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GUERNSEY STATUTORY INSTRUMENT

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1991 No. 26

The Fire Services (Guernsey) Law, 1989  
Code of Guidance No 5 - Places where People Resort

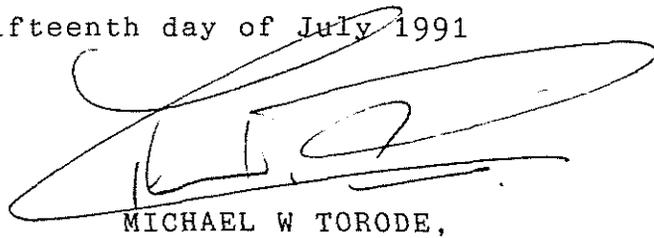
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THE COMMITTEE FOR HOME AFFAIRS, in exercise of the powers conferred upon it by section 8(1)(b) of the Fire Services (Guernsey) Law, 1989, and in exercise of all other powers enabling it in that behalf, has this day made this Code of Guidance which shall come into operation on the 4th November 1991.

Dated this fifteenth day of July 1991



MICHAEL W TORODE,

President of the Committee for Home Affairs  
for and on behalf of the said Committee

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## 1. INTRODUCTION

1.1 The purpose of this code of guidance, which is issued solely in connection with the operation of the Fire Services (Guernsey) Law, 1989, is to set out basic standards for means of escape and related fire precautions in existing premises where people assemble in connection with :-

- (a) entertainment or recreation;
- (b) any club, society or association;
- (c) access by members of the public, whether on payment or otherwise; or
- (d) the sale of food and drink for immediate consumption;

where seating or facilities are provided for at least 40 persons, or where it is reasonable to suppose that, on any occasion, at least 40 persons will be present. (Extra safety precautions may be required in cinemas, or other premises used for film exhibitions.) or;

- (e) have use for the purpose of obtaining access to the above premises.

It is intended both for the guidance of the Fire Brigade and for the information of those responsible for the management of such premises. A contravention of the code of guidance does not of itself render a person liable to civil or criminal proceedings. The contravention may, however, in any proceedings in which there is in issue a liability or contention in relation to which the provision of the code appears to the court to be relevant, be relied upon by any party to the proceedings as tending to establish or negative the liability or contention. It is hoped that the code of guidance will assist in achieving a uniform approach to the implementation of the Law in the relevant premises. It should also be noted that the provisions of this Code are in addition to, and not in derogation from, the provisions of Section 6 of the 1989 Law, which lays down the basic legal duties of occupiers of premises. Occupiers must therefore, as well as observing the guidance set out in this Code, also comply at all times with Section 6 and with any relevant regulations made under the Law.

NOTE 1 - Hereafter, the different premises will be placed into one of three categories as follows -

- (a) Premises with fixed seating under the heading THEATRES;  
Theatres; Cinemas; Concert Halls; Lecture Halls; Churches;  
etc.

(b) Premises without fixed seating under the heading HALLS;

Assembly Halls; Church Halls; Parish Halls; Meeting rooms;  
Dance Halls; etc.

(c) Premises where people eat or drink under the heading  
RESTAURANTS;

Restaurants; Cafes; Bars; etc.

NOTE - Churches, particularly the Parish type are covered by this code, but it may be difficult to apply the requirements. However, every effort should be made to utilise all existing doors and to improve egress, along with general safety standards.

Because the registration procedure under the Law is concerned with buildings in use for a designated purpose, this code of guidance is directed mainly at existing premises where people resort. It may also be useful, with due regard to the difference in viewpoint, to those who contemplate bringing a building into use as such a place or adapting or converting a building for the purpose. However, it must be emphasised that in doing so the requirements of Building Regulations which may be applicable will have to be met, and the recommendations of this code of guidance cannot be taken as necessarily satisfying these or other statutory requirements. Those responsible for premises where people resort are strongly advised not to take action on any costly matters mentioned in this code of guidance without first consulting the Fire Brigade and where appropriate, the departments mentioned below.

- 1.3 Where any measures necessitate structural alterations to a building, application for approval in accordance with the provisions of the Building (Guernsey) Law, 1956, should be submitted for the consideration and approval of the States Building Inspectors before any work is put in hand.
- 1.4 Should any of the proposals involve external additions or changes of appearance, application should be made initially to the offices of the Island Development Committee, Sydney Vane House, Rue du Commerce, St. Peter Port, for the consideration of that committee.
- 1.5 Further to this, where the building is listed as having historical or special architectural features, an application for approval of the works should also be made to the Ancient Monuments Committee.
- 1.6 The code of guidance cannot, of course, take account of all the fire safety requirements that may be necessary, because of circumstances in particular premises where people resort. It is intended to be used as an indication of the general standard to be aimed at rather than as a set of requirements to be rigidly applied in detail in all circumstances.

## MEANS OF PROVIDING FOR SAFETY

1.7 The recommendations in this code are intended to provide safety from fire by means of -

(a) planning and protection of escape routes leading to safety both horizontally and downwards (and/or possibly upwards in a few special circumstances) from any area that may be threatened by fire, so enabling any person confronted by an outbreak of fire to turn away and make a safe escape without outside assistance (see chapters 3 to 7);

(b) construction and finishing with suitable materials and embodying adequate fire resistance in the structure where these are not covered by building regulations (see chapter 8);

(c) segregation of higher fire risk areas (see chapters 2 and 8);

(d) the provision of means of giving warning of fire and, where appropriate, of detecting outbreaks of fire ( see chapter 10);

(e) the provision of fire fighting equipment, whether for use by staff in containing fire in its early stages, or by way of assistance to the fire service, or for automatically extinguishing an outbreak of fire (see chapter 12);

(f) the proper instruction and training of staff (see chapter 14).

## USE OF THE PRINCIPLES AND RECOMMENDATIONS

1.8 It is not possible to make comprehensive recommendations capable of covering every risk, and an intelligent appreciation of the principles and application of the recommendations of this code is therefore essential. The fire hazards of a particular premise and its contents have to be appreciated and, in order to use this code effectively, the behaviour of a fire occurring in the building has to be anticipated according to the assessment made.

## APPLICATION OF ALL THE RECOMMENDATIONS

1.9 Individual recommendations of this code should not be applied in isolation. To ensure maximum benefit, all of the recommendations should be considered. Although the basic principles and recommendations for escape from areas are described in chapters 3 to 7 the most conscientious application of these recommendations would be undermined unless supported by the necessary measures relating to ancillary accommodation, construction, engineering services, fire protection facilities and training set out in chapters 2 and 8 to 14.

## DIAGRAMS

- 1.10 The figures are intended to clarify concept, and should not be taken as indicating the only acceptable forms of planning. The diagrams are numbered with reference to the adjacent paragraph for ease of identification.

Thick lines show where fire resistance is required.

Roman numerals refer to class of fire door required (see paragraph 7.4).

## 2. ASSESSMENT OF FIRE RISK

- 2.1 As premises covered by this guide can vary so greatly in size and layout, the risk of fire can also vary considerably from one situation to another, particularly in premises where differing processes are carried out and hazardous substances are stored or used. It is essential, therefore, that the fire precautions to be provided should be determined having regard to all relevant circumstances.
- 2.2 It is not possible to offer clear-cut, hard and fast rules for making these assessments but it is possible to describe in broad terms the kind of factors which will need to be considered to determine the level of fire risk that would place the premises (or part) into one of three categories of risk ie; 'high', 'normal' or 'low', thus enabling adoption of whichever is more appropriate of the precautions recommended for the premises in this guide.
- 2.3 The detail contained in the following paragraphs should be treated as broad indicators and it is emphasised that all factors must be considered, which include any automatic fire detection and suppression system that may be installed, eg sprinklers installed for the overall protection of the building, or other fire extinguishing systems covering specific areas of special fire risk. The presence of any of these systems may significantly reduce the dangers of rapid fire growth and consequently may have a bearing on the final risk assessment. It does not necessarily follow that the presence (or indeed the absence) of, say, one of the factors mentioned in the description of risk category inevitably means the premises (or part) has to be placed in the 'high' or if it is absent, the 'low' category. It is likely, however, that in many premises there is a mixture of risks.

### ASSESSMENT OF HIGH RISK

#### IGNITABLE MATERIALS

- 2.4 The factor most likely to justify treating the risk as high is the presence in the premises (or part) of any material, dust, vapour, gas or liquid in such quantity and/or disposition or of such nature as is likely when ignited, to cause fire, smoke or fumes to spread rapidly.

#### UNDESIRABLE STRUCTURAL FEATURES

- 2.5 Undesirable structural features such as -
- (i) stairways which cannot be separated from workrooms, machinery room, or areas of higher risk, unenclosed vertical shafts, wooden floors supported on wooden joists;
  - (ii) the complexity of escape routes caused by extensive sub-division of large floor areas by partitions;

(iii) large areas of flammable surfaces (either of walls, ceilings (see paragraphs 8.19 to 8.23 )) or of stacked stock materials or displayed goods.

#### UNUSUAL OCCUPANCIES

- 2.6 Any unusual occupancy relating to those who are permanently employed in the premises or members of the public resorting thereto such as - large numbers of persons relative to the size of the building, occupants mainly or predominantly disabled persons, individuals or small groups of people working in isolated parts of the building. Consideration should also be given to the staff/customer ratio which will determine the level of assistance the public could expect in an emergency.

#### FUNCTIONAL AREAS

- 2.7 A specific area which due to its function may present a greater risk of fire occurring and developing than elsewhere eg a manufacturing process handling highly flammable substances, a large kitchen associated with a restaurant (public or staff), oil fired boiler rooms and transformer and switchgear rooms.

#### UNDERGROUND CAR PARKS

- 2.8 Buildings which contain underground car parks with either :-

- (a) a floor area of more than 500 sq m; or
- (b) room for 20 or more vehicles;

should be provided with an automatic sprinkler system.

#### STORAGE AREAS

- 2.9 Parts of premises which, because of the nature of the materials displayed or stored or because of the methods of storage, present a higher than normal risk to life in the event of fire. In these circumstances it may not be possible to ensure evacuation within a reasonable time using the standards set out in this guide.

#### ADVICE FOR STORAGE AREAS

- 2.10 When the above situation arises, consideration should be given to the adoption of the following measures -

(i) only goods on display should be stored in those parts of the premises to which the public normally have access;

(ii) the storage of goods should be restricted to those parts of the premises to which the public are not admitted. Such parts should be separated from the remainder of the premises by an enclosure, the floors, walls and self-closing doors of which possess a standard of fire resistance of not less than 60

minutes. The enclosure should not form any part of an escape route which would have to be used by members of the public in case of fire;

(iii) the storage of goods should be arranged so that there is a clear passageway from any point in the storage enclosure to a means of escape;

(iv) displays of goods in public areas should be so arranged that there is unimpeded access to all gangways leading to exits and the manner of display should be such that it does not obstruct a clear view of exits and their associated exit signs;

(v) as far as is reasonably practicable, the display of goods should not take place on the same floor as an area that will attract a large congregation of the public at any one time eg a restaurant or bar, or any part where persons are invited to wait and receive specialist services on the premises eg hair dressing and beauty treatment salons;

(vi) goods on display which are accessible to the public, eg for demonstration or examination purposes, should not be stacked, nor should they have coverings that are easily ignited;

(vii) smoking should be prohibited in all areas where goods are stored or displayed and notices to this effect should be conspicuously displayed;

(viii) it is recommended that where substantial quantities of such goods are always present, a sprinkler system should be installed which conforms to British Standard 5306 : Part 2. The sprinkler system and any other automatic fire detection installation provided should be linked into a fire warning system which is terminated at the Fire Station.

#### ASSESSMENT OF NORMAL RISK

2.11 Generally, the risk can be regarded as 'normal'. By this it is meant that the circumstances are such that any outbreak of fire is likely to remain localised or is likely to spread only slowly and in which there is little risk of any part of the structure of the building taking fire readily.

#### ASSESSMENT OF LOW RISK

2.12 In a very small percentage of premises all the factors to be considered will be favourable and it will be reasonable to accept standards of precautions in some respects much lower than those recommended for normal situations.

### 3. MEANS OF ESCAPE - INTRODUCTION

- 3.1 In the event of a fire breaking out in a building it is essential that everyone is made aware of the danger and is able to reach a place of safety before being overcome by smoke, toxic gas or other products of combustion.
- 3.2 The first awareness of a fire on the premises can be expected to be the result of direct observation or an announcement by a member of staff that a fire has occurred. All others in the building will rely upon the fire warning system.
- 3.3 On becoming aware of the need to evacuate the premises, persons will frequently look first to the door by which they entered but if this cannot be reached (perhaps because of the position of the fire or smoke) an understandable instinct will be to turn away from the danger and seek an alternative route to a place of safety. The public may nevertheless underestimate the risk and may be reluctant to use exits with which they are unfamiliar. The role of trained staff in ensuring that the public react and leave promptly should not be understated.
- 3.4 The basic principle, and the one on which the means of escape recommendations in this guide are founded, is that persons should be able to walk to safety along a clearly recognisable route by their own unaided efforts regardless of where a fire might break out in the building. It is however recognised that it will be difficult, if not impossible, for some people with disabilities to make their way to a place of safety without the assistance of others. Arrangements for disabled people should therefore be carefully considered and these are set out in chapter 13.
- 3.5 The design of means of escape from a building must be based on an appreciation of the probable behaviour of fire, which may break out in any part of the building and then cause smoke, heat and flame to spread to other parts. Although recommendations based on such considerations can be devised, they can be used intelligently only if the nature of the risks which they are intended to meet is continually borne in mind. The design of a building should therefore be analysed, part by part, in order to determine the danger which might arise from a fire, either in the part where the fire may originate or in any other part to which it may spread. The value of analysing a plan with these facts in mind cannot be over-stressed. To illustrate this approach to the problem, the following paragraphs contain a study of the behaviour of fire in the course of which the fundamental precautions which form the basis of the recommendations in this code are deduced. Cross references are given to the later parts of the code where these general principles are expressed as specific recommendations.

#### SUB-DIVISION OF ESCAPE ROUTES

- 3.6 For the sake of simplicity in a somewhat complex subject, the process of evaluating means of escape and risks facing people leaving is divided by the code into 3 stages, as follows -

Stage 1 (chapter 4) From a point in a room to the exit from the room;

Stage 2 (chapter 5) From a room exit to a stairway or final exit;

Stage 3 (chapter 6) From the access to a stairway to the final exit.

#### POSITION OF FINAL DISCHARGE POINTS

- 3.7 To facilitate the safe and orderly evacuation of all persons on the premises in the event of fire the means of escape should be so arranged as to discharge in positions where they will not be subject to any special fire risk from the remainder of the building or adjoining buildings.

#### HEIGHT AND DEPTH OF PREMISES

- 3.8 The level of any part of any floor used as a place where people resort should normally not be -

(a) more than 12 m above; or

(b) more than 6 m below

the principal street or ground level.

Premises outside these limits would require special consideration and, where permitted, may necessitate provision of the following:-

(i) exits and exit widths in excess of the number normally required by an additional 10 %;

(ii) protected lobbies provided with permanent ventilation, positioned between all floor areas and protected staircases;

(iii) extended landings to enable persons to rest when either ascending or descending the protected staircase.

#### PERMITTED NUMBERS

- 3.9 The following table should be used in order to find the maximum number of persons to be admitted at any time. The floor area involved (in metres) should be divided by the occupancy factor given.

	Occupancy factor
1 Public restaurants and lounges	- 1 to 1.5*
2 Bars	- 0.3 to 0.5*
3 Areas for standing	- 0.3

4 Staff coffee lounge, committee room, conference room, dining room, meeting room, restaurant, common room, lounge, reading room, staffroom, waiting room	-	1*
5 Library	-	7
6 Amusement arcade, assembly hall, bingo hall, club concourse, crush hall, dance hall, venue for pop concert and like occasion, queuing area	-	0.5
7 Bowling alley, billiard room	-	9.3
8 Studio (radio, film, television, recording)	-	1.4
9 Storage accommodation, car park+	-	30

NOTES These floor space factors are for guidance only and should not be taken as the only acceptable densities.

Toilets, stairway enclosures and similar areas are excluded for the purposes of this paragraph.

Where any room or floor is used or is likely to be used for a variety of purposes the occupant load factor giving the greatest occupant capacity should be applied.

\* Or, where the occupants will normally be seated, the number of seats provided in accordance with an approved seating plan. If bench seats or similar continuous seating is provided, the total width of such seating should be divided by 450 mm.

+ Alternatively, two persons per parking space.

#### PRIMARY DANGER

- 3.10 Often the primary danger associated with fire in its early stages is not flame or heat but smoke and toxic gases produced by the fire. These may make an escape route impassible long before a temperature which is dangerous to life is reached. Many plastics in common use such as polyurethane or polypropylene are highly toxic when burning. This has therefore to be borne in mind when planning fire precautions.

#### DEAD END SITUATION

- 3.11 This is a place from which escape is possible in one direction only, or in directions less than 45 degrees apart that are not separated by fire resisting construction. (See also paragraph 4.10). This may be considered an acceptable risk provided that the distance of travel does not exceed the distance shown in paragraph 3.16 (i), any corridor is of fire resisting construction and any doors giving on to it are fire resisting.

### ALTERNATIVE ROUTES

- 3.12 A fundamental principle is the provision of alternative means of escape. Ideally, it should be possible for a person always to turn his back on a fire and proceed in a safe direction. For this reason it is normally desirable for alternative routes to be available. Thus, in a corridor, the occupier of a room on leaving his doorway may have a choice of turning left or right, and be able to reach safety in either direction.

### PROTECTED ROUTES

- 3.13 These are passages, corridors and stairways which, as the name implies, are protected so that a person using the route can theoretically travel for an indefinite distance without being impeded by the effects of fire. A protected route is, basically, one which is entirely enclosed by fire resisting constructions, with any doors giving on to it (excepting those from a toilet containing no fire risk) being fire resisting and self closing.

### TRAVEL DISTANCE

- 3.14 Travel distance is the term used to denote the distance along a route from any point from which escape may have to be made (and this is, in effect, from any point in a building and taking into account the layout of walls, partitions and fittings) to one or other of the following -

(a) an access to safety in the open air at ground level - the 'final exit' (an enclosed space in the open air at ground level may be accepted as a place of safety provided it has ready and safe access to an unenclosed space.); or

(b) a door to a stairway which is a protected route; or

(c) door to a protected lobby; or

(d) door to an external escape route; or

(e) door for means of escape in a compartment wall which leads to a suitable means of escape. (Each of the adjoining compartments should have independent means of escape.)

NOTE - Storeys should not be divided in any way that would entail any member of the public having to pass through areas normally used only by staff, eg store rooms, loading bays, kitchens, boiler rooms etc.

The maximum recommended travel distance in any circumstances is regulated by the degree of risk offered by the route concerned. For instance, distance of travel down a protected stairway or an external one can be indefinite and is therefore not measured.

However, on a route where the stairway has habitable rooms opening on to it, even though their doors are fire resisting, the risk is higher and travel distance must be restricted. Finally, on a route involving an open staircase, ie one not separated from rooms or corridors by fire resisting doors, a very short distance of travel is specified.

#### ESCAPE CRITERIA

- 3.15 The speed of travel of persons escaping from a fire to a place of safety is assumed as 12 metres per minute. This speed is considerably slower than a normal walking pace, but takes account of the loss of mobility that can occur in the vicinity of fire and smoke. Escape from a room is based on a flow rate of 40 persons per minute out of a unit width exit measuring 0.525 metres. (This does not imply that doors may be that narrow, but is based on a normal shoulder width.) Travel distances are based on an evacuation time of 2.5 minutes to a place of safety for normal risk premises. (Distances are decreased for high risks and increased for low risks.)

For normal risk premises, this allows 100 persons to exit through each 'unit' of 0.525 metres and 200 through 1.05 metre widths. Above this width, the mass of people becomes homogeneous and numbers can be calculated by allowing 15 persons extra for every 75 mm above 1.05 metres.

Where it is necessary to have more than one exit for means of escape purposes, the aggregate capacity of all the exits (see paragraph 4.8), less any one of the largest, should be capable of evacuating all of the persons in the room within the maximum evacuation time for that premise.

#### TABLE OF TRAVEL DISTANCES

- 3.16 Travel distances to those places identified in paragraph 3.14 should not generally exceed, as appropriate, the distances shown in the following table.

#### TRAVEL DISTANCE IN METRES

(i) In 1 direction only (or to a point where escape is possible in alternative directions see paragraph 4.10).

	distance within a room	maximum total distance
(a) Theatres	9	15
(b) Halls	9	15
(c) Restaurants		18
(d) Other areas		
Garages, underground car parks	-	18
Ground level parking	-	27
High risk areas (kitchens/boiler rooms)	-	6 (NOTE 1)

(ii) In more than 1 direction (to the nearest exit see para 3.14)

	distance within a room	maximum total distance
(a) Theatres	18	30
(b) Halls	18	30
(c) Restaurants		45
(d) Other areas		
High fire risk storage		27
Garages, underground car parks		45
Ancillary rooms (switchgear/boiler)		18

**DIRECT DISTANCE** is taken as being two thirds of the travel distance.

**NOTE 1** - Where no alternative means of escape exists, any high risk should be situated so that persons do not have to pass it.

**NOTE 2** - In many instances when applying the recommendations on distances of travel to reach a place of safety, particularly in premises where an open floor area discharges to final exits, it will be appropriate to consider only the one distance, ie the "total distance of travel".

#### **TRIPPING HAZARDS**

3.17 Any fault which would cause someone to trip while attempting to escape from fire could be disastrous. Therefore, loose or worn items, such as carpets, floorboards, stair bannisters etc, should be repaired or replaced. Too steep/shallow or uneven staircases could also be hazardous.

Mats over 12 mm in thickness shall be sunk to the floor level

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

#### **MAINTENANCE OF ESCAPE ROUTES**

3.18 Escape routes should be kept free from obstructions and combustible materials at all times, and notices to this effect should be displayed in those parts of the escape routes which could present convenient storage areas, eg under stair open spaces.

