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Foreword

Taking the right kind of precautions against fire can mean the difference between life and death. That is why each one of us should do what we can to protect ourselves and other members of the community against the dangers of fire.

Advice has been published in recent years on fire safety in a wide variety of premises such as hotels, guesthouses, places of assembly and so on. I am very pleased to add to that advice with this Guide on fire safety in flats.

I would strongly urge persons in control of such premises or persons living in them to study the recommendations in the Guide and to implement them. I have no doubt but that by taking action on these lines, they will be helping to protect themselves and others from the terrible consequences of fire.

In the preparation of the Guide, valuable assistance has been given by

Mr. A. McCarthy, Chief Fire Officer, Waterford County Council
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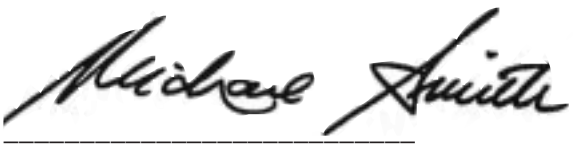
Mr. B. Power, Assistant Fire Adviser, Department of the Environment

I am glad to have the opportunity of publicly recording my thanks to them for their assistance and hard work.



Michael Smith, T.D.,
Minister for the Environment,
July, 1994

Chapter 1
Introduction

I. I REASON FOR THIS GUIDE

Section 18 (2) of the Fire Services Act, 1981, places a duty on persons having control over premises used for the provision of sleeping accommodation to take all reasonable measures to:

"guard against the outbreak of fire on such premises", and "ensure as far as is reasonably practicable the safety of persons on the premises in the event of an outbreak of fire".

Section 18 (3) of the Fire Services Act, 1981, places a duty on every person on such premises to conduct himself in such a way as to:

ensure that as far as is reasonably practicable any person on the premises is not exposed to danger from fire as a consequence of any act or omission of his".

This guide is published to assist persons referred to in these sections of the Fire Services Act, 1981, in discharging their statutory responsibilities for flats.

In many cases, duties under these sections of the Act may be shared. The building owner, the building manager, the caretaker, the owner or tenant of a flat could be the 'person in control', depending on individual circumstance, or tenancy agreements. Likewise, 'persons on the premises' could include flat occupants, caretakers, visitors, maintenance personnel, etc.

1.2 INTERPRETATION

Users of the guide are advised that the interpretation and application of the technical recommendations of the guide should be entrusted to suitably qualified and competent persons. The recommendations contained in Chapters 5, 6 and 7 in particular are of a technical nature. They are primarily intended to be used by advisers to the persons having control over premises containing flats, and by officers of fire authorities.

It is recognised that, as there are many types of flats and as there are differences in the types of buildings containing flats, there is likely to be a need for flexibility in the implementation of the guide's recommendations in particular cases.

Accordingly, it is emphasised that the guide's recommendations are not statutory requirements and that the document's provisions are an aid to, and not a substitute for, professional judgement and common sense.

This guide refers to a number of technical standards and codes of practice. It is important for users of the guide to refer to the latest edition of a standard or code, together with the latest published amendments.

The diagrams in this guide are not drawn to scale. They are intended to illustrate points under discussion relating to means of escape and should not be interpreted in any other way.

1.3 PRINCIPLES OF FIRE SAFETY

The fire safety principles on which the guide is based are adopted primarily to protect life. These principles may be summarised as follows:

(i) avoidance of outbreaks of fire;

(ii) provision of escape routes which are protected from fire and smoke to allow occupants to leave the building safely;

(iii) early detection of fire and early warning to occupants to facilitate safe evacuation;

(iv) early suppression of fire, where this is feasible;

(v) limitation of the development and spread of fire;

(vi) containment of fire and smoke to the room or flat where the fire originates; and

(vii) management of fire safety.

The provisions of this guide, if correctly and carefully applied, should minimise the occurrence of fires and the potential for fatalities and injuries, and should also limit property losses resulting from fires.

1.4 LEGAL PROVISIONS

The primary legislation relating to fire safety in buildings in Ireland is the Fire Services Act, 1981, and the Building Control Act, 1990, and regulations made under these Acts. Copies of these Acts and Regulations may be purchased from the Government Publications Sale Office, Sun Alliance House, Molesworth Street, Dublin 2.

The recommendations in this guide are advisory, and compliance with them does not confer immunity from legal obligations under the Acts and Regulations referred to above, or any other legal instrument.

THE FIRE SERVICES ACT, 1981

This Act makes provision for the establishment of fire authorities and the organisatimi of fire services and for fire safety, fire fighting, the protection and rescue of persons and property, and related matters. The main provisions of the Act, as it relates to flats, are set out in Appendix A.

THE BUILDING CONTROL ACT, 1990

The Building Control Act, 1990, provides for matters relating to the construction, alteration, extension or change of use of buildings. The Building Regulations, 1991, set out the requirements, including fire safety requirements, to be observed in the design and construction of certain buildings. The Building Control Regulations, 1991, prescribe certain procedures to be observed in relation to the design and construction of certain buildings, including application for fire safety certificates and notice of commencement of works. The fact that works may be carried out in accordance with this guide or to achieve the standards of fire safety recommended in this guide does not, of course, exempt such works from the requirements of Building Control legislation, references for which are in Appendix B.

Chapter 2
Scope and Application

2.1 SCOPE OF THE GUIDE

This guide addresses the protection of life from fire in existing flats and buildings containing flats. It discusses and makes recommendations on building layout, construction, fire protection facilities, fire safety management and other measures to minimise the danger to life from fire.

The recommendations on fire safety management apply to all flats and buildings containing flats.

The remaining recommendations, including those on means of escape, structural fire precautions and building services are intended to apply to flats and buildings containing flats which were constructed or converted to flats prior to the coming into operation of the Building Regulations, 1991.

2.2 PREMISES TO WHICH THE GUIDE APPLIES

Subject to paragraph 2.1 this guide applies to:

(i) existing buildings containing flats only;

(ii) buildings containing one or more flats and one or more non-residential uses (mixed-user buildings).

2.3 APPLICATION OF THE GUIDE

The guide is intended to apply to a range of existing premises and buildings of varying sizes. Factors such as the number of floors, type of construction, type and extent of internal linings, and building layout affect life safety and, consequently, the level of fire protection required in a particular case. The guide sets out general principles of safety which should be applied having regard to the individual circumstances of each premises, rather than a set of rules. In each case, it is necessary to analyse,

- the effects of a fire occurring in any flat, or in other parts of the building;
- the danger that this poses to life safety; and
- the fire protection provided in the premises

Maximum benefit will be obtained only when the recommendations of the guide as a whole are applied as part of a comprehensive approach to fire safety.

Persons having control over buildings containing flats, and persons living in flats, are urged to review the fire safety of their premises by reference to the recommendations in this guide. In many cases, persons concerned will have been fully aware of the need for precautions against fire and will have taken action to ensure fire safety by measures of the type recommended in this guide, or their equivalent. Some of the recommendations (e.g. fire safety management measures) are unlikely to involve significant additional expenditure. It may be, however, that in relation to some premises, major investment would be necessary to immediately implement all, or some, of the guide's recommendations. In those cases, it is recommended that immediate steps be taken to draw up a programme for the elimination of deficiencies on a planned basis. Such a programme should identify the deficiencies and determine priorities for the programme, with a view to achieving a structured remedying of deficiencies within the shortest time scale possible.

During the interim period, while the programme is being implemented, special precautions should be taken in regard to fire safety in the building or flat so as to achieve a satisfactory overall standard.

Should the situation so warrant, due to unacceptable fire safety deficiencies, the premises should cease to be used as a flat until an adequate level of fire protection is in place.

2.4 EQUIVALENT FIRE SAFETY

Guidance contained in this document with respect to the use of a particular material, method of construction, standard or other specification does not preclude the use of any other suitable material, method of construction, standard or specification which would achieve an equivalent level of fire protection.

The methods used to demonstrate equivalency should be based on fire safety engineering principles and the

application of professional judgement. Guidance on the use of a fire safety engineering approach is contained in Technical Guidance Document B and the Supplement to that document, published under Article 5 of the Building Regulations, 1991.

Chapter 3
Definitions

The following expressions, where they are used in the guide, have the meaning asslgned to them in this chapter, unless otherwise stated in the text.

ACCESS LEVEL: a level used for normal access to the building or part of a building that either incorporates, or leads directly to, a place of safety.

ALTERNATIVE EXIT: one of two or more exits leading to an escape route, each of which is separate from the other.

BASEMENT STOREY: a storey, the floor of which is situated at such a level or levels that some point on its perimeter is more than 1.2 m below the level of the finished surface of the ground adjoining the building in the vicinity of that point.

BEDSITTER, BEDSIT: a flat consisting of a single room on one level.

CAVITY: any space enclosed by the elements of a building, including a suspended ceiling, or contained within an element other than a room, cupboard, circulation space, protected shaft or the space within a flue, chute, duct, pipe or conduit.

CAVITY BARRIER: construction provided to close a cavity or other concealed space against penetration of smoke or flame or provided to restrict the movement of smoke or flame within such a space.

CIRCULATION SPACE: a space, mainly used as a means of access or egress, between any room in a flat and the flat entrance door and from any flat entrance door to the final exit from the building, including corridors, lobbies and stairways.

DUCT: an enclosed space provided for the distribution of services in a building and includes a ventilation duct.

ESCAPE ROUTE: a route by which a person may reach a place of safety, and in relation to any point in a building, a route from that point to a place of safety.

FINAL EXIT: the termination of an escape route from a building giving direct access to a place of safety, such as a street, passageway, walkway or open space sited so as to ensure the rapid dispersal of persons from the vicinity of a building, or so that they are no longer in danger from fire, smoke or collapse of the building or its elements.

FIRE DOOR: a door, together with its frame and ironmongery, as installed in a building, which is intended to resist the passage of fire and/or gaseous products of combustion, and which is capable of meeting specified fire performance criteria.

FIRE HAZARD: the potential for loss of life or injury in the event of fire.

FIRE PROTECTION: design features, forms of construction, components, systems or equipment in a building, provided to reduce the fire hazard to persons and property by detecting, extinguishing or containing fire.

FIRE-RESISTING CONSTRUCTION: construction which is intended to meet specific test criteria under specified fire exposure conditions for a specified duration, e.g. elements of structure, fire -doors (chapter 6).

FIRE RISK: the probability of a fire occurring.

FIRE STOPPING: a seal provided to close an imperfection of fit or design tolerance between elements, components, or construction in a building so as to restrict the penetration of smoke and flame.

FLAT: a separate and self-contained premises for residential use, separated horizontally from and forming part of a larger building, having all its rooms at one level or, in the case of a split-level flat, not more than half a storey height apart.

GALLERY: any intermediate level between the floor and ceiling of a room.

GROUND STOREY: a storey, the floor of which is situated at such a level or levels that any given point on its perimeter is at, or about, or not more than 1.2 m below, the level of the finished surface of the ground adjoining the building in the vicinity of that point. Where the access to a building is by way of a single flight of external stairs comprising not more than 10 risers, the storey corresponding to the access level may be regarded as the ground storey.

HABITABLE ROOM: any room in a flat, with the exception of any kitchen, utility room, bathroom, or toilet.

HIGH FIRE RISK AREA: a room or space which, because of its contents or the activity carried on therein, poses an increased risk of fire occurring, or a danger of a more severe fire.

INNER ROOM: a room from which escape is possible only by passing through another room.

LOWER-GROUND STOREY: storey below the ground storey which is not a basement storey.

MIXED-USER BUILDING: a building which contains a flat or flats and one or more non-residential uses in one or more storeys.

PLACE OF SAFETY: a place in which persons are in no danger from fire.

PROTECTED ENTRANCE HALL a circulation area consisting of a hall or space within a flat enclosed with fire resisting construction (other than any part which is an external wall of a building).

PROTECTED LOBBY/ CORRIDOR: a circulation area consisting of a lobby or corridor enclosed with fire-resisting construction and forming part of an escape route, or affording additional protection to an escape route.

PROTECTED ROUTE: an escape route which is enclosed by fire resisting construction (other than any part which is an external wall of a building) and which leads to a final exit.

