BRITISH STANDARD

BS 5588-8:1999
Incorporating
Amendment No. 1

Fire precautions in the design, construction and use of buildings —

Part 8: Code of practice for means of escape for disabled people

ICS 13.220.20; 91.040.30

Committees responsible for this British Standard

The preparation of this British Standard was entrusted to Technical Committee FSH/14, Fire precautions in buildings, upon which the following bodies were represented:

Association of British Theatre Technicians
Association of Specialist Fire Protection
British Standards Society
Chief and Assistant Chief Fire Officers Association
Consumer Policy Committee of BSI
Department for Education
Department of Health (NHS Estates)
Department of the Environment, Transport and the Regions (Represented by the Building Research Establishment)
Department of the Environment, Transport and the Regions (Construction Directorate)
Department of the Environment for Northern Ireland
District Surveyors Association
Electricity Association
Fire Brigades Union
Fire Safety Development Group
Guild of Architectural Ironmongers
Health and Safety Executive
Hevac Association
Institute of Building Control
Institute of Fire Safety
Institution of Fire Engineers
Institution of Structural Engineers
Line of Fire
London Fire and Civil Defence Authority
Loss Prevention Council
National Association of Fire Officers
National House-building Council
Royal Institute of British Architects
Royal Institution of Chartered Surveyors
Scottish Office (Construction and Building Control Group)
Steel Window Association

The following bodies were also represented in the drafting of the standard, through subcommittees and panels:

Committee on Mobility for Disabled People
Home Office
Joint Committee on Mobility for the Blind and Partially Sighted
National Federation of the Blind of the United Kingdom

This British Standard, having been prepared under the direction of the Consumer Products and Services Sector Committee, was published under the authority of the Standards Committee and comes into effect on 15 May 1999

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The following BSI references relate to work on this British Standard:
Committee reference FSH/14
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Contents

Foreword

This part of BS 5588 was prepared by Technical Committee FSH/14. It supersedes BS 5588-8:1988, which is withdrawn.

The start and finish of text introduced or altered by amendment is indicated in the text by tags [A1] 〈A1]. Tags indicating changes to text carry the number of the amendment. For example, text altered by Amendment No. 1 is indicated by [A1] 〈A1].

All matters dealing with fire safety management are now located in BS 5588-12.

The other parts which comprise BS 5588 are as follows:

— *Part 0: Guide to fire safety codes of practice for particular premises/applications;*

— *Part 1: Code of practice for residential buildings;*

— *Part 4: Code of practice for smoke control using pressure differentials;*

— *Part 5: Code of practice for firefighting stairs and lifts;*

— *Part 6: Code of practice for places of assembly;*

— *Part 7: Code of practice for the incorporation of atria in buildings;*

— *Part 9: Code of practice for ventilation and air conditioning ductwork;*

— *Part 10: Code of practice for shopping complexes;*

— *Part 11: Code of practice for shops, offices, industrial, storage and other similar buildings;*

— *Part 12: Managing fire safety.*

The axiom that buildings should be accessible to disabled people is firmly established. In 1967, BSI published CP 96, *Access for the disabled to buildings*. The Chronically Sick and Disabled Persons Act [1] was enacted in 1970 (and amended in 1976) with the requirement in Section 4 that buildings to which the public, or some sections of the public, have access should, wherever practicable and reasonable, be accessible. In 1979, CP 96 was revised as BS 5810. The Disabled Persons Act, 1981 [2] included in Section 6 a requirement that provision of access and facilities for disabled people in public buildings should be in accordance with BS 5810 in order that access should be more effectively secured. Following consultations on how Section 6 of the 1981 Act might be implemented, the Government decided that the intentions of the legislation would be better satisfied by using building regulations as a control instrument. Regulations came into force in Northern Ireland from December 1984, in Scotland from March 1985 and in England and Wales from August 1985. This has subsequently been reinforced by the Disability Discrimination Act 1995 [3]. A basic tenet of building law is that access provision has to be complemented by egress provision, and it is on this account that this part of BS 5588 has been prepared.

It has been assumed in the drafting of this standard that the execution of its provisions will be entrusted to appropriately qualified and experienced people.

As a code of practice, this British Standard takes the form of guidance and recommendations. It should not be quoted as if it were a specification and particular care should be taken to ensure that claims of compliance are not misleading.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

In particular, attention is drawn to **4.3**.

Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 23 and a back cover.

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Introduction

Management systems are an essential part of the means of escape for disabled people and [A1] BS 5588-12 provides [A1] guidance for management to aid it in making the best use of the facilities described in this part of BS 5588.

It is envisaged that those responsible for the management of existing buildings would adopt the principles underlying this standard and its recommendations as part of their routine administrative procedures. In many instances, it would be sufficient simply to take account of the advice to management that is contained in [A1] BS 5588-12 [A1] to ensure that the use of a building is facilitated, notwithstanding an individual's disability.

1 Scope

[A1] This part of BS 5588 provides guidance, additional to that in the other parts of BS 5588, for designers, the building construction team and building managements on incorporating into new buildings, or buildings that are being altered, measures that enable disabled people to be assisted to safety in the event of a fire. It applies to all buildings except single-family dwelling houses, flats and maisonettes and buildings used as a house in multiple occupation. [A1]

This part of BS 5588 is not applicable to buildings purpose built for disabled people, including Health Care Premises which are covered by specific guidance documents issued by Government Departments and NHS Estates.

NOTE 1 These are usually provided with means of escape that are more comprehensive than those recommended in this part of BS 5588.

People with learning difficulties are not catered for in this standard as they need to be treated no differently from children or the very elderly with regards to their needs.

NOTE 2 Application of this standard to existing buildings is covered in Annex A.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this British Standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. For undated references, the latest edition of the publication referred to applies.

BS 476-4, *Fire tests on building materials and structures — Part 4: Non-combustibility test for materials.*

BS 476-7, *Fire tests on building materials and structures — Part 7: Method of test to determine the classification of the surface spread of flame of products.*

BS 476-8, *Fire tests on building materials and structures — Part 8: Test methods and criteria for the fire resistance of elements of building construction.*

BS 476-11, *Fire tests on building materials and structures — Part 11: Method for assessing the heat emission from building materials.*

BS 476-20, *Fire tests on building materials and structures — Part 20: Method for determination of the fire resistance of elements of construction (general principles).*

BS 476-21, *Fire tests on building materials and structures — Part 21: Methods for determination of the fire resistance of loadbearing elements of construction.*

BS 476-22, *Fire tests on building materials and structures — Part 22: Methods for determination of the fire resistance of non-loadbearing elements of construction.*

BS 476-23, *Fire tests on building materials and structures — Part 23: Methods for determination of the contribution of components to the fire resistance of a structure.*

BS 476-31.1, *Fire tests on building materials and structures — Part 31: Methods for measuring smoke penetration through doorsets and shutter assemblies — Section 31.1 Method of measurement under ambient temperature conditions.*

BS 5395-2:1988, *Stairs, ladders and walkways — Part 2: Code of practice for the design of helical and spiral stairs.*

BS 5499-1, *Fire safety signs, notices and graphic symbols — Part 1: Specification for fire safety signs.*

BS 5568:1978, *Specification for folding wheelchairs for adults*.

