be enclosed by and separated from the remainder of the building by solid **non-combustible fire-resisting** construction.

10.02 Buildings provided with only one staircase

1 No openings should be provided in the enclosures separating the ancillary accommodation from the **protected staircase**.

2 Transformer chambers and **High voltage** switch gear rooms should be entered solely from the external air and no internal connection should be made to the remainder of the building.

3 Other ancillary accommodation should be

a entered solely from the external air with no internal connection to the remainder of the building, or

b where approached from inside the building, located as far as practicable from the storey exit so as not to prejudice the route of escape to such exit, except that where the ancillary accommodation comprises the whole of the storey and is not used regularly by persons working therein, it may be entered direct from the **protected lobby** to the **protected staircase** (see **Diagrams 84, 85, & 86**).

4 Any ventilation openings serving ancillary accommodation should not be sited within a distance of 1 m (3 feet 3 inches) of any **final exit**.

Diagram 84

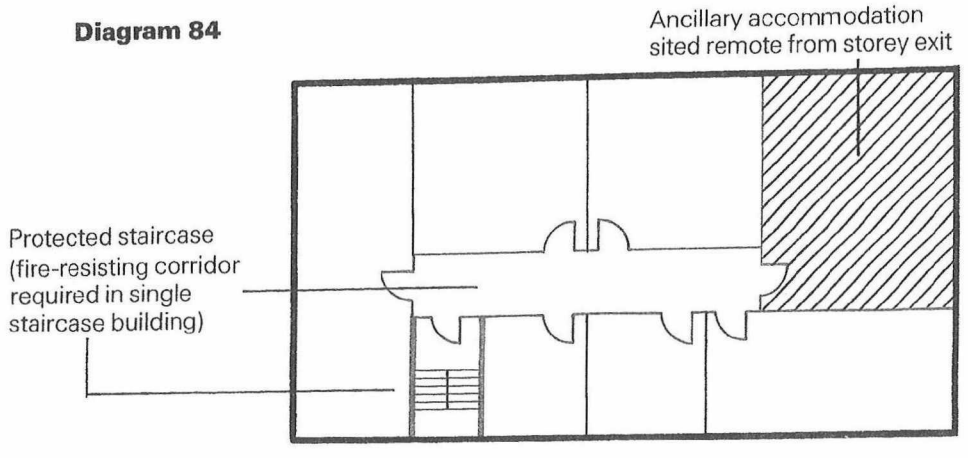
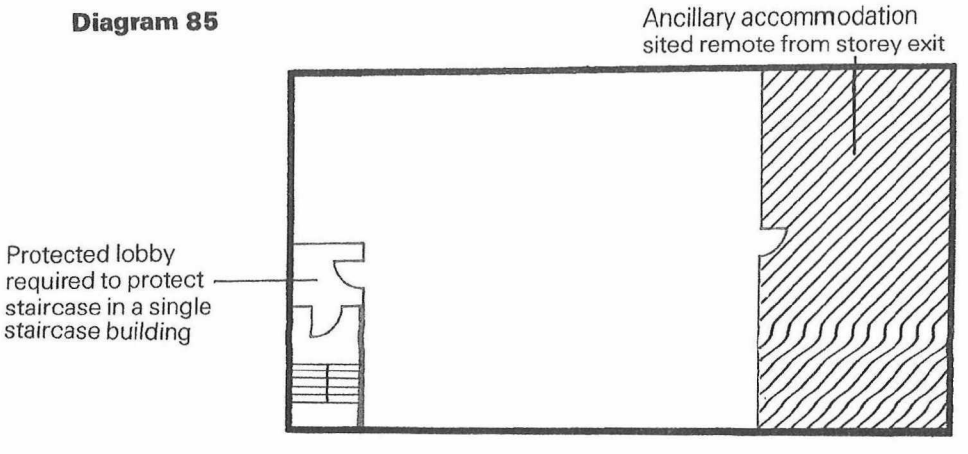


Diagram 85



10.03 Multi-staircase buildings

1 **a** Transformer chambers and **High Voltage** switch gear rooms should, ideally, be entered solely from the external air.

10.03 cont.

b No access should be provided to staircases or to parts of the building to which the public have access.

2 Other ancillary accommodation should conform with the foregoing principle but consideration would be given to access being provided to staircases and other parts of the building where the fire risk was low, e.g. pump rooms (see paragraphs 3 & 4 of the Introduction to this Part).

3 In any **dead end** portion of the building, where permitted, the ancillary accommodation should be located at the extremity of the **dead end** remote from the storey exit so as not to prejudice the route of escape to such exit.

10.04 Means of escape from ancillary accommodation

1 Where a room comprising ancillary accommodation exceeds 6 m (20 feet) in either length or breadth, or of lesser dimensions where the plant is arranged so as to prejudice the means of escape, not less than two exits sited remote from one another and so as to obviate **dead ends** should be provided from the room.

2 The **direct distance** to the nearest exit should not exceed 12 m (40 feet).

3 Any upward means of escape from a boiler chamber, transformer chamber or **high voltage** switch gear room whether by means of stairs or sloping ladder, should be separated from such accommodation by means of a full-height enclosure of **fire-resisting** construction (see **Diagram 87**).

Diagram 86

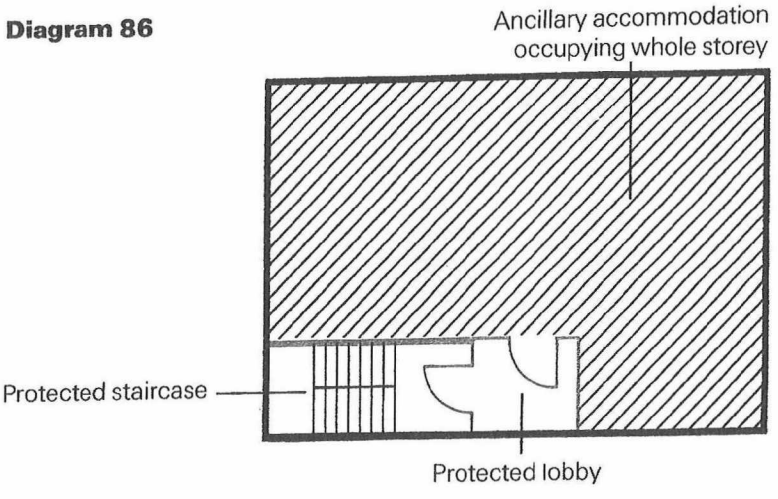
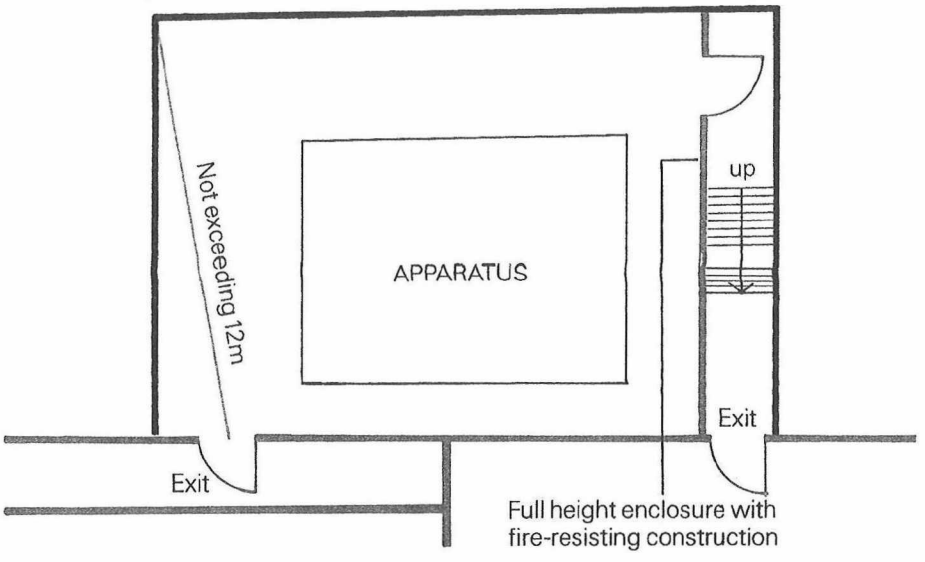


Diagram 87



10.05 Additional safeguards

In order to limit the effect of ancillary accommodation upon the general means of escape in case of fire from a building regard should be had to the additional safeguards detailed hereunder.