PROTECTED SHAFT: a shaft which enables persons, air or things to pass between different compartments, enclosed by fire resisting construction.

PROTECTED STAIRWAY: a stairway, including any hall or space between the foot of the stairs and the final exit, which is adequately protected from fire in the accommodation through which it passes by fire-resisting construction and discharges through a final exit to a place of safety.

SERVICES: installations for the introduction into, and distribution within, a building or structure of water, air, gas, liquid fuel, electricity, telecommunications, heat or other sources of energy and installations for fire protection.

STOREY: any of the parts into which a building is divided horizontally above or below ground level but excluding any structure situated above the level of the roof or in the roof-space, or below the level of the lowest floor, which is intended for the protection of a water tank, or lift motor room, or similar use and is not used for habitable purposes or as a store room. The storey height of a building is the number of storeys, including the ground storey, which are above the ground level.

STOREY EXIT: a final exit or a doorway giving direct access to a protected stairway or external escape route.

TRAVEL DISTANCE: the actual distance to be travelled by a person along an escape route. Note: recommendations for maximum travel distances may apply to travel within a flat and from a flat entrance door to a storey exit.

Chapter 4
Management of Fire Safety

4.0 FIRE SAFETY MANAGEMENT: GENERAL

Persons in control of buildings which contain flats are required to take all reasonable measures to prevent the occurrence of fires and to ensure as far as is reasonably practicable the safety of the occupants in the event of fire occurring on these premises. Occupants of flats also have responsibilities in relation to fire safety. The effects of the fire protection recommendations contained in this guide can be completely negated if persons in control or occupants are unaware of the significance of the precautions, of their own role with regard to fire prevention, and of the appropriate action to take in the event of fire. The following sections provide guidance for the fire safety management of flats.

4.1 MAINTENANCE OF ESCAPE ROUTES

In the event of an outbreak of fire persons in flats should be able to evacuate the premises by routes safe from fire and smoke and free from obstruction. This can be achieved only if escape routes are unobstructed, if fire-resisting doors are kept closed, and if exit doors are readily usable at all times. Escape routes should be inspected on a regular basis. If an obstruction is noticed in the escape route, then it should be removed immediately and steps taken to prevent a recurrence. It is recommended that prominent prohibitory signs should be erected at points where problems can occur in this regard, such as at the bottom of stairway enclosures or in common areas. The following precautions should be taken:

- all escape routes should be unobstructed and immediately available for use at all times;

- all signs on escape routes should be clearly visible and adequately illuminated;

- escape routes should not be used for storage;

- upholstered furniture should not be provided in corridors or within stairway enclosures;

- all doors on escape routes should be capable of being readily and easily opened at all times;

- curtains, drapes or hangings should not be placed across or along an escape route in a manner which would impede or obstruct escape;

- floor coverings, rugs and mats should not present a slip or trip hazard in the escape routes;

- fire doors on escape routes should be kept closed unless they are fitted with automatic hold-open devices (6.8);

- external areas at or near exits should be kept clear, so as to allow the unimpeded escape of persons in the building, in the event of an outbreak of fire, to a place of safety.

4.2 INSPECTION AND MAINTENANCE OF FIRE PROTECTION EQUIPMENT

The safety and protection of persons in flats in the event of an outbreak of fire will depend greatly on the effective functioning of fire protection equipment, such as fire detection and alarm systems, emergency lighting systems and first aid fire-fighting equipment. In many buildings, a high degree of reliance may be placed on such “active” fire precautions, and, in consequence, a high level of responsibility rests with persons in control to ensure that such equipment is inspected and maintained to the highest standards.

To ensure effective functioning, all fire protection equipment should be inspected on a regular basis by competent persons. All such inspections, any faults or deficiencies found, and corrective action taken, should be recorded in a fire safety register (4.3).

In addition to regular inspections, it is essential that fire protection equipment be maintained and serviced at recommended intervals, in accordance with the appropriate standards, and be recorded in the fire safety register.

Maintenance contracts should be arranged with competent companies or persons.

4.3 FIRE SAFETY RECORDS

A fire safety register (see Appendix F) should be maintained as a complete record of all fire safety matters on the premises. The following information should be recorded in the fire safety register:

- the name of the building owner and his agent or management company;

- the date of each test or inspection of the emergency lighting system, fire detection and alarm system, first aid fire fighting equipment and the actions taken to remedy any defects found;

- the date of each inspection of the building services (electricity, gas, and heating system) and the actions taken to remedy any defects found.

4.4 FURNISHINGS

The flammable properties of furnishings are important in determining the ease with which fire can start and also its rate of development. New and second-hand upholstered furniture is required to be resistant to small ignition sources, such as a cigarette or match, and its sale is controlled by the Industrial Research and Standards (Fire safety) (Domestic Furniture) Order, 1988 (S.I. No. 336 of 1988). Care should be taken not to allow ignition sources to come into contact with flammable furnishings and fittings.

Floor coverings in corridors and stairways forming part of the common means of escape from flats should have "a low radius of effects of ignition" when tested in accordance with BS 4790 and assessed according to BS 5287.

4.5 FIRE FIGHTING EQUIPMENT

First-aid fire fighting equipment can make a valuable contribution to containing and extinguishing fire, depending on the capability of the user.

It is recommended that the kitchen area of each flat should be provided with a fire blanket complying with I.S. 415: 1988. The blanket should be properly secured and clear instructions on use should be provided.

Where provided, fire extinguishers should be suitable for the type of fire likely to occur. Portable fire extinguishers should conform with I.S. 290 and be installed, inspected and maintained in accordance with the recommendations of I.S. 291.

4.6 LAYOUT DRAWING

A drawing of each floor should be displayed inside the entrance door to each flat, showing all escape routes from the building.

4.7 FIRE PREVENTION

Fire prevention measures are a key element in the fire safety management of flats. This involves the identification and elimination of potential fire hazards both inside and outside the building, and the establishment of good house-keeping practices. Persons in control and occupants should be familiar with the leaflet "Fire Safety In Bedsits, Flats and Apartments" issued by the National Safety Council. The following fire prevention measures are recommended for all buildings containing flats:

DISPOSAL OF WASTE: arrangements should be made for the collection and removal of waste material/refuse at regular intervals. Pending removal, waste should be stored in suitable containers at a designated location, away from sources of ignition. Waste containers should never be stored in escape routes.

BUILDING SERVICES: the services in a building can cause or contribute to fire and arrangements should be made for regular checking of the electrical, gas installations and heating systems in the building. Inspection and maintenance of the electrical and gas installations and heating systems in flats are discussed in chapter 7 of this guide and should be recorded in the fire safety register.

RENOVATION AND MAINTENANCE WORK: building work, decorating and maintenance can also give rise to an increased risk of fires. The nature of any proposed work in or around a premises should be considered and be supervised by a competent person to ensure that safe systems of work are followed, especially if hot-processes are to be used. Escape routes should not be blocked. Access by the occupants to areas of work should be restricted. Where work involves removing or switching off fire protection facilities, alternative arrangements to maintain safety levels should be made. Hazardous equipment and materials should be removed from the building at the end of each working day, and a final check should be made to ensure that no fire danger remains after work finishes.

FIRE DOORS: fire resisting doors are a critical part of the fire defence system in flats. Occupants should be made aware of the vital role of fire doors, and of the importance of not holding them open by wedging or.other means. "FIRE DOOR - KEEP SHUT" signs should be displayed on all such doors.

4.8 FIRE SAFETY AND SECURITY

Security arrangements are required to prevent access to premises by intruders. However security measures should not compromise fire safety in the building - see Section 5.5.5.

4.9 ADVICE TO OCCUPANTS OF FLATS

For fire precautions to be effective, occupants of flats should be familiar with the role they have to play. Fire safety and the actions to be taken in the event of a fire occurring must be clearly understood. Occupants should familiarise themselves with fire protection facilities which are provided in the building, including the safe use of fire fighting equipment.

Occupants should ensure that the batteries in self-contained battery operated smoke alarms are replaced, when required.

4.10 INFORMATION

Occupants should be provided with a copy of the leaflet "Fire Safety in Bedsits, Flats and Apartments" issued by the National Safety Council (Appendix E)

A notice, including a floor plan and containing the following information, should be displayed in each flat:

- the action to be taken in the event of fire; the action to be taken on discovering a fire or hearing the fire alarm; and

- the procedure for calling the fire brigade.

The following information should also be provided on the floor plan of the building, as appropriate:

- the location of all relevant escape routes from the building;

- the location of fire alarm call points and fire alarm control panel;

- the location of fire fighting equipment;

- the location of the nearest telephone. Where this is in the building a notice on the procedure for calling the fire brigade should be displayed near it.

Chapter 5
Means of Escape

5.0 MEANS OF ESCAPE: GENERAL

It is essential that escape routes are available to enable the occupants of a building to reach a place of safety, and that they are adequate and capable of being safely and effectively used in the event of an outbreak of fire.

This chapter provides guidance for means of escape in existing buildings containing flats, within the scope outlined in Chapter 2.

Subject to certain exemptions, new buildings, extensions to buildings, material alterations of buildings and buildings which are subject to a material change in the purpose for which they are used are required to comply with Part B (Fire) of the First Schedule to the Building Regulations, 1991 (see Appendix B). B I of the First Schedule contains the requirements of the Building Regulations in relation to means of escape in case of fire. The requirement is that "a building shall be so designed and constructed that there are adequate means of escape in case of fire from the building to a place of safety outside the building, capable of being safely and effectively used."

Technical Guidance Document B (Fire) provides guidance on how to satisfy the fire requirements of the Building Regulations. Additional guidance is contained in the supplement to Technical Guidance Document B, Application to Existing Buildings. Paragraph 1.1 of Technical Guidance Document B refers to BS 5588: Part 1:1990, Fire precautions in the design, construction and use of buildings, Part I: Code of practice for residential buildings. Additional general provisions for means of escape are contained in Section 1.4 of Technical Guidance Document B.

The essential requirements for means of escape in the event of an outbreak of fire are the same for all buildings, whether they are newly constructed or are existing. While it is desirable that all flats should comply with the standards applicable to new buildings, in many existing buildings this may not be practicable in some respects. This is particularly the case in buildings which were constructed or converted to flats prior to the introduction of the Building Regulations. In these situations, compensating fire safety provisions are required to ensure an equivalent level of fire safety. The nature and extent of such provisions will depend on the circumstances of each particular case, but are likely to include both active and passive measures. Active provisions are those which come into action on detection of fire e.g. fire detection and alarm system, while passive provisions relate to the defence against fire provided by the fabric and construction of a building.

5.1 CRITERIA FOR MEANS OF ESCAPE

The major hazards which fire poses to life safety are large quantities of heat, smoke and associated gases produced by the combustion of materials. These can travel considerable distances through a building, especially vertically. They may reduce visibility, make movement difficult or impossible, and trap people in a burning building.

A fire can occur in any part of a building. Where a fire occurs in a flat, it will initially affect the occupants of that flat. It is necessary to facilitate escape from that flat to an escape route which leads to a place of safety outside the building.

A fire in a flat may develop to a stage where the occupants of other flats, in the same building, will be affected. It is therefore also necessary to provide facilities to protect the escape routes of all occupants of the building, from their flat entrance door to a place of safety, outside the building.

5.2 ESCAPE ROUTE DESIGN

For the purpose of design, means of escape can be subdivided into three basic stages, as follows:

Stage I — Escape within a flat to the flat entrance door.

Stage 2 — Horizontal escape from the flat entrance door to a storey or final exit, or to a protected stairway, or protected corridor and/or protected lobby to a protected stairway.

Stage 3 Vertical escape by way of a protected stairway to a final exit leading out of the building at ground level or access level.

The following sections provide guidance for these three stages in the means of escape from flats. In some small buildings, it is possible that stages 2 and 3 will be combined.

Guidance for the internal layout of flats is contained in 5.3.

Guidance on horizontal and vertical escape routes from flats is contained in 5.4. Guidance for small buildings which may be served by a single protected escape stairway is contained in 5.4.1 and 5.4.2. For situations in buildings other than those which may be served by a single protected stairway it will be necessary to refer to BS 5588: Part I: 1990 or other appropriate guidance.

5.5, 5.6 and 5.7 are applicable to means of escape generally.