BS 5588-11, *Fire precautions in the design, construction and use of buildings — Part 11: Code of practice for shops, offices, industrial, storage and other similar buildings.*

〉A1〈 BS 5588-12, *Fire precautions in the design, construction and use of buildings — Part 12: Managing fire safety*. 〉A1〈

BS 5655-1, *Lifts and service lifts — Part 1: Safety rules for the construction and installation of electric lifts.*

BS 5655-2, *Lifts and service lifts — Part 2: Safety rules for the construction and installation of hydraulic lifts.*

BS EN 1125, *Building hardware — Panic exit devices operated by a horizontal bar — Requirements and test methods.*

BS 5810, *Code of practice for access for the disabled to buildings*.

BS 5839-1, *Fire detection and alarm systems for buildings — Part 1: Code of practice for system design, installation and servicing.*

BS 5839-3, *Fire detection and alarm systems for buildings — Part 3: Specification for automatic release mechanisms for certain fire protection equipment.*

BS 6206, *Specification for impact performance requirements for flat safety glass and safety plastics for use in buildings.*

BS 7036, *Code of practice for safety at powered doors for pedestrian use.*

PD 6512, *Use of elements of structural fire protection with particular reference to the recommendations given in BS 5588, Fire precautions in the design and construction of buildings.*

3 Definitions

For the purposes of this part of BS 5588 the following definitions apply.

3.1
accommodation stairway
stairway, additional to that or those required for escape purposes, provided for the convenience of occupants

3.2
ambulant disabled people
disabled people who are able to walk but who may depend on prostheses (artificial limbs), orthoses (callipers), sticks, crutches or walking aids

3.3
disabled people
people with a physical, hearing or sight impairment which affects their mobility or their use of buildings

3.4
escape route
route forming part of the means of escape from any point in a building to a final exit (see **3.6**)

NOTE It might be necessary to pass through further doorways before reaching a place of safety, for example if escape was via an internal courtyard.

3.5
evacuation lift
lift that may be used for the evacuation of disabled people in a fire under the direction of management or firefighters

3.6
final exit
termination of an escape route from a building giving direct access to a street, passageway, walkway or other open space sited to ensure the rapid dispersal of persons from the vicinity of a building so that they are no longer in danger from fire and/or smoke

3.7
(fire) compartment
building or part of a building, comprising one or more rooms, spaces or storeys, constructed to prevent the spread of fire to or from another part of the same building, or an adjoining building

3.8
fire door
door or shutter provided for the passage of persons, air or objects, which, together with its frame and furniture as installed in a building, is intended, when closed, to resist the passage of fire and/or gaseous products of combustion and is capable of meeting specified performance criteria to those ends

3.9
firefighting lift
lift designed to have additional protection against fire, with controls that enable it to be used under the direction control of the fire service in fighting a fire

3.10
fire resistance
ability of a component or construction of a building to satisfy for a stated period of time some or all of the appropriate criteria specified in the relevant part of BS 476

3.11
manual call point
component of a fire detection and fire alarm system which is used for the manual initiation of an alarm (see BS EN 54)

3.12
non-combustible material
any material capable of satisfying the performance requirements specified in BS 476-4, or any material which when tested in accordance with BS 476-11 does not flame or cause any rise in the temperature on either the centre (specimen) or furnace thermocouples

3.13
protected stairway/lobby/corridor
stairway, including any exit passageway leading therefrom to its final exit, or lobby or corridor, enclosed with (other than any part that is an external wall of a building) fire-resisting construction

3.14
refuge
area that is enclosed with fire-resisting construction (other than any part that is an external wall of a building) and served directly by a safe route to a storey exit, evacuation lift or final exit, thus constituting a temporarily safe space for disabled people to await assistance for their evacuation

NOTE 1 Examples of refuges are shown in Figure 3 and Figure 4.

NOTE 2 Refuges are relatively safe waiting areas for short periods. They are not areas where disabled people should be left alone indefinitely until rescued by the fire brigade, or until the fire is extinguished. (This should not be confused with the use of refuges in progressive horizontal evacuation, e.g. in hospitals from which people may not need to escape but from where there is the potential for further escape should that become necessary.)

3.15
storey exit
final exit, or a doorway, giving direct access to a protected stairway, firefighting lobby or external escape route

3.16
two-stage fire alarm system
fire alarm system in which the initial alarm is given only in a restricted part of the premises, with an alert signal being given in the remainder of the premises

3.17
wheelchair bound person
wheelchair user who is confined to the wheelchair and requires assistance to negotiate stairs whilst remaining in his or her wheelchair

3.18
wheelchair user
disabled person who depends on a wheelchair for mobility

3.19
wheelchair stairlift
appliance for transporting a person in a wheelchair between two or more levels by means of a guided carriage moving substantially in the direction of a flight of stairs and travelling in the same path in both upward and downward directions

4 Use of this code

4.1 Provision and use of fire safety arrangements

The principles and philosophy underlying the provision of means of escape from buildings and the related precautions in the case of fire are:

a) the planning and protection of horizontal and vertical escape routes leading to safety from any area that may be threatened by fire, so enabling any person to turn away and to escape;

b) the construction and finishing of the building with materials which embody fire resistance in the structure;

c) segregation of high fire risk/hazard areas;

d) fire warning systems and, where appropriate, systems for the automatic detection of fire;

e) effective management control.

4.2 Relationship with other standards for means of escape

The design for means of escape should be in accordance with the standards for the types of occupancy in relevant codes and regulations. Clauses **5** to **12** of this part of BS 5588 describe the additional measures needed to provide escape for disabled people.

4.3 Relationship with statutory provisions

4.3.1 *General*

It is important to appreciate the relationships between this part of BS 5588 and the various statutory provisions relevant to the design and construction of buildings and to the fire precautions to be provided in existing buildings. The relevant legislation indicated in general terms in **4.3.2** has to be complied with in the event of a conflict with this code.

NOTE The Technical Standards for conformity to the Building Standards (Scotland) Regulations [4] include specific provisions for means of escape for disabled people in the event of fire.

There should be preliminary design consultation to avoid the need to make changes to a design at a late stage. For England and Wales, reference should be made to the guidance document, *Building Regulation and Fire Safety, Procedural Guidance* [5]. For Scotland, reference should be made to the Building (Procedure) (Scotland) Regulations 1981 (as amended) [6].

4.3.2 *Building Regulations*

The design and construction of new buildings and extensions to and of material alterations of existing buildings, are controlled by the following statutory provisions which are collectively referred to as building regulations in this part of BS 5588.

England and Wales: The Building Regulations.

Scotland: The Building Standards (Scotland) Regulations.

Northern Ireland: Building Regulations (Northern Ireland).

4.3.3 *Legislation and other regulations for fire safety in buildings*

In addition to the controls mentioned in **4.3.2**, fire safety and means of escape for a wide variety of buildings is dealt with under the following legislation.

England and Wales:

The Fire Precautions Act 1971, as amended by the Health and Safety at Work etc. Act 1974 and the Fire Safety and Safety of Places of Sport Act 1987.

The Building Act 1984.

The Fire Certificates (Special Premises) Regulations 1976, SI 1976 No. 2003 (as amended).

The Fire Precautions (Workplace) Regulations 1997.