3.19 Some existing premises can present special problems in respect of their situation, but all must meet the following minimum criteria :-

(a) the premises should abut upon and have frontage on to a street or streets, or way or ways, or open space having direct access to a street, sufficient to ensure the rapid dispersal of persons from the premises in the event of fire, and to afford satisfactory access and working space for fire brigade appliances (see also Guernsey Fire Brigade appendix FP1);

(b) the width of any street, way or open space referred to in (a) above should not be less than the aggregate width of all exits from the premises discharging into such street, way or open space;

(c) any private way or open space forming part of the means of egress from the premises should be under the control of the licensee although such way or open space need not be exclusive to the premises if existing arrangements are shown to be effective for preserving adequate means of escape from the building; and

(d) any way or open space other than a public highway should:-

(i) be provided with a smooth and even surface and with adequate means of illumination; and

(ii) where considered necessary should be provided with raised kerbs or other protection for pedestrians from wheeled traffic.

#### MIRRORS

3.20 Any mirrors situated on escape routes should be so sited that persons escaping from fire will not be confused by any reflected image of the route they are using, or be misled as to the direction they should take to reach fire exits.

#### 4. STAGE 1 TRAVEL WITHIN ROOMS

##### SMALL ROOMS (of less than 30 sq m)

- 4.1 If a fire starts in a small room the number of occupants will be so small and the distance to the doorway so short that there is little risk that the occupants will not be able to escape through a single doorway. In this case, a second way out is not usually necessary.

##### LARGE ROOMS (of more than 30 sq m)

- 4.2 In a large room there is always a risk of confusion should a fire break out because of the greater number of persons who may be involved. There is also a greater risk that a fire breaking out within the room may trap some of the occupants unless there is an alternative exit. For this reason large rooms should usually have more than one exit (see also paragraph 4.4).

##### DISTANCE OF TRAVEL

- 4.3 The factors which have to be considered when assessing means of escape will vary widely from one set of premises to another. Accordingly the distances suggested in the following paragraphs should be regarded as guidelines and not as hard and fast limits. There are likely to be many situations at both ends of the scale in which either reductions are necessary or increases are possible (see also paragraphs 3.14 and 3.16).

##### NUMBER OF EXITS

- 4.4 A single exit may be permitted in the following cases -

(a) in Theatres or Halls where:-

- (i) there is adequate frontage and a final exit to a street, passageway, or, open space;
- (ii) the overall fire risk in the premises is low;
- (iii) the distance of travel to the final exit is not greater than the maximum permitted for escape in one direction (See paragraph 3.16(i));
- (iv) the wall and ceiling linings, curtains, drapes etc comply with the standards detailed in this guide;
- (v) the door is constructed to open outwards; and
- (vi) a maximum of 50 persons are permitted for the function.

- (b) in a small restaurant (not exceeding 50 persons) if -
  - (i) the travel distance to the final exit or protected staircase does not exceed 18m; and
  - (ii) in the case of a ground storey it is provided with a final exit independent of those on other floors; or
  - (iii) in the case of a basement or first floor there is direct access to the external air and the protected staircase is imperforate and fire resisting from the ground floor storey.

4.5 More than one exit will be required in the following situations -

- (a) if a room is to be occupied by more than that shown in paragraph 4.4;
- (b) if the distance to be travelled between any point and the only exit is more than the appropriate distance recommended in paragraph 3.16 (i);
- (c) from a room which is an area of high fire risk, except that one exit may be satisfactory if the maximum distance is not greater than 6m, and the hazard that causes the room to be high risk can be confined with certainty to the end of the room remote from the single exit.

The means of escape from each floor or tier should be remote from, and independent of, each other and should discharge into the street, way or open space.

- 4.6 Where a room has more than one exit, both or all of which lead into an escape route which leads in one direction only to a place of safety, the distance from any point in the room to the nearest exit should not exceed 9m or, in areas of high fire risk, 6m.
- 4.7 In all cases the number of exits should be sufficient to meet the provisions in respect of distance of travel and (in relation to their width) exit capacity but these factors alone may not be enough to ensure a reasonable measure of safety as there is the possibility that one or more exits could be obstructed.

## WIDTH OF EXITS

4.8 (a) The clear width of an exit should normally not be less than 750mm unless the exit will be used by fewer than five persons;

(b) In instances where one exit is permitted the exit width should be as follows -

for up to 50 persons - 750 mm

(c) Where it is necessary to have more than one exit for means of escape purposes, the aggregate width of all exits less any one of the largest should not be less than:-

- (i) 750mm for up to 100 persons;
- (ii) 1.05m for up to 200 persons;
- (iii) an additional 75mm for each additional 15 persons.

NOTE - Wheelchair users normally require not less than 900mm in width.

4.9 In the case of doorways, the width measured should be taken as being the clear unobstructed width through the doorway where the doors are open at right angles to the frame.

## SITING OF EXITS

4.10 In a room or enclosure requiring more than one exit the exits should be -

- (i) sited remote from and independent of each other;

and so far as is practicable be -

- (ii) located so as to obviate dead ends;
- (iii) distributed uniformly around the perimeter of the floor area they serve.

Exits should be satisfactorily sited if, from any point in the room further than the distances recommended in paragraph 3.16 (i) to the nearest exit, the angle between lines defining the routes to the alternative exits is not less than 45 degrees (see diagram 4.10 where door Y would be unsuitable).

diagram 4.10

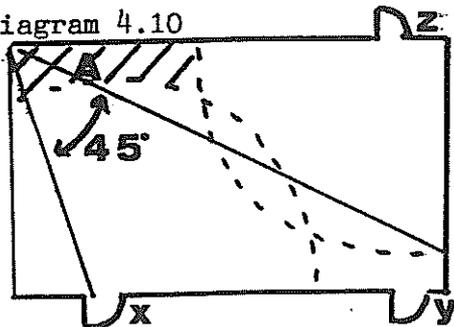
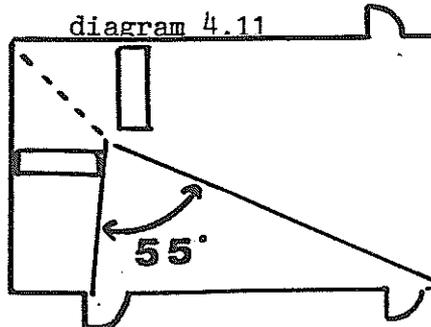


diagram 4.11



(A) = any distance over that recommended in paragraph 3.16 (i)

NOTE 1 Consideration would be given to not more than half the required number of exits being permitted to discharge into a common route of escape.

NOTE 2 Where a stage is provided not less than half the exits for the audience should be sited remote from the stage.

NOTE 3 Where any floor or tier is divided into two or more parts, exits should be provided from each part unless there is adequate access between such parts.

- 4.11 If the room or furniture layout means that the route of travel is initially in one direction only, then 2.5 degrees should be added for each metre travelled in that one direction. eg 4 metres = 10 degrees extra therefore the angle defined in paragraph 4.10 should not be less than 55 degrees (see diagram 4.11).

#### GANGWAYS AND PASSAGEWAYS

- 4.12 The contents of any room in which persons are working or any area to which the public is admitted should be so arranged or disposed that there is a free passageway for all persons to a means of escape in case of fire. Often the layout of seating benches, plant etc within spaces will be such as to delineate gangways clearly.

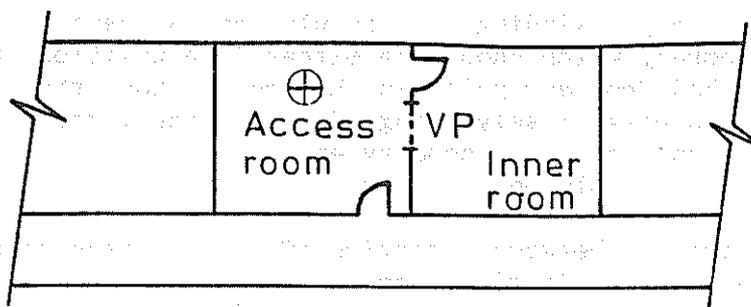
#### INNER AND ACCESS ROOMS (INCLUDING ENCLOSURES)

- 4.13 Where a room is an inner room, ie a room only accessible through an access room, the distance from any point in the inner room through the communication door to the exit from the access room should not generally exceed 9m, or 6m in areas of high fire risk. A situation in which an inner room is entered from an occupied area forming an additional access room should not be allowed.

NOTE 1 - An access room should not be an area of high fire risk.

NOTE 2 - A vision panel of an appropriate size should be provided in a suitable position between the access room and an inner room. This may be omitted, however, if automatic fire detection, in the form of smoke sensors, is installed in the access room as the occupants of the inner room will be aware that a fire has started. Where vision panels are installed in walls required to be fire resisting, it will be necessary to satisfy the appropriate fire resistance standard of that element. (See diagram 4.13)

Diagram 4.13



- 4.14 Where the door of an inner room opens into an access room and between the rooms there is a vision panel, or if automatic fire detection is installed in the access room, the restriction on distance of travel recommended in paragraph 3.16(i) need not apply if, from the point of exit from the inner room, there is escape in more than one direction through the access room. In such cases distance of travel should be in accordance with paragraph 3.16(ii).

#### OPEN PLAN AREAS

- 4.15 The risk of smoke and heat spreading horizontally is greatly increased with open plan floors, where areas are not separated by floor to ceiling walls. With open plans it may of course, be possible to raise the alarm quickly and to escape in several directions away from the source of outbreak. However it will be important to check on the length of the escape routes across the open area and to ensure that, in the case of large spaces, alternative routes are available. In this connection, the furnishing of open plan areas poses several problems as does the positioning of moveable partitioning.

If the escape route is in one direction only, any openings that are not fire resisting should not be sited within 3 metres of the route.

#### PROJECTION AND REWINDING ROOMS

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

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

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

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

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

## 5. STAGE 2 - TRAVEL FROM ROOMS TO A STAIRWAY OR FINAL EXIT

### DEAD END

- 5.1 In corridors where escape is in one direction only, the route should be a protected route unless it leads to a final exit, within the recommended distance of travel as shown in paragraph 3.16 (i).

### INITIAL DEAD END

- 5.2 Where an escape route consists initially of a dead end then has an alternative route to:-

- (a) a final exit; or
- (b) a door to a stairway which is a protected route, or
- (c) a door to a protected lobby; or
- (d) a door to an external escape route; or
- (e) a door for means of escape in a compartment wall which leads to a suitable means of escape

the distance in the dead end should not generally exceed the distances shown in column 1 of paragraph 3.16 (i) as appropriate to the location from which it is to be measured; and the total distance of travel should not generally exceed the distance shown in column 2. Diagram 5.2 is an example of this point.

NOTE - the alternative routes should be separated from the dead end section by fire resisting construction.

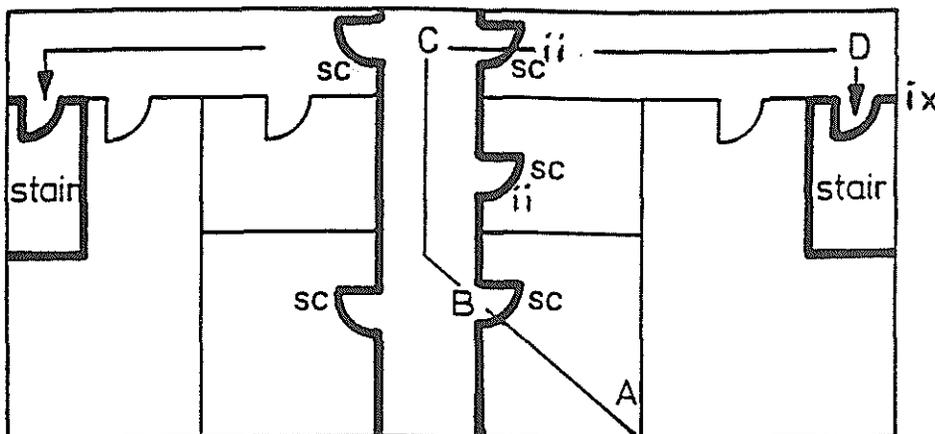


Diagram 5.2 Example of where dead end conditions lead to alternative escape routes. (ii and ix refer to the type of fire door, see 7.4)

- (a) A to B should not exceed the distance of travel within a room (see paragraph 3.16(i))
- (b) A to C should not exceed dead end distance of travel (see paragraph 3.16(i))

(c) A to D should not exceed the maximum total distance of travel (see paragraph 3.16(ii))

(d) Self closing fire resisting doors are provided to separate the dead end from the alternative routes.

- 5.3 Escape in more than one direction in Stage 2 may be deemed to be available from any point from where there are different routes leading to any of the points of safety mentioned in paragraph 5.2 above.
- 5.4 Where the corridor is a protected route, doors to cupboards should be fire doors and should be marked 'Keep locked shut when not in use'.
- 5.5 A main corridor should not normally be less than 1.05m wide.
- 5.6 Corridors should be sub-divided by fire doors as necessary to prevent the free travel of smoke and products of combustion throughout the length of the corridor. Doors provided for the sole purpose of restricting the passage of smoke need not be fire doors provided that they are fitted with suitable smoke seals, are of substantial construction and self closing and double swing as necessary. Care should be taken to ensure that smoke cannot readily by-pass these doors. No undivided length of corridor should normally exceed 18m.
- 5.7 The floor of any corridor or passage should not be inclined at a gradient steeper than 1 in 12 of the horizontal.
- 5.8 Movement of persons up or down a group of not less than 3 steps will be so obvious to those following that they will be prepared for the change in level, but movement up or down one step is not so readily observed and may easily lead to a fall.
- 5.9 Wherever practicable, differences of level in corridors, passages and lobbies should be overcome by the provision of inclines or ramps of gradients not exceeding 1 in 12 or steps not having less than 3 risers in any flight. Additionally all corridors and passages should be level for a distance of 1.5 metres in each direction from any steps.

#### OPENINGS IN FLOORS

- 5.10 Where, from any point on any floor or level it may be necessary to pass near an unprotected opening in a floor through which smoke from a fire in other parts of the building may spread, that opening should be protected unless the occupants will be readily aware of any smoke movement and be able to turn away to an alternative route or exit.

## BALCONIES, BRIDGES, WALKWAYS, ETC

- 5.11 A Balcony, bridge or walkway can sometimes be used to by-pass a stairway enclosure and in some instances can form Stage 2 of an escape route. Where they form any part of the means of escape it will be necessary to ensure that their use at the time of a fire cannot be prejudiced by smoke and flames issuing from openings (eg windows and doors) in the external wall of the building. A door to or from a balcony, bridge or walkway which is intended for use as a means of escape should be kept unlocked. In all cases it will also be necessary to ensure that these means of escape can be used safely by providing, as appropriate, guard rails, hand rails, toe boards, etc. Depending on the circumstances it may be necessary to provide weather protection and lighting.

## EXHIBITIONS

- 5.12 Gangways in exhibitions should be arranged to provide alternative routes of escape and should be of sufficient width to serve the exits to which they lead.

As a guide to the total floor area allocated to exhibition stands, this should not be greater than twice that allocated to gangways.

The construction and finishings of stands should generally be as described for scenery and properties on open stages.

## 6. STAGE 2 - TRAVEL WITHIN STAIRWAYS TO A FINAL EXIT

### STAIRWAY CONSTRUCTION

- 6.1 Where a fire starts in a stairway it will quickly make the stairway unusable by the occupants of all the floors above the point of origin of the fire. They may find it possible to escape by some other route, but smoke and fire rise rapidly through any openings in the floors and may quickly spread to the upper floors. All stairways, therefore, should be constructed in such a way that an outbreak of fire is virtually impossible and combustible material within protected stairways should be minimised.

### ARRANGEMENT OF GROUND FLOOR EXITS FROM STAIRWAY ENCLOSURES

- 6.2 A critical point in any escape route from buildings of more than one storey will be the way from the bottom of a stairway to the open air. All persons descending from upper floors and often those leaving the ground floor, converge upon and pass through this area. A fire spreading to it will make a whole escape route from every floor useless. The simplest and safest precautions against such a risk is to provide a protected stairway enclosure which, in the ground floor, has a doorway leading directly to the open air and which, except for the minimum numbers of doors opening from the horizontal circulation area, is otherwise completely shut off (see diagram 6.4 (a)).

### NUMBER OF STAIRWAYS

#### BUILDINGS WITH A SINGLE STAIRWAY

- 6.3 It will normally be advisable for a building to be provided with two or more stairways, but a single stairway of suitable capacity for the number of persons using the route may be considered satisfactory in the circumstance described as follows -

Small restaurant situated on the first floor or the basement if -

(i) the travel distance either -

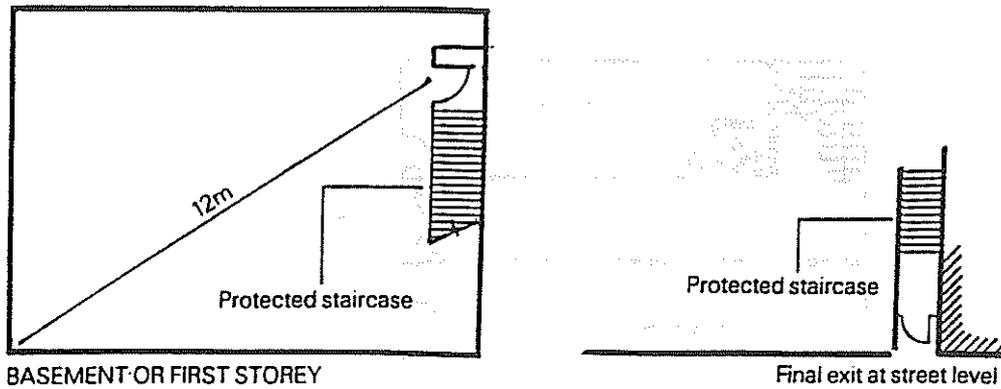
(a) direct to external air and thence by a flight of stairs up to ground level from a basement; or

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

does not exceed 18 metres (or direct distance 12m) (see diagram 6.3);

(ii) the seating accommodation or the assessed standing accommodation does not exceed 50 persons.

diagram 6.3

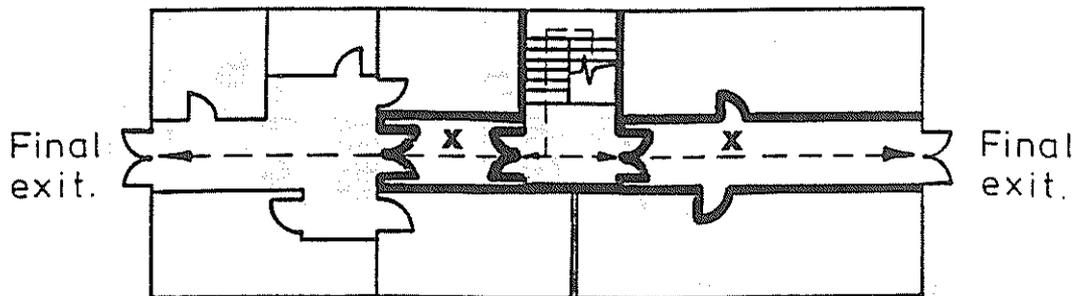


### STAIRWAY WITHOUT FINAL EXIT

6.4 Ideally stairway enclosures should lead direct to a final exit. Where there is only one stairway from the upper floor(s) of a building and a final exit cannot be provided from the stairway enclosure, one of the following arrangements should be adopted -

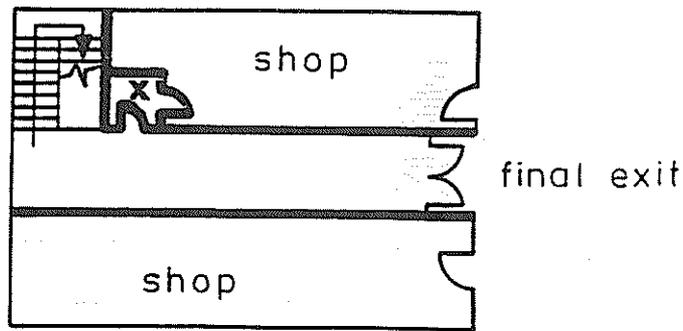
- (a) the provision of two exits from the stairway enclosure each giving access to final exits by way of routes separated from each other by fire resisting construction ( see diagram 6.4 (a));

diagram 6.4 (a) (x refers to the type of fire door, see 7.4)



- (b) there should be a protected route from the stairway to a final exit (see diagram 6.4 (b)).

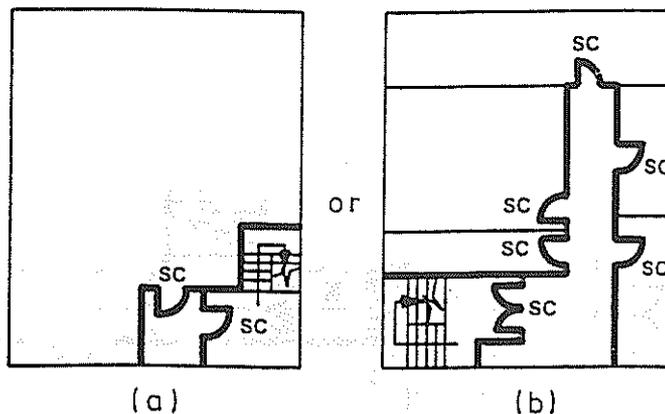
diagram 6.4 (b) (x refers to the type of fire door, see 7.4)



**PROTECTED LOBBY APPROACH TO SINGLE STAIRWAY BUILDING**

6.5 With the exception of buildings of not more than a ground and first floor, in a building with a single stairway the access to the stairway from any floor, other than the top floor or any room (other than a toilet containing no fire risk) should be through a protected lobby or a corridor which is a protected route. (See diagrams 6.5(a) and (b))

Diagrams 6.5 (a) and (b) Examples of a single stairway separated from floor area by a protected lobby or corridor which is a protected route.



**MULTI STAIRWAY BUILDINGS**

6.6 There should be two or more protected stairways for means of escape in all other buildings, apart from exceptional cases, which require protection as follows in paragraphs 6.7 to 6.12.

**ENCLOSURE OF STAIRWAYS**

6.7 All escape stairways should be separated from the remainder of the building by fire resisting construction and by fire doors so as to form a stairway enclosure.