5.3 INTERNAL PLANNING OF FLATS

A fire in a flat will pose immediate danger to the occupants of that flat. The conditions which threaten life safety can develop rapidly and the time available for safe evacuation may be very limited. It is therefore necessary to provide:

(i) early warning of the occurrence of a fire in the flat, see Section 5.6.1;

(ii) limits to the distance to be travelled from any point in the flat to the flat entrance door; and

(iii) an internal layout of the flat which will facilitate the escape of the occupants, having regard to the likely points of origin of a fire.

These provisions relate to the stage I of the escape route design (5.2).

The flat entrance door provides access to the horizontal and vertical components of the means of escape, leading to a place of safety, outside the building.

There are two principal ways of providing safe escape routes in a flat:

- provide escape from all habitable rooms by way of a protected entrance hall, within which no likely source of fire exists, and limit the travel distance along the hall; or

- limit the travel distance from any point in the flat to the flat entrance door.

Where it is not possible to meet either of the above criteria, it will be generally necessary to provide an alternative escape route from each flat or from habitable rooms in flats.

Some flats, particularly where there is a high ceiling, may incorporate galleries providing sleeping accommodation. Persons in such flats are subject to additional risk from fire and special provisions will be necessary for them (5.3.5).

Sections 5.3.1, 5.3.2, 5.3.3,. 5.3.4 and 5.3.5 provide guidance for the provision of means of escape within individual flats, for the more common situations. Alternative solutions to those presented here may be acceptable, where these can be shown to provide an equivalent level of fire safety.

5.3.1 FLATS PROVIDED WITH AN INDEPENDENT EXTERNAL ENTRANCE AT THE GROUND OR LOWER-GROUND STOREY

These flats should be so planned that any habitable room is not an inner room, unless that room is provided with a door, or a window complying with 5.3.6, for escape or rescue purposes.

5.3.2 FLATS OTHER THAN THOSE TO WHICH PAR 5.3.1 APPLIES SITUATED AT THE GROUND STOREY OR NOT MORE THAN ONE STOREY ABOVE THE GROUND STOREY

In these flats:

(a) any habitable room should not be an inner room; and

(b) bedroom doors should be nearer to the flat entrance door than the kitchen or living-room doors.

Alternatively to (a) and (b) above, all habitable inner rooms should be provided with an alternative means of escape, or window complying with 5.3.6, for escape or rescue purposes.

5.3.3 FLATS SITUATED AT TWO OR MORE STOREYS ABOVE THE GROUND STOREY

The internal layout of these flats should comply with one of the following:

(i) there should be a protected entrance hall within the flat, which serves all habitable rooms, planned so that the travel distance from the flat entrance door to the door of all habitable rooms does not generally exceed 9 m (see diagram l);
or

(ii) the travel distance from the flat entrance door to any point in any of the habitable rooms should not generally exceed 9 m and the kitchen should be located so as not to endanger the escape route from any point in the flat and a bedroom should not be an inner room (see diagram 2);
or

(iii) there should be an alternative exit from the flat and where habitable rooms do not have direct access to the entrance hall, fire-resisting construction should separate the living and sleeping accommodation and the alternative exit should be located in the part containing the bedrooms (see diagram 3).

Where a flat is entered from the floor below the flat, the travel distances indicated above are measured to the head of the stairway (see diagram 4A) and where entered from the floor above the flat, an alternative exit should be provided from the lower floor level (see diagram 4B).

5.3.4 FLATS SITUATED AT BASEMENT OR LOWER-GROUND STOREYS

In these situations, the following provisions are applicable (see diagram 5):

(a) flats should not be so planned that any habitable room is an inner room unless that room is provided with a door or a window complying with 5.3.6, for escape or rescue purposes;

(b) a basement or lower-ground floor flat that is not provided with its own external entrance should have an alternative exit, located in the part of the flat containing the sleeping accommodation;

(c) the stairway connecting a basement or lower-ground storey flat to the ground storey should be separated from the stairway serving the upper storeys of the building by means of 60 minutes fire-resisting construction and self-closing fire doors (FD3OS) at ground and basement or lower-ground floor levels.

5.3.5 FLATS WITH GALLERIES

All of the following provisions are applicable to flats with galleries:

(a) the main level of the flat should be planned in accordance with the principles outlined in 5.3.3 above (see diagrams l, 2 or 3);

(b) unless the cooking area is enclosed with fire-resisting construction, any cooking facilities in a room containing a gallery should be remote from the stairs to the gallery and positioned so as not to endanger escape from the gallery;

(c) the distance between the foot of the access stairs to the gallery and the flat entrance door or a door leading to a protected entrance hall should not exceed 3 m.;

(d) an alternative exit should be provided from a gallery if the travel distance from the head of the access stairs to the gallery to any point in the gallery exceeds 7.5 m (see diagram 6).

5.3.6 WINDOWS FOR ESCAPE OR RESCUE PURPOSES

In the limited situations where a window may be used for escape or rescue purposes, it should comply with the following:

- have an unobstructed opening that is at least 850 mm high X 500 mm wide;
- enable the person escaping to reach a place of safety;
- the bottom of a window opening should be not more than 1100 mm and not less than 600 mm above the floor;
- where an escape window is a "dormer" type window or roof window, the distance from the eaves of the roof to the bottom of the opening section should not exceed 1.5 m.

5.4 ESCAPE FROM FLATS: HORIZONTAL AND VERTICAL ESCAPE ROUTES

In many buildings within the scope of this guide it is likely that a fire within any flat, or other area, will spread to affect other parts of the building and will require the evacuation of the entire building. It is therefore necessary to provide early warning of an outbreak of fire and to protect the escape route from each flat entrance door to a place of safety outside the building.

The horizontal component of this escape route, from a flat entrance door to a protected stairway, is the stage 2 referred to in 5.2 above, while the vertical component, comprised of one or more protected stairways, is stage 3. The protection of escape routes from the effects of fire is achieved by means of fire-resisting construction to corridors, lobbies and stairway enclosures and fire doors, as appropriate.

Automatic fire detection and emergency lighting are generally required in stage 2 and stage 3 escape routes (5.6 and 5.7).

It is important that there is an adequate number of protected stairways having sufficient capacity to evacuate the occupants quickly and safely from the building in the event of an outbreak of fire. In larger buildings, a number of protected stairways is likely to be required. However, in many buildings within the scope of this guide, a single protected stairway may be adequate (5.4.1 and 5.4.2). For situations that differ from those described in 5.4.1 or 5.4.2, it will be necessary to refer to the provisions of BS 5588: Part I: 1990, or other appropriate guidance.

5.4.1 SMALL BUILDINGS WITH A SINGLE ESCAPE STAIRWAY

Some buildings, because of their limited size and height, may not require more than one protected stairway for the purpose of means of escape. The following provisions are applicable to small buildings which may be served by a single protected escape stairway:

(a) The building should not have more than five storeys above the ground level, i.e. the ground storey and not more than four storeys above the ground storey.

(b) The travel distance from each flat entrance door to the protected stairway should not generally exceed 4.5 m.

(c) The internal layout of all flats should comply with the provisions of section 5.3 of this guide.

(d) All flat entrance doors should be self-closing fire doors (6.8 and table 6.3).

(e) Every small building with a single stairway, should be provided with a fire detection and alarm system in accordance with the requirements of 5.6 of this guide.

(f) In a building with not more than two storeys above the ground floor level (ground storey and not more than one storey above the ground storey), the stairway should be enclosed in fire-resisting construction (see diagram 7). The flat entrance doors may open directly into the enclosure of the protected stairway.

(g) In a building with not more than three storeys above the ground floor level (ground storey and not more than two storeys above the ground storey), where the building does not contain a basement or lower-ground storey and there are not more than four flats in each storey, the stairway should be enclosed in fire-resisting construction. The flat entrance doors may open directly into the enclosure of the protected stairway.

(h) In a building with four storeys above the ground floor level (ground storey and three storeys above the ground storey), the stairway should be enclosed in fire-resisting construction and be separated from each flat entrance door by way of a protected lobby at all levels, except at the top-most storey. In these situations, however, if each flat contains a protected entrance hall-way, in accordance with 5.3.3 (i), the protected lobby between the flat entrance door and the stairway enclosure may be omitted.

(i) In a building with five storeys above the ground floor level, (ground storey and four storeys above the ground storey) the stairway should be enclosed in fire-resisting construction and be separated from each flat entrance door by way of a protected lobby onto all levels, except the top-most storey.

(j) In a building containing a basement or lower-ground storey, the stairway serving these storeys and the ground storey should be separated from the stairway serving the upper storeys by 60 minutes fire-resisting construction, including self-closing fire doors (FD3OS) at the ground, basement or lower-ground storeys.

(k) In a mixed-user building, additional constraints are required in the case of small buildings which may be served by a single escape stairway. These constraints are outlined in 5.4.2.

5.4.2 MIXED-USER BUILDINGS WITH A SINGLE ESCAPE STAIRWAY

In some small buildings served by a single protected stairway, one or more storeys may be used for purposes other than residential. This can present additional hazards for persons in flats. For these buildings, in addition to the requirements of 5.4.1 above, the following apply:

(a) the building should not have more than five storeys above the ground floor level (ground storey and four storeys above the ground storey);

(b) unless the conditions outlined at (d) below are satisfied, the residential accommodation should be provided with independent means of escape out of the building by either

- separating the stairway serving the residential accommodation from the non-residential areas by imperforate 60 minutes fire-resisting construction (see diagram 8); or

- separating the stairway serving the residential accommodation from the non-residental area by a fire-resisting lobbies formed within the stairway enclosure, and providing an

alternative escape route from the residential accommodation or directly from the stairway enclosure (see diagram 10);

(c) the non-residential accommodation should comply with the means of escape requirements appropriate to that use. The entire building should be provided with an appropriate fire detection and alarm system (5.6);

(d) a single protected stairway may serve the non-residential as well as the residential part of the accommodation, provided (see diagram 9):

- the protected stairway is separated from each non-residential part by a protected lobby;
- any stairway between the ground storey and a basement or lower-ground storey is independent of the protected stairway from the upper floors and does not lead to the same final exit; and
- the non-residential parts are separated from the residential parts with 60 minutes fire-resisting construction (6.4).

5.5 ESCAPE ROUTES - GENERAL PROVISIONS

The provisions of the following sections apply to all buildings within the scope of this guide.

5.5.1 STAIRWAYS

It is essential that stairways are adequate to evacuate all the occupants of a building in the event of fire, and that they can be safely used at all times. The number of stairways will depend on the size, height and occupancy of the building.

The width of escape stairways should be adequate to quickly discharge all the occupants from the building. In buildings which may be served by a single protected escape stairway (5.4.1 and 5.4.2), the escape stairway should not generally be less than 900 mm wide, but a width of not less than 750 mm may be adequate for small numbers of occupants. For larger buildings, stairways should comply with the requirements indicated in BS 5588: Part I: 1990 or other appropriate guidance.

New stairways should comply with the requirements of Part K of the First Schedule to the Building Regulations, 1991. Technical Guidance Document K gives guidance on how to meet the requirements of Part K of the Regulations.

5.5.2 PROTECTION OF VERTICAL ESCAPE ROUTES

The protection of vertical escape routes, by enclosing stairways in fire-resisting construction or within protected shafts, is essential to protect the escape routes from smoke and fire. The protection of stairways also restricts the spread of fire between storeys.

Recommendations for fire-resisting construction to enclose stairways and shafts are outlined in Chapter 6 of this guide. The effective performance of fire-resisting doors in protecting escape stairways is essential for the protection of life in flats, especially in single-stairway buildings. The maintenance of these doors is critical, to ensure their continuing effectiveness.

Stairways which are not located adjacent to external walls, or do not have openable windows, should be provided with suitable automatic smoke ventilation facilities.

Storage rooms or other high fire risk areas should not open directly into a protected stairway. Such areas should be enclosed by fire-resisting construction and be separated from the stairway by protected lobbies.

5.5.3 EXTERNAL ESCAPE ROUTES

The use of external escape routes including flat roofs, walkways and external stairways may be considered acceptable as an alternative means of escape, where there are no practicable alternative solutions. Where an external

escape route is provided it should be protected against the effects of fire in the building, or from smoke and heat issuing from openings in external walls, such as windows and doors. External escape routes should have safe non-skid surfaces, and be of adequate dimensions to enable them to be used safely. All walkways should be protected with guard-rails not less than 1100 mm in height.