Scotland:

The Fire Precautions Act 1971, as amended by the Health and Safety at Work etc. Act 1974 and the Fire Safety and Safety of Places of Sport Act 1987.

The Building (Scotland) Act 1959 (as amended).

The Fire Certificates (Special Premises) Regulations 1976, SI 1976 No. 2003 (as amended).

The Fire Precautions (Workplace) Regulations 1997.

Northern Ireland:

The Fire Services (Northern Ireland) Order 1984 and the Health and Safety at Work (Northern Ireland) Order 1978.

The Planning and Building Regulations (Amendment Order)(Northern Ireland) Order 1990.

The Fire Precautions (Workplace) Regulations (Northern Ireland) 1998.

There are also a number of local Acts as well as entertainment and other licensing legislation that deal with fire safety and means of escape. The designer should consult the fire authority and building authority at an early stage to make certain that the building as planned will meet the requirements that authorities may make, particularly if a fire certificate or licence may be necessary.

NOTE Under the Fire Precautions Act, 1971, where means of escape in case of fire have been provided in accordance with the Building Regulations 1991 in England and Wales, or in Scotland, the Building Standards (Scotland) Regulations 1990, fire authorities cannot generally make structural or other alterations a condition of the issue of a fire certificate or serve an improvement notice, unless:

a) such alterations are necessary to meet the requirements of any regulations made under Section 12 of the Act; or

b) the fire authority is satisfied that the means of escape in case of fire and the means provided to secure that they can be safely and effectively used at all material times, are inadequate by reason of matters or circumstances of which particulars were not required to be supplied to the local authority in connection with the deposit of plans for building regulation/building standards purposes. The deliberate or accidental omission of required information from such plans may be viewed similarly.

4.4 Information to be given to clients

〉A1〈 Advice on evacuation procedures, including techniques for assisting disabled people to leave buildings, and on the management of evacuation lifts is given in BS 5588-12. 〉A1〈

Designers should inform their clients of the nature, function and capabilities of the fire precautions that have been designed into the building, and especially those whose nature may be less evident. This enables a better understanding of the responsibility for ensuring that a high standard of safety is maintained.

The development, maintenance and implementation of 〉A1〈 evacuation procedures (see BS 5588-12) 〉A1〈 including assistance techniques, and the initial management of evacuation lifts, is the responsibility of the building's management team. It is also the responsibility of the building's management team to provide formal guidance to ensure that, where necessary, those people who use the building can familiarize themselves with the various strategies and management systems. By this means individual building users can be made aware of a clear role for themselves within escape procedures in the event of an emergency.

4.5 Use of the diagrams

The diagrams in Figure 1 to 〉A1〈 Figure 5 〉A1〈 are intended to clarify concepts, and should not be taken as indicating the only acceptable forms of planning. Features not relevant to the concepts or principle(s) being illustrated are not shown.

5 Provision for escape

The traditional method of providing means of escape assumes that building users are able-bodied people and that the essential role of management in a fire is to ensure that the fire brigade is called and to ascertain the status of any evacuation.

The presumption of independent capability to use steps and stairs for egress is clearly inadequate when considering the safety of some disabled people. For them evacuation involving the use of refuges on escape routes and either assistance down (or up) stairways or the use of suitable lifts will be necessary. Accordingly, this part of BS 5588 covers the measures appropriate for the safety of disabled people from the moment they, and/or the building management, become aware of potential danger until they reach a place of safety. This concept is illustrated in Figure 1.

The successful emergency evacuation of a building can be greatly assisted by comprehensive management procedures. This applies whether the occupants of a building are disabled or not. The management procedures for disabled people need to include arrangements for assisting wheelchair bound people and those with walking difficulties or certain other impairments.

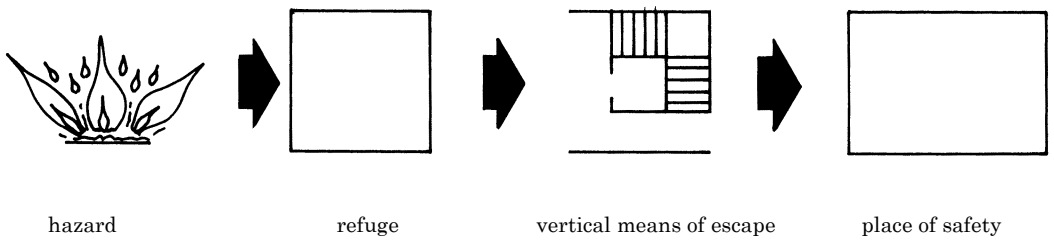


Figure 1 — Principles of evacuation

Although this part of BS 5588 makes no recommendation that all buildings should be provided with evacuation lifts, it is recognized that the provision of an evacuation lift reduces the need to provide physical assistance for the evacuation of disabled people.

More detailed information on ▮A1⟩ evacuation procedures is given in BS 5588-12 ⟨A1▮. The application of the recommendations of this part of BS 5588 should also result in buildings that offer enhanced means of escape in fire for able-bodied persons.

Although a lift may have been used for movement from storey to storey in the building as a matter of course, use of a lift during an outbreak of fire should only be considered where suitable safeguards are incorporated in both the building structure and the lift engineering system. Even with these safeguards, there will remain some risk that the lift may be, or may become, defective (e.g. if the lift motor fails, or if there is smoke within the lift well), or there may be some delay in its arrival. It is therefore important that a disabled person, having reached an evacuation lift lobby, should have access to a stairway which could be used if conditions in the lift lobby become untenable (see Figure 4 and **8.2**).

Where an evacuation lift is provided and access to it is cut off because of the position of the fire, a stairway in another part of the storey could be used to descend to a lower storey from where it may be safe to take the lift to the final exit level. This situation is demonstrated in Figure 4a) and Figure 4c).

For these reasons it is essential that the use of stairways is considered even in buildings provided with an evacuation lift. Evacuation of a wheelchair bound person, down or up a stairway, is dealt with under management procedures ▮A1⟩ (see BS 5588-12) ⟨A1▮.

6 Escape routes

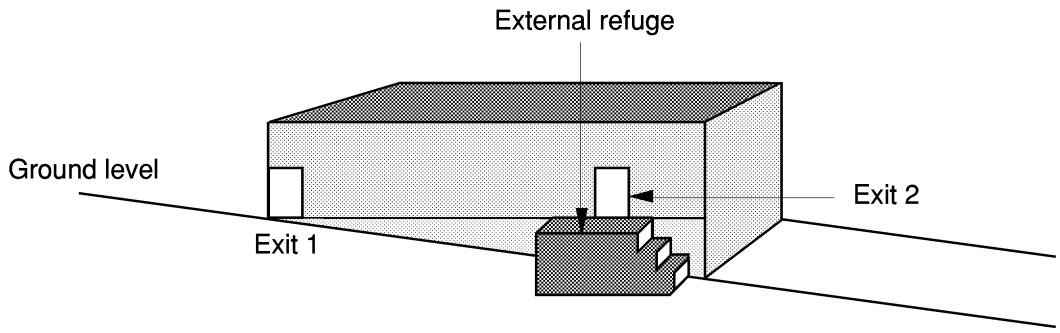
6.1 General

It is essential that all occupants are able to leave quickly any area in which they may be in danger from fire. Escape routes should be free from any feature that might impede movement, such as unsuitable door ironmongery or raised thresholds or steps between changes of level within a storey.