6.8 Where an escape stairway is enclosed as recommended in paragraph 6.7 with a final exit from the enclosure and the only doors into the stairway are:-

- (a) from toilets containing no fire risk (but see Note 3 to paragraph 8.5);
- (b) from protected lobbies;
- (c) from corridors;
- (d) from lift wells with no openings other than those to the stairway enclosure; or
- (e) a final exit

the stairway should be regarded as a protected route.

NOTE :- Where doors other than those listed above (eg doors from rooms or cupboards) open into a stairway, or there is no final exit from the stairway, it will be necessary to determine whether the stairway can be regarded as a protected route.

6.9 Where an escape stairway (including an external stairway conforming to paragraph 6.38) can be considered to be a protected route it will not be necessary to have regard to distance of travel in Stage 3. Where this is not the case the Stage 3 section of the escape route should be regarded as forming part of the total distance of travel (see paragraph 3.16(ii)).

6.10 Where an escape stairway is a protected route with a final exit to the open air, and the stairway only serves a balcony or tier, there may not be a need for the door at the head of a stairway to be fire resistant.

6.11 Where a main stairway does not comply with the final exit provision of paragraph 6.8 because it discharges through the main entrance lobby (foyer) of the premises it may be counted as an escape stairway provided that:-

(a) there is direct and unobstructed access from the point at which the flight or flights terminate to a final exit;

(b) the foyer and remainder of the stairway is separated from all adjacent accommodation by fire resisting construction and self closing fire doors;

(c) the stairway and foyer contains nothing which is readily combustible or likely to contribute to rapid ignition or development of fire; and

(d) there remain a sufficient number of alternative escape routes from all areas served by the main stairway for the occupant capacity.

- 6.12 Two stairways which appear to provide alternative routes do not constitute alternatives for escape purposes if they both descend into one common area at ground level, unless there is fire-resisting construction separating the stairways at ground level so that the common area is one of negligible fire risk and access between the stairways is via two sets of self-closing fire doors.

#### WIDTH OF STAIRWAYS

- 6.13 Any stairway, lobby, corridor or passageway, which forms part of the means of escape from the premises, should be of a uniform width not less than the width of the exit, or the aggregate width of the exits, from which it leads and should be so constructed and arranged so as not to impede the free flow of traffic or the safe escape of people using it.
- 6.14 As a general rule stairways should be at least 1.05m wide and in all cases the aggregate capacity of stairways should be sufficient for the number of persons likely to use them at the time of the fire. In this connection it will be necessary to consider the possibility of one stairway being inaccessible because of the fire and the aggregate width must allow for this possible reduction. (See also paragraph 4.8.)

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

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

- 6.15 Stairways wider than 2.1m should normally be divided into sections, each separated from the adjacent section by a handrail, so that each section measured between the handrails is not less than 1.01m wide.

#### MEASUREMENT OF WIDTH

- 6.16 Stairways and landings should be measured, with no account being taken of skirtings, as follows:-
- (a) when enclosed on each side by walls, from the finished surface of the wall on one side to the finished surface of the wall on the other side;
  - (b) when constructed with a wall on one side only, from the finished surface of the wall to the outer edge of the steps and landings; and

(c) when provided with balustrades on both sides, from the outer edge of the steps or landings on one side to the outer edge of the steps or landings on the other side.

Side handrails projecting not more than 100mm and central handrails of not more than 150mm in total width may be disregarded for calculation purposes.

#### HEADROOM OF STAIRWAYS, LOBBIES ETC

6.17 The clear headroom of every stairway, lobby, corridor or passage should be not less than 2m measured vertically from the pitch line of the nosings of steps and from the floor in all other cases. There should be no projections from any wall or ceiling below a clear height of 2m of any stairway, lobby, corridor or passage which may impede the free flow of persons using it.

#### STAIRWAYS AND LANDINGS

6.18 A stairway should have:-

- (a) no fewer than three risers no more than sixteen risers in any flight;
- (b) no more than two consecutive flights without a turn;
- (c) a turn between consecutive flights where any flight has twelve risers or more;
- (d) no riser within the opening swing of any door; and
- (e) a landing at the top or bottom, and between consecutive flights.

The length of the landing should be not less than the width of the stairway of which it forms part.

6.19 The rise of any step should be uniform throughout its length, and should be the same as that of every other step in the same flight.

#### SPIRAL OR HELICAL STAIRWAYS

6.20 The going of a step should be not less than 280 mm and all consecutive tapered treads should have:-

- (a) the same minimum going of 280 mm, measured at a point 270 mm from the wide end of the tread;
- (b) the same rate of going and taper;
- (c) their narrow end at the same side of the flight; and
- (d) an angle of taper of not more than 15 degrees.

## LIGHTING CONDITIONS OF STAIR TREADS

- 6.21 Where lighting conditions render it desirable the nosings of all stair treads should be made conspicuous by painting or other effective means.

## HANDRAILS

- 6.22 A continuous handrail should be fixed on each side of all stairways, steps, landings and ramps at a height of not less than 840mm or more than 1m measured vertically from the pitch line of the nosing of steps and from the floor of landings, except that a second handrail need not be provided to such stairs and ramps or flights of steps which are not more than 1.01m wide. The handrail should not normally project more than 100mm and the ends should be turned for safety.

## PROTECTIVE BARRIERS

- 6.23 A protective barrier should be provided in each of the following positions:-

- (a) at each side of any stairway or ramp; and
- (b) at the perimeter of any landing or floor, balcony or any other part of the premises where such provision is necessary to ensure the safety of persons using the building.

- 6.24 The minimum height of a protective barrier should be as follows:-

- (a) barrier guarding a balcony which is immediately in front of fixed seating - 790mm;
- (b) barrier guarding a flight - 900mm; and
- (c) any barrier not described in paragraphs (a) or (b) above - 1.1m.

- 6.25 A handrail may form the top of a protective barrier provided that the appropriate height is achieved.

- 6.26 Any new protective barrier should be designed in accordance with British Standard 6180.

## BARRIERS ACROSS ESCAPE ROUTES

- 6.27 Rigid barriers should not be provided in or across any gangway, exitway or route of escape from the premises. Any rope barrier which may be provided should be fitted with automatic catches or slip connections and should be arranged so as not to trail on the floor when parted. The fittings should not project into the gangway or exitway.

## FLOORS AND TIERS

- 6.28 No floor or tier whether temporary or permanent should be constructed with a slope of more than 35 degrees to the horizontal.
- 6.29 The floors of gangways, lobbies, corridors and passageways and the treads of steps and stairways, should have non-slip and even surfaces.

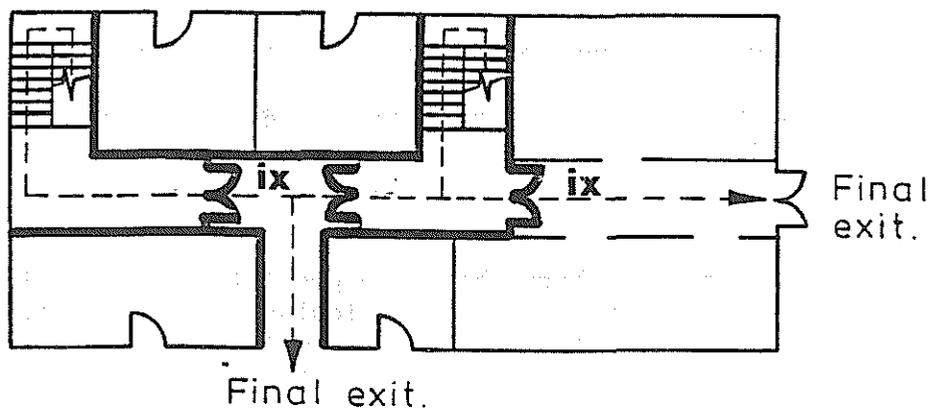
## STAIRWAY SURFACE FINISHES

- 6.30 Where a building has only one escape stairway, and surface finishes of the stairway do not conform with the recommendations in paragraphs 8.22 to 8.25, an alternative escape route should be provided.
- 6.31 In buildings where more than one stairway is necessary for escape purposes and the surface finishes of one or more stairway(s) do not conform with the recommendations in paragraphs 8.22 to 8.25, this may nevertheless be acceptable if there are compensating factors eg automatic fire detection or a lobby approach to the stairway(s) in question.

## SEPARATION OF STAIRWAYS

- 6.32 Where from an upper floor(s) of a building there is more than one stairway, which is required to be separated from the remainder of the building, and the stairways do not have final exits from the stairway enclosures, the stairways and the routes to their respective final exits should be separated from one another by fire resisting construction and fire doors in such a way that an outbreak of fire at any point cannot affect more than one escape route from the stairways (see diagram 6.33).

diagram 6.32 (ix refers to the type of fire door, see 7.4)



## STAIRWAYS TO BASEMENTS

- 6.33 If the distance of travel from any point in the basement exceeds that given in paragraph 3.16 (i) the basement should have at least two stairways or other escape routes to a place of safety at ground level.
- 6.34 In all premises where people resort it is preferable that a stairway serving upper floors should not extend to the basement, and wherever possible all stairways to basements should be entered at ground level from open air, and in such positions that smoke from any fire would not obstruct any exit serving the upper floors of the building. Where the stairway links a basement with the ground floor the basement should be separated from the ground floor either by a protected lobby or by two 30 minute fire doors, one at basement and one at ground floor level or, if this cannot be achieved, by one 60 minute fire door. In cases where a stairway providing access for technicians links a stage basement through a protected stage to fly and lighting galleries, exemption to the above may be afforded for that stairway.

## ACCOMMODATION STAIRWAY

- 6.35 Accommodation stairways are additional to that or those required for escape purposes and are provided for the convenience of occupants.

These need not be separated from the remainder of the building provided that -

- (a) the means of escape are sufficient without relying on the accommodation stairway;
- (b) no escape route from a dead end of an upper floor passes through an accommodation stairway (see also paragraph 8.8 in relation to other floor openings);
- (c) the stairways do not pass from one compartment to another;
- (d) no such stairway serves more than two floors; and
- (v) neither of the floors is connected by an open stairway to a third floor.

## VENTILATION

- 6.36 Wherever practicable, there should be provision for ventilating stairways in the event of fire, particularly if the stairway enclosure is not adjacent to an external wall which has openable windows, and the stairway continues uninterrupted to the top of the building. The minimum area of permanent or openable venting generally acceptable is considered to be no less than 1 sq m or 5% of the internal area of the stairway enclosure whichever is the greater.

## OTHER FORMS OF ESCAPE FROM HEIGHT (WITH LIMITATIONS)

### EXTERNAL STAIRWAYS

- 6.37 Where there is an external stairway it should be a protected route and it will therefore be necessary to ensure that the use of it at the time of a fire cannot be prejudiced by smoke and flames issuing from openings (eg windows, doors) in the external wall of the building below and adjacent to the stairway. It will also be necessary to provide lighting (see chapter 11) and consider the protection of the stairway from the weather. For further information see Guernsey Fire Brigade appendix FP6.

### ROOF EXITS

- 6.38 Persons escaping from a fire, other than those escaping from a level below ground, should not normally have to ascend to a higher level to reach a place of safety. However, in exceptional circumstances where it is not practicable to provide means of escape without placing reliance on an upwards escape route, roof exits may be acceptable provided that the following criteria are met:-

- (a) roof exits should not normally be used by the public;
- (b) the roof should be flat, adequately defined and the surface should be of a safe non-slip character and the route guarded with protective barriers and provided with lighting (see chapter 11);
- (c) the escape route across the roof and its supporting structure should be constructed as a fire resisting floor;
- (d) if the escape route is in one direction only any ventilation outlet or other extract system and any door roof lights, or windows that are not fire resisting should not be sited within 3m of the route;
- (e) persons should not have to ascend more than one level;
- (f) the exit should be in, or lead directly to, a place of safety;
- (g) the higher level to which persons ascend should not be to an area of high fire risk;
- (h) the route by which the higher level is gained should be a stairway;
- (i) if the stairway serves any lower level(s) also, the upward escape route should be separated from the remainder of the stairway by fire-resisting construction and by fire doors.

## ESCALATORS

- 6.39 Escalators are not normally allowed as a means of escape although in certain premises it may be reasonable to regard them as similar to accommodation stairways (see paragraph 6.35).
- 6.40 Escalators not within stairway enclosures may need to be separated from the remainder of the building by fire-resisting construction and by fire doors.
- 6.41 To avoid a situation where persons are carried towards a fire it is important that arrangements should be made to stop escalators at the outset of an emergency.

## FIXED SLOPING LADDERS

- 6.42 Fixed sloping ladders suitably guarded are not acceptable for use by members of the public. They are only acceptable for use by limited numbers of persons who are able-bodied and active enough to be able to negotiate them without difficulty. Where provided in boiler, transformer or high voltage switchgear rooms, they should be separated from such accommodation by means of a full height enclosure of fire resisting construction.

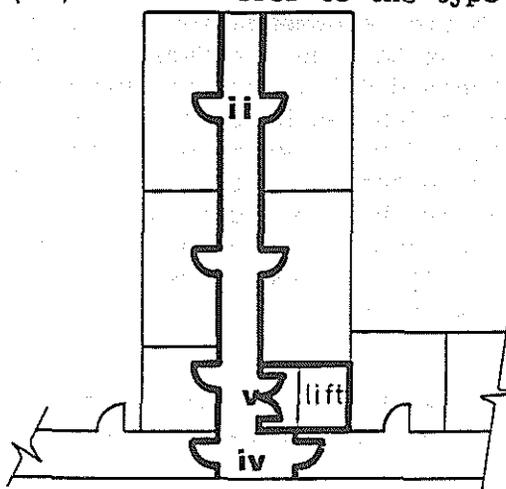
## RAMPS

- 6.43 Where a ramp is provided it should:-
- (a) have an easy gradient and in no case should it be steeper than 1 in 12;
  - (b) be provided with guard rails, where it is more than 600 mm above the ground, which should be at a height between 150 mm and 300 mm above the ramp;
  - (c) be provided with handrails which should give a firm support and be between 840 mm and 1 m above the surface of the ramp;
  - (d) have a width not less than that of the exit it serves;
  - (e) normally be divided into sections, each separated from the adjacent section by a handrail, so that each section measured between the handrails is not less than 1.01 m wide; and
  - (f) be provided with non slip surfaces which will be particularly necessary where a ramp is exposed to the weather.

## LIFTS

- 6.44 Lifts and hoists are not normally acceptable for means of escape. Exceptionally, however, when it is necessary to consider means of escape for persons in the premises who may be disabled, the use of a lift(s) should not be ruled out provided the appropriate provisions of British Standard 5588 : Part 8 are complied with.
- 6.45 Unless a lift is situated within a stairway enclosure which is a protected route and is entered from the stairway only, it should be contained within a lift well enclosure of fire resisting construction in which the access doors are fire doors. Existing sliding doors to lift shaft openings are sometimes ill fitting in their slides and frames and offer a poor barrier to the passage of smoke. In such cases where the opening discharges into a corridor which is a dead end, a protected lobby should be provided at the entrance to the lift. A person should not have to pass through the lobby to reach the continuing route of escape beyond (see diagram 6.45).

diagram 6.45 (ii, iv and v refer to the type of fire door, see 7.4)



- 6.46 A lift motor situated at the foot of a lift well which is within the enclosure of a stairway which is a protected route and forms the only escape route from a building (or part of a building) should be housed in a compartment separated from the lift well by fire resisting construction. Any opening necessary in the separation between the compartment and the well for the operation of the lift should be as small as possible.
- 6.47 Where practicable, a lift well should have a permanent ventilation at the top equal to not less than 0.1 sq m for each lift in the lift well enclosure.

## 7. DOORS

### FIRE DOORS

- 7.1 Fire doors are one of the most important links in the chain of fire safety precautions, and care in their selection to ensure that they are adequate for their purpose cannot be over emphasised. The failure of doors under fire conditions usually occurs either at the gap between the door and the frame, or at one or more of the points where ironmongery is fixed (particularly at the hinges or lock positions), or, in the case of glazed doors, at the line of the junction between the glazed area and the rest of the door. For this and other reasons it is particularly important to ensure that doors delivered on site comply precisely, in dimensions and workmanship, with the manufacturers specification for the appropriate fire resistance test report. Doors should also be hung to ensure a good fit when closed (no more than about the thickness of 50p piece) and the use of wedges should not be permitted (see paragraph 7.10).
- 7.2 Fire doors are provided for heat or smoke control, or to protect means of escape. A basic recommendation for a half hour door could be misleading as this only refers to the criteria for stability (British Standard 476). For the purposes of this chapter, fire doors are designated by reference to their required performance (in minutes) for integrity only (eg a reference FD 20 implies that the door in that situation should achieve not less than 20 minutes integrity when tested in accordance with British Standard 476 : Part 22 and a reference FD 30 implies not less than 30 minutes integrity). Where doors are also required to retard the passage of smoke at ambient temperature the suffix 'S' is added.

NOTE - 'integrity' is the ability to withstand cracking or opening up to the extent of allowing flames to pass through.

### UPGRADING DOORS

- 7.3 An FD 20 door can normally be upgraded to FD 30 by the provision of intumescent strips. The passage of smoke at ambient temperature can be resisted by the provision of flexible edge seals (possibly in conjunction with intumescent strips) or possibly by the provision of 25 mm x 35 mm doorstops.

Depending on the suitability of existing doors (they should not be too flimsy) and their location, it is possible to upgrade them to the required standard (Guernsey Fire Brigade appendix FP/4 should be consulted). It is however usually more practicable to purchase new doors due to the time and effort taken.

## FIRE RATING

7.4 Fire doors should be provided to suit the correct fire rating as follows -

- (b) FD 20S - (i) a fire door forming part of the enclosure of open plan areas which persons need to pass in case of fire;  
(ii) a fire door forming part of the enclosure of a corridor forming a dead end not also being item (x);  
(iii) a fire door sub-dividing corridors connecting alternative exits;  
(iv) a fire door sub-dividing dead end portions of corridors from the remainder of such corridors;
- (c) FD 30 - (v) a fire door forming part of the enclosure of all lift shafts except those within enclosures of a protected stairway;  
(vi) a fire door forming part of the enclosure of builder's ducts etc;  
(vii) a fire door affording access on to an external stairway (other than that at the highest level);  
(viii) a fire door forming part of the enclosure of the following ancillary accommodation -
1. storage area not greater than 450 sq m (see notes 1 & 2)
  2. repair and maintenance workshops and reprographic rooms (see note 1)
  3. kitchens (separately or in conjunction with an associated restaurant/canteen);
  4. transformer, switchgear and battery rooms, for low voltage or extra low voltage equipment;
- (d) FD 30S - (ix) a fire door forming part of the enclosure of a protected stairway;  
(x) a fire door forming part of the enclosure of a fire resisting lobby or corridor approach to a protected stairway;
- (e) FD 60 - (xi) a fire door forming part of the enclosure of the following ancillary accommodation -
5. loading bays;
  6. storage areas greater than 450 sq m (see notes 1 & 2);
  7. service installation rooms other than those covered in items 4 and 9 to 13 inclusive;
  8. car parks within or adjoining a building;
  9. boiler rooms (see note 3);
  10. fuel storage spaces (see notes 3 & 4);
  11. transformer and switchgear rooms for equipment above low voltage;
  12. rooms housing fixed internal combustion engines; and
  13. any higher fire risk area other than items 9 to 13.

NOTE 1 - Not higher fire risk areas.

NOTE 2 - Other than refuse storage.

NOTE 3 - Other than oil fired boiler installations and oil storage.

NOTE 4 - Other than liquified petroleum gas storage.

#### WIDTH OF FINAL EXIT DOORS

- 7.5 The total width of all final exit doors, or other means of exit from a lobby/foyer, should be not less than the total width of all exitways or other means of exit leading into them.

#### GLAZED ELEMENTS

- 7.6 The above paragraphs exclude reference to any performance for insulation (because of problems of radiation through traditional fire resisting glass). Because a heat barrier would prevent persons passing doors or walls incorporating glazed elements, these should not extend any lower than 1.1 m above floor level when installed in such a situation.

#### SELF CLOSING DEVICES

- 7.7 The ability of fire doors to perform their designed function will depend upon their being fully closed at the time of the fire. They are, therefore normally required to be fitted with self closing devices. These devices should be capable of overcoming the latch if fitted, or otherwise of holding the door in the closed position.
- 7.8 Rising butt hinges are not suitable, as are possibly the cheaper devices which, when first installed cause a door to slam, and then lose their strength over a period of time and fail to close the door.
- 7.9 Self closing devices are not required on doors to cupboards, service ducts and any vertical shafts linking floors, but these should be kept locked shut when not in use.

#### AUTOMATIC DOOR RELEASES

- 7.10 No means should be provided for holding a self closing fire door in an open position other than by an automatic door release which will effectively cause the door to close when activated by a signal from the electrical fire alarm, which incorporates smoke detectors. The release must also be provided with a ready means of manual operation from a position at the door. Automatic door releases should only be fitted to a door which cannot be kept closed because of the problems presented by its frequent use in the day-to-day running of the premises. Normally no such device should be fitted to doors forming part of a stairway enclosure. The door release should be positioned at the same height as the door closer in order to prevent warping.

NOTE - Doors which are held open in the manner referred to in this paragraph should be closed after any performance. This may be achieved by the installation of a remote switch.

## DIRECTION OF OPENING

7.11 Escaping persons arriving at a locked exit will quickly form a build-up if there is any delay in getting out. It may therefore be impossible for persons at the head of the build-up to open the door (because of weight of numbers) if it opens inwards. Normally therefore, a door used for means of escape should open in the direction of escape. It should always do so -

(a) if it is from a room in which a fire may develop very rapidly; or

(b) alternatively an inward opening door may be secured by a key in the open position whenever members of the public are present.