External escape routes should be provided with lighting so that they can be safely used for the evacuation of the building, including emergency lighting for operation in the event of a failure of the mains power supply (5.7).

5.5.4 DOORS ON ESCAPE ROUTES

The following provisions apply to doors on escape routes:

(i) Doors should not open across stairways or obstruct the clear width of corridors, landings or lobbies when opened.

(ii) A panel of clear glazing should be provided in doors which open in both directions.

(iii) Sliding doors should not be provided across escape routes.

(iv) Roller-shutter doors or other lockable protective doors or gates should not be placed on escape routes or outside final exits.

(v) Doors on escape routes should be fastened in such a manner that they can be easily and immediately opened from the inside at all times.

(vi) Where panic-bolt type locking mechanisms are used on doors on escape routes, they should comply with BS 5725 : Part I :1981. Doors which have panic bolts fitted should have a "PUSH BAR TO OPEN" sign displayed on them.

5.5.5 SECURITY

Security arrangements in buildings containing flats should not be such as to impede the escape of persons from the building in the event of an outbreak of fire. Permanently fixed grills or bars should not be placed outside window openings which may be required for escape or rescue purposes, see 5.3.1, 5.3.2, 5.3.4 and 5.3.6. Likewise doors on escape routes should be readily usable, see 5.5.4.

5.6 FIRE DETECTION AND ALARM

The installation of automatic fire detection and alarm systems can significantly increase the level of protection from fire by giving an early warning of its occurrence. The recommendations on fire detection and alarm in this guide are intended to improve the level of fire protection by:

(a) giving early warning of fire to the occupants of a flat in which the fire originates; and

(b) giving early warning to occupants throughout the building of fire which may threaten their safety or their escape from the building.

5.6.1 SELF-CONTAINED SMOKE ALARMS

Every flat should be provided with self-contained smoke alarms, installed in accordance with the guidance contained in Appendix D.

Three types of self-contained smoke alarm are available generally:

(a) battery operated alarms - the installation of this type of alarm provides an acceptable level of protection within individual flats, so long as batteries are replaced as required;

(b) mains operated alarms - these eliminate the need for replacement of batteries, and provide an acceptable level of protection within individual flats;

(c) mains operated alarms with battery back-up - these provide the best level of protection within individual flats, and are designed to function, even with an interruption of the mains power supply.

Self-contained smoke alarms should be manufactured in accordance with I.S.409:1988 or other appropriate standard.

5.6.2 FIRE DETECTION AND ALARM SYSTEMS

Fire detection and alarm systems should be provided in buildings as described in Sections 5.4.1 and 5.4.2 of this guide as follows:

(a) In buildings of two or more storeys (including basement storeys), used for the provision of residential accommodation only, a fire detection and alarm system complying with the requirements of I.S.3218:1989 should be installed.

The system should be a "type L3X" system for the protection of the escape routes from the entrance to each flat to a place of safety and covering areas adjoining these routes. In addition to automatic smoke detection within these routes, automatic heat detection should be provided within each flat (located in the internal hall-way, where provided).

(b) In mixed-user buildings of two or more storeys (including basement storeys), a fire detection and alarm system complying with the requirements of I.S.3218:1989 should be installed, the type of system and the protection provided to be as recommended by a suitably qualified and competent person, taking into account the nature of the different occupancies and the building construction and layout.

(c) The design and installation of new automatic fire detection and alarm systems should comply with I.S.3218:1989 and should be carried out by competent persons. A commissioning and installation certificate, as detailed in Appendix C of IS. 3218: 1989, should be completed and retained on the fire safety register (4.3).

Particular attention should be paid to those aspects of the fire alarm system design and installation which are affected by the multi-occupancy nature of the building. In mixed-user buildings, it is essential that the siting of the control and indicating equipment is agreed between the users and that the equipment is accessible to all occupants. Arrangements should be made to ensure the continuity of power supplies to a common alarm system.

(d) Buildings protected by automatic detection systems should also be provided with manual fire alarm call points.

5.6.3 MAINTENANCE OF FIRE DETECTION AND ALARM SYSTEMS

It is vital that an automatic fire detection and alarm system should operate when required to do so. Automatic fire detection and alarm systems should be regularly tested, maintained and serviced, in accordance with the provisions of IS. 3218, and the responsibility for ensuring that this is done should be clearly assigned in each building.

Arrangements should be made for access to those parts of the system within individual flats or occupancies for testing, maintenance and servicing.

5.6.4 PROCEDURE IN THE EVENT OF FIRE

All residents and occupants should be made aware of the action to be taken on discovering a fire or on hearing the fire alarm, including raising the alarm and calling the fire brigade. Further guidance on this subject is included in Sections 4.9 and 4.10 of this guide.

5.7 LIGHTING AND SIGNPOSTING OF ESCAPE ROUTES

Escape routes should be provided with emergency lighting, i.e. lighting provided for use when the power supply to the normal lighting fails, and signposting to ensure that they can be safely and readily used by persons evacuating the building in the event of an outbreak of fire. The emergency lighting should also enable people to see any directional or warning signs associated with common escape routes, changes in floor level, the location of fire alarm call points and fire fighting equipment.

In common escape routes, including stairways, normal lighting with a suitable system of control should be provided so that people are able to move within the escape routes from the building during the hours of darkness and from areas that do not have the benefit of daylight. Where press-button slow release lighting switches are provided, they should be of adequate lighting duration to facilitate escape in the event of an outbreak of fire.

5.7.1 PROVISION OF EMERGENCY LIGHTING

Emergency lighting should be provided throughout all common escape routes, i.e. corridors, lobbies and stairways in buildings containing flats.

The reliability of an emergency lighting system is dependent on its being installed, commissioned and maintained in accordance with recognised standards.

New emergency lighting systems should comply with IS. 3217: 1989 - Code of Practice for Emergency Lighting. Existing systems may be acceptable if they are capable of maintaining the required level of illumination for not less than one hour. Emergency lighting is generally provided by means of suitably located self-contained emergency lighting fittings.

5.7.2 SIGNPOSTING OF ESCAPE ROUTES

Exit and directional exit signs are not generally required in single stairway buildings as the occupants of the building will be familiar with the escape route. However, if the access route to the stairway is via a long or circuitous route, exit and directional exit signs may be required to indicate clearly the escape route.

In multi-stairway buildings exit signs should be provided to indicate the alternative escape routes available from each storey of the building. Directional exit signs should also be provided where the alternative exit locations are not visible from any point in the common circulation areas of the building.

Exit signs should be located where they are most likely to be seen and preferably immediately above the exit opening. Directional exit signs should be fixed in conspicuous positions and wherever possible, between 2 m and 2.5 m above floor level.

All signs should be uniform in colour and format and comply with ISO 3864:1984- Safety Colours and Safety Signs.

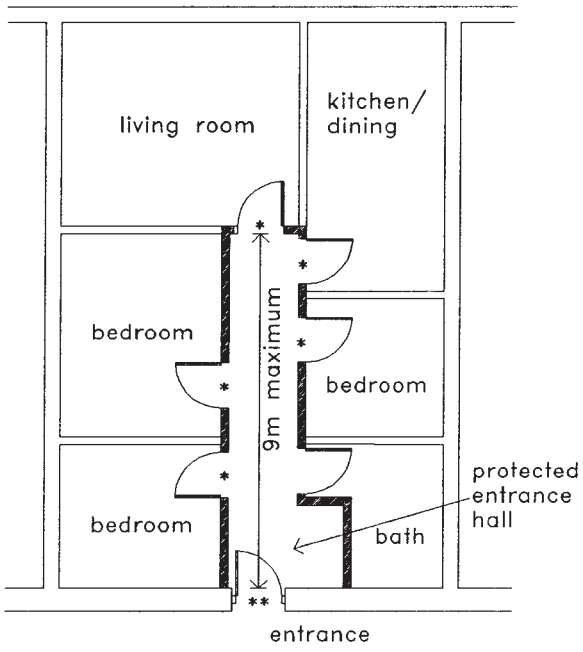
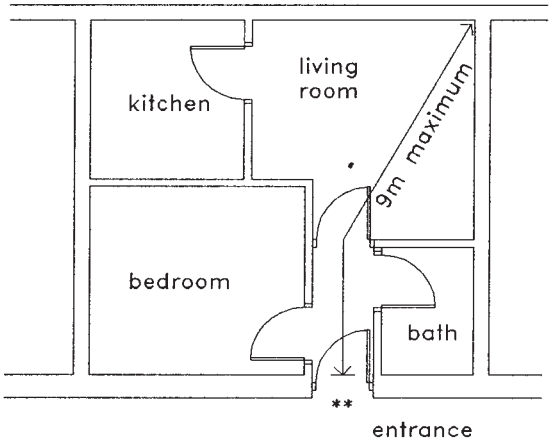


DIAGRAM 1



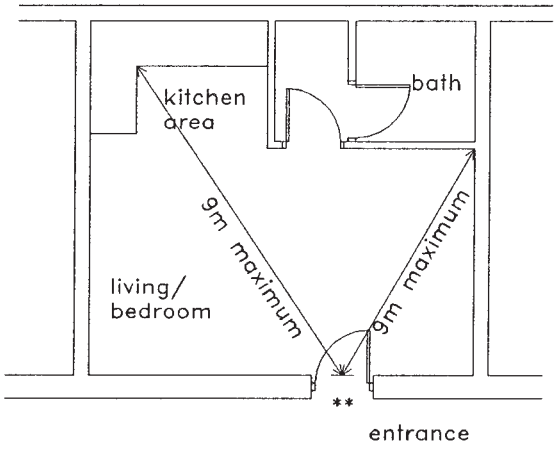


DIAGRAM 2

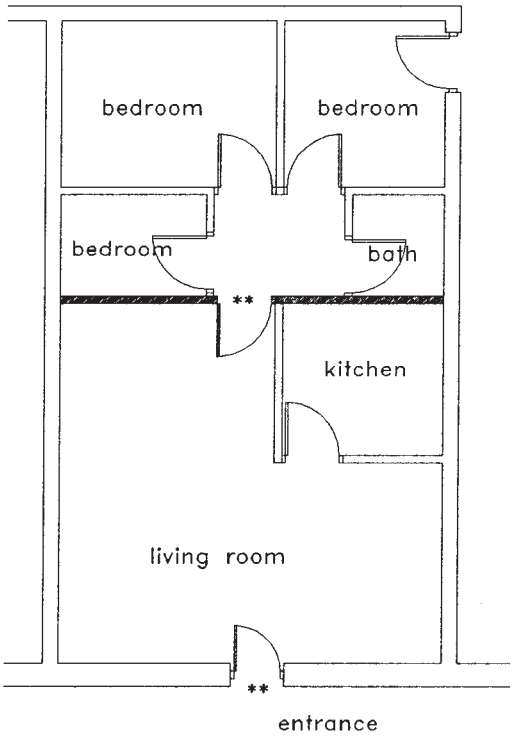


DIAGRAM 3

Legend:

30 Min Fire Resisting Construction

* Fire Door FD20

** Fire Door FD30S

Diagrams 1, 2 & 3

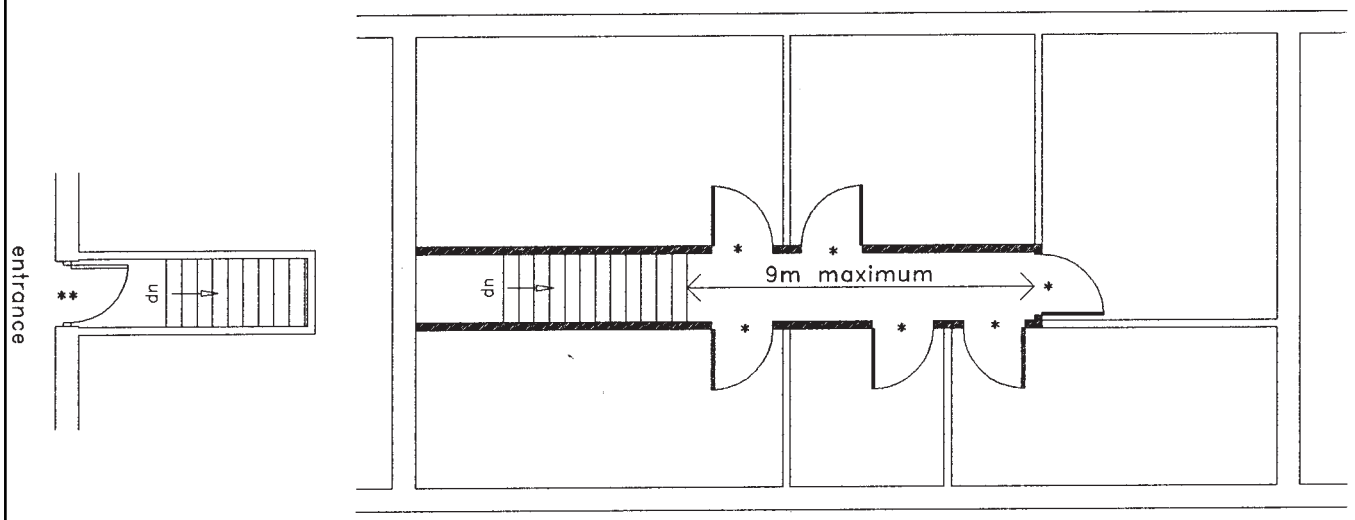


DIAGRAM 4A Flat entered from floor below

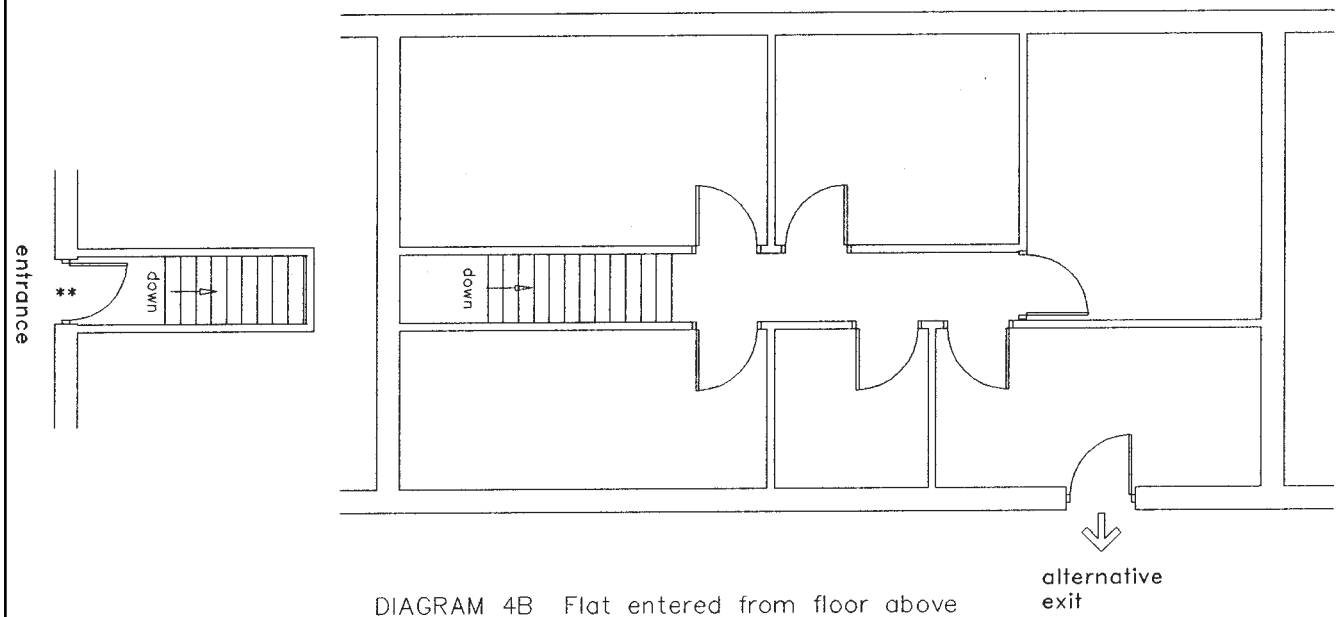
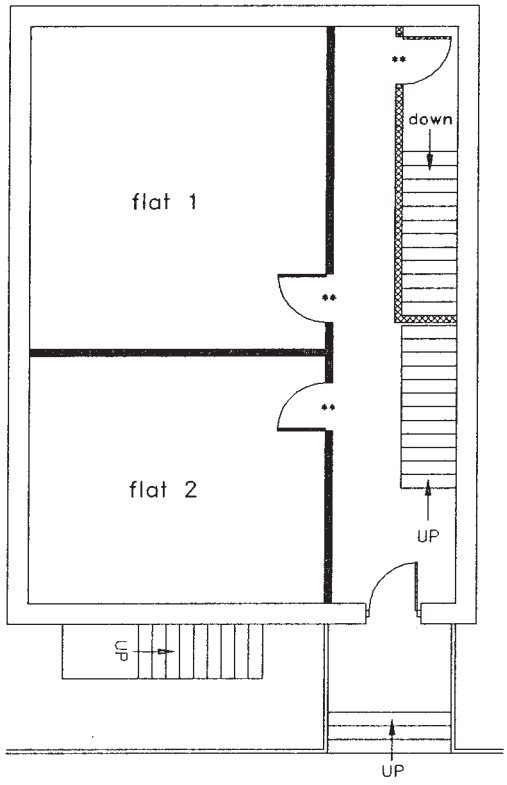


DIAGRAM 4B Flat entered from floor above

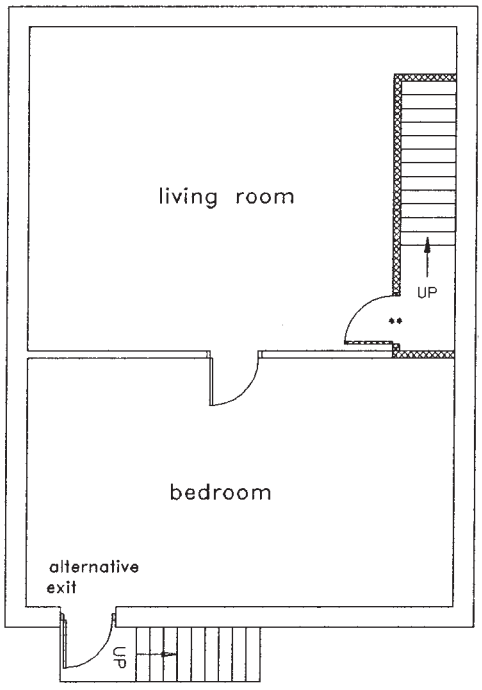
Legend:

30 Min. Fire Resisting Construction
* Fire Door FD20
** Fire Door FD30S

Diagrams 4A & 4B



GROUND STOREY



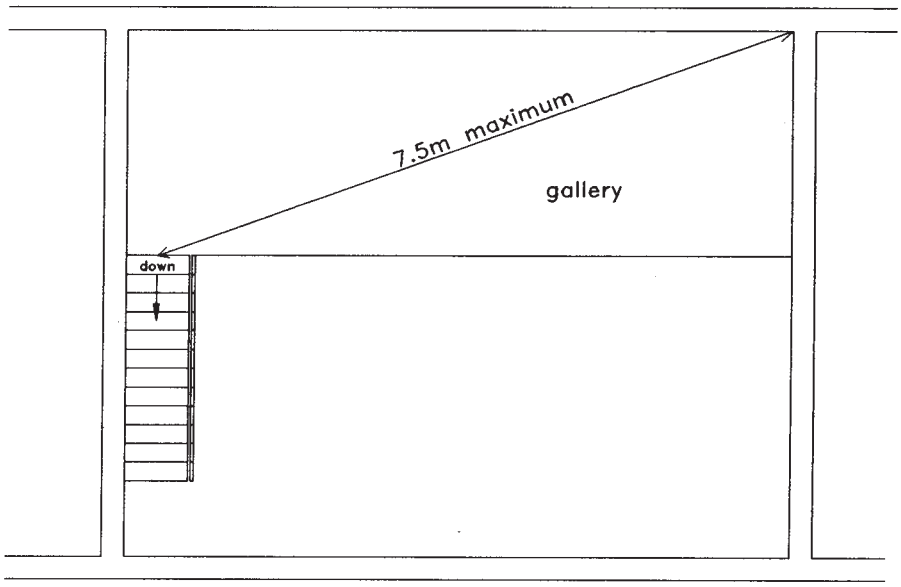
BASEMENT OR
LOWER–GROUND STOREY

Legend:

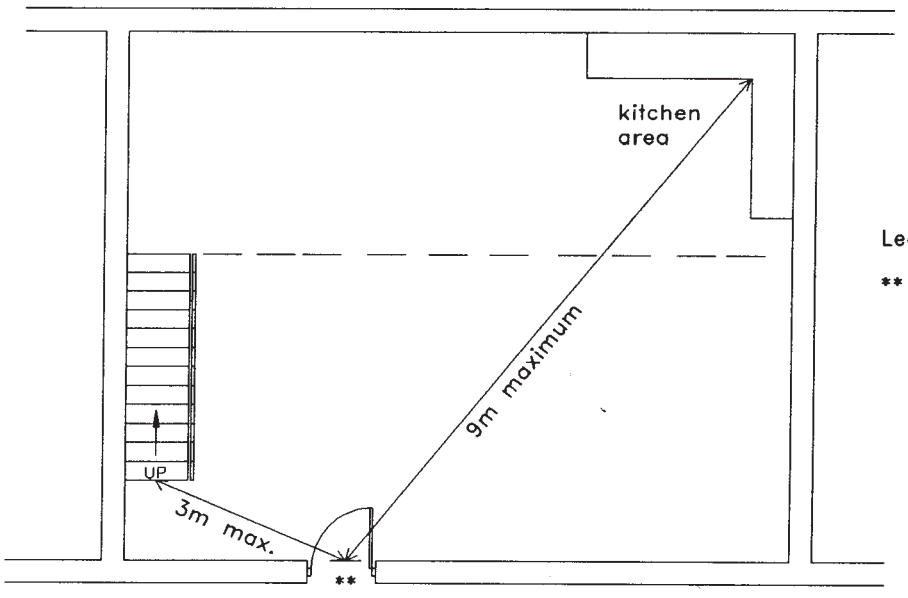
60 Min Fire Resisting Construction
30 Min Fire Resisting Construction
** Fire Door FD30S

DIAGRAM 5

Diagram 5



Gallery level



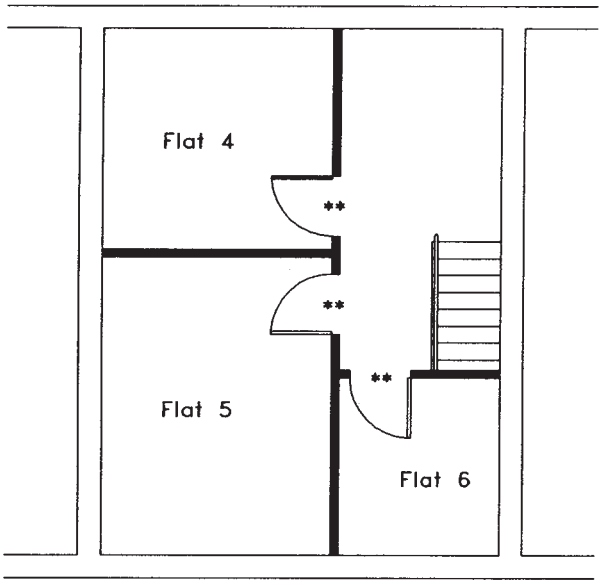
Entry Level

Legend:

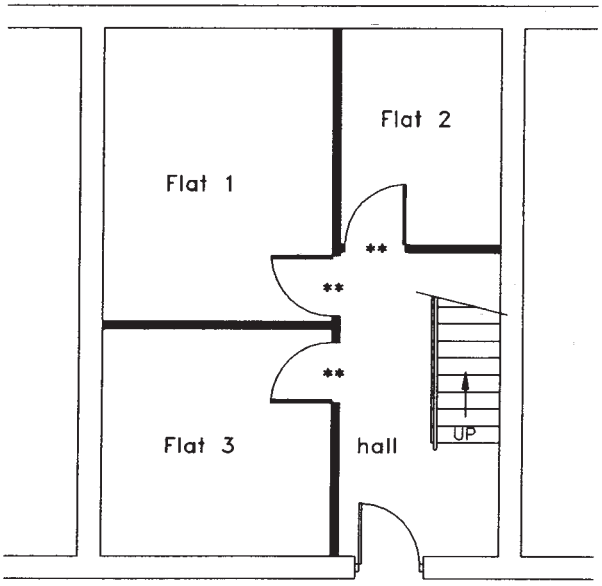
** Fire Door FD30S

DIAGRAM 6

Diagram 6



UPPER STOREY



GROUND STOREY

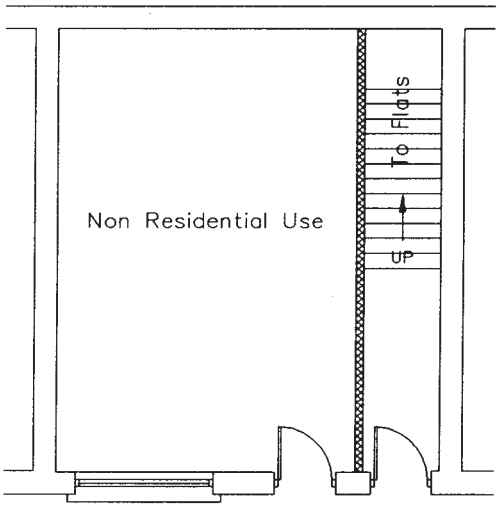
Legend:

30 Min. Fire Resisting Construction

** Fire Door FD30S

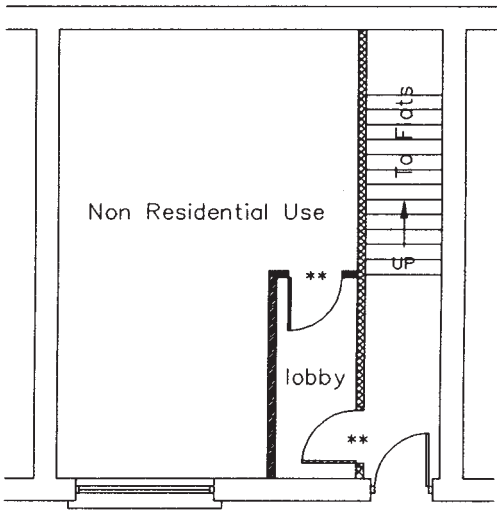
DIAGRAM 7

Diagram 7



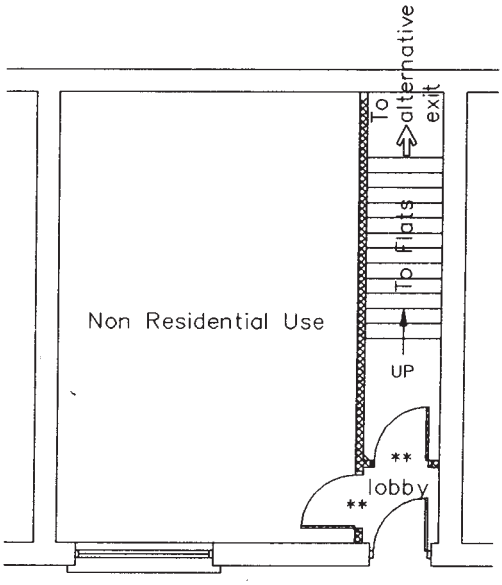
Ground Storey

DIAGRAM 8



Ground Storey

DIAGRAM 9



Ground Storey

DIAGRAM 10

Legend:

60 Min Fire Resisting Construction

30 Min Fire Resisting Construction

** Fire Door FD30S

Diagrams 8, 9 & 10

Chapter 6
Structural Fire Precautions

6.0 GENERAL

When considering the measures necessary to provide a reasonable degree of fire protection in any building the fire resistance of the structure and the rate at which fire can spread across the surfaces of walls and ceilings are important factors.

This chapter outlines minimum standards of fire resistance of the structural elements which are necessary for the purposes of protecting the means of escape and restricting the spread of fire between flats and within the structure or fabric of the building. Minimum standards are also outlined for restricting the rate of fire spread along surfaces and the contribution of combustible wall and ceiling linings to the spread of fire.

6.1 ELEMENTS OF STRUCTURE

For the purposes of this guide the following elements are regarded as elements of structure:

(a) any member forming part of the structural frame of a building or any other beam or column, not being a member, forming part of a roof structure only;

(b) floors not being the lowest floor of a building;

(c) floors and walls, separating flats or different uses within a building;

(d) a load-bearing wall or load-bearing part of a wall;

(e) any structure enclosing a protected shaft or stairway.

6.2 FIRE RESISTANCE

The fire resistance of an element of structure is a measure of the ability of that element to withstand the effects of fire for a specified duration, when it is tested to a particular standard. The standard test methods normally employed are those contained in BS 476: Parts 20 - 23 or BS 476: Part 8.

The recommendations for fire resistance are intended to provide the structural elements with resistance to exposure to fire, for reasonable periods. Fire resistance requirements for the elements of structure depend on the size of the building, particularly its height.

The element of structure should either:

(a) be constructed to the same specification as that which, if exposed to test by fire in accordance with BS 476 Parts 20 - 23, or BS 476: Part 8, would fulfil its function in relation to load-bearing capacity, integrity and insulation for not less than the required duration or;

(b) conform with one of the specifications set out in the Building Research Establishment Report “Guidelines for the construction of fire-resisting structural elements” for the required periods of fire resistance.

The fire resistance of a door is a measure of its ability to withstand the effects of fire under specified test conditions, for a specified duration. The standard test methods normally employed are those contained in BS 476: Parts 20 and 22 or BS 476: Part 8.

Guidance on increasing the fire resistance of existing timber floors is given in Building Research Digest Number 208.

Guidance on methods to increase the fire resistance of existing timber doors is available from the Timber Research and Development Association.

6.3 FIRE RESISTANCE FOR ELEMENTS OF STRUCTURE

Recommendations for the fire resistance of the elements of structure of a building containing flats are outlined in table 6-I.

Table 6-I

Building Height	Fire Resistance (Minutes)
Up to 4 storeys above ground level (Ground storey and up to 3 storeys above the ground storey)	30
More than 4 storeys above ground level.	60
Basement, Lower-Ground storeys	60

Note: the fire resistance periods indicated are minimum values and relate to performance in terms of loadbearing capacity, integrity and insulation by reference to BS 476: Parts 20-24 or BS 476: Part 8.

6.4 MIXED-USER BUILDINGS

When residential accommodation forms part of a mixed-user building, the residential accommodation should be separated from the other parts (e.g. shop, office) by construction having a minimum fire resistance of not less than 30 minutes for buildings of up to 2 storeys in height (above ground floor level) and 60 minutes for buildings of more than 2 storeys.

6.5 HIGH FIRE RISK AREAS

Areas which present a high fire risk should be separated from other parts of a building by construction having a minimum fire resistance of 60 minutes. Examples of such areas include rooms containing boilers, common laundry rooms and electrical switch rooms. Doors into such areas, except where they open directly to the outside, should have a minimum fire resistance of 60 minutes and should be fitted with self-closing devices.

Small store rooms should be separated by means of 30 minutes fire resisting construction, with 30 minutes self-closing fire doors. All high fire risk areas should be protected by automatic fire detection, connected to a fire alarm system for the building (4.6).

6.6 CONSTRUCTION DETAILS

Junctions between elements of construction, cavities, pipe-ducts and lifts frequently constitute points of weakness for fire spread and should be checked carefully in existing buildings. Junctions between building components should not be such as to transfer fire from one side to the other. Suitable fire-stopping should be provided in these areas.

Cavities and hidden spaces, such as hollow walls and suspended ceilings, can provide a route for fire spread. Cavity barriers should be provided to restrict the spread of smoke and fire within cavities. Large cavities may also need to be protected by automatic fire detection.

The provision of cavity barriers and fire-stopping should generally comply with the recommendations contained in section 3.4 of Technical Guidance Document B, published under the Building Regulations, 1991.

6.7 WALL AND CEILING LININGS

The surface of walls and ceilings should comply with the classifications indicated in table 6-2, for the different locations.

Surface spread of flame may be tested by reference to the method specified in BS 476: Part 7, under which a material may be classified as Class I, 2 or 3, Class I being the highest rating.

To restrict to a minimum the use of materials which ignite easily or which produce a high rate of heat release when ignited, “fire-propagation” indices are specified, by reference to the method of test specified in BS 476: Part 6. Index of performance (I) relates to the overall test performance, whereas sub-index (i) is derived from the first three minutes of the test.

The highest product performance classification, based on the above criteria, is Class 0. This is achieved if a material or the surface together with its substrate of a composite product is either:

(a) composed throughout of materials of limited combustibility (see Appendix C); or

(b) a class I material which has a fire propagation index (I) of not more than 12 and sub-index (i) of not more than 6.

Table 6-2
CLASSIFICATION OF SURFACE LININGS OF WALLS AND CEILINGS.

Location of Wall or Ceiling Linings	Classification
Bathrooms and toilets (not opening directly onto escape routes)	Class 3
Circulation spaces within flats	Class 1
Other circulation spaces	Class 0
All other areas	Class 1

Timber products may achieve a class I rating with appropriate proprietary treatments. Treatment of timber lining materials is only acceptable where the material is not less than 13 mm thick and where cavities behind the linings are restricted to a width of 600 mm and a height of 1000 mm and they do not contain electrical wiring. Care should be taken to ensure that any such treatment is carried out, and maintained, strictly in accordance with the manufacturer's written instruction.

Care should be taken to ensure that a build-up of combustible paints does not reduce the classification of any lining from that specified in Table 6-2.

Parts of the surface of walls in a room may be of a class lower than that specified in Table 6-2 (but not lower than Class 3) provided the total area of those parts in any room does not exceed one half of the floor area, subject to a maximum area of 20 m^2.

6.8 FIRE DOORS

The situations where fire doors should be provided are outlined in chapter 5 (Means of Escape) and Table 6-3 below. When fitted in a building, a fire door requires a door frame and ironmongery, such as hinges, locks, catches, seals and door-closures. The complete assembly, referred to as a fire door-set, constitutes a fire door. The fire resistance of a fire door must be achieved, when it is part of a door-set, in its location within a building. It is therefore critical that a fire door-set is installed correctly and in accordance with any relevant test certification.

New fire doors should be selected and installed in accordance with the following standards:

- BS 8214: 1990, Code of Practice for Fire Door Assemblies with Non-Metallic Leaves.
- BS: PD 6512: Part 1:1985, Guide to Fire Doors, and
- BS: PD 6512: Part 3:1987, Guide to the Fire Performance of Glass.

The upgrading of existing doors to achieve the performance requirements for a fire door may be feasible in some cases. This should only be undertaken in accordance with tested and approved methods, such as the Timber Research and Development Association's Wood Information Sheet: Section I: Sheet 32, "Fire resisting doors by upgrading" together with the specifications contained in TRADA Wood Information Sheet II, D5 to D12, "Timber building elements of proven fire resistance".

Fire doors (except to a cupboard or service duct) should be fitted with self-closing devices which are capable of closing the doors from the fully-open position, with any latches fitted. Where it is necessary to hold fire resisting doors in the open position, this should only be done using electro-magnetic type devices linked to an automatic fire detection and alarm system. Hold-open devices should not be fitted to doors to protected stairways or protected lobbies. Any hold-open systems should incorporate an automatic release mechanism complying with BS 5839: Part 3. The automatic release mechanism should release the door to close automatically in the event of each or any one of the following:

(i) the detection of smoke by detectors;

(ii) the failure of the power supply;

(iii) the operation of the manual or automatic fire alarm system.

All fire doors (except where heldopen by a hold-open device complying with the above) should be marked, at about eye-level, with the appropriate fire safety sign complying with BS5499 : Part I :1990 to the effect that they should be kept closed when not in use.