Except where there is a change in level within the relevant storey, a route leading to a final exit in the same storey should not pose a problem for those people who cannot use stairs. Elsewhere there may be some delay whilst waiting for assistance to use either a stair or an evacuation lift. It may therefore be necessary to provide refuges where disabled people can wait for short periods of time in relative safety before continuing to a final exit (see Clause **8**).

Delays could also occur where a storey exit (which is also a final exit) leads onto an external flight of steps which connects it with the ground level. Subject to guidance on protection, (see Clause **17**) the refuge in such a situation might take the form of an open-air external refuge terrace (see Figure 2).

In many existing modern buildings refuges will have been provided as a result of meeting the Building Regulations for means of escape. In older buildings the provision of refuges may be possible without affecting the internal design of the building to any material extent.



NOTE Exit 2 would require a refuge.

Figure 2 — Exits from same storey with different ground levels

6.2 Entertainment and cultural use buildings

The design of escape routes and the organization of management procedures is particularly critical in this class of building because the users are likely to be unfamiliar with their surroundings, and because population densities in terms of the number of persons per unit area are high. These considerations have contributed to unreasonable restrictions on the access of disabled people to these buildings and one of the purposes of this part of BS 5588 is to show that such restrictions are unnecessary. There are clearly problems in stepped auditoria, grandstands and similar buildings, but the design for means of escape should allow disabled people a choice of location, similar to that enjoyed by non-disabled people.

Normally the number of disabled people requiring assistance in an evacuation of an assembly building is likely to be small, particularly where a back stage area is concerned. However in the event of a large group of disabled people attending an event, it is sensible that the organizers of the group should discuss emergency evacuation arrangements with the management of the building.

7 Horizontal escape routes

The means of escape from storeys should be in accordance with the standards for the type of occupancy in any relevant codes and regulations.

The routes of travel should be free from any obstacle that may cause undue delay to disabled people, e.g. raised thresholds or steps. Where minor changes of level within any storey cannot be avoided, a ramp conforming to BS 5810 should be provided.

8 Refuges

8.1 Commentary

The limitation of distances of horizontal travel for means of escape purposes means that most disabled people should be able independently to reach the safety of a protected escape route or final exit. However some disabled people, for example those who are wheelchair bound, will not be able to use stairways without assistance. For this reason it is necessary to provide refuges on all storeys other than those in small buildings of limited height (where the distance of travel to a final exit is so limited that the provision of refuges is unnecessary), those providing level access directly to a final exit and those consisting exclusively of plant rooms.

*A refuge (see **3.14**) needs to be of sufficient size both to accommodate a wheelchair user and to allow the wheelchair user to manoeuvre into the wheelchair space without undue difficulty. A BS 5568:1978 type A folding wheelchair occupies a space of 660 mm × 1 065 mm, but there are a wide variety of wheelchairs in use and powered wheelchairs are increasingly being used. It should also be noted that the disabilities of wheelchair users vary both in type and degree. Given these factors the minimum space provided for a wheelchair in a refuge needs to be at least 900 mm × 1 400 mm allowing for manoeuvring. As an indication of the manoeuvrability of wheelchairs, a BS 5568:1978 type A folding wheelchair (when propelled in a forward direction by means of the handrims) is capable of negotiating a turn through a door opening of 775 mm clear width into a 900 mm wide corridor (and vice versa) and is capable of being turned through 180° in a 1 400 mm wide corridor.*

The following are examples of satisfactory refuges:

a) *an enclosure such as a compartment, protected lobby, protected corridor or protected stairway;*

b) *an area in the open air such as a flat roof, balcony, podium or similar place which is sufficiently protected (or remote) from any fire risk and provided with its own means of escape.*

It is essential that the location of refuges and of wheelchair spaces within refuges does not have any adverse effect on the means of escape provided in the building.

Figure 3 and Figure 4 illustrate examples of refuges and routes of escape from a fire from positions where there is immediate direct exposure to risk. In Figure 3a), fire-resisting separation across the storey creates two compartments, each of which is a refuge from fire in the other; in Figures 3b) and c), the protected stairways or lobbies serve as refuges. In many buildings such spaces are formed as part of the design and construction process.

Although as a general principle an evacuation lift should be located close to a protected stairway, as in Figure 4a), there are circumstances where this need not be so, provided the requirement for safe access from the refuge to a stairway can be assured. Figure 4b) and Figure 4c) show such an arrangement; the lobby has separate access to both compartments and provides a refuge from each. If the lobby becomes untenable before the lift arrives, safe access to the stairway remote from the fire is possible. If the position of the fire is such that it is not possible to enter the lift lobby, then either the other compartment [Figure 4b)] or the stairway [Figure 4c)] provides a refuge.

Figure 5 illustrates the principles for the provision of wheelchair spaces within protected stairways. In Figure 5b) the landing is larger to allow access to the wheelchair space without disrupting the flow of persons escaping.

8.2 Recommendations

Whether or not a lift is provided the following recommendations are applicable.

a) A refuge should be provided for:

1) each protected stairway affording egress from each storey; and

2) each final exit leading onto a flight of stairs as shown in Figure 2.

NOTE 1 The provisions in a)1) and 2) do not apply to:

i) buildings comprising not more than a basement, a ground floor and a first storey, with the floor area of each storey 280 m^2 or less, and in a single occupancy;

ii) storeys consisting exclusively of plant rooms.

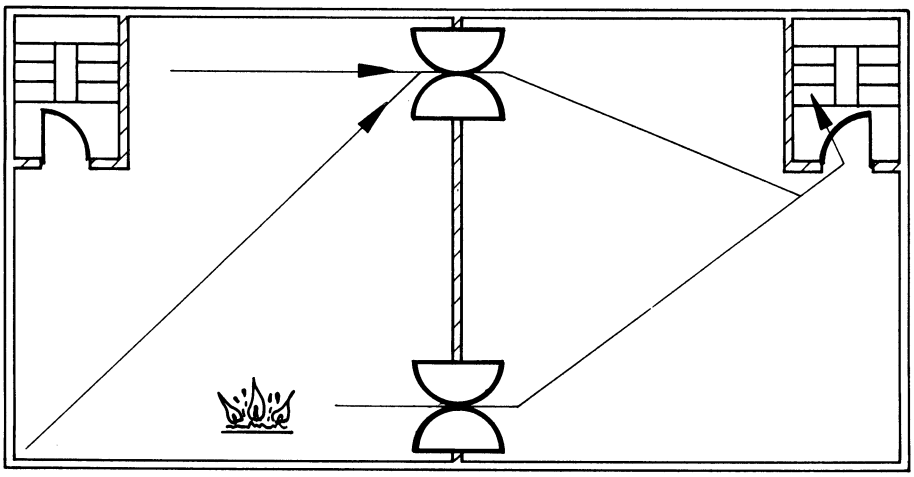
NOTE 2 "Storey" includes any open areas to which the public or staff have access, such as a roof garden.

b) Each refuge should provide an area accessible to a wheelchair in which a wheelchair bound person can await assistance.

c) Where a refuge is a protected stairway or protected lobby or protected corridor, the wheelchair space should not reduce the width of the escape route. Where the wheelchair space is within a protected stairway, access to the wheelchair space should not obstruct the flow of persons escaping.