The door should also -

(c) be hung so that when open it does not obstruct any escape route (see diagram 7.11);

(d) open through not less than 90 degrees;

(e) be provided with an observation panel if it is hung to swing both ways;

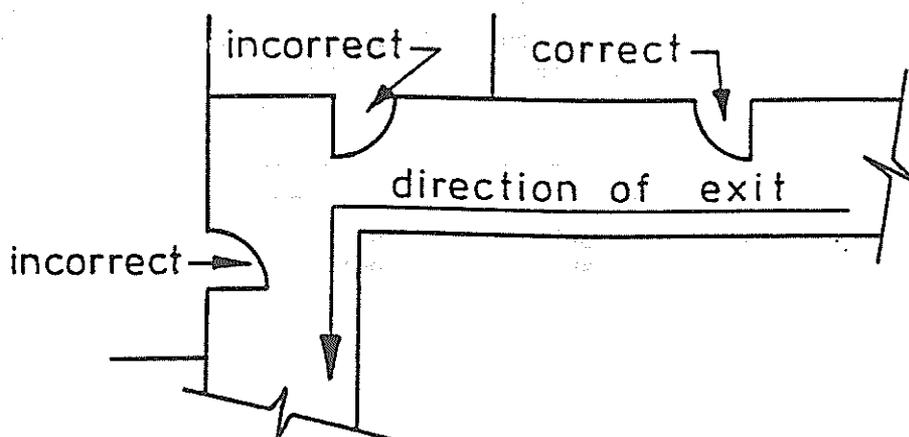
(f) if it is a fire door, protecting an escape route, be fitted with smoke seals.

Because of the tripping hazard it should also -

(g) not open directly over a step; and

(h) Thresholds or sills of all doors should not normally protrude above the surface of the floor. Where this is a practical necessity for weather protection they should offer the minimum obstruction. (Modern replacement plastic doors appear to suffer from this fault).

Diagram 7.11



7.12 Any door or gate which opens into a corridor, stairway, passageway or gangway should, where possible, be recessed. If this is not possible it should be hung so as to be closed by a stream of persons passing through such a corridor, stairway, passageway or gangway in the direction of the exit. Any such door or gate should be rendered self-closing, and should be arranged so as not to interfere with exit or other doors. Consideration should be given for such a door or gate to be provided with a vision panel.

NOTE - Where, for convenience of working, a door not providing fire separation is required to be held open into an exitway, it should be fitted with a holding device which will allow it to be shut readily by gentle pressure on the door itself.

7.13 A door or gate should not open immediately onto a step or steps, and a landing equal to the width of the doors and not less than 1m in length should be provided between the door or gate and the step or steps. Where a door or gate is at the head or foot of steps, a landing of not less than 1m should be provided between the door or gate and the top step or the bottom step as the case may be.

#### FASTENINGS ON DOORS

7.14 There have been many tragic disasters, where persons have died as a result of fire, which can be attributed to the fact that exit doors were either locked, obscured or otherwise obstructed. It is therefore a cardinal principle in relation to means of escape that all gates and doors should be able to be opened easily and immediately by persons leaving the building or making their way to a place of safety.

7.15 Any exit door or gate which is required to be kept open whilst the public are on the premises should be provided with approved fastenings so that the door or gate is kept open in such a way that it will not cause an obstruction.

7.16 All doors which for structural reasons cannot be hung to open in the direction of the exit and all collapsible, sliding or roller gates, shutters or doors across exitways should be locked with a removable key, in the fully open position, at all times when the public are present. During such times the key should be removed and kept secure from unauthorized persons (eg in the manager's office).

7.17 Where the doors, gates, or shutters are required by paragraph 7.16 to be locked open, a notice or notices clearly visible on both sides of the door, gate or shutter (whether open or closed) should be prominently displayed. The notice should bear the words 'This door (gate, shutter etc) to be secured open when the premises are occupied'.

- 7.18 Removable security fastenings such as chains, bars, padlocks etc should be removed from all doors, gates, shutters etc on exit routes at all material times. Such fastenings should be placed on numbered hooks in an approved position not accessible to unauthorized persons (eg in the manager's office). There should be only one such numbered hook for each fastening. No removable fastening should be replaced until the public have left the premises and sufficient exits should remain available for staff who may be present.

#### PANIC BOLTS OR LATCHES

- 7.19 Doors used for means of escape should be kept unlocked at all times when people are in the building and in no case should a door be so fastened that it cannot and immediately be opened from the inside without the use of a key. Where the door has to be kept fastened while persons are in the building, the fastening should only be by means of a panic latch or panic bolt (or such fastenings as may be approved) which ensures that the door can be readily opened by pressure applied by persons within.
- 7.20 Panic bolts or latches should be without sharp projections and should be of such pattern that normal horizontal pressure on the push-bar will open the door. The push-bar should be placed at a height within the range of 900mm-1.1m from the floor. The words 'PUSH BAR TO OPEN' should be displayed conspicuously in block letters not less than 50mm in height immediately above or below the push-bar. Panic bolts should be of a strong type and the working parts should be properly maintained. Panic bolts and panic latches fitted after the publication of this guide should comply with British Standard 5725: Part 1.

More than one type of fastening should not be fitted to any door ( eg a panic bolt fitted for ease of exit would be negated by the addition of, say, a barrel bolt).

NOTE - Where special security arrangements are necessary eg banks, consideration will need to be given to the fastening of doors. In such cases it will be necessary for all concerned to understand the method of fastening to be used and for all to be able to use it in the event of an emergency. Alarms can also be fitted to emergency doors, to either act locally or generally. The addition of a notice warning of the alarm should deter frivolous use.

#### OTHER FASTENINGS

- 7.21 Other door fastenings which may be satisfactory according to circumstance ( but to a increasingly lesser extent) are -
- (a) push pads, which act in a similar way to a panic latch but which has a smaller pressure area;

(b) special mortice locks which will always open from the inside without the use of a key, but which can be locked to persons outside, (the provision of lever type handles are preferred);

(c) emergency exit locks in doors with break glasses;

(d) emergency break glass draw bolts;

(e) yale type locks;

(f) draw type bolts.

NOTE 1 Where a special form of mechanical fastening is used, precise instructions as to its use should be displayed where they can be clearly seen and understood by any persons using the fastening. The use of electrically operated fastenings require special consideration to ensure that they are readily operable at all material times and will fail safe.

NOTE 2 Where it is desired to provide security arrangements to doors required to be kept free of fastenings or where doors are provided with panic bolts only, removable fastenings or chains may be used in which case a board should be provided at a central location point (eg porters or managers office) upon which all such fastenings should be hung on named hooks in order to facilitate checking when the premises are in use.

NOTE 3 All of the above should be fixed on the face of the door at a height within normal reach.

NOTE 4 Keys in glass fronted boxes are no longer considered acceptable for securing doors required for means of escape purposes.

NOTE 5 Door handles or any other door fittings should preferably not project more than 50mm into exitways. Handles should be of the lever type but with the free end turned in to prevent it from catching in clothing.

#### OTHER ALTERNATIVE EXITS

##### SLIDING DOORS

7.22 These are not normally suitable on escape routes unless they are for the sole use of staff. Where provided, a notice with the words 'Slide to open' and with an arrow pointing in the appropriate direction should be permanently displayed at about eye-level on the face(s) of all sliding doors which afford an exit or are situated across an escape route.

7.23 Where an alternative means of escape exit is required from a projection or rewinding room, this may be by way of a hatch or window.

Any such hatch or window should be sufficiently large and openable (to at least 850 mm in height x 500 mm wide in the clear with the casement open) to permit an average size person to pass through with ease.

Suitable steps should be provided up to the sill, both on the inside and the outside, with handgrips provided as necessary. The height of the sill should not be more than 1.1 m above the floor level.

#### **CURTAINS**

7.24 Curtains hung on either side of exit doors or in exit ways (whether corridors or staircases) shall -

- (a) be hung on easy runners;
- (b) be parted in the middle;
- (c) not overlap each other by more than 75 mm;
- (d) be secured at the top outer corners;
- (e) not rail upon the floor;
- (f) not conceal notices.

## 8. FIRE RESISTANCE AND SURFACES OF WALLS AND CEILINGS

- 8.1 Fire resistance refers to the ability of construction to prevent heat and smoke from travelling from one area (compartment) into another and is built in to protect means of escape and prevent fire spread.
- 8.2 The requirement for a low surface spread of heat or flame over walls and ceilings is designed to prevent fire already present in the means of escape (whether in a room, corridor or stairway) from preventing persons escaping.
- 8.3 Where premises form part of a building, the use and construction of the remainder of the building should be such that, in the event of fire, there will be no undue threat to the safety of the occupants of the premises. Where separation is offered by fire resisting screens and fire doors to the specified standard, this will be deemed to meet the period of fire resistance. In other cases the risks will need to be evaluated by the licensing authority,

### MINIMUM FIRE RESISTANCE

- 8.4 When planning fire precautions and means of escape in premises it is usual to have regard to the fire resistance of the elements of structure, eg walls, floors etc. In the types of premises covered by this guide it may not always be possible to achieve the minimum standards set out in the table below. In such circumstances compensating features are required such as a reduction in the distance of travel and/or the provision of automatic fire detection and/or automatic fire suppression systems.
- 8.5 **MINIMUM FIRE RESISTANCE (IN MINUTES)** (Figures in brackets refer to the notes below)

#### FLOORS

- |  |   |                |
|--|---|----------------|
| (a) Floor immediately over a basement                | - | 60 (1 & 10)    |
| (b) other floors for buildings                       | - | 30 (1 & 2)     |
| (c) Enclosing an area of high fire risk<br>fire risk | - | 60 (8,10 & 11) |
| (d) Enclosing a ventilation duct                     | - | 30 (1 & 2)     |

## WALLS AND DOORS

Enclosing a stairway; protected route;	-	30	(3,5,7 & 9)
lift motor room;			(3,5,7 & 9)
lift well;			(5,7 & 9)
compartment; or			(4,5 & 7)
ventilation duct.			(5,7 & 9)
			(1)

Enclosing a dressing room etc	-	2 x 30	(12)
Enclosing a separated stage	walls	-	60
	doors	-	2 x 30

In a stairway from ground floor to basement			
walls	-	60	
doors	-	2 x 30 or	
		1 x 60	(5,6,7 & 9)

Enclosing an area of high fire risk	-	60	(7,8 & 9)
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In a corridor to sub-divide it	-	20	(5,7 & 9)
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### NOTES TO ABOVE TABLE

1. See paragraph 8.8.

2. This does not include for example, a gallery floor.

3. Except a door to a toilet containing no fire risk, provided that the toilet room is separated by fire-resisting construction from the remainder of the building, and the door is self closing.

4. Except a lift well contained within a protected stairway enclosure (see also paragraphs 6.45 and 6.46).

5. An existing door may be deemed to satisfy the necessary standard of fire resistance if it can be suitably modified in accordance with the methods recommended in the Timber Research and Development Association's Wood Information Sheet, section 1 sheet 32 "Fire resisting door set by upgrading".

6. See paragraph 6.35.

7. See paragraphs 5.6, 6.39(d) and 7.4;

8. In certain areas of high fire risk eg a kitchen, cloakroom, servery, etc a 30 minute door and/or service hatch or shutter may be permitted. During the period that the public are on the premises, and provided that the cloakroom, servery etc is attended, the door, hatch or shutter may be held in the open position.

9. (a) Fire resisting glass may be incorporated into the wall separating any accommodation from a corridor that is a protected route provided that the glass in its framework satisfies the fire resistance performance criteria for British Standard 476: Part 22.
- (b) A glazed screen with timber frames may be used to separate an escape corridor from a stairway enclosure provided that the appropriate fire resistance given in the table is maintained between the two areas. The insulation criterion of British Standard 476 may be waived where the glazing is limited to an area at least 1.1m above the adjoining floor level.
- (c) Vision panels incorporated into a door which protects an escape route should not reduce the fire resistance required for the door and should accord with the appropriate provisions of British Standard 6262.
10. See paragraph 8.6.
11. Other than ground floor.
12. Where access is allowed between the stage or platform and the dressing room, and between dressing rooms etc and the auditorium or hall, a protected lobby or protected route should be provided. The requirement will be met by having at least two 30 minute fire doors between the dressing room and stage/platform area or between the dressing room and any other public area.
- 8.6 The period of fire resistance suggested in 8.4 above should wherever practicable be achieved except that in a building where the main elements of structure offer less than a 60 minute standard, an enclosure to an area of high risk and the floor immediately over a basement should, under no circumstances, be less than 30 minutes fire resistance. In any other case in which the suggested periods of fire resistance cannot be achieved it will be necessary to consider whether some compensating provision is needed, such as a reduction in the distance of travel and the provision of automatic fire detection.
- 8.7 Accommodation coming within the scope of this guide and situated within a building comprising other categories of use, ie residential, should be structurally separated from such premises by imperforate construction which affords a fire resistance of not less than 60 minutes. Provision should also be made for independent and protected escape routes.

## **FIRE/SMOKE SPREAD**

- 8.8 In addition to the measures already recommended for protected routes, areas of higher fire risk, lift wells etc (see paragraph 8.5) it will be necessary to safeguard the means of escape against the spread of fire and smoke and hot gases through service openings in the building structure, eg service ductwork, pipework openings, chutes and ventilation trunking. This list is not exhaustive but is intended to highlight those engineering services commonly found and which need to be considered. Safeguards normally consist of protective fire resisting enclosures to these services where they may pass through, or into, escape routes from other parts of the premises or by effective fire/smoke stopping at the point where the building services penetrate the floors or walls. In the larger premises where extensive ventilation ductwork is present fire dampers may be required.
- 8.9 Because of the need to protect the means of escape from the premises it will be necessary for a detailed examination to be made of structural separation in order to identify voids and wall cavities which may not be readily apparent. Without such an inspection and any defects being remedied, it is possible that heat and smoke could pass unrestricted through these openings thereby jeopardising the use of escape routes.
- 8.10 A large assembly room may not always be fully used for an event because of a reduced number attending. In such circumstances there is a risk of a fire developing in the unoccupied area and spreading to the occupied part. This is the situation which occurred at the Stardust Club in Dublin in February 1981 when a fire started in an area of seating which was not being used for the event and was thus curtailed off from the rest of the ballroom. It is therefore essential that the occupied part of the premises and the public attending the event are not placed at risk from a fire developing in the unoccupied part. To ensure this, ideally the fire risk should be guarded against by effective separation or an automatic fire detection system installed. There is also a need to secure against unauthorised access.

## **MECHANICAL VENTILATION**

- 8.11 In order to control the movement of smoke laden air and to prevent as far as practicable it being carried into routes of escape, any system of mechanical ventilation should be designed to ensure that air quantities are so adjusted that the normal movement of air is directed away from protected staircases, exits and routes of escape.

- 8.12 Where a system of mechanical ventilation is installed involving the recirculation of air, a smoke detector, in addition to those required for the protection of particular risks, eg computer suites, should be provided in the extract system ductwork at a point before the separation of the recirculated air. On operation, the detector should be capable of stopping the recirculation of air and, at the same time, should divert the extract air outside the building.
- 8.13 In systems involving the recirculation of air and in other large mechanical ventilation installations, a means for the exclusive use of the Fire Brigade for the control of the ventilation system should be provided in a suitable position.
- 8.14 The absence of structural separation is not always apparent, and the existence of voids and wall cavities in which smoke and heat may travel is sometimes evident only from a detailed examination of the construction. In some circumstances a fire in a room, if allowed to develop, may effect adjoining rooms or spaces by means of penetration other than through the door opening, eg by wall cavities and ceiling or roof voids.
- 8.15 Often the installation of -
- (a) ventilation systems;
  - (b) recessed ceiling lights;
  - (c) the renewal of or changes to central heating systems; or
  - (d) rewiring;
- may have weakened the integrity of the fire resistance, allowing smoke penetration.
- 8.16 To prevent heat and smoke passing initially from an area or room via gaps or crevices thus jeopardising the use of escape routes, these should be filled or 'stopped' to a standard equal to that of the element of construction.

#### SEPARATION OF ANCILLARY ACCOMMODATION

- 8.17 Ancillary accommodation is boiler chambers, refrigeration plant rooms, switch gear rooms and any other plant or apparatus being part of the services of a building.

These should be enclosed by and separated from the remainder of the building by solid non combustible fire resisting construction.

#### SINGLE STAIRCASE BUILDINGS

- 8.18 (a) No openings should be provided in the enclosures separating the ancillary accommodation from the protected staircase.

(b) Transformer chambers and high voltage switchgear rooms should be entered solely from the external air and no internal connection should be made to the remainder of the building.

(c) Other ancillary accommodation should be -

(i) entered solely from the external air with no internal connection to the remainder of the building; or

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

(d) Any ventilation openings serving ancillary accommodation should not be sited within a distance of 1 m of any final exit.

#### MULTI STAIRCASE BUILDINGS

8.19 (a) Transformer chambers and high voltage switchgear rooms -

(i) should ideally, be entered solely from the external air;

(ii) no access should be provided to staircases or to parts of the buildings to which the public have access.

(b) Other ancillary accommodation should conform with the foregoing principle but consideration would be given to access being provided to staircases and other parts of the building where the fire risk is low, eg pump rooms.

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

#### BOILER, TRANSFORMER OR SWITCHGEAR ROOMS

8.20 Any upward means of escape from a boiler chamber, transformer chamber or high voltage switchgear room whether by means of stairs or sloping ladder, should be separated from such accommodation by means of a full height enclosure of fire resisting construction.

8.21 In order to provide you with some guidance in the type of structure which would give a fire resistance of 30 minutes, some examples of suitable materials are given as follows -

(a) WALLS

- (i) 75 mm reinforced concrete
- (ii) 100 mm brick
- (iii) 100 mm concrete block
- (iv) 12.5 mm plasterboard both sides of timber frame
- (v) 9.5 mm plasterboard both sides of timber frame plus 5 mm of gypsum plaster
- (vi) 50 mm rockwool

(b) FLOORS

21 mm thickness of tongued and grooved boarding on timber joists not less than 175 mm deep by 50 mm wide with ceiling of one layer of plasterboard of minimum thickness of 12.5 mm finished with 5 mm layer of gypsum plaster.

SURFACES OF WALLS AND CEILINGS

8.22 Apart from small areas the surface of walls and ceilings should correspond to a standard not lower than the appropriate classification indicated below -

- Class 0 In circulation spaces and escape routes (see paragraph 8.25)
- Class 1 In rooms, including auditoria and places of assembly other than small rooms (see paragraph 8.26)
- Class 3 In small rooms (not exceeding 4 sq m)

NOTES -

(i) Class 0 means the standard prescribed by A.8 of Approved Document B 2/3/4 of the Building Regulations.

(ii) Classes 1 and 3 means in accordance with British Standard 476 : Part 7.

(iii) The proper application of special coatings on existing surfaces to achieve a certified Class 1 rating may be acceptable, subject to suitable maintenance of the coatings.

8.23 Partitions, space dividers and other similar vertical surfaces which are provided to sub-divide a room should be not less than the class of surface required for the room in which they are situated.

8.24 In the early stages of a fire in a building, the personal hazards to occupants can be severely affected by the internal linings, and finishes of walls and ceilings. Materials likely to be found in situ in existing buildings are often difficult to assess in terms of surface spread of flame and fire propagation. Some examples of these materials have therefore been broadly classified as follows.

## 8.25 CLASS 0

Acceptable in all locations -

- (a) inorganic materials, ie brickwork, blockwork, concrete, plasterboard, ceramic tiles, plaster finishes (including rendering on wood or metal laths) and all other surfaces conforming to Class 0;
- (b) woodwool slab;
- (c) thin vinyl and paper coverings (other than heavy flock wallpapers), provided they are fixed to an inorganic surface described in (a) above.

## 8.26 CLASS 1

Flame retardent grade or treated to achieve Class 1 surface spread of flame rating and acceptable in all rooms provided evidence of suitable treatment is available -

- (a) cellulosic materials, ie timber, particleboard (chipboard), hardboard, blockboard;
- (b) thermosetting plastics (decorative laminates);
- (c) heavy flock wallpapers.

These are not acceptable on escape routes ie stairways, corridors, entrance halls.

## 8.27 CLASS 3

The following are acceptable in small rooms of floor area not exceeding 4 sq m.

- (a) Materials mentioned in 8.22 but not flame retardent treated.
- (b) plastics - thermoplastics, ie expanded polystyrene (provided it is not finished with gloss paint, and is on inorganic surfaces in thicknesses not exceeding 5 mm on walls or 12 mm on ceilings). (Any such surface which has been painted with gloss paint should be removed.)

These are not acceptable on escape routes ie stairways, corridors, entrance halls.

## ADVICE ON FLOOR COVERINGS

- 8.28 Some floor coverings will, when involved in fire, react to produce large volumes of heat and toxic smoke although the surface spread of flame may be relatively slow. The possibility that the floor coverings may present a hazard to means of escape should not be overlooked and should feature in the overall assessment of suitability of surfaces, walls and ceilings to protected routes. If new floor coverings are to be installed to overcome this problem, they should comply with British Standard 5287 as conforming to the low radius of fire spread (up to 35 mm) when tested in accordance with British Standard 4790.

## ADVICE ON FURNITURE AND FURNISHINGS, AND SYNTHETIC MATERIALS

- 8.29 Furniture and furnishings which are easily ignited or demonstrate rapid spread of flame characteristics present a particular fire hazard and their presence will be a factor in determining the acceptability of escape routes and in particular of protected routes.

### UPHOLSTERED FURNITURE

- 8.30 It is recommended that upholstered furniture should only contain those filling materials specified in the Furniture and Furnishings (Fire) (Safety) Regulations 1988; and that invisible parts of permanent covers comply with the provisions of the Furniture and Furnishings (Fire) (Safety) (Amendment) Regulations 1989. The furniture should satisfy as a minimum standard Ignition Source 0 (cigarette test) of British Standard 5852: Part 1 and Ignition Source 5 (timber crib test) of British Standard 5852: Part 2. However, it should be noted that British Standard 5852 does not test the resistance to ignition of the underside of the seating. In addition, where the cover material, or any barrier fabric, has been treated chemically to impart a degree of flame retardence, it should be subjected to the water soak test, as advocated in the Furniture and Furnishings (Fire) (Safety) Regulations 1988. The new standards should be applied when refurbishment and replacement takes place.
- 8.31 Application for consent for upholstered furniture should, where required, be made to the licensing authority in writing and should be accompanied by full details of the materials to be used and a certificate from an approved testing establishment. The licensing authority may, after consideration of specific circumstances of use, vary the level of ignition source which seating is required to meet.
- 8.32 All fixed and movable seating should be maintained free from tears, rips etc, which would result in the filling being exposed.