In some situations, as indicated below, limited amounts of un-insulated fire-resisting glazing may be incorporated into a fire door:

Location of Fire Door	Un-Insulated F.R. Glazing
Within the enclosure to a protected entrance hall	Unlimited above 1.1 m
Between a protected stairway and a protected lobby or protected corridor	Unlimited above 1.1 m
Entrance door to a flat	Nil

TABLE 6-3 PROVISION OF FIRE DOORS

Type of Fire Door	Location
FD2O	I. A door forming part of a protected entrance hall within a flat (except the flat entrance door). 2 A door affording access to a flat from an external balcony or deck, where such balcony or deck is served by only one stairway. 3 A door opening onto an external flight of stairs.
FD2OS	A door sub-dividing a protected corridor.
FD3OS	I A door forming part of a protected lift enclosure, unless within the enclosure of a protected stairway. 2 A door forming part of a protected stairway, a protected lobby, protected corridor or a building services duct. 3 A door affording access to a flat from an internal protected corridor or lobby. 4 A door forming part of a stairway serving a basement or lower-ground storey.
FD6OS	A door forming part of an enclosure of a high fire risk area.

NOTES
FD2O, FD3O, FD6O denote fire door assemblies ("door-sets"), for durations 20, 30 and 60 minutes respectively.

The suffix "S" denotes an appropriate cold smoke seal between the door and door-frame.

Periods of fire resistance relate to performance in terms of integrity by reference to BS 476: Parts 20 and 22 or BS 476: Part 8.

Chapter 7
Building Services

7.0 BUILDING SERVICES: GENERAL

Some building services are potential sources of fire, and equipment associated with them should be installed and maintained in accordance with the relevant standards and codes of practice. The importance of correct installation is emphasized because these services are often concealed above ceilings and in ducts. Installation faults that might lead to fire are particularly dangerous because the fire is unlikely to be discovered for some time if it is concealed. This chapter deals only with the provision of services in existing buildings containing flats. The repair and maintenance of associated equipment is discussed in chapter 4, in the context of fire safety management.

In this guide, building services comprise the following:

(i) Electrical Installation,

(ii) Gas Services,

(iii) Heating Systems,

(iv) Ventilation and air-conditioning systems.

7. I ELECTRICAL INSTALLATIQN

The electrical installation in the building should be inspected regularly and tested by a competent person for compliance with the Electro Technical Council of Ireland (ETCI) National Rules for Electrical Installations (ET 101: 1991) and an appropriate entry made in the fire safety register (see chapter 4).

All extensions and repairs to electrical installations should be carried out in a proper manner, in accordance with the ETCI Rules ET 101 - 1991.

7. 2 GAS SERVICES

It is essential that gas installations, storage tanks, pipe lines, gas burning appliances, flues and equipment are correctly installed and fitted with appropriate safety devices and maintained according to the appropriate standards and codes of practice (Appendix G).

All components of gas installations should be inspected at regular intervals by a competent person in accordance with the appropriate standards and codes and an appropriate entry made in the fire safety register (see chapter 4).

7. 3 HEATING SYSTEMS

The majority of fires involving space heating are caused by local heating appliances, particularly those of the portable radiant type. It is therefore recommended that each flat be provided with a heating system using only fixed heating appliances or based on a central system. Fixed gas heaters should preferably be of the flued type. Radiant type heaters should not be provided in escape routes. Where open fires are provided, the integrity of the hearth and fire surrounds should be checked, and arrangements put in place to have chimneys cleaned regularly.

7.4 VENTILATION AND AIR-CONDITIONING SYSTEMS

Where a mechanical ventilation and air-conditioning system is installed in a building it should be evaluated using the following standards:

(a) Mechanical ventilation and air-conditioning plant should be installed in accordance with BS 5720: Code of practice for mechanical ventilation and air-conditioning in Buildings.

(b) Service ducts should be installed in accordance with BS 8313 : Code of practice for the accommodation of building services in ducts and ventilation and air-conditioning duct-work should be installed in accordance with BS 5588: Part 9: Code of practice for ventilation and air-conditioning duct-work.

(c) Any system of mechanical ventilation should be designed to ensure that the normal airflow pattern is away from protected escape routes and exits.

(d) Ventilation and air-conditioning systems should be compatible with any pressurisation system installed.

Table of Appendices

Appendix A

THE FIRE SERVICES ACT, 1981

The following is a brief outline of the main provisions of the Fire Services Act, 1981, as it relates to flats. It is not intended to be a legal interpretation of the Act.

A. I LEGAL RESPONSIBILITIES

Section 18(2) of the Fire Services Act imposes a duty on persons having control over certain premises, including those containing flats to:

"take all reasonable measures to guard against the outbreak of fire on such premises, and to ensure as far as is reasonably practicable the safety of persons on the premises in the event of an outbreak of fire".

Section 18(3) of this Act imposes a duty on every person on such premises, including occupants and visitors to:

"conduct himself in such a way as to ensure that as far as is reasonably practicable any person on the premises is not exposed to danger from fire as a consequence of any act or omission of his".

A.2 PENALTIES

The Act provides for substantial penalties with fines of up to ten thousand pounds (£10,000) and/or two years imprisonment for persons convicted on indictment of offence under the Act.

A.3 FIRE SAFETY NOTICES

Under Section 20 of the Act, a fire authority may serve a fire safety notice on the owner or occupier of a "potentially dangerous building".

A "potentially dangerous building" is defined in section 19 of the Act as a building which constitutes a serious danger to life in the event of a fire occurring therein for a number of reasons outlined in that section.

A fire safety notice may prohibit the use of a building (or part of it) and may require the owner or occupier to carry out specified fire precautions in that building. There is provision in Section 21 of the Act for a person on whom a fire safety notice is served to appeal against the notice in the District Court.

In a situation of extreme and urgent concern about fire safety, a fire authority may apply, under Section 23 of the Act, to the High Court for an order to restrict or prohibit use of such a building.

It is an offence under the Act to fail to comply with the terms of a fire safety notice, and penalties similar to those outlined above may be imposed on a person convicted of such an offence.

A.4 POWERS OF INSPECTION

Section 22 of the Act gives powers to any "authorised person" of a fire authority to inspect premises containing flats. It is an offence under Section 22 (6) to:

* refuse entry, at any reasonable time, to an authorised person, in the exercise of his duty or
* obstruct or impede an authorised person,
* fail or refuse to give information which a fire authority or an authorised person is entitled to require,
* provide false or misleading information to a fire authority or an authorised person.

An authorised officer of a fire authority should be in a position to produce satisfactory identification, if so requested.

Appendix B

THE BUILDING CONTROL ACT, 1990

The following Regulations have been made under the above Act and are relevant to new works carried out in existing buildings which contain flats.

Sl. No. 305 of 1991	BUILDING CONTROL REGULATIONS, 1991
Sl. No. 306 of 1991	BUILDING REGULATIONS, 1991
Sl. No. 111 of 1992	BUILDING CONTROL ACT, 1990 (APPEALS) REGULATIONS, 1992
Sl.No. 112 of 1992	BUILDING CONTROL ACT, 1990 (FEES) REGULATIONS, 1992
Sl.No. 182 of 1992	BUILDING CONTROL ACT, 1990 (FEES) (AMENDMENT) REGULATIONS, 1992
Sl. No. 153 of 1994	BUILDING CONTROL (AMENDMENT) REGULATIONS, 1994
Sl.No. 154 of 1994	BUILDING REGULATIONS (AMENDMENT) REGULATIONS, 1994

THE BUILDING REGULATIONS, 1991 FIRST SCHEDULE: PART B (FIRE)

BI MEANS OF ESCAPE IN CASE OF FIRE

A building shall be so designed and constructed that there are adequate means of escape in case of fire from the building to a place of safety outside the building, capable of being safely and effectively used.

B2 INTERNAL FIRE SPREAD (LININGS)

For the purpose of inhibiting the spread of fire within a building, the internal linings:

(a) shall offer adequate resistance to the spread of flame over their surfaces, and

(b) shall have, if ignited, a rate of heat release which is reasonable in the circumstances.

B3 INTERNAL FIRE SPREAD (STRUCTURE):

(I) A building shall be so designed and constructed that, in the event of fire, its stability will be maintained for a reasonable period.

(2) (a) A wall common to two or more buildings shall be so designed and constructed that it offers adequate resistance to the spread of fire between those buildings.

(b) A building shall be sub-divided with fire resisting construction, where this is necessary to inhibit the spread of fire within the building.

(3) A building shall be so designed and constructed that the unseen spread of fire and smoke within concealed spaces in its structure or fabric is inhibited where necessary.

(4) For the purpose of sub-paragraph 2(a), a house in a terrace and a semi-detached house are each to be treated as being a separate building.

B4 EXTERNAL FIRE SPREAD

The external walls and roof of a building shall be so designed and constructed that they afford adequate resistance to the spread of fire to and from neighbouring buildings.

B5 ACCESS AND FACILITIES FOR THE FIRE SERVICE

A building shall be so designed and constructed that there is adequate provision for access for fire appliances and for

other such facilities as may be reasonably required to assist the fire service in the protection of life and property.

MATERIAL ALTERATION

The Building Regulations will apply to a material alteration of an existing building (Article 10 of Building Regulations, 1991):

10(1) Subject to Articles 6 and 7, these Regulations shall apply -

(a) to all works in connection with the material alteration or extension of an existing building (whether or not such building was erected before the operative date); and

(b) to every part of an existing building as affected by a material alteration or extension, but only to the extent of prohibiting any works which would cause a new or greater contravention, in the existing building, of the provisions of these [Building] Regulations.

10(2) For the purposes of this article, "material alteration" means an alteration (other than a repair or renewal) where the work, or any part of the work, carried out by itself would be subject to a requirement of Part A (Structure) or B (Fire) of the First Schedule [to the Building Regulations].

TECHNICAL GUIDANCE DOCUMENT SUPPLEM ENT PART 2

SECTION B I

1.6.4 In the case of a material alteration of an existing building, which is not also the subject of a material change in the purpose for which it is used, the requirements of BI may be met by the application of the means of escape provisions, together with requirements in relation to the protection of escape routes, emergency lighting, fire detection and alarms, fire suppression and building services contained in:

- Any Guide or Code of Practice, published by the Department of the Environment for the purpose of providing guidance in relation to satisfying obligations under section 18(2) of the Fire Services Act, 1981, for the type of premises to which the material alteration is carried out.

SECTION B3

3.6 MATERIAL ALTERATION OF AN EXISTING BUILDING

In the case of a material alteration of an existing building, which is not also the subject of a material change in the purpose for which it is used, the requirements of B3 may be met by the application of the Internal Fire Spread (Structure) provisions contained in:

- Any Guide or Code of Practice, published by the Department of the Environment for the purpose of providing guidance in relation to satisfying obligations under section 18(2) of the Fire Services Act, 1981, for the type of premises to which the material alteration is carried out.

The use of the relevant sections of this guide are regarded as satisfying the criteria indicated in these provisions of the supplement to. Technical Guidance Document B.

BUILDING CONTROL REGULATIONS: FIRE SAFETY CERTIFICATES

Parts III and IV (articles 8 to 18 inclusive) of the Building Control Regulations, deal with fire safety certification.

A fire safety certificate is required for a material alteration, to which the requirements of Part B of the first schedule to the Building Regulations apply, of a building containing flats.

A fire safety certificate granted under the Building Control Regulations may be construed only as certifying that the building, if constructed in accordance with the plans,

documents and information submitted, would comply with the requirements of part B of the first schedule to the Building Regulations.

A fire safety certificate refers only to the design of a building or works. It does not apply to the building or works, as constructed.

COMMENCEMENT NOTICES:

Part II (articles 5 to 7 inclusive) deals with commencement notices.

Commencement notices allow a building control authority to monitor construction for compliance with the building regulations. Where a fire safety certificate is required, a commencement notice is also required. They do not relieve the person who carries out the work of responsibility to comply with the requirements of the building regulations. A commencement notice is served on the building control authority not less than 7 days and not more than 21 days before the commencement of the works.

Appendix C
Materials of Construction

NON-COMBUSTIBLE MATERIALS:

(a) Any material which when tested to BS 476: Part II: 1982 does not flame and there is no rise in temperature on either the centre (specimen) or furnace thermocouple.