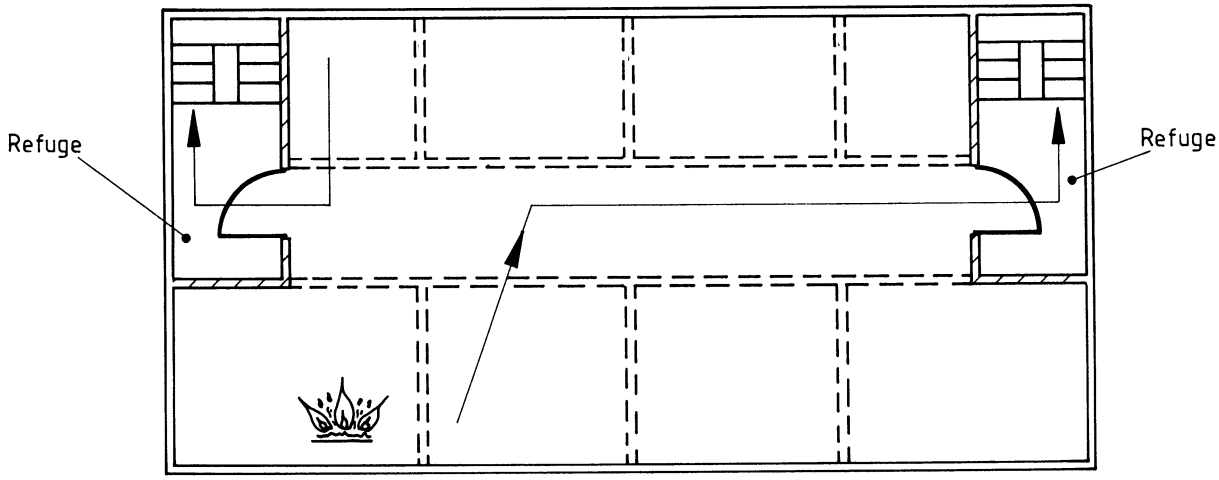
d) When the number and locations of refuges have been decided the essential requirement for independent communication between the occupants and evacuation management personnel needs to be met [A1] (see BS 5588-12) [A1].

e) Where a refuge is within a pressurized stair it should conform to BS 5588-4.



a) Storey divided into two refuges (stairway not provided with wheelchair space)

NOTE Persons occupying the left hand compartment would not reach a refuge until they had entered the right hand compartment. Two doorsets in the partition are necessary in case access to one of the doorsets is blocked by fire.



b) Protected stairways used as refuges

NOTE Protected stairways should be approached by way of a protected lobby in certain situations, for example, in high buildings.

Key

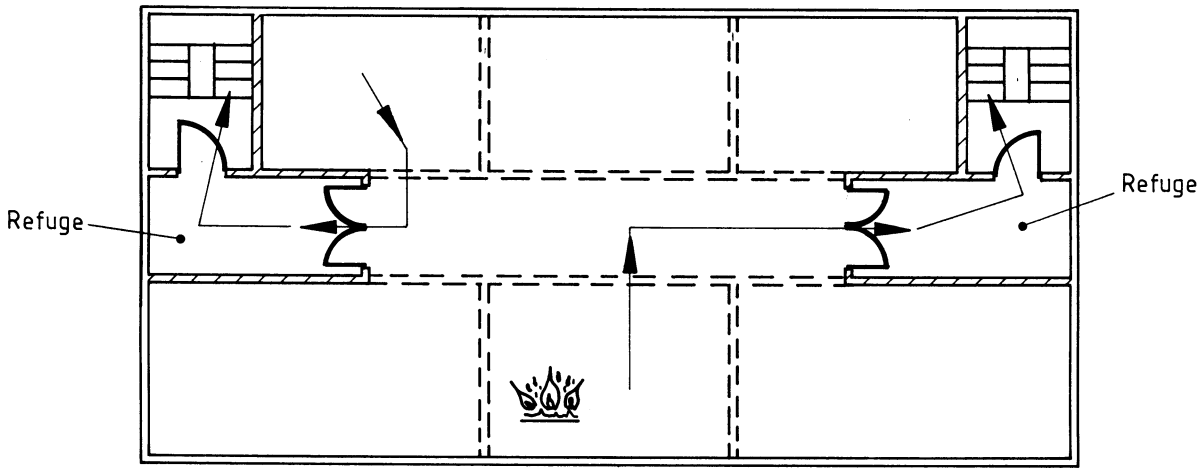
30 min (minimum) fire-resisting separation

FD 30S fire door

NOTE The doorset may have one or two leaves and, dependent on its location, may be single or double action (swing).

Partitioning for cellular planning

Figure 3 — Examples of refuges in buildings not provided with evacuation lifts



c) Protected lobbies used as refuges

Key

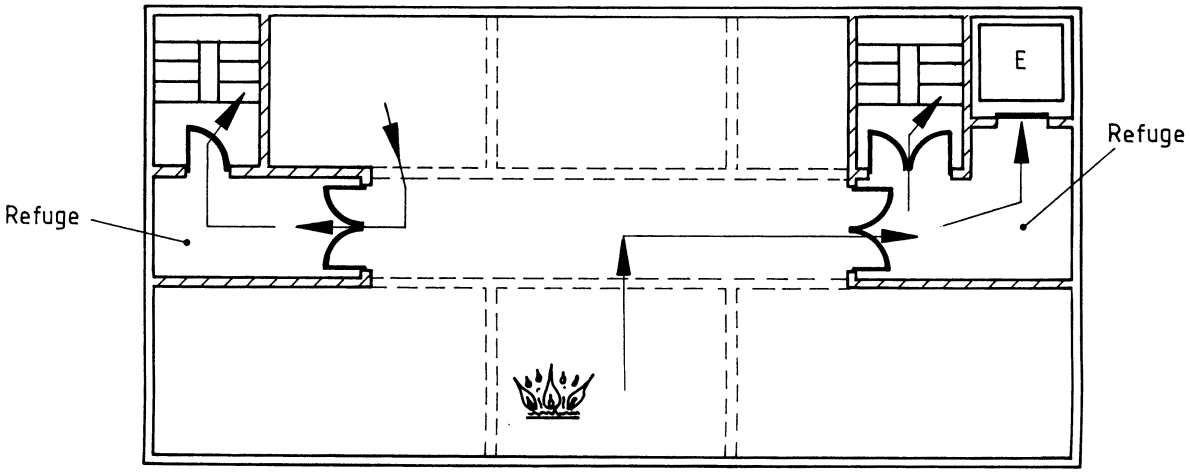
30 min (minimum) fire-resisting separation

FD 30S fire door

NOTE The doorset may have one or two leaves and, dependent on its location, may be single or double action (swing).