## ADVICE ON CURTAINS OR FABRICS

8.33 (a) Any curtains, fabrics or other drapes hung in places of entertainment should be of durably flame-retarded fabric or inherently flame-retarded fabric and should conform with British Standard 5867: Part 2 fabric type B. Curtains or drapes should not conceal notices and should be hung so as not to trail on the floor.

(b) Attention is drawn to the Department of Environment test outlined in the "Department of the Environment Fire Retardant Specification No 7, Ignition Standards for Curtains". Fabrics should be tested using Ignition Source 5 (timber crib test) of British Standard 5852: Part 2. Licensees may wish to consider the use of this test which subjects curtains, hangings and drapes to a more searching indication of a material's performance in a fire situation. The appropriate procedure in British Standard 5651 should be completed prior to this test in respect of those fabrics which have been chemically treated.

(c) Where curtains are permitted in front of fire exit doors they should be hung so as not to obstruct exit signs and be arranged so as not to trail on the floor and with a centre opening when in front of pairs of doors. They should only be permitted where attendants are present nearby to open the curtains in the event of an emergency. (See also paragraph 7.26).

8.34 The approval of specific non-durably flame-retarded fabrics may be considered.

8.35 Temporary decorations should not be used unless approved.

8.36 Application for consent for all decorations, curtains and hangings should, where required, be made to the licensing authority in writing and should be accompanied by full details, including samples (not less than 1000mm x 500mm) of the material proposed to be used and, in the case of temporary decorations, a statement as to the period for which it is desired to retain the decorations.

## ARTIFICIAL AND DRIED FOLIAGE

8.37 It is not possible to assess dried or artificial foliage in terms of flame retarded fabrics using formal laboratory test methods. It is, however, recommended that these and similar items be subjected to ignition tests using small flaming sources comparable to those used for testing drapes and curtaining, as follows:-

a suitable small flaming ignition source, the match equivalent butane flame Ignition Source 1 specified in British Standard 5852: Part 1, should be applied to the treated leaves, flowers, etc, of the sample for 20 seconds. Ignition is acceptable during the application of the igniting flame but, on its removal, flaming, whilst continuing locally, should not spread beyond the area first ignited.

8.38 As it has been found difficult to totally inhibit the production of flaming droplets or debris from the solid plastics parts of artificial foliage such as stems, the licensing authority should consider factors such as:-

- (a) the location;
- (b) the ease of access by the public; and
- (c) the overall amounts of artificial foliage present.

8.39 All artificial and dried foliage used for decorative purposes in public areas should be flame retardant treated. As flame retardant treatments can be adversely affected by contact with moisture (as this can cause recrystallisation on surfaces), periodic retreatment may be required to maintain the effectiveness of the flame retardant treatment and/or to maintain an acceptable appearance. The licensing authority should therefore consider a policy of reappraisal of such treated items.

8.40 Dried flowers and grasses should not be sprayed with hair lacquer or other like substance, as such treatment will only enhance the ease of ignition and rate of fire spread.

#### CELLULAR FOAM

8.41 The use of cellular foam in such places as sports halls or gymnasiums may prejudice the safety of persons using other parts of the premises, if the cellular foam is involved in a fire. This is the situation which occurred at Maysfield Leisure Centre, Belfast, in 1984 where as a result of a fire involving gymnasium mats containing cellular foam 6 people died from inhaling the smoke and toxic gases. In order that the risk of fire may be reduced it is recommended that the guidance given in paragraphs 8.42 to 8.44 should be followed.

8.42 Gymnasium mats and similar equipment should ideally contain only combustion modified high resilience foam as prescribed in the Furniture and Furnishings (Fire) (Safety) Regulations 1988. The mats and equipment should also comply with the provisions of British Standard 1892 Part 2 when this is published. This standard is based on the Sports Council Fire Test for Mats 1987.

8.43 The contents of all new foam pits should be of combustion modified high resilience foam. Where existing pits do not contain this type of foam the contents should be replaced at the earliest opportunity. Pits should ideally be covered when not in use.

8.44 Gymnasium mats should be stored in a purpose-built store having a fire resistance of 60 minutes to British Standard 476: Parts 21 to 22, and where possible be ventilated to open air. When British Standard 1892 Part 2 is published, storage arrangements for sports/gymnastic equipment containing cellular foam should comply with the later standard.

## 9. NOTICES AND SIGNS

### EXIT AND DIRECTIONAL SIGNS

- 9.1 All fire safety signs, notices and graphic symbols should conform as far as possible with British Standard 5499 : Part 1 and with British Standard 2560 for internally illuminated exit signs. Self-luminous fire safety signs should also comply with the requirements of British Standard 5499: Part 2. However, existing signs and notices need not be replaced immediately if they are fulfilling their purpose effectively. They should, however, be examined and replaced if they are found to be inadequate.
- 9.2 People will usually attempt to leave premises by the same way that they entered. As these entrances in places of entertainment will of necessity be restricted it follows that the exit facilities provided for the premises will not be fully utilized. For this reason all available exits should be clearly indicated so that the public are aware that there are ways of leaving the building other than by the doors which they used to gain admission. In addition, the provision of well sign-posted exits in full view of the audience will give a feeling of security in an emergency situation.
- 9.3 A notice bearing the word "EXIT" in plain block lettering not less than 125 mm high should be placed over any door or opening leading from the place of assembly into an exit. The notice should be positioned, wherever possible, between 2m and 2.5m above the floor. No other notice should be incorporated in, or form part of, an "EXIT" notice other than a directional arrow.
- 9.4 Any exit which is not a normal route of travel from the premises should be indicated by a notice bearing the words "FIRE EXIT" in conspicuous lettering of appropriate size. The notice should be displayed immediately above the exit opening, wherever possible. Where this is not possible a position should be chosen where the notice is least likely to be obstructed and most likely to be seen.
- 9.5 In the auditorium of a theatre, cinema or any other premises where the general lighting may be dimmed or extinguished while the public are on the premises, the notices should be illuminated internally.
- 9.6 At suitable points along an escape route where an exit cannot be seen or where a person escaping might be in doubt as to the location of an exit, a notice should be provided bearing, in lettering of appropriate size, the words "FIRE EXIT" and the necessary directional arrow. Such notices should be fixed in conspicuous positions, wherever possible between 2 m and 2.5 m above the floor level.
- 9.7 Exit signs should be illuminated whenever the public are present.

## NOTICES ON DOORS

- 9.8 A door fitted with a panic bolt or panic latch should have the words "Push Bar to Open" printed on the door immediately above the pushbar.
- 9.9 A notice with the words "Fire Door - Keep Shut" should be permanently displayed at about eye level on both faces of all fire doors except those to cupboards. Fire doors which are normally open but which close automatically on the operation of fire detectors should bear the words "Automatic Fire Door - Keep Clear".
- 9.10 A notice with the words "Fire Door - Keep Locked" should be permanently displayed on the outside face of all fire doors not required to be self closing eg cupboards.
- 9.11 A notice with the words "Slide to Open" in conspicuous lettering of appropriate size with an arrow pointing in the appropriate direction should be permanently displayed at about eye level on the face(s) of all sliding doors which afford an exit or are situated across an escape route.
- 9.12 A notice with the words "Fire Escape - Keep Clear" should be permanently displayed at about eye level on the external face of all doors which are provided solely as a means of escape in case of fire and which, because they are not normally used, are liable to be obstructed.

## DOORS AND OPENINGS OTHER THAN EXITS

- 9.13 Any door or opening other than an exit, which leads to parts of the premises to which the public have access should have a conspicuous notice indicating the use of such parts. Any door not to be used by the public should be similarly indicated or should be marked 'Private'. Such doors and openings should not resemble exits and the notices should not be specially illuminated. Notices bearing the words 'No exit' or 'No way out' should be prohibited.

## SELF-LUMINOUS FIRE SAFETY SIGNS

- 9.14 Self-luminous fire safety signs will not generally be allowed where the viewing distance exceeds 24m.

## SIZE OF LETTERS

9.15 The size of lettering on "FIRE EXIT", "EXIT" or "EMERGENCY EXIT" signs should be as follows -

Up to 10 m away	- 50 mm
Over 10 m and up to 20 m	- 75 mm
Over 20 m and up to 30 m	- 100 mm
Over 30 m and up to 40 m	- 125 mm
Places of Assembly	- 125 mm
"Push Bar to Open"	- 50 mm
"Slide to open"	- 20 to 40 mm

## 10. MEANS FOR GIVING WARNING IN CASE OF FIRE

### GENERAL

- 10.1 In any building or part of a building requiring registration there should be a means for giving a warning in case of fire to persons in the building.

### FIRE ALARM STANDARDS

- 10.2 A fire alarm system should comply at least with the recommendations for type M of British Standard 5839 : Part 1 and where an alarm system is installed to comply with the British Standard a completion certificate should be provided. There may, however, be situations where a simpler means of raising the alarm could be regarded as adequate. (For automatic detection see paragraph 10.5)

### MANUALLY OPERATED ALARMS

- 10.3 Manually operated sounders may be acceptable in smaller buildings (see paragraph 10.7) if each sounder will give a warning which is audible throughout the building during a performance. Gongs, triangles, klaxons, bells and whistles may be acceptable as sounders provided they cannot be confused with any entertainment in progress.
- 10.4 Manual fire alarms should be mechanically reliable, and the position chosen for the operation of any sounder should be as safe as possible from the effects of any fire risk, ie away from storage spaces, kitchens, switch cupboards etc.

### AUTOMATIC FIRE ALARM SYSTEMS

- 10.5 In the arrangements for manually operated systems, reliance is placed on the people present to discover and give warning of fire. This may not be adequate if a fire starts in a part of a building which is visited only occasionally, such as a store room or in premises which have been left unattended at night time. In these two cases an automatic fire alarm system may be of great value in reducing the time between the outbreak of fire and its discovery, although in the second case, the value will only be realised if the system is directly connected to the Fire Brigade Control Room. Automatic fire alarm systems are now available in various forms and are capable of carrying out a variety of functions, which include the detection of heat in the form of an unnaturally rapid rise in ambient temperature, smoke and the products of combustion and flame.

10.6 Although an automatic fire alarm system will give warning of fire it cannot itself take appropriate action to contain it. However, there are automatic detection systems which have a variety of functions such as closing down a ventilation or air-conditioning plant, opening vents for the removal of smoke from escape routes, bringing a pressurization system into operation or merely activating automatic door releases as well as the giving of an alarm.

NOTE 1 - automatic fire detection is necessary in some situations, to which the following paragraphs also refer - 2.3; 2.9 (viii); 4.13 to 4.14; 6.32; 7.10; 8.4; 8.6 and 8.10.

#### **GUIDANCE ON CHOICE OF CLASSIFICATION**

10.7 The following paragraph is for guidance only as each premise has its own differing factors, however, some idea of the type of fire alarm required should become clearer.

(1) In very small premises - of say up to 100 sq m, it may be reasonable to have no actual alarm and to rely on shouting etc. In this case it would be helpful if the premise had -

- (a) an absence of internal walls (so that the call of FIRE could be heard throughout);
- (b) short travel distances (so that easy egress can be made);
- (c) only one storey.

(2) In small premises - say up to 150 sq m, it may be reasonable to have a simple mechanical alarm such as a handbell etc. In this case it would be helpful if the premise had -

- (d) see (1) (a and b) above;
- (e) not more than two storeys;
- (f) an absence of noisy processes (so that the alarm could be heard above any background noise);
- (g) an absence of high risk areas;
- (h) easy all round access (so that possibly the alarm can be safely and easily raised from another position).

(3) In the majority of the remaining premises the system should be at least a manually operated (break glass) electrical system.

(4) Automatic detection would possibly be recommended if all or some of the following apply -

- (i) travel distances are excessive;
- (j) the building is more than two storeys high;
- (k) there is more than one occupancy (using the same escape routes);
- (l) there are high risk areas (depending on their nature and position);
- (m) there are sleeping risks (flats etc);
- (n) part(s) of the premise are sometimes unoccupied.

NOTE - Audible alarms should not be provided in premises used by a closely seated audience for stage plays, films, concerts, boxing, wrestling; or in clubs, restaurants and dance halls where considerable loose seating is provided, or in large exhibition halls. Such cases require special consideration and each case is dealt with according to circumstances.

#### STAGED FIRE ALARMS

- 10.8 Research of large-scale fires in public buildings in which large numbers of people have been killed has revealed that a major problem is often a delay by staff in warning the public of a potential fire risk, combined with a rapid fire and smoke spread. In recommending a staged alarm system it is extremely important to stress that people need clear and accurate information as early as possible in order to ensure that all are able to reach a place of safety. A staged alarm system while intended not to alert the public unnecessarily, should not cause an unnecessary delay in warning the public to leave and provision should be made for sounding a general alarm for evacuation by sounders or a signal broadcast over the public address system. The evacuation signal should be under the control of the manager who should decide when the second stage should be put into effect. The staff should be fully aware of the evacuation procedure and the need to direct the public to the safest exits. The evacuation plan and staff training should also emphasise the importance of an efficient network of communication between staff members prior to and during an evacuation. (See also chapter 14.)
- 10.9 Where the normal use of the premises is other than for entertainment and a permanent audible fire warning system is installed, it may be necessary for the initial audible alarm to be silenced when parts of the premises are used for such entertainments as stage plays, etc.
- 10.10 Audible warning should be provided in the parts of the premises to which the public are not admitted.
- 10.11 In order that the audible warning may be silenced in those parts of the premises used by the public whilst the entertainment is in progress, a switch should be provided in a suitable position which, when operated, renders the sounders inoperative and automatically switches warning signal lamps into the alarm circuit. Control and indicating equipment should show that the audible alarm in that zone is inoperative. The switch should be secured against unauthorised interference and be provided with a notice to denote its purpose together with a coloured indicator lamp, incorporated in the two way switch circuit, to give a visual indication that the alarm sounders have been silenced.

## **TWO-STAGE FIRE ALARMS**

- 10.12 This should not be confused with the above ie Staged fire alarms. In certain premises, consideration may also be given to provide for two different kinds of alarm signal, an 'alert' signal (usually intermittent) which need not be treated as a signal for general evacuation, and an 'evacuation' signal (usually continuous), which may be given in the zone of origin of the alarm while other parts are receiving the 'alert'. The approval of the Fire Brigade should be sought before such a system is installed.

## **STAFF ALARMS**

- 10.13 In large establishments an initial general alarm may be undesirable because of the number of general public present and the need for fully trained staff to effect pre-planned procedures for safe evacuation. Restricted alarms by means of sounders or other types of communication (including personal paging systems) supplemented by visual systems for staff recognition may be preferred. Provision should be made for sounding a general alarm for evacuation by sounders or the signal broadcast over the public address system. The evacuation alarm should be under the control of a responsible person specifically nominated to be responsible for deciding when the second stage should be put into effect.

## **AUDIBLE ALARMS BY PUBLIC ADDRESS SYSTEMS ETC**

- 10.14 Where these systems are used to transmit a general alarm the signal should take priority and override other facilities of the equipment. The alarm signal, that may be followed by voice transmission of essential information for safe evacuation, should be distinct from other signals that may be in general use on the system. Section 9.12 of British Standard 5839 : Part 1 gives advice on the general requirements in this respect.

## **SEPARATE BUILDINGS**

- 10.15 In establishments which consist of several separate buildings, the same system should be installed in all parts, but the system in each separate building may be self-contained, so that an alarm may be sounded in one part without automatically operating throughout the rest of the establishment.

## **TYPES OF ELECTRICAL SYSTEMS**

- 10.16 This is the classification of the type and extent of protection given to a particular premise. The two major categories are those of life and property protection, these are sub-divided into categories of total and partial protection. It is important that the type of system required for a particular premise is decided upon before design of the system commences.

Each category has a type letter for easy reference as follows.

10.17 TYPE L systems are automatic detection systems intended for the protection of life.

They are further divided into -

(i) TYPE L3 which is installed only for the protection of corridors and escape routes. (This may also require detectors in rooms opening onto escape routes.)

(ii) TYPE L2 which is installed only in defined parts of the protected building where a fire could lead to a high life hazard eg sleeping areas without supervision or high risk areas. An L2 system should always include the coverage of an L3 system.

(iii) TYPE L1 which is installed throughout the protected building with the exception of -

(a) lavatories and water closets;

(b) voids less than 800 mm in height, unless the spread of fire between rooms or compartments can take place through it;

(c) roof spaces without services or storage space; and

(d) cupboards under 2 sq m with no special hazard such as switchgear or if positioned understairs.

10.18 TYPE P systems are automatic detection systems intended for the protection of property and may be required by an insurance company.

They are sub-divided into -

(i) TYPE P2 which roughly equates to L2; or

(ii) TYPE P1 which roughly equates to L1.

10.19 TYPE M systems are manual alarm systems and have no further sub-division.

10.20 Systems intended for use in multi-occupancy buildings are given the suffix letter X. Systems both of types L and P should also be provided with manual call points.

#### ZONING OF THE SYSTEM

10.21 To ensure a fast and unambiguous identification of the fire source the protected area should be divided into zones. When determining the area to be covered by a zone, consideration should be given to accessibility, size, the fire routine determined for the premises, and particularly in occupied premises, that each zone is accessible from the main circulation routes leading from where the control panel is sited. The control panel,

or a repeater should be positioned where it can be seen by the Fire Brigade upon their arrival.

In general the following guidelines for the size of a zone should be observed -

- (a) if the total floor area of the building is not greater than 300 sq m then the building need only be one zone, no matter how many floors it has;
- (b) the total floor area of a zone should not exceed 2000 sq m;
- (c) the search distance should not exceed 30 m. This means the distance that has to be travelled by a searcher inside a zone to determine visually the position of a fire should not exceed 30 m. The use of remote indicator lamps outside doors may reduce the number of zones required.
- (d) where stairwells or similar structures extend beyond one floor but are in one fire compartment, the stairwell should be a separate zone;
- (e) if the zone covers more than one fire compartment, then the zone boundaries should follow compartment boundaries;
- (f) if the building is split into several occupancies, no zone should be split between two occupancies.

#### **AUTOMATIC FIRE DETECTORS**

##### **10.22 TYPES OF DETECTORS**

- (a) IONISATION SMOKE detector - responds when smoke, having entered the detector causes a change in the ionisation currents within the detector. They are more sensitive to smoke produced by rapidly burning flaming fires.
- (b) OPTICAL SMOKE detectors - have a photo-electric cell which responds when light is absorbed or scattered by smoke particles. They are more sensitive to smoke produced by smouldering fires.
- (c) RATE OF RISE HEAT detectors - respond to a rapid rise in temperature, with a pre-set fixed maximum temperature, should the rise be slow.
- (d) FIXED TEMPERATURE HEAT detectors - respond only to a pre-set fixed temperature, usually 60 degrees C or 90 degrees C.

#### **CHOICE OF DETECTORS**

- 10.23 When choosing the type of detector to be used in a particular area it is important to remember that the detector has to discriminate between fire and the normal environment existing within the building.

## INCORRECT CHOICE

- 10.24 The incorrect use of a type of detector may cause unwanted alarms. Therefore smoke detectors should never be used where there is the likelihood of smoke or fumes being present in the normal working environment eg kitchens, boiler rooms, car parks, loading bays etc.

## SMOKE DETECTORS

- 10.25 Whilst there are differences in the type of fire that the ionisation and optical smoke detectors are most suitable for, they are equally suitable for general detection taking into account the following provisos -

(a) ionisation detectors are more liable to false alarms from air currents, dust and gaseous substances.

(b) optical detectors are more liable to false alarms from tobacco smoke but are more suitable for sleeping risks in bedrooms, dormitories etc, and fires involving pvc or polyurethane foam products.

## PROPERTY PROTECTION

- 10.26 When considering the type of detector to be used for property protection (P), the likely cost both in terms of the value of the property to be protected and the effect of disruption of the business that could occur from a serious fire, should be considered.

If these costs are relatively small then the installation of heat detectors may be considered. However, as heat detectors are far less sensitive than smoke detectors, if the costs are high then smoke detectors may be considered. Most systems are in fact a combination of smoke and heat detectors with heat detectors installed in lower risk areas.

## LIFE PROTECTION

- 10.27 When dealing with systems installed for life safety (L) then in general it is advisable to install smoke detectors to give the earliest possible warning of a fire, especially with regard to escape routes and corridors. In order to reduce the possibility of false alarms, rate of rise detectors should be fitted in offices, work rooms etc.

## FALSE ALARMS

- 10.28 It is essential that the utmost care should be taken by both installer and user to reduce the incident of false alarms. Common causes include as follows:-

## GENERAL

- 10.29 (a) Mechanical and electrical faults which may result from vibration, impact or inadequate servicing;
- (b) Ambient conditions such as high air velocities, heat, smoke or flame from a process within a building;
- (c) Contractor's employees working in a protected area unaware of the presence of a fire detection system;
- (d) Communication faults arising from servicing and testing work carried out without prior notification to the Fire Brigade or arising from Guernsey Telecoms activity.

## HEAT DETECTORS

- 10.30 False alarms may be caused by abnormal increases in temperature caused by space heating equipment, industrial processes and sunshine. They may be obviated by installing detectors with, where appropriate higher temperature settings, or in the case of direct sunshine, by introducing an appropriate shade.

## SMOKE DETECTORS

- 10.31 False alarms may be caused by smoke and other fumes, dusts (including slow accumulations of dust and disturbed aerial dusts), fibres, steam and condensation produced by normal processes, activities and the environment, by vehicle engines and insect infestation. Self cleaning ovens may cause an ionisation detector to operate.

Very fast air flows eg in a warehouse exposed to windy conditions, may cause ionisation smoke detectors to give false alarms. Under such situations, special precautions may need to be taken by the system designer.

## MANUAL CALL POINTS (BREAK GLASS)

- 10.32 The break glass call point is a device to enable persons to raise the alarm in the event of a fire, by simply breaking a frangible element and thus activating the alarm system. The following notes give guidance for the correct siting and positioning of break glass call points -

(a) break glass call points should be located on exit routes and in particular on the floor landings of staircases and at all exits to the open air;

(b) break glass call points should be located so that no person need travel more than 30 m from any position within the premises in order to give an alarm;

(c) generally, call points should be fixed at a height of 1.4 m above the floor, at easily accessible, well illuminated and conspicuous positions free from obstruction;

(d) the method of operation of all call points in an installation should be identical unless there is a special reason for differentiation.