(b) Totally inorganic materials, such as concrete, fired clay, ceramics, metals, plaster and masonry, containing not more than I per cent by weight or volume of organic material. (Use in buildings of combustible metals such as magnesium/aluminium alloys should be assessed in each individual case).

(c) Concrete bricks or blocks meeting I.S. 20: 1974; I.S.20 Part I: 1987 or I.S. 189:1974.

(d) Products classified as non-combustible under BS 476: Part 4:1970.

Non-combustible materials may be used whenever there is a requirement for materials of limited combustibility.

MATERIALS OF LIMITED COMBUSTIBILITY

(a) Any non-combustible material listed above.

(b) Any material of density 300 kg/m^3 or more which when tested to BS 476: Part I I, does not flame, and the rise in temperature on the furnace thermocouple is not more than 200C.

(c) Any material with a non-combustible core at least 8 mm thick having combustible facings (on one or both sides) not more than 0.5 mm thick. (When a flame spread rating is specified, these materials must also meet the appropriate test requirements).

(d) Any material of density less than 300 kg/m^3, which when tested to BS 476: Part I I. does not flame for more than 10 seconds and the rise in temperature on the centre (specimen) thermocouple is not

TYPICAL PERFORMANCE RATINGS OF SOME GENERIC MATERIALS AND PRODUCTS

RATING		MATERIAL OR PRODUCT
Class 0	I.	Any non-combustible material or material of limited combustibility.
	2.	Brickwork, block-work, concrete and ceramic tiles.
	3.	Plasterboard (painted or not, with or without an air gap or fibrous or cellular insulating material behind).
	4.	Woodwool cement slabs.
	5.	Mineral fibre tiles or sheets with cement or resin binding
Class 3	6.	Timber or plywood with a density more than 400 kg/m^3, painted or unpainted.
	7.	Wood particle board or hardboard, either treated or painted.
	8.	Standard glass reinforced polyesters.
NOTES:	(I)	Materials and products listed under Class 0 also meet Class I.
	(2)	Timber products listed under Class 3 may be brought up to Class I with appropriate proprietary treatments.

Appendix D
Installation of Self-Contained Smoke Alarms

Smoke alarms should be located between the sleeping area and places where fires are most likely to start (e.g. kitchen or living room). In general, this will indicate installation of an alarm in the internal hall-way of a flat, where provided.

There should be a self-contained smoke alarm within 7m of the doors to rooms where a fire is likely to start and within 3m of bedroom doors.

Mains-operated self-contained smoke alarms should be permanently wired to a separately fused circuit at the distribution board. They may operate at a low voltage via a mains transformer. The wiring installation should conform to the IEE Wiring Regulations or to the rules of the ETCI.

Each self-contained smoke alarm should be fixed to the ceiling at least 300 mm from any wall or light fitting. The method of fixing should be in accordance with the manufacturer's instructions.

Self-contained smoke alarms should not be fixed in bathrooms, showers, cooking areas or garages, or any other place where steam, condensation or fumes could give false alarms.

In the case of flats whose layout is unusual or complex, advice about the location of smoke alarms should be sought from a suitably qualified and competent person.

Appendix E
"Fire Safety in Flats, Bedsits and Apartments How to Prevent Fire - and how to escape it" [National Safety Council leaflet]

Flats, bedsits and apartments often contain special fire hazards. As in any home, following basic guidelines in your day-to-day activity will greatly reduce the risk of fire in your flat. A little time spent looking around for fire hazards could prove to be time well spent.

Should a fire break out in your flat, or in another flat in your building, be ready for it. Have a well prepared fire evacuation plan and practise it regularly. It's easy to think "It won't happen here". It might. The key is to be prepared for it.

THREE GOLDEN RULES:

1. Take sensible safety measures around your flat to avoid fire hazards.

2. Install at least one smoke alarm on each floor level.

3. Plan your fire evacuation drill - and practise it

LOOK AROUND - PREVENT FIRE

Look around your flat or apartment. Look at your day-to-day activities in it. Can you make it safer? Use this leaflet as a checklist to prevent fire in your flat.

IN THE LIVING ROOM:

- Always place an effective spark-guard in front of an open fire. Keep the area round a fireplace clear of newspapers, clothes or other combustible items. Don't air clothes in front of an open fire and remember - your chimney needs to be cleaned at least twice a year.

- Make sure all electrical leads and plugs are free from deterioration and fraying. Avoid over-loading sockets - stick to one plug per socket. Switch off and unplug all appliances when not in use, except those specially made to operate full time. Don't try electrical repairs yourself -call a qualified electrician. Place portable heaters well clear of furniture and curtains. Check the instructions for their proper use. Never move gas, oil or electric heaters when in use. Always make sure there is adequate ventilation where heaters are used.

- If there are people who smoke in your flat use large, stable ashtrays. Hot ash can smoulder for hours before igniting, for example on an armchair. Keep matches and lighters well out of the reach of children.

IN THE KITCHEN:

Most fires start in the kitchen. Keep a suitable fire extinguisher or fire blanket in a handy place. If the cooking area is part of your living room, make sure it is positioned well away from the door to allow your escape if necessary.

- Don't let grease build up on the cooker, and keep electric flexes well clear of cooking rings and hops. Remember - pots and pans should be placed on the cooker with handles turned in, but not over other rings.

- Your chip-pan should not be more than one-third full. If your cooking oil does catch fire, use a fire blanket, but never put yourself at risk. Don't try to move the pan, and never use water on a chip-pan fire.

- Always check that the cooker is off last thing at night Finally, use the cooker only for cooking, never for heating or drying clothes.

IN THE BEDROOM:

- Make sure your electric blanket is used according to manufacturer's instructions, and check it regularly for wear or damage. When storing, roll rather than fold it.

- A properly working flashlight beside your bed is useful for emergency light at night.

- Never smoke in bed as it is one of the most dangerous fire hazards and should be avoided completely.

THE SMOKE ALARM - AN INVALUABLE FRIEND

Most fires happen at night when people are asleep. Your chances of dying or being injured in a fire are cut dramatically by the smoke alarm's early warning system. It gives you a vital time to act before fumes or smoke can build up.

- Position an approved smoke alarm where you can hear it clearly all over the flat. In larger flats, you may need more than one smoke alarm. Test your smoke alarms regularly.

- If your smoke alarm sounds, or if one goes off elsewhere in your building, never assume it's a false alarm - always act immediately. Better to be safe than sorry.

PLAN YOUR ESCAPE - AND PRACTISE IT

Often when fire breaks out, so too do confusion and error. If you have a well-practised fire evacuation plan, you will be better able to deal with an emergency situation. Know exactly what you are going to do in the event of a fire.

YOUR FIRE DRILL AT A GLANCE

- Plan two escape routes from each room.

- Close all doors behind you as you leave.

- Warn other residents by pounding on their doors as you pass.

- Move quickly to get outside the building without using lifts.

- Do not re-enter for any reason.

- Phone the fire brigade from a nearby phone.

Always make sure that your main escape route is clear and easy to use. For example, make sure your door is easy to open and if you need to rely on a window, be certain you can open it. If you are trapped in your flat by smoke, heat or fire, close the room door and seal all cracks with sheets or clothing. Attract attention by waving a sheet or piece of clothing near the window. Get down on your hands and knees where the air is cleaner and cooler.

The information in this leaflet couldsave your life and the lives of other people living in your building. Take some time now to make your flat, bedsit or apartment safe, and to guard against the possibility of a fire. Remember, if you need assistance or if in any doubt, call you Local Authority Fire Prevention Officer.

You can also get further information from:

COMHAIRLE SABHAILTEACHT NAISIUNTA
THE NATIONAL SAFETY COUNCIL
4 NORTHBROOK ROAD
DUBLIN 6

Appendix F
Fire Safety Register

THE FIRE SAFETY REGISTER SHOULD CONSIST OF THE FOLLOWING:

1. PREMISES DETAILS
   Address,
   Owner, Management Company (if any).

2. FIRE FIGHTING EQUIPMENT
   Inventory,
   Inspection details, Maintenance details.

3. EMERGENCY LIGHTING
   Inventory of fittings,
   Inspection details,
   Maintenance details,
   Details of works carried out

4. FIRE ALARM SYSTEM
   Zone details,
   Location of detectors,
   Location of manual call points,
   Inspection details,
   Maintenance details,
   Details of works carried out

5. FIRE DOORS
   Inventory of fire doors in building,
   Inspection details,
   Maintenance details,
   Details of works carried out

Appendix G
Reference Standards

I.S. 265 : 1989	Installation of gas service pipes
I.S 290 :1986	Portable fire extinguishers
I.S. 29I : 1986	The use, siting, inspection and maintenance of portable fire extinguishers
I.S. 327 : 1990	Domestic installations using LPG
I.S. 409 : 1988:	Self-contained smoke detectors for private dwellings.
I.S. 415 : 1988	Fire Blankets
I.S. 3212 : 1987	Code of Practice for piped installation of fixed gas-fired space heaters.
I.S. 3213 : 1987	Storage of LPG cylinders and cartridges
I.S. 3216 : 1988	Storage of LPG at fixed installations
I.S. 3217 : 1989:	Code of Practice for Emergency Lighting
I.S. 3218 : 1989	Fire Detection and Alarm Systems
I.C.P.3 : 1989	Domestic installations for manufactured and natural gas
BS 5499	Fire safety signs, notices and graphic symbols
Part 1:1984	Specification for fire safety signs
BS 5588	Fire precautions in the design, construction and use of buildings
Part 1 :1990	Code of practice for residential buildings
Part 4 : 1978	Code of practice for smoke control in protected escape routes using pressurisation.
Part 8: 1988	Code of practice for means of escape for disabled people
Part 9: 1989	Code of practice for ventilation and air conditioning ductwork
BS 5720 : 1979	Code of practice for mechanical ventilation and air conditioning in buildings
BS 476	Fire tests on building materials and structures
Part 4:	Non-combustibility test for materials
Part 6:	Method of test for fire propagation for products
Part 7:	Method for the classification of the surface spread of flame of products
Part 8:	Test methods and criteria for the fire resistance of elements of building construction
Part II:	Method for assessing the heat emission from building products
Part 20:	Method for determination of the fire resistance of elements of construction (general principles)
Part 21:	Methods for determination, of the fire resistance of loadbearing elements of construction
Part 22:	Methods for determination of the fire resistance of non-loadbearing elements of construction
Part 23:	Methods for determination of the contribution of components to the fire resistance of a structure
Part 24:	Method for determination of the fire resistance of ventilation ducts
Section 31.1:	Methods of measuring smoke penetration through doorsets and shutter assemblies. Measurement under ambient temperature conditions
PD 6520:1988	Guide to fire test methods for building materials and elements of construction

Appendix H
Reference Publications

	Address
Technical Guidance Document K. Stairways, ramps and guards.	
Increasing the Fire Resistance of Existing Timber Floors. Building Research Establishment, 1988 (Digest 208)	Government Publications Sale Office Molesworth Street, Dublin 2. Tel (01) 671 0309
Fire test results on building products: fire propagation. FPA, 1980 (updated 1986).	Building Research Establishment Bookshop Bucknalls Lane, Garston, Watford WD2 7 JR Tel. (0923) 894040
Fire test results on building products: fire resistance. FPA, 1983.	Fire Protection Association 140 Aldersgate St., London EC IA 4HX Tel. (071) 600 1487
Regulations for Electrical Installations 15th Edition 1981 Institution of Electrical Engineers.	Institution of Electrical Engineers, Station House, Nightingale Road, Hitchin, Herts. SG5 IRJ Tel. (0462) 53301.
Guidelines for the construction of fire-resisting structural elements. Building Research Establishment, 1988 (BR 128).	Building Research Establishment Bookshop Bucknalls Lane, Garston, Watford WD2 7 JR Tel. (0923) 894040
Fire Protection of Timber Floors The Association of Specialist Fire Protection Contractors and Manufacturers.	P0 Box Ill, Aldershot, Hampshire GU II IYW Tel. (0252) 21322
Fire Protection for Structural Steel in Buildings The Association of Fire Protection Contractors and Manufacturers, Fire Test Study Group and the Steel Construction Institute.	Silwood Park, Ascot, Berks. SL5 7QN Tel. (0344) 23345