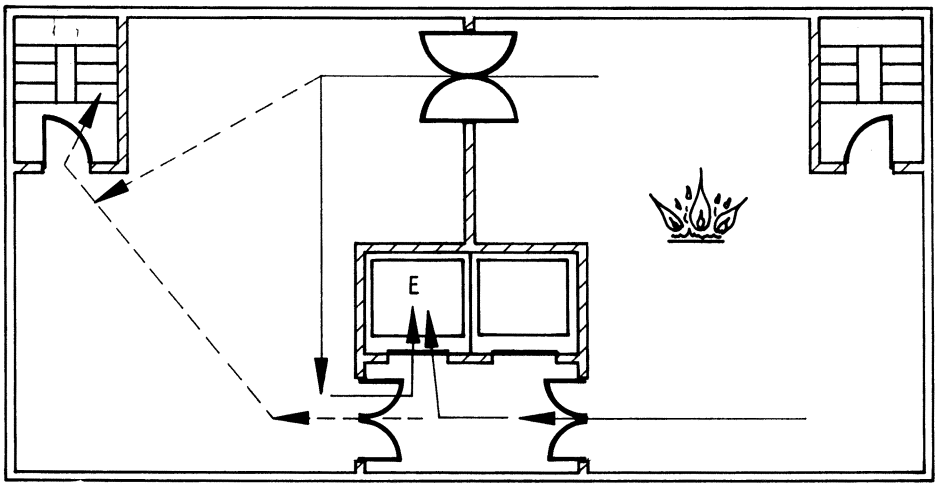
Partitioning for cellular planning

Figure 3 — Examples of refuges in buildings not provided with evacuation lifts (*continued*)



a) Protected lobbies used as refuges

NOTE The evacuation lift may be a firefighting lift.



b) Storey divided into two refuges

NOTE The doorset in the partition separating the two parts of the accommodation is required in case access to the lift lobby is blocked by fire.

Key

30 min (minimum) fire-resisting separation

FD 30S fire door

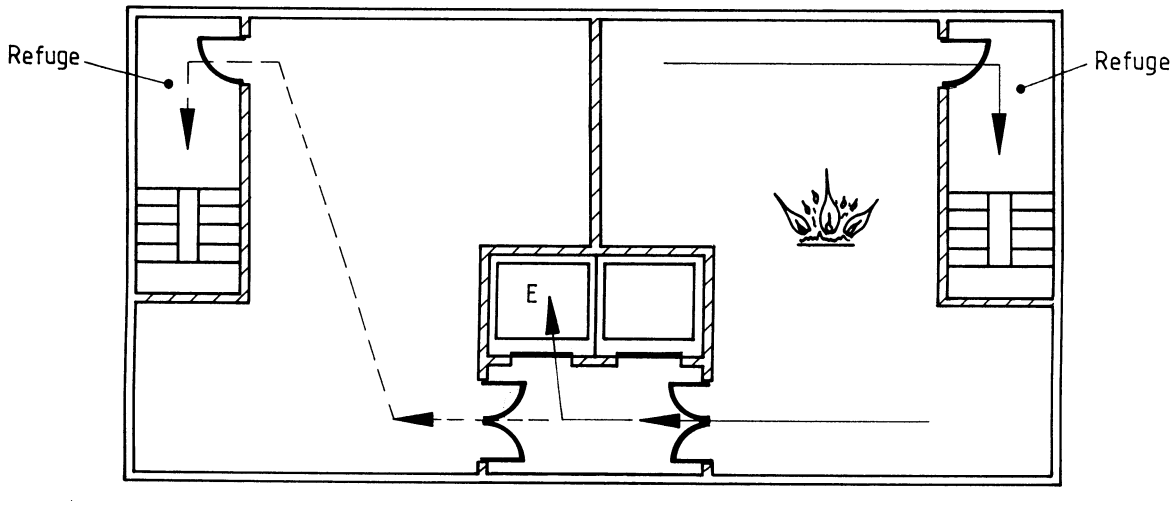
NOTE The doorset may have one or two leaves and, dependent on its location, may be single or double action (swing).

Partitioning for cellular planning

E Evacuation lift

NOTE The lift landing doors should be FD 30 fire doors.

Figure 4 — Examples of refuges in buildings provided with evacuation lifts



c) Protected stairways used as refuges

Key

30 min (minimum) fire-resisting separation

FD 30S fire door

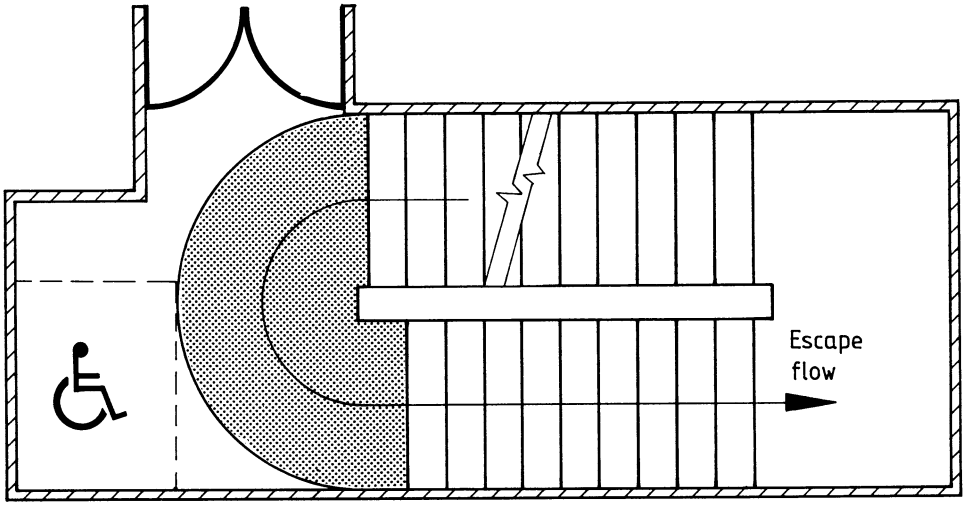
NOTE The doorset may have one or two leaves and, dependent on its location, may be single or double action (swing).

Partitioning for cellular planning

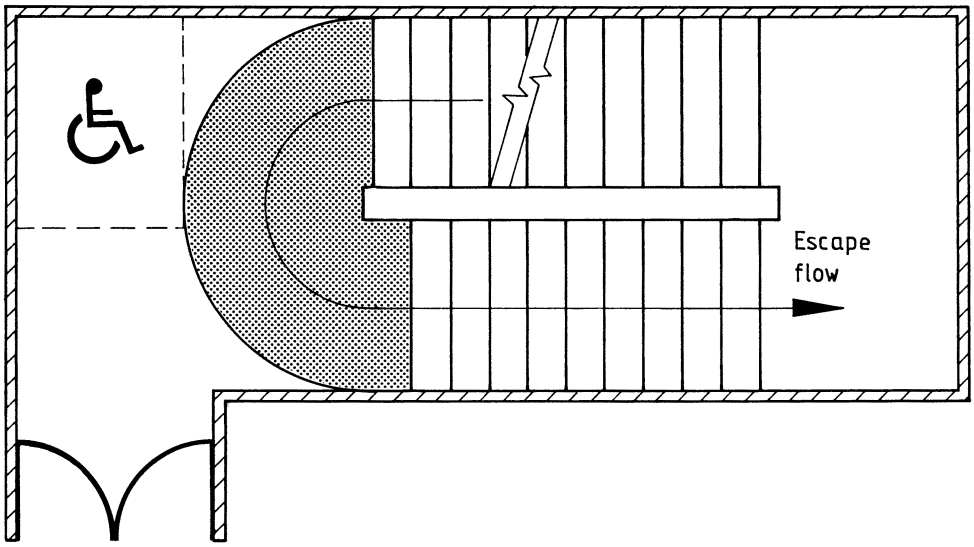
E Evacuation lift

NOTE The lift landing doors should be FD 30 fire doors.