#### ALARM SOUNDERS

10.33 An important component of any fire alarm system is the alarm sounder, normally a bell or electronic sounder, which must be audible throughout the building in order to alert and/or evacuate the occupants of the building.

The following notes give guidance for the correct use of alarm sounders -

(a) a minimum sound level of either 65 dBA or 5 dBA above any background noise likely to persist for longer than 30 minutes in any one day, whichever is the greater, should be produced by the sounders at any occupiable point in the building;

(b) all audible warning devices used in the same system should have a similar sound and be distinct from any other audible alarms used for a other purposes;

(c) a large number of quieter sounders rather than a few very loud sounders may be preferable to prevent noise levels in some areas from becoming too loud;

(d) it is unlikely that sounder noise levels in a room will be satisfactory if more than one dividing wall or door separates it from the nearest sounder. At least one sounder per fire compartment will be necessary;

(e) the level of sound provided should not be so high as to cause permanent damage to hearing;

(f) the number of fire alarm sounders used inside a building should be sufficient to produce the sound level recommended, but should in any case be at least two;

(g) in premises where the noise level may be excessive, or in any other situation where a normal type of sounder may be ineffective, visual signals should be used to supplement the audible alarms; they should not however be used on their own.

The sounders should be arranged on at least two separate circuits, so that failure of one circuit does not cause all sounders in the building to fail.

#### VISUAL ALARMS

10.34 Visual alarms for warning staff are recommended for the parts of the premises to which the public have access. Buzzers or other low noise emission sounders which are meaningful to staff may be used to draw attention to the visual alarm.

10.35 In some premises, the accepted procedure for notifying staff of an emergency will not rely on a specific and specially installed visual alarm system, but on, for example, the operation of the house lights or, in the case of a theatre, the lowering of the safety curtain, or a code message broadcast over the public address system.

10.36 Arrangements for staff alarm signal lights should be made in premises having a closely seated audience such as a theatre, conference or concert hall as follows:-

(a) signal lights should be installed where they will be clearly seen, to warn the staff that a state of emergency has arisen;

(b) the siting of the lights will depend upon the layout of the premises but consideration should be given to siting the lights in the following positions:-

- (i) at the back of each tier in the auditorium;
- (ii) in the manager's office;
- (iii) in the main entrance hall;
- (iv) near the point where the house lights are controlled;
- (v) on the stage, other than an open stage;
- (vi) in the stage keeper's office (if provided);
- (vii) near stage areas, eg dressing rooms, meeting rooms, staff rooms, workshops etc;
- (viii) in any projection or lighting control box; and
- (ix) adjacent to the doors outside the auditorium where staff may be located.

The lamps used for this purpose should be readily distinguishable by the staff from the decorative lighting of the premises. They should not, however, attract the attention of the audience.

10.37 Operating points for all staff alarm signal lights should be placed as follows:-

- (a) in or near the manager's office;
- (b) at each level in the auditorium;
- (c) on or near the stage;
- (d) in or adjacent to the main entrance hall; and
- (e) in any projection or lighting control box.

10.38 In premises where the main area of entertainment is a hall where the public will participate in such activities as dancing etc, signal lamps and alarm sounders should be provided. It may however be beneficial for a two stage alarm system to be provided. (See also paragraphs 10.8 and 10.13.)

NOTE - Duplicate lamps should be provided with this lighting circuit so that on failure of one signal light the other signal light will continue to function.

## POWER SUPPLY

- 10.39 The power supply equipment for a fire alarm system should be exclusive to the fire alarm system. Where the fire alarm system is combined with other control or emergency systems, eg in computer controlled buildings, the reliability of the power supply should not be reduced by such non-exclusive use. In addition -
- (a) connection to the mains supply should be via a switch-fuse reserved solely for the purpose, its cover being painted red and labelled 'FIRE ALARM - DO NOT SWITCH OFF';
  - (b) if the mains supply fails the standby supply must have a certain minimum duration after which sufficient capacity should remain to provide operation of the total alarm load for 30 minutes;
  - (c) for type L and M systems, if a mains failure will be recognised within 12 hours, then a standby duration of 24 hours is required. If the premises are likely to be unoccupied and not supervised to meet this 12 hour requirement, then the duration is required to be 24 hours after the detection of the fault;
  - (d) for type P systems, if the fault will be immediately recognised when it occurs (either in the building or over a remote link) then a standby duration of 24 hours is required. If the building has no remote link, and may be unattended at times, then the required duration is 24 hours longer than the building may remain unoccupied.

## INSTALLATION ADVICE

- 10.40 In order to prevent incorrect provision of equipment, the following sequence should be followed -
- (a) decide which classification is required (see paragraph 10.7);
  - (b) get quotes for the installation (at least three is advised);
  - (c) installers to provide details of equipment (preferably on plan, single line being sufficient);
  - (d) Fire Brigade to check details;
  - (e) decide which quote to accept;
  - (f) Fire Brigade to make site visit before installation to double check plan;
  - (g) installation;

- (h) States Electricity Board to check installation and send in form to Fire Brigade;
- (i) installer to send in form to Fire Brigade;
- (j) Fire Brigade to test the installation.

#### ROUTINE TESTING

10.41 The system should be regularly tested and serviced in accordance with the requirements of British Standard 5839, as a guide the user should carry out the following tests and inspections at regular intervals -

##### (a) DAILY

- (i) check that the panel indicates normal operation. If not, record any fault indicated in the event log and report the fault to a responsible person;
- (ii) check that any fault recorded for the previous day has received attention.

##### (b) WEEKLY

- (iii) operate a manual call point or smoke detector to ensure the system operates properly. Each week a different detector should be checked;
- (iv) check that the sounders have operated and then reset the system;
- (v) check the battery connections;
- (vi) complete the event log with details of date, time, trigger device tested and enter 'Routine Weekly Test' in the event section. Any defects should be entered under 'Action Required' and reported to a responsible person.

##### (c) QUARTERLY

- (vii) check entries in the log book and take any necessary action;
- (viii) examine the batteries and their connections;
- (ix) operate a manual call point or detector to ensure the system operates properly, checking that all sounders are operating;
- (x) check that all functions of the alarm control panel operate by simulating fault conditions;
- (xi) visually check that structural alterations have not been made that could have an effect on the siting of detectors and other trigger devices;

(xii) complete the event log with details of date, time trigger device tested and 'Quarterly Test' in the event section. Any defects or alterations to equipment should also be entered.

(d) ANNUALLY

(xiii) carry out an inspection as detailed for the quarterly inspection;

(xiv) every detector should be tested in situ;

(xv) all cable fittings and equipment should be checked that they are secure and undamaged.

The above maintenance programmes are for use as a guide only and the frequency of testing should be adapted to suit the environment that the equipment is working in.

NOTE - Fire alarm connections to the Fire Station should only be tested by arrangement with the Brigade control room operator.

## 11. EMERGENCY ESCAPE LIGHTING

### LIGHTING - GENERAL

- 11.1 All parts of the premises to which the public have access and all external exitways should be provided with normal lighting capable of providing sufficient illumination of those parts of the premises for the public to leave the premises safely.
- 11.2 The normal lighting should be arranged so that the requirements of paragraph 11.1 continue to be met should a fault occur on other equipment fed from the same source of supply.
- 11.3 Whenever the public are on the premises, the normal lighting should be kept on, in the absence of adequate daylight, and should provide the level of illumination required by paragraph 11.1, save where emergency lighting is in use in accordance with the rest of this chapter.

### ESCAPE LIGHTING

- 11.4 Escape lighting should be provided in buildings where there is underground or windowless accommodation, core stairways or extensive internal corridors and in buildings where travel along escape routes would be made difficult in darkness. An escape lighting system should conform with the appropriate provisions including the certification provisions contained in British Standard 5266 : Part 2 (when it is issued, until then Part 1 should be consulted).
- 11.5 The means of control used for the purpose of providing the normal lighting and emergency lighting should be situated or arranged so as to minimise the risk of their unauthorised operation.
- 11.6 The emergency lighting should be designed, installed, protected, maintained and operated so as not to be affected adversely by other electrical or gas equipment.
- 11.7 The emergency lighting may be supplied from the same source as the normal lighting but should also be capable of being powered by an independent supply. The independent supply should be brought into operation immediately and automatically in the event of failure of the normal supply to the emergency lighting.
- 11.8 The independent source of supply to the emergency lighting specified in paragraph 11.7 should be of such capacity that it is capable of maintaining the level of illumination required by paragraph 11.1 for at least one hour or such longer period as may be required.
- 11.9 In theatre auditoria complete or substantially complete blackouts which may be required for production reasons may be permitted but this should not include extinguishing any exit signs which should, at all material times, comply with the requirements of chapter 9.

## MODE OF OPERATION

11.10 The mode of operation for emergency lighting luminaires and systems is normally categorised by the suffix M for maintained (operates from normal supply and emergency supply and can be switched), NM for non-maintained (emergency use only) and S for sustained (illuminated at all material times), followed by a '/' and the number of hours duration in the event of a mains failure, eg

M/1 is a maintained 1 hour duration system;

NM/3 is a non-maintained 3 hour duration system.

11.11 The type and category of the escape lighting to be used in any particular premises is dependent to some extent upon their size and function. For most types of premises either a maintained or non-maintained system will normally prove to be equally satisfactory. However, a maintained system should invariably be employed in premises where the normal lighting can be dimmed or reduced below the levels required for escape route identification and illumination whilst the premises are occupied, eg most places of public entertainment (where the lights are so dimmed that it would be difficult to see "EXIT" notices by the normal lighting, then the notice should be illuminated internally).

11.12 The cost difference between a 1 hour system and a 3 hour system, particularly for self contained luminaires, means that in most cases the designer would be well advised to design any system for a 3 hour duration.

## POSITIONING OF LUMINAIRES

11.13 The correct positioning of emergency luminaires is essential in order to provide a system that not only complies with the various legislative requirements but provides a safe and effective way of evacuating a building in the event of a mains failure. Therefore apart from achieving the minimum light levels, various obstructions, hazards and routes must be covered. The following is a step by step guide to assist in the design of the system.

11.14 Emergency escape lighting should be provided for places where people resort as follows -

(a) CINEMAS, THEATRES ETC where there are closely seated audiences - throughout all portions of the premises used by the audience, including the escape routes therefrom, and to all escape routes used by the staff and/or performers.

(b) DANCEHALLS;

(c) CHURCH HALLS, ASSEMBLY ROOMS, ETC (other than those previously considered in (a) above);

(d) EXHIBITIONS (see Note);

(e) RESTAURANTS, PUBLIC HOUSES ETC (see Note); -

throughout all portions of the premises, including the escape routes therefrom, except for premises sited wholly on the ground floor where less than 100 persons are accommodated and where a sufficient number of approved exits are provided.

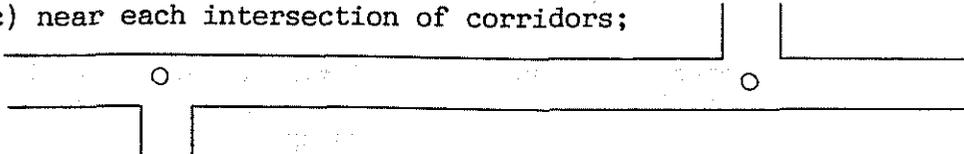
NOTE - Emergency escape lighting would not be considered necessary WITHIN exhibition or restaurant areas not exceeding 50 sq m situated on other floors.

11.15 Luminaires and signs should be positioned -

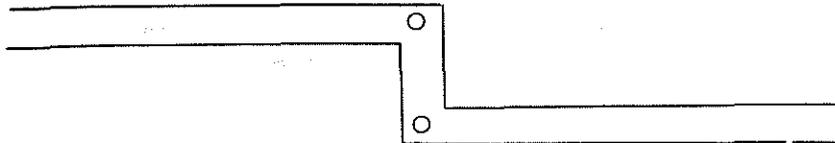
(a) to show exit routes and final exits from premises clearly. Signs should be illuminated;

(b) to ensure exterior areas of final exits are lit to at least the same level as the area immediately inside the exit to enable people to move away from the exit to areas of safety;

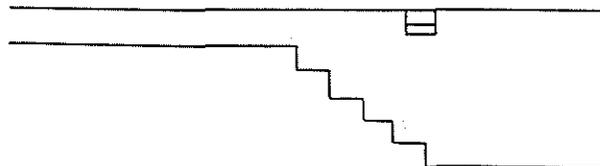
(c) near each intersection of corridors;



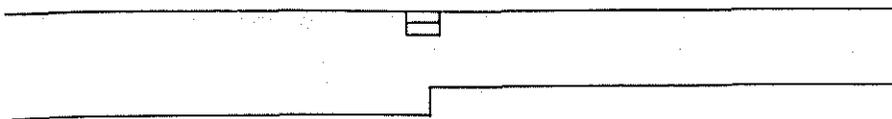
(d) near each change of direction;



(e) near each staircase so that each flight of stairs receives direct light;



(f) near any other change of floor level which may constitute a hazard;



(g) to illuminate fire alarm call points and fire fighting equipment at all material times;

(h) to ensure normal pedestrian escape routes from covered car parks are illuminated to the same standard as escape routes within buildings;

(i) in plant, switch and control rooms;

(j) within passenger lift cars. Only self contained emergency luminaires are suitable for this application;

(k) in toilets exceeding 8 sq m.

If considered appropriate, each luminaire can be positioned in order to illuminate more than one of the above if they are adjacent. Moreover, it is considered good practice to position the various items for fire safety (extinguishers, call points etc) together so that their position is readily known.

#### ILLUMINANCE LEVELS FOR DEFINED AND UNDEFINED ESCAPE ROUTES

11.16 British Standard 5266 : Part 1 1988 gives a detailed definition of the required illuminance of escape routes. Escape routes have been divided into two types - 'defined' which can be thought of as a specific corridor or corridor area; and 'undefined' which can be thought of as an open plan area on the escape route which has an open plan office or supermarket, where no defined escape route is convenient.

#### DEFINED ESCAPE ROUTES

11.17 In most instances the horizontal illuminance at floor level on the centre line of a defined escape route should not be less than 0.2 lux. In addition for escape routes up to 2 m wide, 50% of the route width should be lit to a minimum of 0.1 lux. Escape routes wider than 2 m can be treated as a number of 2 m wide bands.

11.18 The 0.2 lux is a minimum level and within certain premises there may be areas where an illuminance level well in excess of that figure may be required eg where aged or partly sighted people are likely to be present.

11.19 To avoid abrupt changes between excessive dark and light areas on the floor of the escape route, it is necessary to illuminate the route reasonably uniformly.

#### UNDEFINED ESCAPE ROUTES

11.20 Undefined escape routes must be lit to an average of 1 lux. This may sound like a higher lighting level, but in practice, it is very similar to the 0.2 lux minimum needed in 'defined' escape routes. An advantage of using this concept is that the layout of the particular area may be altered, ie by moving furniture, low level partitions, shelving units etc without the need to alter the emergency lighting system.

11.21 The use of a fewer number of high output emergency luminaires is normally the most cost effective way of illuminating an undefined escape route. The convertalite type is ideally suited for this application.

## **ROUGH GUIDE TO WATTAGE REQUIRED**

- 11.22 The system requires detailed planning as to the type and numbers of luminaires required but a rough guide to the total wattage required can be got by dividing the floor area in square metres by 2.

## **NUMBERS REQUIRED**

- 11.23 This should be decided by the installer, but as a rough guide, one unit is required for each 6 metres. This distance can be increased by installing better units, but on the other hand, care has to be taken to avoid installing lesser powered units such as those designed for toilets or lifts etc.

## **SERVICING**

- 11.24 All emergency escape lighting requires regular testing and servicing and a record showing the date of each routine examination and test, and its result should be kept on the premises.

(a) **CENTRAL BATTERY SYSTEMS.** Simulation of a failure of the normal lighting supply for a continuous period of at least 1 hour should be carried out twice a year. During this period all luminaires and/or signs should be checked for proper function. For systems with specified duration categories in excess of 1 hour, it is recommended that a test for the full duration should be carried out every 3 years.

(b) **SELF CONTAINED LUMINAIRES/SIGNS.** Simulation of a failure of the normal lighting supply for a short period of time should be carried out once a month, and for 1 hour twice a year. Luminaires and signs with a specified time in excess of 1 hour should be tested for the full duration time once in every 3 years.

## **EMERGENCY LIGHTING BY GAS OR OTHER MEANS NOT USING ELECTRICITY**

- 11.25 In premises where emergency lighting by gas or other means not using electricity is already installed, the levels of emergency lighting provided should, where reasonably practicable, be similar to those which would be provided if the system was powered by electricity and installed in accordance with the provisions of British Standard 5266.
- 11.26 Any flame illuminants should be fixed securely and situated well away from woodwork and other combustible materials, and where possible, out of reach of the public. They should be protected from draughts.
- 11.27 The control of individual gas lamps should either be out of reach of the public or be fitted with taps that require a key to turn them. There should however be a means provided by which individual lamps or all lamps can be shut-off in an emergency by members of staff only.

11.28 Signs or notices of the photo-luminescent type, ie where the active material making up the luminous parts of such signs or notices needs a period of exposure to light before they become visible in darkness, are not acceptable.

## 12. FIRE FIGHTING EQUIPMENT

- 12.1 All premises should be provided with means for fighting fire for use by persons in the building.
- 12.2 Fires involving ordinary combustible materials such as wood, cloth and paper are the most likely type of fire to occur in the majority of premises. Water is the most effective agent for extinguishing these fires and the appropriate equipment will therefore be hydraulic hose reels, water type extinguishers or extinguishers containing fluoroprotein foam (FP), aqueous film forming foam (AFFF), film forming fluoroprotein foam (FFFP) or light water.

### HOSE REELS

- 12.3 If hose reels are installed they should be located where they are conspicuous and always accessible, eg in corridors. Hosereels should be sited with care to avoid having to be taken through fire doors which need to be kept closed for safety. The hose should comply with Type 1 hose specified in British Standard 3169 and hose reel installations should conform with British Standard 5306 : Part 1 and British Standard 5274. For further details ask for Guernsey Fire Brigade appendix FP 52.

### CHOICE OF EXTINGUISHER

- 12.4 There are several factors to consider in selecting the right kind of portable extinguishers for your premise but the most important is the kind of fire for which they are likely to be required. Guidance on this major point is given below. Other considerations which the buyer of extinguishers should bear in mind and on which this code provides guidance follow.

### METHOD OF OPERATION

- 12.5 All extinguishers in the same premises (or in a group of companies) should, where possible, operate by the same method. For example, where water and foam extinguishers are provided it will avoid confusion if all the extinguishers operate in the 'upright' position. (Note - all extinguishers conforming to British Standard 5306 : Part 3 operate in an upright position.)

### OPERATING ANGLE OF JET

- 12.6 Extinguishers may be required to fight a fire where the jet has to be directed below the level of the extinguisher (eg under floorboards) or upwards (eg into fume hoods) and to meet such requirements extinguishers fitted with a hose are needed.

### EFFECTIVE RANGE

- 12.7 Where the approach to a fire may be restricted the range of extinguishers is important (see paragraph 12.19).

## SHAPE OF JET

- 12.8 A spray is more suitable than a jet where a fairly large area has to be covered and where the penetration of a solid jet is not needed. Purely surface fires in ordinary solid combustible materials are more effectively dealt with by a spray. A few water extinguishers are fitted with dual purpose nozzles designed to emit either a spray or jet.

## EASE OF HANDLING

- 12.9 Nine litre water extinguishers, the most common sized extinguisher in general use, weigh between 15 to 18 kg and most people are capable of using such extinguishers without too much difficulty.

However, these extinguishers may be too heavy or cumbersome for some people, eg the elderly. In such instances 4.5 litre extinguishers should be installed.

## ENVIRONMENT

- 12.10 High or low temperatures (above 43 degrees C and below 4 degrees C) may have a detrimental effect on some extinguishers. Care must be taken to choose extinguishers which will not prove dangerous or damaging in certain situations eg having a foam extinguisher near a heat treatment bath containing molten salts, or a water extinguisher near high voltage equipment.

## LOW TEMPERATURES

- 12.11 Water and foam extinguishers are liable to be affected by low temperatures. Protection can be given by installing the extinguishers in heated cabinets, or for a limited period in insulated cabinets.

With water (gas cartridge), water (stored pressure) and certain types of foam (mechanical) extinguishers a non corrosive anti-freeze agent may be used as an alternative, to protect them from freezing, but the manufacturer of the extinguishers should first be consulted.

## HIGH TEMPERATURES

- 12.12 High temperatures may lead to the rupturing of carbon dioxide, halon and stored pressure type extinguishers. Gas cartridges may also rupture. The suppliers should be consulted if the temperature of rooms where extinguishers are to be installed is likely to exceed 43 degrees C for old extinguishers or 60 degrees C for extinguishers conforming to British Standard 5423.

## CORROSIVE ATMOSPHERES

- 12.13 Extinguishers sited in damp or chemically corrosive atmospheres need more frequent inspection and maintenance than is recommended below. They may need to be put in special enclosures.

## SUITABLE EXTINGUISHERS FOR VARIOUS TYPES OF FIRE

### ORDINARY COMBUSTIBLE MATERIALS

#### 12.14 (a) WATER

The effectiveness of an extinguishing agent on fires in ordinary solid combustible materials (eg wood, paper, textile fabrics) depends principally upon its cooling action. Water has better cooling properties than other agents and is best for use on fires in these materials which may re-ignite if not adequately cooled. Also, water can penetrate readily to reach a deep-seated fire. This penetrating ability can be enhanced by the addition of wetting agents but these agents should be added only after consultation with the extinguisher supplier.

NOTE - Water is a conductor of electricity and must not be used on live electrical equipment.