1 Refrigeration plant rooms

Any portion of a building used to accommodate refrigeration plant (excluding the small domestic types) which employs a refrigerant which is flammable or toxic, or which when subjected to heat may give rise to flammable or toxic gases, should be ventilated direct to the external air and in no circumstances should refrigeration plant be accommodated in a boiler chamber.

2 Diesel driven engines

A room containing a diesel driven engine should be provided with adequate permanent ventilation direct to the external air.

3 Petrol driven engines

A room containing a petrol driven engine should be provided with adequate permanent ventilation direct to the external air and must satisfy the provisions of the Petroleum (Consolidation) Act, 1928.

4 Liquified petroleum gas engines

A room containing a liquified petroleum gas engine should have:

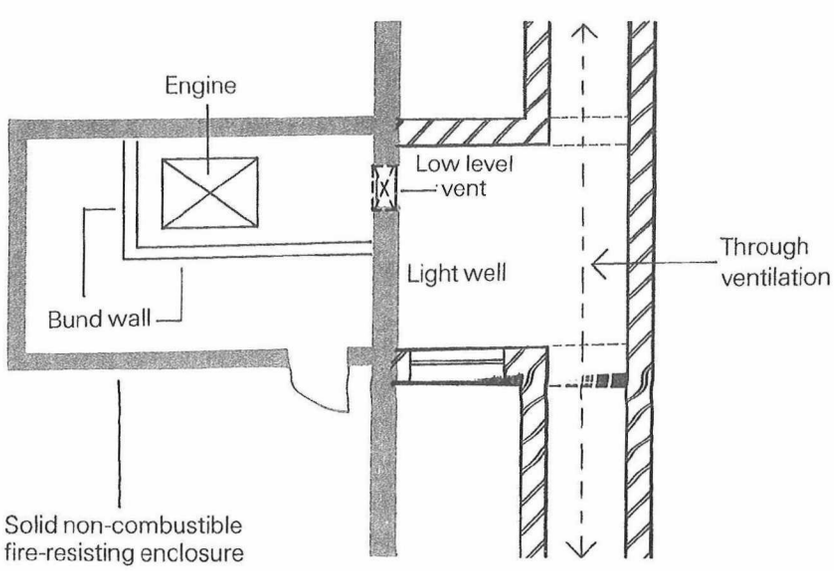
a the sill of any internal door raised 600 mm (2 feet) above the level of any floor of the room and the whole room should be ventilated **at floor level** by openings direct to the external air, or,

b the engines and any spare gas bottles (if permitted) enclosed by a bund wall generally 600 mm (2 feet) high within the room, each bund wall being ventilated **at floor level** direct to the external air.

c In either of the cases referred to above the ventilation openings should discharge well away from drainage or other manholes and in the case of large quantities of liquified petroleum gas the height of the sill and of the bund walls may need to be increased.

d Ventilation or other low level openings should not discharge into an internal court, lightwell or other enclosed space unless such court, lightwell or space is provided with good through ventilation at low level (see **Diagram 88**).

Diagram 88



Note: Any manholes,lantern lights etc., at base of light well require special consideration

5 Battery charging rooms

A battery charging room should be ventilated at high and low level direct to the outer air and should be arranged to provide about four air changes per hour.

6 Fuel stores

A fuel store should preferably be entered either direct from the external air or from the boiler chamber it serves.

7 Boiler chambers

Adequate ventilation for personnel and for the air supply for combustion purposes with all boilers working should be provided direct to the external air independent of any doorway required to be fitted with a **fire-resisting** door.

8 Transformer chambers, High voltage switch gear rooms and battery charging rooms

Transformer chambers, **high voltage** switch gear rooms and battery charging rooms should be imperforate from any garage or car park.

Note *Where boiler chambers and/or transformer chambers are located in a basement storey such storey should be provided with smoke outlets to the satisfaction of the Council.*

Part 11

Electrical and Mechanical Services

Part 11

Electrical and Mechanical Services

Introduction

The incidence of fires resulting from electrical causes is an increasing one and in order to combat this risk, it is essential that new installations should comply strictly with the standards set out in the Code. In this context, emphasis is placed on the need for periodic inspection of all existing installations, for the appropriate certificates to be rendered by competent engineers and for prompt remedial action when any defects are reported.
Similar safeguards relate to smoke detection and **safety lighting** control equipment which are an integral element for means of escape in case of fire. Much of this equipment is battery operated and the regular inspection and maintenance of the batteries and control devices is essential if their safety function is to be preserved. Where automatic start diesel generators are installed to supply essential services, the generator should be started by means of a simulated mains failure and be connected to the load at prescribed intervals (e.g., monthly).

Contents of this Part

11.01 Electrical installations generally

1 Electrical work generally should be in accordance with the current edition of the Regulations for the Electrical Equipment of Buildings, published by the Institution of Electrical Engineers.

2 Special considerations apply to certain circuits (e.g., fire alarm circuits, **safety lighting**, etc.) which will require:

a suitable segregation of the wiring from that of other circuits, and

b the use of an approved form of wiring which affords adequate protection against damage by fire or other causes.

3 In addition to the foregoing, installations in premises required to be licensed by the Council for entertainments should be in accordance with the Council's 'Places of Public Entertainment Technical Regulations' (Publication No. 0378X) obtainable from the Information Centre, Greater London Council, The County Hall (South Block), London SE1 7PB.

11.02 Artificial lighting

Adequate **artificial lighting** should be provided in all buildings of a sufficient standard to enable persons to move about within a building, to leave any part of a building and to reach a **final exit.** The lighting should be kept alight during the whole time it might be necessary for escape purposes.

11.03 Safety lighting generally

1 In addition to the artificial system of lighting, a safety system of lighting should be provided in the premises prescribed hereunder affording a level of illumination sufficient to enable persons to leave all parts of the premises without assistance from the **artificial lighting.** The safety system should be from a source entirely independent of the **artificial lighting** and should be arranged either:

a to come into operation automatically on the failure of the main supply (i.e., a non-maintained system); or

b to be kept operating at all times when natural light is insufficient for means of escape purposes (i.e., a maintained system).

2 The independent sources of lighting acceptable to the Council are:

a a central battery system either floating or trickle charged,

b individual battery-operated self-contained fittings,

Note *Any battery supplying* **safety lighting** *should be capable of maintaining the full* **safety lighting** *load continuously for a period appropriate to the use with a maximum period of three hours.*

c automatic start diesel engine-driven generator.

Note *Automatic starting should provide full* **safety lighting** *within a maximum period of fifteen seconds of the failure of the normal supply.*

3 Where specified it will be necessary to submit details of the various installations to the Council for its approval prior to any work being commenced.

11.04 Premises required to be provided with safety lighting

Safety lighting should be provided to all premises of the types described hereunder (including any external escape routes therefrom) other than in premises or on external escape routes which do not require the provision of **artificial lighting.**

1 All premises having staircases without natural lighting

Safety lighting should be provided throughout every staircase in all buildings (other than those having only a ground and first storey and not being a building requiring safety lighting by reason of its coming within the scope of any other category) including an 'EXIT' notice illuminated from the safety lighting system at the level of the discharge point from the staircase.

2 Places where people work (see **Part 4**)

In offices and factories, safety lighting would not normally be required (other than to staircases having no natural lighting) except in the case of:

a basements in which large numbers of persons are accommodated and irrespective of the number of persons accommodated, those in which the means of escape are not direct and immediately apparent to the persons accommodated.

b parts of buildings likely to be used for purposes other than their normal day-to-day use, e.g., staff canteens used for social functions.

3 Places where people resort (see **Parts 5 & 6**)

a Cinemas, theatres, concert halls, auditoria and other uses involving provision for a closely-seated audience.

Safety lighting should be provided throughout all portions of such premises used by the audience, including the escape routes therefrom, and to all escape routes used by the staff and/or performers.

b Dance halls

Safety lighting should be provided throughout all portions of the premises, including the escape routes therefrom, except in the case of premises sited wholly in the ground storey where less than one hundred persons are accommodated and where a sufficient number of approved exits are provided leading direct to a street or other approved dispersal space.

c Church halls, assembly rooms, school halls and lecture rooms (other than those premises coming within the scope of item 3(a) above).

Safety lighting should be provided throughout the premises, including the escape routes therefrom, except in the case of premises having only a ground storey where less than one hundred persons are accommodated and where a sufficient number of approved exits are provided leading direct to a street or other approved dispersal space.