Figure 4 — Examples of refuges in buildings provided with evacuation lifts (*continued*)



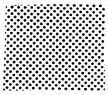
a) Provision where access to the wheelchair space is in the same direction as the escape flow within the stairway



b) Provision where access to the wheelchair space is counter to the access flow within the stairway

Key

Wheelchair space



Occupied by escape flow

Figure 5 — Wheelchair spaces in protected stairways

9 Stairways

9.1 Commentary

For the evacuation of disabled people, it is essential that the design of escape stairways is considered. This is because they will be the sole means of escape in buildings not provided with evacuation lifts, or in the event of a lift failure. Occasionally, the provision of stairs may be unavoidable in effecting minor changes of level.

For disabled people the important features of stairway design are:

a) *the going of the treads*;

b) *the rise of the steps and the avoidance of open risers*;

c) *the number and profile of hand rails*;

d) *the dimensions of landings (see also Clause 8)*;

e) *the unobstructed width of the stairway*;

f) *the provision of tactile and visual markings*.

Although wheelchair stairlifts are suitable for access, they should not be used as a means of escape. Wheelchair stairlifts should not be installed within means of escape stairways unless that is the only practical option for providing access for disabled people to upper floors. In such situations, it is essential that the stairway width required for means of escape is maintained beyond the incursion into the stairway width of any fixed part of the stairlift, such as its carriage rail. Elsewhere, for instance in other parts of an escape route, regard will need to be paid to the space taken up by other parts of the installation, such as its power unit and the stairlift itself, when in its closed state.

To be reasonably safe, people who are unsteady on their feet need to be able to stand firmly on any step with their feet square to the nosing. People with visual impairments, particularly those using guide dogs, and people with walking difficulties find tapered treads particularly difficult to negotiate.

Advice on the design of stairs and handrails is given in BS 5395 and, for disabled people, in BS 5810.

Visually impaired people are able to use stairs more easily if stair nosings contrast with the stair finish. Similarly handrails should contrast with the wall finish.

9.2 Recommendations

Within a protected stairway the handrail(s) should be essentially continuous. They should conform to BS 5810 and be of such a dimension and sufficiently clear of walls to afford a firm grasp to those who need them for support.

Where a spiral stair is proposed as a means of escape it should be either semi-public stairs (category D) or public stairs (category E) as specified in Table 2 of BS 5395-2:1984. If escape is in an upward direction, the rise should not exceed 180 mm and open risers should not be used.

Wheelchair stairlifts are not suitable for use as a means of escape. Wheelchair stairlifts that are provided for access should not be located within escape stairways unless the effective width of the stairway is equal to or exceeds the width required for escape, having regard to the permanent incursion into the width of the flight of any part of the stairlift installation.

10 Ramps

10.1 Commentary

Ramps can be a useful alternative to stairways and, to a lesser extent, to lifts. Their disadvantage is that they take up a great deal of space and for this reason are frequently impracticable. The gradient of a ramp requires careful consideration. Some ambulant disabled people including those using wheelchairs can find a steep slope difficult to negotiate.

10.2 Recommendations

Ramp surface finish should be firm and slip resistant.

Handrails to ramps should be colour contrasted to adjacent surfaces and a colour/tone in the floor finish can be used to highlight ramp location.

Any ramp provided should conform to the relevant recommendations given in BS 5810.

11 Lifts

11.1 Commentary

Unlike a normal passenger lift, it is essential that any evacuation lift can continue to operate safely when there is a fire in the building. Although it is not necessary to provide a lift for the evacuation of disabled people, a firefighting lift (which is provided principally for the use of the fire service in fighting fires) may be used for the evacuation of disabled people prior to the arrival of the fire service, who will then assume responsibility for the evacuation of any remaining persons. Liaison with the fire authority to co-ordinate procedures for the use of a firefighting lift for evacuation of disabled people in case of fire is essential. ⟩A1⟨ *(See BS 5588-12.)* ⟩A1⟨

An evacuation lift should always be available for evacuation purposes. It therefore needs to be a lift used routinely as a passenger lift and not one used solely or occasionally as a lift for transporting goods. An evacuation lift should have suitable structural, electrical and fire protection and be capable of being taken under control by an authorized person. It should be associated with a refuge.

11.2 Recommendations

11.2.1 *General*

Any lift provided for the evacuation of disabled people should be either a firefighting lift or an evacuation lift.

11.2.2 *Evacuation lifts*

The following recommendations are applicable.

a) An evacuation lift should conform to the relevant recommendations in BS 5810 and BS 5655-1 or BS 5655-2.

b) An evacuation lift should be clearly identified.

c) An evacuation lift should be situated within a protected enclosure consisting of the lift well itself and a protected lobby at each storey served by the lift, and should be provided with a protected route from the evacuation lift lobby at the final exit level to a final exit.

d) An evacuation lift should be provided with a switch clearly marked “Evacuation Lift” and situated adjacent to the lift landing door at the final exit storey. Operation of this switch should cause the evacuation lift to return to the final exit storey and should isolate the lift landing call controls. The evacuation lift should then operate only in response to the lift car control panel and the communications system provided should be in operation ⟩A1⟨ (see BS 5588-12) ⟩A1⟨. Unauthorized operation of the switch may be prevented by the use of a key operated switch or by placing the switch in a glass-fronted box.

e) The primary electrical supply should be obtained from a sub-main circuit exclusive to the lift and independent of any other main or sub-main circuit. Other lifts in the same well may be fed from the same primary supply, provided that the supply is adequate for the purpose and that arrangements are such that a fault occurring in any other lift in that well or the power supplies thereto does not affect in any way the operation of the evacuation lift.

f) Except for hydraulic lifts serving two storeys only, the lower of which contains a final exit, an alternative power supply should be provided such as an automatically started generator, a privately owned distribution system that would not be affected by a fire in the building (either by being disconnected for firefighting purposes or by failure of the main switchboard providing the normal power supply to the building) or a separately fused protected circuit fed directly from the main incoming electrical supply to the building located in a fire protected enclosure. The cables transmitting the alternative power supply should be separated from those of the primary supply and routed through areas of low fire risk, or should be physically protected so that a breakdown, or any cause of a breakdown, on one cable cannot lead to simultaneous failure of the other supply. Any power switches or isolators should be clearly identified and labels should be provided at the main switchboard and at the alternative power supply indicating the presence and location of the other supply.

g) Any electrical sub-station, distribution board, generator, hydraulic pump or other apparatus should be protected from the action of fire in the building for a period not less than that specified for the enclosing structure of the evacuation lift installation and in accordance with the general principles of structural fire protection for a lift machine room.

12 Fire safety signs

The following recommendations are applicable.

a) Refuges and evacuation lifts should be clearly identified by appropriate fire safety signs.

b) Where a refuge is in a lobby or stairway, it is essential that the sign is accompanied by a blue mandatory sign worded “Refuge keep clear”.