#### (b) DRY POWDER

Multi-purpose dry powders based on mono-ammonium phosphate have a better performance on fires involving solid materials than ordinary dry powders based on sodium bicarbonate or potassium bicarbonate. After the powder cloud has knocked down the flames on a burning solid, it melts and forms a skin on the material. The melting has some cooling effect on the material and the skin has a smothering effect, reducing the rate at which flammable vapours are produced from the material.

### FLAMMABLE LIQUIDS

#### 12.15 (a) DRY POWDER

Dry powder is generally the best type of extinguisher for dealing with fires in flammable liquids. By extinguishing the flames over the liquid, dry powder acts more rapidly than foam and is particularly suitable for dealing with fires which may spread to surrounding materials before a complete foam blanket could be formed over the burning liquid. These extinguishers deal more effectively with large areas of burning liquid than other extinguishers of comparable size. They are effective too on fires in free-flowing liquids, especially where the liquid spills and spreads over a fairly large area. Dry powder is a non-conductor of electricity and can safely be used on fires when there is a risk of electric shock.

NOTE - The cooling properties of dry powder are limited and it gives no protection against re-ignition which may occur after application ceases. It is not as effective as foam on fires in liquid containers where the liquid has overheated either because it has been burning for some time or because it has been heated in a process.

## 12.15 (b) FOAM

Foam extinguishes a fire by forming a blanket on the surface of a burning liquid. The foam blanket remains in position for sufficient time to prevent re-ignition and to allow the liquid to cool. Foam extinguishers are, therefore, especially suitable for dealing with fires in which a liquid has been overheated, either because it has been burning for some time or because it was being heated in a process. Examples include; oil quench tanks, oil-filled boilers (where a sill is provided), and frying ranges.

## 12.15 (c) LIGHT WATER

'Light water' (a type of foam made by mixing a perflucarbon surface active agent, water and air) is particularly suitable for dealing with fires in low flash point liquids such as petrol on which a 9 litre extinguisher is capable of extinguishing a greater area of fire than the same size extinguisher containing protein foam. It has less resistance to burn back than protein foam, when a fire is not completely extinguished. Liquid surfaces are covered more readily with light water, and the surface active agent causes some of the water from the foam to form a thin layer on the surface of the flammable liquid which reduces the likelihood of re-ignition.

NOTE - It is difficult to form a blanket of foam on free-flowing liquid and quite impossible to do so when the liquid is flowing over a vertical surface. Liquids spilled on the floor or other horizontal surface may spread over a larger area than the normal discharge from a foam extinguisher can cover. A large number of liquids, such as alcohols, break down the foam produced by an ordinary portable extinguisher and prevent the formation of an effective blanket. Foam is a conductor of electricity and should not be used on live electrical equipment.

## 12.15 (d) CARBON DIOXIDE

Carbon dioxide, by extinguishing the flames over the liquid, acts more rapidly than foam and is more suitable for dealing with fires which may spread to surrounding materials before a complete foam blanket can be formed over the burning liquid. Carbon dioxide extinguishers are suitable for dealing with small fires involving escaping liquids on both horizontal and vertical surfaces. They are also suitable where the over-riding factor is to avoid damage or contamination by dry powder deposits or foam. Examples of risks where they are especially suitable include; coating and spreading machines, delicate laboratory equipment. Carbon dioxide is a non-conductor of electricity.

NOTE - The cooling properties of carbon dioxide are limited and it gives no protection against re-ignition which may occur as the gas disperses rapidly. It is not as effective as foam on fires in liquids in containers where the liquid has over-heated because it has been burning for some time or because it has been heated in a process.

## 12.15 (e) HALONS

Halons, by extinguishing the flames over the liquid, act rapidly, and they are useful on fires in flammable liquids. They have a similar range of useful applications to carbon dioxide extinguishers but an important application is for dealing with fires in petrol and oil-driven engines. Halons are non-conductors of electricity.

NOTE 1 - Should not be used or kept in confined spaces or any place where there is a risk that someone may inhale the vapours or the products formed when the vapours are heated by fire. Because of the damage to the ozone layer, the vapours should not be released for training purposes.

NOTE 2 - It has been established that persons of the type who are susceptible to solvent abuse have used this substance for that use. Therefore extinguishers of this type should not be positioned where they can be mis-used in this way.

## 12.15 (f) FIRE BLANKETS

Fire blankets are classified in British Standard 6575 and are described as follows:-

(a) light duty: These are suitable for dealing with small fires in containers of cooking fat or oils and fires in clothing;

(b) heavy duty: These are for industrial use where there is a need for the blanket to resist penetration by molten metals.

### FLAMMABLE GASES

12.16 No special provision can be made for dealing with fires involving gases because the only effective action against such fires is to stop the flow of gas. Indeed there will be a risk of an explosion if a fire involving escaping gas is extinguished before the flow of gas has ceased.

### METALS

12.17 None of the extinguishing agents referred to in the preceding paragraphs will effectively deal with a fire involving metals. Special powders are available for dealing with burning metals and should be provided wherever there is a risk of fires involving such metals, for example, aluminium, magnesium, sodium and potassium.

## ELECTRICAL AND ELECTRONIC EQUIPMENT

### 12.18 CARBON DIOXIDE, HALONS AND DRY POWDER

Carbon dioxide, dry powder and halon extinguishers are suitable for use on live electrical equipment. The current should be turned off immediately the fire has been extinguished to prevent re-ignition. If the current can be turned off before the fire is tackled this is much the most effective course. Water or foam (which are conductors of electricity) should not be used on live electrical equipment because of the risk of shock. It is not always necessary to provide special extinguishers to supplement the protection given by water appliances in departments and buildings having limited quantities of electrical equipment eg where there are lights, wiring and a few small motors only. But of course the occupants must be taught to isolate the equipment whereupon water may be used.

Carbon dioxide and halon extinguishers are most suitable for dealing with fires involving electronic equipment in view of its delicate nature.

NOTE - Dry powder does not readily penetrate the spaces inside equipment.

#### USUAL CAPACITIES

12.19 The following are the normal capacities of extinguishers used although other sizes are available.

Type	: Water	: Foam	: Dry Powder	: Carbon Dioxide	: Halon
Typical capacity	: 9 litres	: 9 litres	: 4 kg/9kg	: 2 kg	: 1.5 kg
Horizontal range	: 7m	: 5m	: 5m/6m	: 1m	: 3m
Total weight	: 15-18 kg	: 15-18 kg	: 8.5/18 kg	: 15 kg	: 2-3 kg
Area of flammable liquid fire extinguished	: 1 sq m	: 4.5/7 sq m	: 0.5 sq m	: 0.5 sq m	

#### NUMBERS REQUIRED

12.20 As the most likely fire will be in ordinary combustible materials, water is normally the best agent. One extinguisher should be provided for each 200 sq m of floor area with a minimum of 2 to each storey (excepting premises with storey floor areas of less than 100 sq m when 1 extinguisher will be sufficient). In premises where the main risk is likely to be different (eg flammable liquids) then other extinguishers (eg dry powders) should be supplied at least at the same ratio.

## STAGE AREAS

- 12.21 Stage areas exceeding 56 sq m should be provided with 2 x 9 litre water extinguishers and 1 x fireblanket. Stage areas less than that figure should have 1 x 9 litre water extinguisher and 1 x fire blanket.

## DRESSING ROOMS

- 12.22 In every block of 4 dressing rooms a minimum of 1 x 9 litre water extinguisher and 1 x fireblanket should be provided.

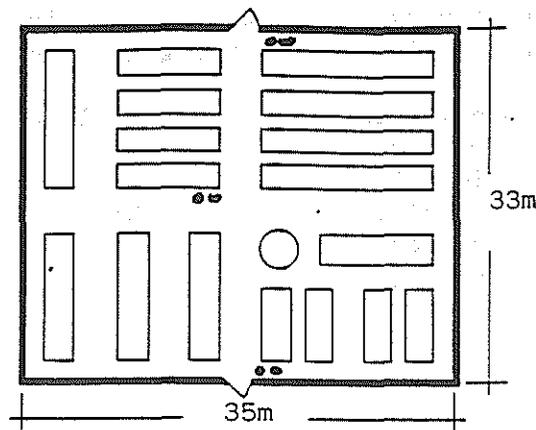
## SCENERY STORE, STAGE BASEMENT, PROPERTY STORE, BANDROOM

- 12.23 1 x 9 litre water extinguisher should be provided for each risk area, or an appropriate extinguisher where water is unsuitable.

## SITING

- 12.24 Extinguishers for general protection should be as near as possible to exits or on staircase landings. They should be positioned within 30 m of one another. Where large undivided floor areas necessitate positioning appliances away from exits or outer walls, they should be installed on escape routes (see diagram 12.24).

diagram 12.24

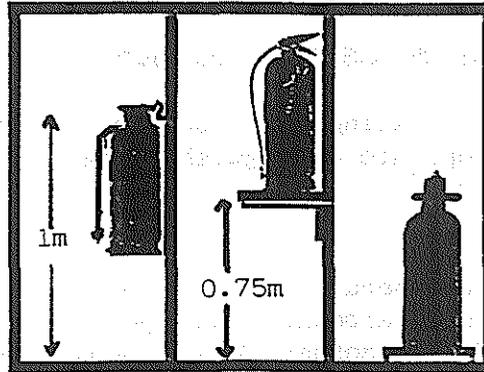


- 12.25 In buildings where there are perhaps hose reels, fire buckets, fire blankets, fire alarm call points and fire instruction notices as well as portable extinguishers, it is advantageous to group the equipment and notices together at fire points. Fire points make larger displays so that the equipment is easier to locate in an emergency, and valuable time can be saved if someone can go to one place to raise the alarm and collect the fire fighting equipment. However, where there are major flammable liquid and electrical equipment risks, the appropriate extinguishing equipment should be installed close to these risks.

## INSPECTION AND TESTING

- 12.26 Extinguishers, spare gas cartridges and replacement charges should be examined at least monthly by a responsible person to make sure that appliances are in their proper positions and have not been discharged, or lost pressure (in the case of extinguishers fitted with a pressure indicator), or suffered obvious damage. The provision of brackets, shelves or base blocks will help to show if any appliance is missing (see diagram 12.26).

diagram 12.26



- 12.27 A more thorough inspection should be carried out at least once a year by a competent person eg a service man from the extinguisher suppliers, or from a firm specialising in this kind of work.
- 12.28 The dates of inspection and refilling should be indelibly recorded on a label securely attached to the extinguisher or painted on the body (it should not be stamped into the body of the extinguisher). Alternatively, the date may be recorded in a special register, each extinguisher should have an identification to correspond with the item in the register.

### 13. PHYSICALLY DISABLED AND SENSORY IMPAIRED PEOPLE/CARE OF CHILDREN

- 13.1 Access to entertainment and cultural use buildings such as theatres, cinemas, concert halls, exhibition halls and stadia is important to enhance the lives of everybody, not least disabled people. The design of escape routes and the organisation of management procedures are particularly critical in these classes of buildings because the users are likely to be unfamiliar with their surroundings and population densities in terms of the number of persons per unit area are very high. These considerations have often led to unreasonable restrictions on the access of disabled persons to these buildings. There are clearly problems with stepped auditoria, grandstands and similar buildings, but it should be possible to provide some, or indeed many locations for disabled persons to be integrated with the assembly as a whole from whence they may be evacuated without disrupting the general exodus.
- 13.2 Normally the number of severely disabled persons in an assembly building is likely to be small, but in the event of a large group attending an event, it is sensible that the organisers of the group should discuss the arrangements with the management of the building.
- 13.3 British Standard 5588 : Part 8 Code of practice for means of escape for disabled people, provides guidance on the measures to be incorporated into new buildings or existing buildings which have been altered, to enable the safe evacuation of disabled people in the event of fire. It is accepted that it may not always be possible to fully comply with the code in existing buildings and in these circumstances alternative ways of meeting its objectives should then be sought.
- 13.4 Management should draw up fire precautions for the premise in consultation with staff who have disabilities and/or sensory impairments and by obtaining any necessary specialist advice.

#### PEOPLE WITH IMPAIRED VISION

- 13.5 People with impaired vision or colour perception may experience difficulty in recognising fire safety signs. Such signs should therefore be sited so that they are easily seen and readily distinguishable. Management may obtain advice about the siting of notices from the Royal National Institute for the Blind or the National Federation of the Blind of the UK.
- 13.6 Management should ensure that any employees with impaired vision familiarise themselves with escape routes, especially those which are not in general daily use.

- 13.7 Where possible, management should arrange for a normally sighted person to work near any employee with impaired vision to warn and reassure them in the event of fire and to accompany them along the escape route. It is recommended that the sighted person should lead, inviting the other person to grasp their elbow or shoulder lightly as this will enable the person being assisted to walk half a step behind and thereby gain information about doors and steps, etc. Assistance should be offered to guide dog owners and it is recommended that the helper holds the leash and not the dog's harness.
- 13.8 After leaving the building, people with impaired vision will generally head in the direction most familiar to them. It is important that management ensure that they are not abandoned at this point but led to a place of safety, with a normally sighted person remaining with them until the emergency is over.

#### PEOPLE WITH IMPAIRED HEARING

- 13.9 People with impaired hearing may experience difficulty in hearing a fire alarm. However, impairment of hearing does not mean that a person is completely insensitive to sound. Many people with severe impairment have sufficiently clear perception of some types of conventional audible alarm signals to require no special provision. Where this is not the case management should ensure that a person with normal hearing is available to alert any with impaired hearing to the need of evacuation.
- 13.10 In certain situations, such as premises where profoundly deaf people form the majority of employees, alternative types of alarm signal may be necessary, eg lights or other visual signals, vibrating devices, or sound signals within certain selected frequency bands. Management may obtain technical advice on the selection of suitable devices from the Royal National Institute for the Deaf. As alternative alarm signals may have unwanted side effects they should only be installed following consultation between management and employees.

#### INDUCTION LOOP SYSTEMS

- 13.11 Induction loop systems, used in some premises for audio communication with people with suitable hearing aids, are not considered acceptable means of alerting hearing-impaired people in the event of fire. Where such systems are in normal use, however, they may be used to supplement the alarm.

#### WHEELCHAIR USERS AND PEOPLE WITH IMPAIRED MOBILITY

- 13.12 When granting, renewing or transferring a licence, there should be agreement between the licensing authority, fire brigade and the licensee on the number of wheelchair users who may be admitted at any one time. The fire brigade should also advise the licensing authority of any additional safeguards which could be taken to permit organised parties of wheelchair users to attend a performance where numbers would exceed those normally allowed.

- 13.13 Whilst some existing places of entertainment, because of the structure and internal layout of the premises, will have some difficulty in accommodating disabled people in wheelchairs, in others access facilities have been provided to an increasing extent and this practice should be encouraged. It is also recommended that, where practicable, the licensing authority should encourage the licensee to provide wheelchair spaces in various parts of the seating area so that wheelchair users can sit with friends and have a choice of seats. Where it is proposed to make structural alterations to the premises the special needs of disabled people should be identified and note taken of the guidance contained in British Standard 5588: Part 8.
- 13.14 Unaccompanied disabled people who are unable to walk either aided or unaided should normally enter and leave the premises in a wheelchair.
- 13.15 Although access for wheelchair users is easier to the ground floor, the licensing authority should take into consideration means by which the wheelchair user can be admitted to other floors without prejudice to safety. It may be possible for some of the fixed seating to be removed permanently or temporarily to provide spaces for wheelchairs. This can best be arranged in the front or back rows of blocks of seating or at the ends of rows of seating. The number of seats, including wheelchair spaces, should not exceed the number permitted.
- 13.16 Where a disabled person sits in their wheelchair as part of the audience, the wheelchair should be placed in a position where it will not obstruct other people in an emergency and where a ready means of exit is available. Where a disabled person leaves their wheelchair to occupy a seat, the wheelchair should be left readily available but where it will not cause an obstruction to on exit route.
- 13.17 Ramps to be used by wheelchair users should conform to British Standard 5810.

#### MENTALLY HANDICAPPED PEOPLE

- 13.18 Management should ensure that any mentally handicapped people are reassured in the event of fire and led to a place of safety. They should not be left unattended.

#### USE OF LIFTS

- 13.19 Disabled people may rely on a lift as a means of escape only if it is an evacuation lift or a firefighting lift operated under the direction and control of management using an agreed evacuation procedure. The recommendations in paragraph A.3 of appendix A to British Standard 5588 : Part 8 should be followed.

## SOURCES OF ADVICE

- 13.20 Access Committee for England/Centre on Environment for the Handicapped, 35 Great Smith Street, London SW1P 3BJ;
- Disabled Living Foundation, 380-384 Harrow Road, London W9 2HU;
- Guernsey Bailiwick Association for the Hard of Hearing and Deaf, Tel 38303;
- Guernsey Blind Association, Tel 20646;
- Liaison Officer for the disabled, Guernsey Telecoms Tel 711221;
- Motor Neurone, Tel 57291;
- Multiple Sclerosis Society, Tel 63834;
- National Federation of the Blind of the UK, Unity House, Smyth Street, Westgate, Wakefield, West Yorkshire WF1 1ER;
- Royal Association for Disability and Rehabilitation, 25 Mortimer Street, London W19 8AB;
- Royal National Institute for the Blind, 224 Great Portland Street, London W1N 6AA;
- Royal National Institute for the Deaf, 105 Gower Street, London WC1E 6AH;
- Society for Physically Handicapped, Tel 24333.

## ACCOMMODATION OF CHILDREN

- 13.21 The Inquiry into the fire at Summerland Leisure Centre in August 1973 found that parents had tended to be separated from their children since pursuits for each were located in different places and floors. Instead of going directly to exits, parents naturally tried to find their children, making their way against the flow of persons on the escape routes, thus adding to the danger. In order to minimise the risk, if children are to be accommodated separately from their parents or guardians in places of entertainment, the following measures are recommended:-

(a) the accommodation for children should be at or as near ground level as practicable (or the level at which the final exits discharge). In no circumstances should the accommodation for children be:-

(i) on a floor above the level at which their parents or guardians are accommodated unless the route of escape is through the upper level; or

(ii) at basement level unless the children are adjacent to the accommodation for parents or guardians;

(b) the room or enclosure for children should be adjacent to an external wall and should not have fewer than 2 exits, one of which should be a final exit;

(c) if the room adjoins parent accommodation, the aggregate width at the exits from both areas, exclusive of the doors between the room and the parents' or guardians' accommodation, should be sufficient for the total number, ie children plus parents, guardians and other persons; and

(d) a notice should be prominently displayed where the children are deposited, saying that in the event of an emergency children will be escorted by a member of staff to a named collection point outside the building.

#### 14. ADVICE TO MANAGEMENT ON FIRE INSTRUCTION AND DRILLS

- 14.1 Possibly the information in this chapter, more than any other, can affect the safety of persons in the building. No matter how high the inbuilt standard of protection from fire, careless or uninformed persons can always negate the safeguards against fire by blocking exits, wedging fire doors open, misusing fire extinguishers, panicking during an emergency etc. It also needs to be said that fire conscious and well informed staff can sometimes compensate for unexpected failure of normal precautionary measures.
- 14.2 All persons employed in buildings for which registration is required should be instructed and trained to ensure that they understand the fire precautions and the action to be taken in the event of a fire. This should include persons on regular duties or shift duties outside normal working hours, including part time staff, cleaners etc. Training should be based on written instructions but it is important that they are specific to individual premises. Reliance upon a standard instruction of a type used by many large organisations may not be satisfactory without modification to suit individual needs. (See paragraph 14.29 for example.)

NOTE: Where an application for registration has been made, and you are awaiting a Fire Brigade inspection, interim measures should be made to secure that instruction and training is given.

- 14.3 It is vital that all premises used by the public are as safe as practicable from fire and that managers know how to protect the public and their staff from injury or death if a fire breaks out. To this end a licensee should consult the licensing authority and the Fire Brigade well in advance of a proposed event to ensure that the proposals and the fire precautions for the premises are adequate for the event(s) in question. A licensee should fully understand and comply with the conditions of the licence. Non-licensed premises should also contact the Fire Brigade for advice.

#### THE MANAGER'S RESPONSIBILITIES

- 14.4 The safety of the public is the responsibility of the manager (or his deputy). This means that the manager (or his deputy) should be in charge of and present on the premises during the whole time that they are open to the public and kept free from work which would prevent him from being immediately available in the event of an alarm of fire.

#### PREMISES MANAGED BY VOLUNTARY ORGANISATIONS

- 14.5 In the case of premises which are managed by voluntary organisations and which are hired out from time to time other organisations for public entertainments, but do not have paid staff to supervise such functions, it may not be appropriate for the licensee, staff or committee members to be present at every

entertainment. Nevertheless a person should be nominated as responsible for both the entertainment and safety arrangements. It is also recommended that the hirer fulfills the following conditions:-

(a) is aged 18 years of age or over;

(b) signs a written undertaking to accept responsibility for being in charge of and remaining on the premises at all times when the public are present and for ensuring that all conditions of the entertainment licence relating to management and supervision are met;

(c) possesses a full copy of the licence conditions for the premises;

(d) ensures that he receives instruction and training in the items listed in paragraph 14.13;

(e) carries out a safety check as listed in paragraphs 14.7 and 14.9; and

(f) provides such attendants as may be required under paragraphs 14.21 to 14.24; and instructs them as to their essential responsibilities in the event of fire or other emergency.

Furthermore all voluntary management committees should be encouraged to provide instruction for their committee members and booking secretaries in emergency procedures at least once every year.

14.6 The manager should also be aware that certain functions eg pop concerts and like occasions (including discos), can present additional dangers for the audience, largely from the affects of over excitement and irrational behaviour; and the noise level and flashing lights. In such circumstances, and particularly where there is a mainly younger audience, he should ensure that there is a sufficient number of adequately trained attendants to cover an emergency situation; and a public address system which can override the performance and be heard clearly in all parts of the premises.

#### **BEFORE THE PUBLIC ARE ADMITTED**

14.7 Before the public are admitted to any performance the manager is responsible for ensuring that a check is made of the following:-

(a) **EXITS** (to ensure that they are unlocked and available for use).

A record should be made in a log book kept for the purpose that:-

(i) all doors, gates referred to in paragraph 7.16 are locked in the open position;

- (ii) all removable fastenings have been removed from other doors etc in accordance with paragraph 7.18 and placed in the manager's charge; and
- (iii) all panic bolts have been tested and are in good working order.