Note *The installation of safety lighting in a school hall or lecture room within a school would not be required when such hall or lecture room was intended to be used only for the normal day-to-day purposes of a school.*

d Exhibitions (either in premises used solely for exhibition purposes or in premises used primarily for other purposes).

Safety lighting should be provided throughout the exhibition area including the escape routes therefrom, except in the case of such area being confined to a ground storey or part of a ground storey in which less than one hundred persons are accommodated and from which there are a sufficient number of approved exits leading direct to a street or other approved dispersal space.

Note *In storeys or floor areas above the ground storey, safety lighting to staircases and exits should be provided in all cases but would not be considered necessary within an exhibition area not exceeding 50 m² (500 square feet). Where, however, a number of exhibition areas discharge into the same common escape route, safety lighting of the escape route may be required.*

e Restaurants, banqueting rooms, public houses and premises used for similar purposes;

Safety lighting should be provided throughout the premises, including the escape routes therefrom, except in the case of a ground storey accommodating less than one hundred persons and from which there are a sufficient number of approved exits leading direct to a street or other approved dispersal space.

Note *In storeys above the ground storey,* **safety lighting** *of the staircases and exits would be required in all cases but would not be considered necessary within the designated area where such area did not exceed 50 m² (500 square feet). Where, however, a number of such areas discharge into the same common escape route,* **safety lighting** *of the escape route may be required.*

f Shops, supermarkets and departmental stores.

Safety lighting should be provided throughout the premises, including the escape routes therefrom, except that:

i **Safety lighting** would not be required within a ground storey sales floor not exceeding 280 m² (3000 square feet) in area, provided that the travel distance to an approved exit does not exceed 15 m (50 feet).

ii In a building not exceeding two storeys above the ground storey and having no sales floor exceeding 280 m² (3000 square feet) in area, **safety lighting** of the staircases would not be required where they are lighted naturally and where they are provided with a satisfactory degree of borrowed **artificial lighting** from a street.

4 Places where people sleep (see **Part 8**)

a Flats and maisonettes

Safety lighting would not normally be required other than in buildings provided with staircases without normal lighting (see item **11.04 1**) and in premises provided with means of escape not in normal use and with which occupants are unlikely to be familiar (e.g., roof escape, where permitted).

b Hotels and hostels

Safety lighting should be provided –

i in all staircases and corridors,

ii in all areas of assembly, e.g., restaurants, banqueting rooms, ballrooms, bars and lounges,

except where its omission is permitted by items **11.04 3(b), (d) & (e).**

Note *Consideration may be given to the omission of* **safety lighting** *in small premises having not more than one storey above the ground storey where the approach from bedrooms to a* **protected staircase** *is direct by way of a* **protected lobby** *or a short* **fire-resisting** *corridor and where the* **protected staircase** *and* **protected lobby**/*corridor are sited on an external wall and are suitably positioned so as to obtain a satisfactory degree of borrowed* **artificial lighting** *from outside the building. In such cases the provision of suitable electrical hand lamps may be accepted.*

5 Underground car parks (see **Part 9**)

a **Safety lighting** throughout the parking areas would not normally be required subject to the exits therefrom being provided with 'EXIT' notices illuminated from a **safety lighting** system and being clearly visible from all parts of the parking areas.

b **Safety lighting** should be provided in staircases serving –

i all car parks at a lower level than first basement, and

ii all car parks comprising more than one basement storey.

6 Generally

a Consideration may be given to the omission of **safety lighting** from portions of a building used only for dead storage, or in other premises where portions are used exclusively by members of the staff and where the escape routes and exits are clearly defined.

b In premises requiring **safety lighting,** which have a limited **floor area** and in which the **travel distance** does not exceed 15 m (50 feet) from any part to an approved exit, consideration may be given to provision of 'EXIT' notices illuminated by the **safety lighting** in lieu of full **safety lighting** requirements.

11.05 Fire alarm systems

Fire alarm systems should be provided in accordance with **Part 13** of this Code.

11.06 Mechanical ventilation and the control of smoke spread

1 In order to control the movement of smoke-laden air and to prevent as far as practicable it being carried into routes of escape, any system of mechanical ventilation should be designed to ensure that air quantities are so adjusted that the normal movement of air is directed away from **protected staircases,** exits and routes of escape.

2 **a** Where a system of mechanical ventilation is installed involving the recirculation of air, a smoke detector, in addition to those required for the protection of particular risks, e.g., computer suites, should be provided in the extract system ductwork at a point before the separation of the recirculated air. On operation, the detector should be capable of stopping the recirculation of air and, at the same time, should divert the extract air outside the building.

b in systems involving the recirculation of air and in other large mechanical ventilation installations, a means for the exclusive use of the fire brigade for the control of the ventilation system should be provided in a position to be agreed with the Council.

3 Electric motors and other electrical apparatus should be so constructed that any smoke caused by overheating could not be discharged in any position where it would be evident to the public or where it might jeopardise any route of escape.

Note *This would normally be achieved by any electrical plant and machinery being within a* **fire-resisting** *enclosure ventilated to external air.*

4 In certain cases full details of the installation will be necessary and the Council's approval obtained prior to the commencement of any work on site (see **Part 2** of this Code).

5 Special consideration will be necessary for any scheme incorporating the provision of pressurized staircases and/or lobbies as a means of protecting vertical escape routes. Research is still being carried out in this field and applicants should discuss their proposals with the Council's officers at an early stage before preparing detail **plans.**

Part 12

Construction and General Requirements

Part 12

Construction and General Requirements

Introduction

The constructional and general requirements contained in this Part of the Code of Practice are primarily concerned with the protection of planned escape routes from fire and/or smoke and with the safety of persons who may have cause to use them in the event of an outbreak of fire. They also seek to ensure that routes of escape, wherever provided, can be negotiated safely and without any danger to the occupiers or users of buildings. This Part should, therefore, be read in conjunction with the remaining Parts of the Code.

Attention is drawn to the need for ensuring that the buildings concerned are in conformity with the London Building Acts and the current London Building (Constructional) By-laws and any other relevant legislation (see **Part 1** of this Code of Practice).

Where alterations or extensions are intended to be carried out to existing buildings which do not themselves comply with the standards and requirements of this Part of the Code, particularly in regard to the fire separation between adjacent storeys or to the elements of construction required by the London Building (Constructional) By-laws, etc., it may be necessary either to provide the necessary protection or, where this might be impracticable, to require a higher standard of means of escape in case of fire.

Contents of this Part

12.01 Barriers, in places of assembly

1 Rigid check-barriers should not be provided across any gangway, route of escape or **final exit.**

2 Any rope barrier which may be provided should be fitted with automatic catches or slip connections, should be arranged so as not to trail on the floor when parted and the fittings should not project into the gangway or any route of escape or exit.

12.02 Borrowed lights

1 **a** Borrowed lights, fanlights and glazed partitioning should not be provided in the **fire-resisting** enclosures of a **protected staircase** which provides the only route of escape from a building.

b Any glazing in the doors affording access to such staircase should not exceed 0·4 m² (4 square feet) except that where a **protected lobby** or a **fire-resisting** corridor is provided between a **floor area** and the **protected staircase,** the area of glazing in the door(s) to the lobby and between the lobby or corridor and the staircase may be 1·1 m² (12 square feet) constructed in accordance with the current **building By-laws.**

2 **a** In a multi-staircase building no glazing should be provided in the **fire-resisting** enclosures of a **protected staircase,** except for a minimal quantity between the staircase enclosure and **a protected lobby** or **a fire-resisting** corridor.

b Any glazing in the doors affording access to a **protected staircase** should be only as described in **1**(**b**) above unless otherwise approved by the Council.

c Any glazing in a **fire-resisting** corridor serving a **dead end** should not extend below a height of 1·400 m (4 feet 6 inches) above the level of the floor.

12.03 Cupboards (within protected staircases and/or exitways)

1 In any building or part of a building provided with only one **protected staircase,** cupboards should not be provided within, or be entered from, the **protected staircase.**

2 Any space beneath a flight of stairs in a building provided with only one **protected staircase** should be sealed off by imperforate **fire-resisting** construction to prevent the space being used as a storage area or other purpose.

3 Elsewhere, cupboards within or entered from **protected staircases,** including the exitways leading to **final exits,** should be fully enclosed by **fire-resisting** construction. The **fire-resisting** doors thereto should be kept locked shut and should be permanently marked 'KEEP SHUT' (see item **12.12 4 (f)**) and no glazing should be provided within the **fire-resisting** enclosures.