(b) ESCAPE ROUTES

- (i) to see that they are free of obstruction and can safely and effectively used at all material times;
- (ii) to see that fire doors are not wedged or propped open (although they may be held open by an approved automatic door release); and
- (iii) to see that all exit signs are illuminated.

(c) THE PREMISES (to ensure that there are no obvious fire hazards).

14.8 During the performance the manager is responsible for ensuring that (where appropriate) the safety curtain is lowered or raised.

14.9 The manager is also responsible for ensuring that the following are provided and maintained:-

- (a) FIRE INSTRUCTION NOTICES
- (b) FIRE FIGHTING EQUIPMENT
- (c) A MEANS FOR GIVING WARNING IN CASE OF FIRE

Additionally, he should ensure that

- (d) ELECTRICAL AND GAS INSTALLATIONS

are satisfactorily maintained.

14.10 In order to ensure that equipment is maintained in a safe condition the manager should ensure that it is examined regularly by a competent person who, if not a qualified person, has the authority to engage a qualified person to carry out installations or repairs.

Note: Any residual current device, earth leakage circuit-breaker or similar device used to connect equipment to the electrical installation of the premises should be checked to ensure that it is suitable for the purpose.

14.11 The manager should also ensure that floor coverings, furniture and furnishings, scenery, props, curtains, drapes and hangings meet the appropriate standards.

14.12 The manager is also responsible for STAFF TRAINING in respect of fire precautions and evacuation procedures. Instruction should be given frequently by competent persons, at such intervals as will ensure that all employed persons are instructed preferably at least four times in each period of twelve months. It is particularly important that newly appointed staff are made aware of the means of escape and fire procedures at the commencement of their employment.

14.13 Instruction and training should provide for the following -

- (a) the action to be taken upon discovering a fire;
- (b) the action to be taken upon hearing the fire alarm;
- (c) raising the alarm, including the location of the alarm call points, the internal fire alarm telephones and the location of the alarm indicator panels;
- (d) the correct method of calling the Fire Brigade;
- (e) the location and use of fire equipment;
- (f) knowledge of escape routes, particularly any not in regular use;
- (g) knowledge of the method of operation of special escape door fastenings;
- (h) appreciation of the importance of fire doors and the need to close all doors at the time of a fire and on hearing the fire alarm;
- (i) stopping machines and processes and isolating power supplies where appropriate;
- (j) during staff drills and training, all escape doors, not in regular use, should be operated to ensure that they function satisfactorily and this will also assist in staff awareness of all facilities;
- (k) evacuation of the building (where members of the public are present, this will include reassuring them and escorting them to exits etc) and where appropriate, an assembly point.

It is particularly important that the manager ensures that where, for operational reasons, staff are transferred to another part of the premises, they are made aware of the means of escape and fire procedures of the new work area (including any additional responsibilities) if this differs from their permanent duty station.

NOTE - It is important that all members of staff take part in fire drills. False alarms which could be of nuisance value only can be used to good effect if they are treated as a drill. With no one being aware that it is a false alarm, the full procedure can be gone through including full evacuation and calling of the Fire Brigade (although the Fire Brigade should not be called for a known false alarm).

14.14 In addition to the above, certain categories of staff should be instructed and trained in matters peculiar to their particular responsibilities at the time of a fire. Examples are -

- (a) heads of departments;
- (b) engineering and maintenance staff;
- (c) floor supervisors;
- (d) security staff;
- (e) telephonists (this is particularly relevant where two stage alarm arrangements are employed).

#### DRILLS

14.15 At least four times a year (in large premises up to 12 times a year to ensure every person takes part in 4) a practice fire drill should be carried out simulating conditions in which one or more of the escape routes from the building is obstructed. During these drills the fire alarm should be operated by a member of staff who is told of a supposed outbreak, and thereafter the fire routine should be rehearsed as fully as circumstances allow.

#### RECORDS

14.16 Such details as are necessary to show the training and instruction given should be recorded in a logbook. The following are examples of matters which may need to be included in such a record -

- (a) date of the instruction or exercise;
- (b) duration;
- (c) name of the person giving the instruction;
- (d) names of the persons receiving the instructions; and
- (e) the nature of the instruction, training or drill.

14.17 In all premises one person should be responsible for organising fire instructions and training and in larger premises a person or persons should be nominated to co-ordinate the actions of the occupants in the event of a fire.

#### ATTENDANTS

14.18 There should be competent attendants on duty during the whole time that the public are on the premises. These attendants should have been specifically instructed as to their essential responsibilities in the event of fire or other emergency. Account should be taken of the additional responsibility caused by the attendance of disabled persons and children.

14.19 The primary duty of attendants is to ensure that safe conditions are maintained in the premises and to achieve this, they should:-

- (a) ensure that no overcrowding occurs in any part of the premises;
- (b) keep all gangways and exits clear at all times;
- (c) prevent standing on seats or furniture; and
- (d) be aware of any special requirements needed to ensure the safe evacuation of the audience/patrons.

14.20 Attendants should be readily identifiable to the public by means of some conspicuous clothing or marking system which is visible under all lighting conditions.

#### NUMBERS OF ATTENDANTS

14.21 The number of attendants on duty on the premises to assist persons entering or leaving should be not less than 1 for every 250, or part of 250 persons present; and

(a) if the number of persons on the floor or tier is less than 100, there should be at least 1 additional attendant on duty on that floor or tier;

(b) if the number of persons present on any floor or tier exceeds 100 there should be at least 2 additional attendants on duty on that floor or tier.

Note: Extra attendants to those indicated above may be required because of the type of entertainment and/or the composition of the audience.

14.22 Where most of the audience is under the age of 16, the number of attendants on duty should be not less than one for every 100 or part of 100 within the auditorium and one attendant for every 50 or part of 50 above the lowest floor.

14.23 Where children are to be accommodated separately from their parents or guardians there should be sufficient attendants, of 16 years of age or over (see paragraph 14.22), present at all times to facilitate an evacuation. All attendants who have responsibility for children should have been trained as described in paragraph 14.13 and have attended at least one practice fire drill.

14.24 The manager and those in the management team whose normal duties are other than the assistance of persons entering the auditorium or entertainment area should not be included in calculating the number of attendants for the purpose of paragraphs 14.21 to 14.23. Similarly a commissionaire stationed at the entrance, or anyone else employed in an area away from the auditorium, should not be included. However, attendants who are on duty at a door leading directly into the auditorium may be counted for this purpose, even if they normally stand just outside the door.

## RESTRICTION OF SMOKING

- 14.25 Smoking should be strictly prohibited on stage and in all areas associated with the stage, except where it is necessary in connection with the performance. The use of naked lights will require approval.
- 14.26 In the interests of safety it is recommended that smoking should be restricted to staff rest areas only and prohibited in all parts to which the public have access except bars and main foyers.

## EXCLUSION AND ADMISSION OF THE PUBLIC

- 14.27 All entertainments should immediately stop and the public should be instructed to leave the premises:-
- (a) if there is an outbreak of fire;
  - (b) if there is a suspected gas leak;
  - (c) if the normal lighting fails and remains inoperative (see paragraphs 11.1 to 11.3) for more than the rated duration of the emergency lighting system less one hour. The public should not be re-admitted until the requirements of paragraphs 11.1 to 11.3 can be met;
  - (d) if the normal lighting fails, and the emergency lighting has a rated duration of less than one hour;
  - (e) if the capacity of the source of supply for the emergency lighting can no longer maintain that lighting for at least one hour;
  - (f) if the emergency lighting fails to comply with the level of illumination required by chapter 11; or
  - (g) in the case of small premises, if the emergency lighting fails, unless a rapidly available alternative lighting system, meeting the requirements of chapter 11 is brought into operation without delay and the normal lighting is still operating.

NOTE 1: If the water supply fails during a performance (where this is relevant to the installed fire protection system), there should not be a need to evacuate the premises but no member of the public should be subsequently admitted until the normal supply is restored.

NOTE 2: The term 'rated duration' in (b) and (c) above is defined as the period of time that the luminaire can continuously provide the minimum illuminance required in the emergency condition.

**FIRE INSTRUCTION NOTICES**

14.28 At conspicuous positions in all parts of the building printed notices should be exhibited stating in concise terms the essentials of the action to be taken upon discovering a fire and on hearing the alarm. (See paragraphs 14.29 and 14.30 for example.)

14.29

**STAFF                      F I R E                      INSTRUCTIONS**

**IF YOU DISCOVER A FIRE**

- 1 Raise the alarm by operating the nearest fire alarm call point
- 2 Attack the fire, if possible, with the appliances provided - but without taking personal risks - ensuring a clear escape route is available at all times

**ON HEARING THE FIRE ALARM**

- 3 .....will call the Fire Brigade immediately
- 4 Staff will direct persons out of the building by way of the nearest available exit route and then proceed to the assembly point at.....where a roll call is to be taken
- 5 Ensure that
  - all windows and doors are closed
  - all means of escape are available for immediate use
  - all fire appliances are ready for use
- 6 DO NOT use lifts (unless specifically provided and indicated as a means of escape for persons with disabilities)  
  
DO NOT shout or run - this tends to cause panic  
  
DO NOT allow anyone to re-enter the building

**IF YOU DISCOVER A FIRE**

1 Raise the alarm by operating the nearest fire alarm call point  
(the nearest fire alarm call point is.....)

**IF YOU HEAR THE FIRE ALARM**

2 Leave the building immediately and proceed to the assembly point at .....

by the nearest available exit. Your primary escape route is.....

and the alternative route is.....

(or a plan of the section of the premises can be included to indicate escape routes)

3 Close doors behind you

4 DO NOT stop to collect personal belongings

DO NOT use the lifts (unless specifically provided and indicated as a means of escape for persons with disabilities)

DO NOT shout or run - this tends to cause panic

DO NOT re-enter the building

**STUDY THIS NOTICE CAREFULLY SO THAT YOU KNOW WHAT TO DO IN AN EMERGENCY**

THE FIRE ALARM SIGNAL IS.....

## 15. SERVICES (ELECTRICAL, GAS AND OIL)

### ELECTRICAL, GAS AND OIL EQUIPMENT NOT TO GIVE RISE TO DANGER

- 15.1 Electrical installations should be installed, tested and maintained in accordance with the provisions of the States of Guernsey Electricity Board. Work on electrical installations and appliances should only be carried out by qualified electricians.
- 15.2 Gas installations in any premises supplied with gas through pipes from outside their boundary are subject to the controls of the Guernsey Gas Light Co Ltd. These place a duty upon suppliers of gas, installers and users. Improperly installed or maintained gas fittings and appliances can result in fires, explosions, and the release of toxic products of combustion. Work on appliances or fittings should only be carried out by competent persons. Practical guidance on standards of training in safe gas installation is given in the Health and Safety Executive Approved Code of Practice 'Standards of training in safe gas installation'. Whilst the Gas Safety (Installation and Use) Regulations 1984 do not apply to premises which have their own gas supply (ie where the supply is piped from liquified petroleum gas (LPG) cylinders or a tank within their boundary), the Regulations may still be used as a guide to safe practice wherever it is reasonably practicable to do so.

### GAS CONTROLS

- 15.3 The means of shutting-off the supply of gas to any appliance and/or to the whole of the gas installation within a building should be readily accessible and positioned so that access is unlikely to be impeded by the public in the event of an emergency. Regulations 8 and 14 of the Gas Safety (Installation and Use) Regulations 1984 are particularly relevant to emergency controls.
- 15.4 Oil fired boiler installations and oil storage facilities should comply with the provisions of British Standard 5410: Part 1 or Part 2 as appropriate for the installation, commissioning, testing and maintenance.

## ELECTRICAL SAFETY

- 15.5 Where the socket outlets from the electrical installation may be used for the connection of lighting, video or sound amplification equipment, display models and other portable equipment, the licensing authority may consider that each socket outlet, particularly in the stage area (except for socket outlets which are controlled by a properly installed stage lighting installation), should be protected by an integral residual current device (RCD) (Earth leakage circuit-breaker) having a rated tripping current not exceeding 30 milliamps. RCDs should comply with the provisions of British Standard 4293.
- 15.6 Socket outlets in a stage area and their associated wiring should be regularly tested and inspected by a qualified electrician and a certificate showing the results of the inspection and test should be made available to the licensing authority.
- 15.7 Where RCDs are fitted to protect socket outlets their correct operation should be tested by operating the test button before use. If the device does not switch off the supply, a qualified electrician should be consulted and the use of the socket outlet prohibited until the defect has been rectified.
- 15.8 RCDs protecting circuits other than socket outlets should be tested at regular intervals not exceeding 6 months.

NOTE 1 - The use of RCDs reduces the risk of shock and fire associated with permanently plugged-in and portable equipment, but cannot eliminate all electrical hazards. Other safety precautions should not be relaxed.

NOTE 2 - RCDs as described above are not required on normal lighting circuits, as a fault in any part of a circuit would cause all lights on that circuit to be extinguished.

## PROTECTION AND SIZE, STRENGTH AND CAPACITY OF ELECTRICAL EQUIPMENT

- 15.9 All electrical equipment should be:-
- (a) of adequate size, strength and capacity, so as to prevent danger when put to use; and
  - (b) suitably placed, safeguarded and protected, so as to prevent danger arising from any fault or overload.
- 15.10 There should be sufficient, correctly installed and rated, electrical power sockets within the premises, so as to preclude the use of long trailing flexes to portable electrical appliances and/or multi-socket adaptors. Where equipment is suspended by ropes, cables or other combustible materials, safety chains or other non-combustible means of support should be provided.

## ELECTRICAL REQUIREMENTS

- 15.11 The electrical installation of the premises should be in accordance with the IEE Regulations for Electrical Installations, current at the time of installation, and all materials or equipment for which there is a British Standard or Specification should conform to the appropriate specification or code of practice or be constructed to an equivalent standard.
- 15.12 In the case of new installations, a diagram of the main electrical circuits should be fixed in a position easily accessible to the technical staff.
- 15.13 The main circuit switch gear and fuses should be situated in a place set apart, the door of which should be kept shut and locked if the enclosure communicates with any part of the premises to which the public have access.
- 15.14 All main switches or circuit-breakers should be labelled to indicate the circuits they control, and the fuse ways of the sub-circuits of distribution boards should be clearly labelled.
- 15.15 The polarity of every circuit should be correct, in particular where single pole switches are used to ensure that the live pole is switched.
- 15.16 Local switches for the control of lighting in parts of the premises accessible to the public should be avoided wherever practicable, except for the provision of switches to control house and cleaner's lighting in an auditorium. In such cases, the switches should be so placed that they are not readily accessible to the public and should be either key-operated or otherwise enclosed to prevent unauthorised interference.
- 15.17 Electric signs and advertising devices on the outside of the premises should be controlled by switches or circuit-breakers to isolate these from the electrical supply. The switches/circuit-breakers should be situated in a position readily accessible to the staff.

## LUMINOUS DISCHARGE LIGHTING

- 15.18 The supply of electricity to luminous discharge lighting installations on the outside of a building, or used within a building when the public are not admitted, should be capable of being cut off by one or more firemen's switches or other means of control situated outside the building and be accessible to members of the fire brigade but not easily accessible to the public.

## LIGHTING FOR SPECIAL EFFECTS

- 15.19 No lasers, strobes or other form of high intensity lighting should be installed or used without approval. No such lighting should be used other than strictly in accordance with any terms and conditions which may be imposed by the licence.

## ELECTRICAL WIRING - GENERAL

- 15.20 Systems of wiring used for the low voltage circuits of the permanent electrical installations should have all cables and conductors should all be to the standard laid down by the States Electricity Board.
- 15.21 PVC insulated and sheathed cables complying with the requirements of British Standard 6004 may be used for staff warning and oral announcement systems when the voltage does not exceed extra-low voltage and the cables are routed through protected areas of low fire risk. Where this is not possible, a system of wiring as detailed in paragraph 15.20 above should be used. Where such systems form part of any emergency signalling or alarm system the wiring should comply with the provisions of British Standard 5839: Part 1.
- 15.22 Where cables, conduit or ducts pass through walls, ceilings or partitions, the surrounding hole should be filled with fire-stopping material to prevent the passage of fire or smoke.
- 15.23 Where the installed batteries give off a flammable gas when being charged, the conductors in the battery room from the batteries to the control equipment should not be enclosed in conduit or ducting. Where the conductors from the batteries pass from the battery room to another room or enclosure, provision should be made to prevent flammable gases passing from the battery room to the other area via the cable run.
- 15.24 Cables to be installed outdoors on walls and the like should incorporate a sheath and/or armour suitably resistant to any mechanical damage likely to occur, or be contained in a conduit system or other enclosure affording adequate protection against such damage.
- 15.25 No wiring other than for the purpose of operating or lighting a ventilating system should be installed in any ventilating duct; similarly, no wiring other than that associated with the lift should be installed in a lift shaft. See British Standard 5655 for details.

- 15.26 Flexible conductors should be as short as practicable and should be provided with mechanical fixing and reinforcement at the point of entry into all apparatus, accessories, fittings or machines to which they are connected.
- 15.27 Flexible conductors used for arc lamps, floodlights, effects lamps and other electrical apparatus should, where necessary, be protected by heat-resisting material, which in new installations should be cables complying with British Standard 6141.

#### **INSPECTION OF ELECTRICAL INSTALLATIONS**

- 15.28 All electrical installations should be inspected at least every 5 years or such shorter period as may be specified by the licence, by a qualified electrician appointed by, or on behalf of, the manager of the premises. An inspections certificate concerning the condition of the installations should, after each inspection, be forwarded to the licensing authority by or on behalf of the manager of the premises. In the case of new installations or extensions to existing installations a completion certificate should be obtained. Specimen completion and inspection certificates are produced by the Institution of Electrical Engineers.

#### **GENERATORS, TRANSFORMERS, SWITCHGEAR AND HEAT PRODUCING EQUIPMENT**

- 15.29 Electricity generating plant and main supply transformers should be placed in a room:-
- (a) other than the auditorium;
  - (b) not communicating directly with the auditorium or with any other part of the building to which the public are admitted; and
  - (c) which is of fire-resisting construction throughout (except where there are windows, skylights and openings communicating directly with the open air). The standard of fire-resistance should not be less than 60 minutes or such higher standard as may be required by the Fire Brigade.

#### **USE OF BATTERIES**

- 15.30 The failure of battery powered equipment to operate correctly and for the required period could have serious consequences where the equipment is provided for fire safety purposes. It is therefore important to ensure that batteries used in fire safety equipment receive regular servicing and maintenance.

## FIRE SAFETY EQUIPMENT USING PRIMARY (NON-RECHARGEABLE) BATTERIES

- 15.31 Such equipment should have the batteries replaced at regular intervals not exceeding 6 months. Sufficient spare batteries should be kept on the premises to replace all batteries used in the equipment, and care should be taken to ensure the rotation of the stock and that records of battery replacement are maintained.

## EQUIPMENT USING SECONDARY (RECHARGEABLE) BATTERIES

- 15.32 Due to the wide range of batteries available for use in fire safety equipment it is beyond the scope of this guide to detail the maintenance requirements for them all. However, the following general rules should be observed:-

(a) detailed records should be kept of battery replacement and maintenance so that evidence can be produced to the licensing authority of satisfactory performance and maintenance of any equipment that is powered by batteries either continuously or in the event of failure of the normal supply;

(b) only batteries recommended by the equipment manufacturer should be used;

(c) all batteries should be replaced at the end of the design life as specified by the battery manufacturer or sooner in the event of failure to provide the rated performance; and

(d) all batteries should be used and maintained strictly in accordance with the manufacturer's instructions.

NOTE 1 - It is important, in the case of self-contained emergency lighting units and emergency lighting systems, that the routine inspection and tests detailed in British Standard 5266 are carried out. In the case of premises used only occasionally the daily inspection should be carried out on those days when the premises are used for public entertainment and recreation.

NOTE 2 - Where batteries are provided at a single point to provide power to a number of remote units, full details of the system, type, number and capacity of the cells together with the maintenance instructions should be kept available in the near vicinity of the batteries.

NOTE 3 - Smoking should be prohibited in any rooms in which electric batteries are stored or used when the batteries are capable of discharging a flammable gas. Normally the danger is associated with lead acid type batteries when they are being recharged. The rooms should be adequately ventilated.

NOTE 4 - Notices should be displayed, stating that smoking is prohibited, in and immediately outside any rooms in which electric batteries are stored or used. Any new 'No smoking' sign should comply with British Standard 5499: Part 1.

## HEATING APPLIANCES

- 15.33 All heating appliances should be suitably guarded and fixed in position in such a manner so as to prevent unauthorised persons having access to the controls or being able to approach sufficiently close to the appliance to endanger themselves.
- 15.34 Every heating appliance used in the premises should be situated at a safe distance from any combustible materials or substances. In deciding the safe distance regard should be given to the type of heater and the ease of ignitability of the nearby materials or substances.
- 15.35 Care should be taken to ensure that radiant heaters, particularly those fitted with reflectors, are not directed towards combustible materials and that, wherever possible, they are mounted at a high level above head height, usually at least 2.5m above floor level.

NOTE - It is not possible to give definitive advice on the safe distance necessary between heater and combustible material due to the many variable factors involved. Generally any combustible material should not have its temperature raised significantly above the ambient temperature for the area by the effects of direct heating by the appliance.

- 15.36 No oil-fired heaters, other than those forming part of the boiler installations, should be used in the premises.
- 15.37 No portable liquified petroleum gas (LPG) heater should be in the premises when members of the public are present. Containers of LPG should be protected against unauthorised interference and accidental leakage. LPG cylinders, both full and empty, should be kept in safe positions in the open air away from other flammable materials, or where this is not reasonably practicable because of exceptional circumstances, in an adequately ventilated storeroom constructed in accordance with HSE Guidance Note CS 4 - 'The keeping of LPG in cylinders and similar containers' (HM Stationery Office, ISBN 011 883539 4). The storeroom should not be used for any purpose other than the storage of LPG cylinders. LPG cylinders in use should be sited outside the structure and with their valves readily accessible in case of an emergency.

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