12.04 Dispersal spaces

1 A **final exit** from a building should have direct access to a street, a passageway or an open space having direct access to a street, and should be so arranged as to ensure the safe and rapid dispersal of persons from the vicinity of a building so that they would no longer be in any danger from fire and/or smoke.

2 If the dispersal space is reached by a narrow passageway leading to a street there should be no openings in the enclosure of the passageway unless it is possible for persons to disperse in two opposite directions both of which should lead to a street or other acceptable place of safety.

3 Any private way or private open space forming part of an escape route should be under the control of the occupier of the premises but it need not be exclusive to the premises provided that the means of escape can be maintained at all times.

4 Adequate protection from vehicles and wheeled traffic, together with adequate means of illumination, should be provided to all dispersal areas (see **Part 11**).

12.05 Doors

1 Direction of opening

a Except as specified in (**f**) hereunder, doors and gates forming part ot a route of escape should be hung to open in the direction of escape clear of any steps, landings or the public way and should, where necessary, be recessed so that, when open, they do not obstruct the required width of any gangway, corridor, passageway, staircase, landing or other route of escape.

b In the case of a **final exit** door or gate, a landing not less than 900 mm (3 feet) in depth should be provided between the doorway or gateway opening and any step or steps. Similarly where any door or gate is at the head or foot of any steps, a landing as last described should be provided between the door or gate and the top step or bottom step or both as the case may be.

c Where doors on escape routes are permitted to open in both directions each door should be provided with a panel of clear glazing at sight level fo observation purposes of about 230 mm × 230 mm (9 inches × 9 inches) in area. If the doors are required to be of **fire-resisting** construction the glazing should be of clear **fire-resisting** quality.

d In buildings likely to be frequented by disabled persons in wheelchairs or in which they are employed, the bottom or lower edge of the clear glazing should be fixed at a height not exceeding 1 m (3 feet 3 inches) above floor level.

e In Places of Assembly and similar occupations, unless otherwise permitted by the Council, exit doors and gates used by the public should be hung in two leaves of equal width.

f Where a doorway or gateway is not likely to be used by more than 20 persons, the doors or gates fitted therein may open inwards.

Note *In special circumstances where the fire hazard is considered to warrant it, exit doors may be required to open in the direction of escape irrespective of the number of occupants (e.g., cellulose spraying booths).*

g In exceptional circumstances where the Council permits any door or gate used by more than 20 persons to open inwards, it should be so arranged tha it can be locked back in such a manner so as to require a key to release it and, when locked back, it does not form an obstruction or reduce the required width of exit.

h In Places of Assembly, any door or gate, other than a door or gate likely to be used by the public, which opens into a gangway, passage, staircase or corridor should be so hung that it can be closed by a stream of persons passing it in the direction of exit. Any such door or gate should be rendered **self-closing**, should be so arranged as not to interfere with exit or other doors and should normally be provided with an observation panel.

2 Revolving doors, sliding doors, iron doors and steel roiling shutters

a Revolving doors

Revolving doors should not be provided on escape routes unless side-hinged doors of adequate width and opening in the direction of escape are provided immediately adjacent to the revolving doors, and a permanent notice worded 'FIRE EXIT' or 'EXIT' (see items **12.12 2** (**a**) or (**b**)) should be provided over doors.

b Sliding doors

Sliding doors may be permitted on parts of routes of escape which would

normally be used by not more than 20 persons, such as in factories, warehouses or similar premises, where a particular use may necessitate the provision of such doors, and in such cases they should be marked 'SLIDE TO OPEN' and be provided with a direction arrow indicating the direction of opening (see item **12.12 4(k)**).

c Rolling steel shutters, iron doors and collapsible gates

Rolling steel shutters, iron doors and collapsible gates on escape routes should be kept in the open position during the time the building is occupied.

3 Wicket doors

Full size wicket doors should be provided in large sliding doors and in large rolling shutters on escape routes and such doors should be clearly defined and be permanently marked 'FIRE EXIT' (see item **12.12 2(a)**).

4 Electro-magnetic and automatic doors

See item **12.08 3.**

5 Fire-resisting doors

Except in the case of doors to hotel bedrooms and doors to and within dwellings (including flats and maisonettes), **fire-resisting** doors should be marked with a permanent notice 'FIRE DOOR—KEEP SHUT' in 5 mm ($\frac{1}{4}$ inch) plain letters.

12.06 Ducts, chutes and dust chambers

1 Services and other similar ducts in **protected staircases** and in **fire-resisting** enclosures to escape routes should be enclosed with **fire-resisting** construction. Doorways and access panels thereto should not be provided within nor approached from the staircase of a building provided with only one **protected staircase;** elsewhere any access doorway or panel thereto should be provided with doors or shutters of **fire-resisting** construction which should be either fixed in position or, if hinged, kept locked shut.

2 Dust chutes should:

a be separated from **protected staircases** and escape routes by, and enclosed with, **fire-resisting** construction,

b be provided with adequate smoke outlets at the top direct to external air, and

c have openings sited in well ventilated positions satisfactory to the Council, fitted with close-fitting metal hoppers arranged to close automatically after use.

3 Dust chambers should be approached only from the external air or be otherwise sited in well ventilated positions satisfactory to the Council. They should not be approached direct from any **protected staircase** or other route of escape, should be enclosed with **non-combustible fire-resisting** construction and the doors thereto should be kept locked shut and be provided with a permanent notice marked 'KEEP SHUT' in 50 mm (2 inch) plain letters.

12.07 Escape routes

1 The floors of gangways, corridors, lobbies, landings and passages forming part of escape routes should have non-slippery even surfaces.

2 Lobbies, corridors, passageways, etc. forming part of an escape route should have a clear headroom of not less than 2·060 m (6 feet 9 inches) measured vertically from the level of the floor and there should be no projection from any wall (except normal handrails), ceilings, or false ceilings below this height which would impede the free flow of persons using it (for staircases see item **12.17 4 (e)**).

12.07 cont.

3 **a** Where the Council is prepared to accept a route of escape on to the roof of a building and thence on to the roof of an adjoining building from which there is access to a staircase or other satisfactory route leading to a **final exit,** the access to the roof should be by way of a staircase and a dormer doorway, and

b the route from one building to the other should be by way of flat roofs at the same level, but consideration would be given to other means satisfactory to the Council.

12.08 Fastenings to doors

1 **a** Requirements as to lock fastenings and availability of doors may vary according to the statutory needs of the legislation involved, e.g. Factories Act 1961, Offices, Shops and Railway Premises Act 1963, Fire Precautions Act 1971, but generally, whilst premises are occupied by persons, the doors to any doorways through which a person may have to pass to reach a **final exit** (including the door thereto) should not be locked or fastened in such a manner that they cannot be opened easily and immediately on the way out. Where fastenings are fitted to doors or gates external to the building, they should be of a strong type and the working parts should be of metal not liable to corrosion.

b Doors on escape routes (other than those which are required to be kept free from fastenings or which are required to be provided with a special type of fastening, e.g., panic bolts) should be provided only with simple fastenings which are clearly visible and are located on the side from which escape is required; such fastenings should be of a type that can be operated easily and immediately without the use of a key (e.g., lever handled latches, night latches or barrel bolts) fixed on the face of the door at a height within normal reach.

2 Panic bolts

a In Places of Assembly and in premises where a large number of the public are likely to be accommodated, all doors and/or gates required for means of escape should be kept free from fastenings other than panic bolts or such other fastenings as may be approved by the Council.

b Panic bolts should be without sharp projections and should be of such a pattern that normal horizontal pressure on the cross bar if on a single leaf door or on either cross bar if on double leaf doors, will open the doors. The cross bars should be placed at a height of not less than 900 mm (3 feet) and not more than 1·050 m (3 feet 6 inches) from the floor, and when required by the Council, the doors should be permanently marked 'PUSH BAR TO OPEN' in 25 mm (1 inch) plain letters in a conspicuous position.

c Where panic bolts are fitted to external gates they should be of a strong type and the working parts should be of metal not liable to corrosion.

d Exit doors from Boiler Chambers and such other ancillary accommodation (see **Part 10**) as the Council may require should be fastened only with panic bolts or simple lever handled fastenings.

3 Electro-magnetic door holders, cabin hooks, etc.

a Any door which is required to be **self-closing** must not be fitted with cabin hooks or other devices for holding it open without the approval of the Council. Except in the case of doors to **protected staircases,** consideration would be given to the use of satisfactory electro-magnetic door holders.

b Automatic doors

Automatic doors to exits should incorporate adequate fail-safe measures and should be capable of being opened manually in the direction of escape upon the failure of the automatic action.

4 Security arrangements

Where it is necessary to provide additional security, consideration will be given to the following fastenings for this purpose:

12.08 cont.

a In certain classes of buildings where it is considered necessary to provide additional security when the premises are not occupied, extra fastenings to doors may be by way of:

i key-operated locks, provided that arrangements are made to ensure that the doors are unlocked during the time the building is occupied, or,

ii hasps and staples, or security bars, provided that they are locked in the open position or removed during the time of occupation.

In either of the above cases a permanent notice worded **'THIS DOOR TO BE KEPT UNLOCKED WHEN PREMISES OCCUPIED'** in 10 mm ($\frac{1}{2}$ inch) plain letters should be provided adjacent to such doors in a conspicuous position.

b Where it is desired to provide security arrangements to doors required to be kept free from fastenings or where doors are provided with panic bolts only, removable fastenings or chains may be used in which case a board should be provided at a central location point (e.g., porters or managers office) upon which all such fastenings should be hung on named hooks in order to facilitate checking when the premises are in use.

c Where doors are only used for escape purposes or for obtaining ingress to an adjoining building and the means of escape is not primarily for persons who resort to the premises (see **Parts 5 & 6**), the following arrangements for fastening doors may be used, provided that such doors can be opened immediately and easily by any person on his way out:

i a lever handle, or latch or a night latch contained in a box glazed with thin clear glass or

ii any patent catch operated by breaking a glass cover or seal which has been approved by the Council,

iii a panel of thin clear glazing not less than 230 mm x 230 mm (9 inches x 9 inches) through which can be seen the fastening on the opposite side of the door and which can be operated immediately and easily when the glass is broken.

d Any of the above fastenings may be arranged to operate a burglar or fire alarm system if required, but a person should not have to operate more than one of these fastenings in order to leave the premises.

12.09 Gas meters

1 Gas meters should not be installed within a **protected staircase** or other route of escape required to be enclosed with **fire-resisting** construction which provides the only means of escape from a building or part of a building, except that a gas meter may be installed within the entrance hall of a flat or maisonette or within the staircase of a single family dwelling house where such installation conforms with item **2** hereunder.

2 Any gas meter and its connection installed elsewhere within a **protected staircase** or other route of escape required to be enclosed with **fire-resisting** construction should:

a be **fire-resisting** when tested in accordance with BS. 4161 : Part III : 1968, or

b be housed within a compartment of **fire-resisting** construction, or

c be connected to a service pipe which incorporates, in a position adjacent to the meter, a thermal cut-off device designed to cut off automatically the flow of gas in the event of the temperature exceeding 95°C (203°F).

12.10 Ladders, sloping and vertical

1 Step ladders

Step ladders may be permitted as an upward alternative means of escape where the number of persons who would use the escape is less than 30 and where they do not exceed more than one storey in height. Such ladders should be

12.10 cont.

constructed of **non-combustible** material and should be fixed at an angle not steeper than 60° to the horizontal. They should be provided with flat treads 130 mm (5 inches) in depth fixed not more than 200 mm (8 inches) apart.

2 Vertical ladders

Vertical ladders may only be permitted in exceptional circumstances (e.g., factories, gantries, etc.) where a very small number of able-bodied men are involved. They should be constructed of **non-combustible** material and shouid be not less than 460 mm (1 foot 6 inches) wide fixed 100 mm (4 inches) clear of the face of the wall securely in position and should have flat treads 50 mm (2 inches) wide. Suitable hand strings should be carried up to provide hand-grips. Landings should be provided when vertical ladders exceed 6 m (20 feet) in height and where they exceed 9 m (30 feet) in height they should be enclosed with metal guards but these would only be permitted in buildings or associated plant where their use is customary (e.g., power stations).

12.11 Lift shafts and lift motor rooms

Note *Lifts do not form any part of means of escape and should never be used for the evacuation of persons under fire conditions because of the danger of their being trapped should the electricity supply fail.*

1 Lift motor rooms

Preferably lift motor rooms should be located at the top of the lift shaft. They should be enclosed by and separated from the lift shaft by **fire-resisting** construction which should be imperforate from the shaft, except for the minimum size openings necessary for the passage of the requisite wires and cables.

2 Lift shaft enclosures

a Lift shafts should be enclosed generally by **non-combustible fire-resisting** construction except where they are contained wholly within a **protected staircase** and the lift motor room is located at the top of the shaft.

Note *Attention is drawn to Section 48(4) of the Factories Act 1961 which requires all lifts and hoistways to be enclosed by* **fire-resisting** *material.*

b *i* All internal linings (other than doorway linings) to the lift shaft should be of **non-combustible** construction.

ii All external linings to the lift shaft where located within a **protected staircase** should be in accordance with item **12.15** of this Part of the Code of Practice.

3 Lift shafts which are not required to be provided with **non-combustible fire-resisting** enclosures (see **2**(*a*) above) should be protected throughout their height by substantial wire grilles or similar construction so arranged as to prevent any person coming into contact with the moving parts of the lift or from falling down the shaft.

4 Smoke outlets

a A smoke outlet not less than 0·1 m² (1 square foot) in area delivering direct to the open air and fitted with an open metal grille or widely spaced louvres should be provided at or near the top of each lift shaft enclosed with solid construction.

b Where practical construction difficulties arise, consideration would be given to the omission of the smoke outlet to a lift shaft which does not connect with more than three storeys.

5 Automatic control

a Doors, shutters or gates to lift shafts (other than those to hand-operated lifts or hoists) should be fitted with automatic control so as to ensure that they cannot be opened except when the lift cage is opposite to the particular opening it is serving.

12.11 cont.

b Doors, shutters or gates to hand-operated lifts should be kept closed when not in actual use and a permanent notice 'KEEP SHUT' in 5 mm ($\frac{1}{4}$ inch) letters should be provided thereon.

6 Fire lifts

Where fire lifts are required under Section 20 of the London Building Acts (Amendment) Act 1939, they should be constructed in accordance with the standards contained in the Council's 'Code of Practice for Buildings of Excess Height and/or Additional Cubical Extent' – Publication No. 0542 1 obtainable from the Information Centre, Greater London Council, The County Hall (South Block), London SE1 7PB.

7 Lifts for stretcher cases

In buildings having any storey at a greater **height** than 18 m (60 feet) above the level of the footway, consideration should be given to the provision of one of the lifts being of sufficient size to accommodate a stretcher. The minimum dimensions for this purpose where direct access is at right angles to the entrance to a lift are 2·360 m (7 feet 9 inches) by 900 mm (3 feet).

12.12 Notices

1 General

a Unless otherwise permitted all notices in connection with means of escape in case of fire which are required to be provided throughout buildings should be in clearly legible letters.

b The colouring of the lettering should be distinctive against its background.

c All exit notices should be sited in conspicuous positions over or adjacent to exit doors or openings; directional signs and notices should be provided and sited, where necessary, to indicate the route of escape to a **final exit.**

d In Places of Assembly and in premises where people resort (see **Parts 5** and **6**) all 'EXIT' notices described in item **2** below should be clearly visible when either the **artificial** or **safety lighting** is in use and unless otherwise permitted by the Council, no other notice should be incorporated in or form part of such notice.

2 Exit notices

The following notices should be used where specified:

a 'FIRE EXIT' or 'EMERGENCY EXIT'

This notice should be used in offices, factories, warehouses and similar users, retail shops, departmental stores, supermarkets, hotels, hostels, schools, colleges and other similar residential users.

b 'EXIT'

This notice should be used in places of public assembly, theatres, cinemas and similar premises except that 'EMERGENCY EXIT' may be used in similar situations to the 'EXIT' notice where the exit is not intended for general use by the assembly but solely as an exit in case of an emergency.

c 'TO FIRE EXIT', 'TO EMERGENCY EXIT' or 'TO EXIT'

This notice should be used either with or without a directional arrow as the case may be to indicate the route to a storey exit which may not be visible from any part of a storey, corridor, room, etc.

3 Standard sizes for exit notices

The sizes of the letters of exit notices referred to in item **2** above should be appropriate to the circumstances and the distance from which they are required to be visible, but unless otherwise stated in an approval they should be in accordance with the following:

12.12 cont.

a Not less than 125 mm (5 inches) in all premises involving members of the public and where a notice must be seen at a distance greater than 25 m (80 feet).

b Not less than 75 mm (3 inches) for situations where a notice must be seen at a distance between 15 m (50 feet) and 25 m (80 feet).

c Not less than 50 mm (2 inches) for situations where a notice must be seen at a distance less than 15 m (50 feet).

4 Other notices

The following notices are indicative of the types and sizes of lettering that should be adopted unless otherwise required or approved by the Council and they should be provided in the positions detailed in the approval of the Council:

a 'FLAMMABLE MATERIALS', 'FLAMMABLE LIQUIDS', 'HIGHLY FLAMMABLE', 'NO SMOKING'
in 25 mm (1 inch) letters

b 'FIRE DOOR – KEEP SHUT', 'FIRE PRECAUTIONS – KEEP SHUT'
in 5 mm ($\frac{1}{4}$ inch) letters.

c 'FIRE PRECAUTIONS – KEEP UNOBSTRUCTED'
in 10 mm ($\frac{1}{2}$ inch) letters.

d 'IN CASE OF FIRE ESCAPE TO ADJOINING BUILDING IS AVAILABLE FROM TOP STOREY'
in 5 mm ($\frac{1}{4}$ inch) letters.

e 'IN CASE OF FIRE BREAK GLASS AND TURN HANDLE'
in 10 mm ($\frac{1}{2}$ inch) letters.

f 'KEEP SHUT'
in 5 mm ($\frac{1}{4}$ inch) letters.

g 'NO GOODS TO BE STORED OR PLACED IN THIS SPACE'
in 10 mm ($\frac{1}{2}$ inch) letters.

h 'PRIVATE', 'PRIVATE – TO ROOF ONLY'
each in 10 mm ($\frac{1}{2}$ inch) letters.

j 'PUSH BAR TO OPEN'
in 25 mm (1 inch) letters.

k 'SLIDE TO OPEN'
in 50 mm (2 inches) letters (depending on location of door).

l 'STAIRCASE AND EXIT TO BE KEPT CLEAR OF GOODS AND OTHER OBSTRUCTIONS'
in 10 mm ($\frac{1}{2}$ inch) letters.

m 'THIS DOOR (OR GATES) TO BE SECURED OPEN (KEPT UNLOCKED) WHEN THE PREMISES ARE OCCUPIED'
in 10 mm ($\frac{1}{2}$ inch) letters.

n 'TO BE CLOSED AT NIGHT AND IN EMERGENCY'
in 5 mm ($\frac{1}{4}$ inch) letters.

5 Places of assembly and other public buildings

a in the auditorium of a theatre, cinema or any other premises where the general lighting may be dimmed or extinguished while the public are on the premises, the 'EXIT' notices should be illuminated internally and should conform with British Standard 2560: 1954 or be of a self-luminous type in accordance with British Standard 4218: 1967.

b Any door or opening, other than an exit, which leads to portions of the premises accessible to the audience, should have a conspicuous notice indicating the use of such portions.

c Any door not usable by the public should be similarly indicated as in (**b**) above or should be marked 'PRIVATE'. Such doors should not resemble exits and the notices should not be illuminated internally. The words 'NO EXIT' or 'NO WAY OUT' should not be provided.

12.13 Obstructions

Clear gangways should be kept and maintained from all parts of each storey or floor up to and between staircases and exits.

12.14 Openable windows and/or loading doors

1 In buildings permitted to have only one protected staircase and elsewhere as may be required by the Council a portion of the windows facing, and accessible to fire brigade ladders from, a public way, street, thoroughfare or open space in all storeys, should be capable of being opened within 300 mm (12 inches) of the sill level for emergency purposes. The opening portion should be of a size sufficient to enable a full-sized person to pass through and should be kept free of all obstruction (including bars).

2 No bars or other security barriers should be provided across windows and/or doors in any building without first obtaining the approval of the Council.

3 Loading doorways may be utilised instead of openable windows in which case:

a the doors thereto should be kept unobstructed so that they can be opened readily from the inside in an emergency, and

b the openings should be securely fenced to a height of 1·050 m (3 feet 6 inches) above floor level and should be provided with a secure hand hold on each side, and

c the fencing should be kept in position except when loading operations are being carried on.

12.15 Partitions, linings and surfaces to walls, partitions and ceilings

NOTE Attention is directed to the construction of partitions, wall and ceiling linings, false ceilings, etc., required in buildings coming within the scope of Section 20 of the London Building Acts (Amendment) Act 1939 full details of which are contained in the Council's Code of Practice for 'Buildings of Excess Height and/or Additional Cubical Extent' – Publication No. 0542 1 obtainable from the Information Bureau, The County Hall, SE1 7PB.

1 In buildings provided with only one **protected staircase,** the whole of the construction within the **protected staircase,** together with any linings and surface finishings thereto including those to lobbies and corridors, should be of **non-combustibie** materials except for handrails and normal paint finishes (other than nitro-cellulose or similar highly flammable coatings) or other decorative combustible finishings not exceeding 1 mm (1/25 inch).

2 In buildings having two or more **protected staircases,** the wall and ceiling linings, surface finishings and false ceilings (other than doorway linings) should be constructed :

a in accordance with item **12.15 1** above where in a **dead-end,** and

b where in staircases, lobbies and corridors should be of :

i **non-combustible** material, or

ii a combustible material (other than nitro-cellulose or similar highly flammable coatings) not exceeding 1 mm (1/25 inch) in thickness applied direct to a **non-combustible** surface, or

iii a combustible material exceeding 1 mm (1/25 inch) in thickness but not exceeding 13 mm (½ inch) in thickness which when tested in accordance with British Standard 476: Part 7: 1971 is classified Class 1 for surface spread of flame and is inherently throughout its thickness of no greater flammability

12.15 cont. than its surface and is applied direct to a **non-combustible** backing (see also item **5.12** – **Part 5** of this Code).

3 In all cases no cavities should be formed behind linings except where the lining and its supports are entirely **non-combustible.**

Note *Linings and surface finishings, etc., in other parts of a building are dealt with, where necessary under the various parts of this Code of Practice depending upon its use.*

4 Additional partitioning or high fittings should not be erected in any storey unless the approval of the Council has been first obtained.

12.16 Ramps

1 A ramp, including the floor of any corridor or passageway, which affords a means of escape should not, unless otherwise specified, be inclined at a gradient steeper than 1 in 10* to the horizontal and no steps should be introduced throughout its length. Ramps should be protected at the sides and level landings should be provided at the top and bottom of a ramp and at any intermediate position where an exit doorway opens on to it.

***Note** The gradient may need to be 1 in 12 in the interests of disabled persons (see item* **1.11**).

2 Where a sloping corridor or passageway leads direct to the top of a staircase or direct from the bottom of a stairway, the corridor or passageway should be level for a distance not less in length than the width of the corridor or passageway, from the top step or the bottom step as the case may be.

12.17 Staircases

1 Construction

Notwithstanding the requirements of the By-laws or any other legislation staircases in all Places of Assembly and in premises frequented by a large number of the public should be constructed of **non-combustible** material.

2 Measurement of width

The width of a staircase and any landing should be measured between :

a the finished surface of walls when enclosed on each side with walls, or

b the finished surface of the wall and the inner side of the balustrade when a wall is provided on one side only, or

c the inner surface of the balustrades when balusters are provided on both sides;

whichever the case, the width should not be decreased by the introduction of projections other than the required handrails (see item **12.17 5**)

3 Treads and risers

a The going of all staircases should be uniform throughout.

b Otherwise than in Places of Assembly treads should be not less than 240 mm (9½ inches) measured on plan between nosings, and the vertical rise should be not more than 190 mm (7½ inches),

c In Places of Assembly and in places where large numbers of the public resort, the treads should be 280 mm (11 inches) exclusive of nosings, and the vertical rise should not be more than 150 mm (6 inches).

Provided that in promises where the accommodation does not exceed 100 persons staircases used by the public may have treads not less than 250 mm (10 inches) wide, exclusive of nosings, and vertical risers not exceeding 190 mm (7½ inches) high and where the accommodation does not exceed 50 persons the treads and risers may be as described in item **3**(**b**) above.

12.17 cont.

d Where open risers are provided the nosings of each tread should overlap the back of the tread beneath to a depth of 25 mm (1 inch).

4 Flights of stairs

a Stairs should be arranged in straight flights without winders, should consist of not more than sixteen risers and there should be no fewer than three risers to a flight.

b In Places of Assembly and in other buildings where large numbers of people resort there should be not more than two successive flights without a turn and if there are more than twelve steps in a flight there should be not more than one flight without a turn.

c Landings should be provided at the top and bottom of each flight of stairs and the depth of a landing between flights of stairs should be not less than the width of the flight which serves them.

d The floors of landings and the treads of steps and stairs should have non-slippery and even surfaces.

e Staircases and landings should have a clear headroom of not less than 2·060 m (6 feet 9 inches) measured vertically from the nosings of treads or the floor of the landing and there should be no projections from the walls or soffits into the required width below this height (other than handrails) which may impede the free flow of persons using them.

f Metal steps and landings, where permitted, should be of solid or perforated plate; if perforated, openings should not exceed 20 mm ($\frac{3}{4}$ inch) in width and treads and landings should be provided with 40 mm (1 $\frac{1}{2}$ inches) deep solid nosings. If constructed of slats or bars, no slat or bar should be more than 12 mm ($\frac{1}{2}$ inch) apart.

Risers, when provided, should be solid or of closed pattern. When risers are not provided, the nosing of each tread should overlap the back edge of the step beneath to a depth of 25 mm (1 inch) unless a raised lip 20 mm ($\frac{3}{4}$ inch) high is provided along the back edge of each tread.

g Any space beneath a flight of stairs in a building provided with only one **protected staircase** should be sealed off by imperforate **fire-resisting** construction to prevent the space being used as a storage area or other purpose.

5 Handrails

a Every flight of stairs should be provided with a handrail on each side except that where the width of a staircase is less than 1·100 m (3 feet 7 inches) a handrail need only be provided on one side of the staircase.

b Handrails should be securely fixed at a height of not less than 840 mm (2 feet 9 inches) nor more than 1 m (3 feet 3 inches) measured vertically above the pitch line (i.e., a notional line which connects the nosings of all treads in the flight).

c Handrails should be continued round landings as necessary; should not project on to the required width of a staircase for more than 75 mm (3 inches) and all projecting ends of handrails should be protected so as to avoid injury to persons descending a staircase.

d Generally, a staircase of greater width than 1·800 m (5 feet 11 inches) should be designed in flights of 'double' width and a central handrail should be provided to each flight. Each section of each flight should be not less than 1·100 m (3 feet 7 inches) wide (i.e., 2·200 m (7 feet 2 inches) between enclosing walls and/or balustrades).

6 Balustrading and other similar protection

a Exposed edges of staircases, landings, balconies, flights of steps (including those leading from a **final exit** to street level), open wells and any escape route external to the building, should be protected by suitable balustrading.

b Unless otherwise permitted balustrading should be constructed of **non-combustible** material and should be not less than 1·050 m (3 feet 6 inches) in height in the following situations:

12.17 cont.

i where next to an open well or void extending through more than one storey in **height** and exceeding 600 mm (2 feet) in width, or

ii where next to areas of glazing or light-weight panels in external walls, or

iii where used externally, or

iv in places of assembly or in buildings where large numbers of persons resort.

In situations other than those stated above, the balustrading should be not less than 900 mm (3 feet) in height (see also item **12.17 7(b)** hereunder).

c The height of the balustrading should be measured perpendicularly from the centre of the treads or from the level of the landings, etc., to the upper surface of the balustrading.

d Unless the balustrading is of solid construction for its whole height, the space between vertical and/or horizontal balusters should not normally exceed 100 mm (4 inches).

7 Additional requirements for external staircases and other external routes of escape

a External staircases, gangways, balconies and other external routes of escape where permitted, together with all necessary supports and protection thereto, should be constructed of **non-combustibie** materials.

b Any external staircase, gangway, balcony or other acceptable external route of escape exceeding 15 m (50 feet) above ground level should be constructed with solid treads, solid risers and solid balustrading which should be not less than 1·200 m (3 feet 11 inches) in height.

c Any glazing within 1·800 m (6 feet) of an external staircase, gangway or balcony or other acceptable route of escape and also within 9 m (30 feet) vertically below any part thereof should be of **fire-resisting** quality in frames fixed shut, except that where any window is required to open statutorily for ventilation purposes it should be arranged as a bottom hinged opening inwards hopper light with metal side baffles.

d Doorways to external staircases from all storeys below topmost storeys should be provided with **fire-resisting self-closing** doors and where necessary the doors should be recessed so that they open clear of steps and landings. Any recesses so formed should be enclosed with **fire-resisting** construction carried up from floor to ceiling or the recess should be ceiled over with similar material.

The floors within recesses should be of **non-combustible** material of an appropriate standard of **fire-resistance.**

e External staircases, where permitted, should be protected against the weather, e.g., snow and ice.

8 Spiral staircases

Spiral staircases may be permitted as an alternative means of escape in special circumstances where a small number of persons is involved. They should not exceed 9 m (30 feet) in height, should be not less than 1·500 m (5 feet) in diameter and should be provided with adequate headroom, continuous handrails and protection. Such staircases should be constructed of **non-combustible** material unless otherwise approved by the Council.

12.18 Warm air heating units

a Oil-burning air heaters (other than for domestic purposes)

Full details regarding oil-burning air heaters are contained in an Information Sheet issued by the Council and can be obtained from the Greater London Council, Building Regulation Division, Middlesex House, 20 Vauxhall Bridge Road, SW1V 2SB.

b Domestic warm-air heating units

Full details regarding domestic warm-air heating units are contained in an Information Sheet issued by the Council and can be obtained from the address referred to in item **12.18(a)** above.

Part 13

Fire Alarm Systems, Fire Appliances and Access for Fire Brigade Appliances

Part 13

Fire Alarm Systems Fire Appliances and Access for Fire Brigade Appliances

Introduction

This Part of the Code is concerned with the provision of early warning in the event of fire, fire-fighting equipment and access paths to buildings for fire brigade vehicles and appliances.

The provision of these facilities is mandatory under certain of the legislation concerned with fire precautions and means of escape in case of fire but where this is not so they should always be incorporated and allowed for at the design stage. This is particularly relevant in the case of new buildings before they are occupied.

New buildings are dealt with under Section 34 of the London Building Acts (Amendment) Act 1939 and unless the building concerned is one which is also subject to control under Section 20 of the same Act – in which case conditions requiring these facilities will form part of the approval – recommendations may be made for their inclusion.

It should be appreciated that once a completed building is occupied certain of these facilities will become mandatory under other legislation e.g. the Factories Act, 1961, the Offices, Shops and Railway Premises Act, 1963 and the Fire Precautions Act 1971. There are also special provisions in this connection for premises to be licensed for entertainment.

Contents of this part

13.01 Fire alarm systems

1 General

A fire alarm system should

a be readily available at all times;

b have means of actuating the alarm sited in a position where it is capable of operation without exposing any person to undue risk;

c incorporate an alarm signal which should be distinctive so that it will not be confused with any other sound;

d be clearly audible* throughout the building (see also item **2** below) and

e be installed in accordance with the requirements of BS. CP. 1019: 1972.

***Note** *Audible alarms should not be provided in premises used by a closely seated audience for stage plays, films, concerts, boxing, wrestling or in clubs, restaurants and dance halls where considerable loose seating is provided, or in large exhibition halls. Such cases require special consideration and each case is dealt with according to circumstances.*

2 Manual/Electric system

A manual/electric system is usually set in motion by the operation of a break-glass release-button call point. When the glass is broken the alarm sounds by electrical means, to give a clear and continuous warning throughout the building. It may, in certain circumstances operate signal lights together with sounders.

Power supplies for such systems may be:

a dry cell batteries in the form of self-contained units;

b public electricity mains supply through a separate mains switch fuse; or

c secondary battery, maintained in an adequately charged condition so that in the event of a mains failure the system will continue to operate.

Systems (**a**) and (**b**) are suitable only for buildings requiring less than six call points. In the case of buildings subject to statutory control, approval to the proposed system should be obtained from the appropriate authority.

3 Two-stage systems

a In certain situations, e.g. high office blocks and hotels, where an adequate degree of compartmentation and **fire resistance** is provided it may be considered that only parts of a building may need to be evacuated immediately, for instance, the floor on which a fire occurs and the floor next above. In such cases a two stage alarm system is desirable.

b This system enables a preliminary warning, by way of an intermittent signal (known as the 'ALERT') to be given for 30 seconds, followed, when necessary, by an 'EVACUATION' alarm, which is a continuous signal, for the evacuation of the whole building, or for various sectors of the building or for individual floors of the building. It may provide for a phased evacuation of a building.

c The system necessitates priority telephone communication between all floor levels and a permanently manned control point, e.g. telephone switch room equipped with an indicator board.

4 Communication systems (internal automatic telephone)

a In a building, in single occupation, having an internal automatic telephone system and a switchboard continuously staffed, the telephone system may be used as a means of indicating an alarm of fire by dialling a pre-determined number to reach a separate instrument installed in the permanently manned position.

b A warning system would be necessary in order to alert the occupants and this would normally be in the form of conventional electric alarm sounders in

13.01 cont.

circuit with a switch operated manuaiiy on the receipt, by telephone or a fire call, of a notification of any emergency.

Note i *This type of system would need careful consideration to ensure that it would always be operative in the circumstances appertaining to the building and would necessitate a sufficient number of telephones with all wiring adequately protected.*

ii *The system may also be adapted to provide a two-stage alarm.*

13.02 Call points

a Call points should normally be sited adjacent to each storey exit or in each staircase enclosure adjacent to the downward flights at each floor level. They shouid be sited in similar positions at each floor level with additional points as necessary so that no persons would have to travel more than 30 m (100 feet) to operate the alarm from any part of the building.

b The method of actuation and the tone of signal should be uniform throughout the premises.

13.03 Automatic fire alarms

1 General

The value of an automatic fire alarm system lies in its ability to detect and give warning of fire in its incipient stage.

It is particularly valuable when a building is unoccupied and for protecting parts of buildings such as stock rooms and other risk areas which are visited only occasionally. It is of importance in buildings such as hotels where there is a greater danger to life from an outbreak of fire occurring while people are asleep and in unfamiliar surroundings.

2 The system of automatic fire alarms

a A system of detectors operated by heat or smoke (automatic call points) is installed and linked into the manually operated electrical fire alarm system.

b Where the alarm is a two stage system, the circuit should be so arranged that the operation of any one detector will actuate the alarm signal in the same way as the call points.

c Smoke detectors should normally be used except in areas such as kitchens and boiler chambers where smoke may be present under normal conditions; in these cases heat detectors should be installed.

13.04 Fire instructions and fire drills

1 Fire instructional notices should be displayed in the building to ensure that staff and visitors are made fully aware of the procedure to be adopted in the event of fire.

2 The notices should normally be situated:

a adjacent to each fire alarm call point; (Procedure in the event of fire)

b by the telephone switch board; (Instructions for calling the Fire Brigade)

c in the bedrooms of hotels, hostels and similar occupancies; (Individual instructions for guests).

Note *Specimens of notices can be obtained from the Council's Building Regulation Division, Middlesex House, 20 Vauxhall Bridge Road, SW1V 2SB or from the Fire Prevention Branch; London Fire Brigade, Albert Embankment, SE1 7TJ.*

3 All staff and employees should be sufficiently practised in fire drills so that they are acquainted with the appropriate action to take in an emergency. This is

particularly necessary in premises where the public are involved but it should be carried out in all types of buildings.

Note *Advice and guidance on fire drills can be obtained from the Fire Prevention Branch, London Fire Brigade, Queensborough House, Albert Embankment, SE1 7TJ.*

13.05 Portable fire fighting equipment

1 General

Portable fire fighting equipment is such as can be used by the occupants of a building before the arrival of the fire brigade and includes hydraulic hose reels and portable fire extinguishers.

Where suitable pressure can be obtained hydraulic reels are to be preferred for the following reasons:

a they can be operated easily by one person without training or undue exertion;

b they are less likely to failure than extinguishers and require a minimum of attention;

c they produce a continuous jet of water whereas the discharge from a portable extinguisher is limited;

d although the initial cost of installation is high they are an economical form of protection because maintenance and replacement costs are lower than for portable extinguishers.

2 Hydraulic hose reels

a Hydraulic hose reels should only be sited in staircases in very exceptional circumstances.

b They should be positioned on the floor areas at points not more than 3 m (10 feet) from storey exits and, provided a reel gives full coverage, one would suffice for each floor.

c The associated tubing should consist of 19 mm ($\frac{3}{4}$ inch) nominal bore non-kink rubber hose fitted with a 4·76 mm (3/16 inch) shut off type nozzle and should not normally exceed 30 m (100 feet) in length.

d Reels should be installed so that the centre of the reel is not more than 1·100 m (3 feet 7 inches) above the level of the floor but in exceptional circumstances or where the reel at this height would form a serious obstruction in gangways, corridors, etc., consideration would be given to the reel being installed at any height not exceeding 2·300 m (7 feet 6 inches) to the centre of the reel, provided that the hose drum is fitted with a device to prevent the tubing from jamming when in use.

e The nozzle when housed and the supply valve to the reel should be conveniently sited for easy operation.

3 Water supply to hydraulic hose reels

a The hose reels should be connected to a mains supply which will maintain a minimum flow of 138 litres (30 gallons) per minute and a running pressure of not less than 2·07 bar (30 lb per square inch) at the highest reel. Where less than three reels are provided however a flow of 92 litres (20 gallons) per minute for two hose reels and 46 litres (10 gallons) for one hose reel will suffice.

b Where an adequate working pressure is not available from the mains supply, two electrically operated booster pumps, either of which should be capable of maintaining the supply, should be provided, preferably to run in tandem to ensure that the installation will be kept in commission if one pump is out of action for any reason.

c The pumps, which should be connected to a separate electrical sub-circuit, should come into operation automatically when a reel is operated.

d The Water Undertaking will not normally accept boosting direct from the mains and will therefore require the provision of a break-tank. Such tanks should have a minimum capacity of 1130 litres (250 gallons) and be filled automatically through a supply pipe having an internal diameter of at least 38 mm (1 ½ inch).

e Pipes supplying hose reels should not be less than 38 mm (1 ½ inch) bore except that, in the case of installations comprising only one or two reels, a 25 mm (1 inch) pipe would normally be adequate.

f All hose reels should be tested once a year to check that they are in working order and produce a satisfactory jet of water.

4 Portable fire extinguishers

a The minimum provision of portable fire-extinguishers should be one 9 litre (2 gallons) capacity water-type extinguisher in accordance with either British Standard 138: 1948 or British Standard 1382: 1948, for each 210 m² (250 square yards) of **floor area,** with not less than two extinguishers per storey.

b They should be sited in prominent positions on the **floor area** adjacent to a storey exit or within staircases so that any person can reach an extinguisher, attack the fire and still be certain that there is a clear exit route behind him.

c No person should have to travel more than 30 m (100 feet) to reach a portable fire extinguisher.

d All similar types of portable extinguishers in a building should be of the same method of operation.

Note *Other types of portable extinguisher may be needed for special purposes, e.g.,*

i *foam extinguishers for flammable liquid risks such as in kitchens, or*

ii *carbon dioxide extinguishers for electrical risks.*

13.06 Automatic sprinkler installations

1 The provision of an automatic sprinkler installation is strongly recommended in buildings or parts of buildings used for storage, trade and manufacture (and would in fact be required for such buildings coming within the scope of Section 20 of the London Building Acts (Amendment) Act 1939 and also in parts of buildings licensed for Entertainment, e.g. throughout the stage area of premises having a separated stage, storage areas, etc.), as this form of protection would ensure the automatic detection of a fire in its early stages, would deliver water to the seat of the fire, would give an alarm outside the building and could be arranged to give simultaneous alarm to the Fire Brigade or to an approved alarm station.

2 The installation of a sprinkler system should be in accordance with CP. 402.201: 1952 and with the appropriate rules of the Fire Offices Committee.

13.07 Access for public fire brigade vehicles

1 Adequate means of vehicular access for fire fighting purposes by the Fire Brigade should be provided to all buildings.

2 The extent and the siting of the access depends upon a number of factors such as the use, size and height of the building, and also whether dry or wet rising mains are provided. Care should be taken to see that appropriate widths and heights of access to courtyards, etc., are adequate.

3 Guidance on this aspect can be obtained from the Fire Prevention Branch, London Fire Brigade, Queensborough House, Albert Embankment, SE1 7TJ; a detailed Information Sheet (FP/GEN/20 (Rev. 1)) covering these aspects is available on request.

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