13 [A1] Advice to management

For advice to management, see BS 5588-12 for:

a) advice on procedures in case of fire;

b) techniques for the evacuation of disabled people down (or up) stairways;

c) management of evacuation lifts;

d) examples of evacuation strategies. [A1]

14 [A1] *Clause deleted* [A1]

15 [A1] *Clause deleted* [A1]

16 [A1] *Clause deleted* [A1]

[A1] **Figure 6** — *Deleted* [A1]

17 Construction of refuges and evacuation lift enclosures

NOTE The construction of enclosures to firefighting lifts is covered in BS 5588-5.

17.1 Fire resistance

Where fire resistance is recommended in this part of BS 5588, the period of resistance should be taken (in the absence of any recommendation to the contrary) as being not less than 30 min. Elements of construction forming refuges, evacuation lift enclosures and lobbies should have the following fire resistance.

a) Loadbearing walls should have equal fire resistance with respect to loadbearing capacity (and integrity and insulation where appropriate) from either side and should only have uninsulated glazed elements as permitted in BS 5588-11:1997, **13.5**.

b) Non-loadbearing walls and partitions should have equal fire resistance with respect to integrity and insulation, from either side and should only have uninsulated glazed elements as permitted in BS 5588-11:1997, **13.5**.

c) Doors should have equal fire resistance with respect to integrity from either side, except in the case of doors to:

1) lift wells where fire resistance is with respect to exposure of the landing side only;

2) external escape routes where fire resistance should be from the inside.

17.2 Glazed elements

The following recommendations are applicable.

Glazed elements that are fire-resisting in terms of integrity and insulation to the required level may be used without restriction.

Glazed elements that are fire-resisting in terms of integrity can be used only where there is a legal requirement to provide vision panels.

17.3 Fire doors

Fire doors, including self-closing devices, should be in accordance with BS 5588-11.

Doors (except lift landing doors) protecting openings in refuges or enclosures to evacuation lifts should be FD 30S fire doors. Lift landing doors to evacuation lifts should be FD 30 fire doors.

NOTE Ill-chosen self-closing devices can make fire doors virtually impassable to some disabled people. However, it is not possible at present to give more specific recommendations.

17.4 Hold-open systems

NOTE Information on hold-open systems is given in BS 5588-11.

17.5 Doors on escape routes

NOTE Information on doors on escape routes is given in BS 5588-11.

18 Fire alarm systems

18.1 General

In the event of fire it is essential that all the occupants of the building are alerted as speedily as possible. This will normally require the provision of a fire alarm system. The process of evacuation is most commonly initiated when a person perceives a fire and operates a manual call point, or if he or she is unable to take this essential action, informs someone who can. Alternatively an automatic fire detector may initiate the alarm.

Conventional fire alarm equipment and systems may not always be entirely satisfactory in certain circumstances for disabled people, or in buildings designed for occupation by disabled people. While management systems will adequately cover the raising of a fire alarm and the warning of occupants in the majority of buildings and circumstances, in a minority of situations it may be necessary to make alternative provisions.

In buildings with a fire alarm system that includes sufficient manual call points, sounders and perhaps automatic fire detectors, raising the alarm should not pose any difficulty. However, there are buildings, particularly small premises, where an electrical alarm system may not be necessary, or at most a simple, manually operated, mechanical or electrical device to give the alarm suffices. The measure of need depends on whether or not an evacuation can be started without undue delay and each building should be individually assessed. Arrangements other than, or additional to, conventional alarm sounders may be used in many buildings to warn occupants of fire, e.g. announcements over loudspeakers.

In buildings not normally open to the public at large, e.g. workplaces, the management may consider that the arrangement most suited and convenient to disabled people is a two-stage alarm system with a separate evacuation signal and limited first stage evacuation. This gives disabled people an opportunity to move before congestion is likely to arise from a general evacuation, and has obvious advantages for all concerned. It should be stressed, however, that the case for a two-stage alarm, whether or not used in conjunction with phased evacuation of a building, cannot be dictated solely by the needs of disabled people. The most important factor should be whether it is safe and desirable for all occupants of the building to adopt such a procedure. In practice the structural arrangements recommended in this part of BS 5588 for the safety of disabled people are frequently the same arrangements which would support the adoption of two-stage fire alarms and phased evacuation as a matter of course.

Any fire alarm system installed for the majority of building users and conforming to BS 5839-1 should also be suitable for disabled people. However, in certain circumstances provisions additional to the recommendations given in BS 5839-1 may be desirable (see **18.3**). In general, people with impaired hearing will either be able to perceive an audible alarm signal or be alerted by other occupants. In a minority of situations, visual alarm signals may need to be provided which should be the subject of consultation with the fire authority (see BS 5839-1:1988, **9.7**).

18.2 Manual call points

The recommendations given in BS 5839-1 for the number and siting of manual call points should be adequate for the speedy initiation of the fire alarm in most premises. However, consideration should be given to the following if the alarm would need to be initiated by a disabled person:

a) the provision of an automatic fire detection system;

b) a reduction in the spacing between manual call points to compensate for delays in operation because of the limited mobility of occupants;

c) the provision of alternative manually operated switching devices (e.g. ceiling cord switches) additional to those recommended in BS 5839-1, where operation of manual call points is likely to be difficult or seriously delayed because of the occupants' disabilities.

18.3 Fire alarm alert signals

Perhaps the most commonly recognized difficulty in this respect is that experienced by those with impaired hearing. However, it should be stressed that impairment of hearing in no way means 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, in most situations there will be people about who can alert those with impaired hearing to the need for evacuation and it will be reasonable to rely upon these others to provide the necessary warning. In certain situations, such as a generally noisy area where audible alarms may not be heard, alternative types of alarm signal may be necessary, for example visual alarms, paging systems, vibrating devices or sound signals within carefully selected frequency bands. The type of alarm chosen should be appropriate for the activities being carried out in the area being considered.

NOTE Technical advice on the selection of suitable devices may be obtained from the Royal National Institute for Deaf People (see Annex B).

Careful consideration is necessary when selecting an alarm warning device and tests will often be necessary before a final decision is made. It is essential that the warning signal is suitable for those whom it is intended to alert even, if necessary, when they are asleep. Unwanted effects of any alarm signal should also be considered. Examples of unwanted side effects that should be avoided as far as is practicable include the following:

a) levels or frequencies of sound signals which cause severe discomfort, approaching actual pain, to the ears of people with both normal and impaired hearing;

b) warning sounders which obliterate the other sounds, echoes or reflections which visually impaired people use to aid their movements;

c) sound signals which make spoken communications, especially the giving and receiving of instructions or requests for assistance, difficult if not impossible;

d) certain frequencies in flashing/stroboscopic light systems which can cause confusion, disorientation and, in some people, epileptic fits.

Many of these problems are more common where people are very old or mentally confused, and there are many medical conditions that may affect individual reactions whatever type of alarm device is adopted.

Annex A (normative)
Application of this part of BS 5588 to existing buildings

A.1 General

Wherever possible the recommendations in this part of BS 5588 should be followed although it is accepted that in existing buildings generally, and buildings of historic interest in particular, it may not be possible to fully follow the recommendations in this part of BS 5588. Alternative ways of meeting its objectives should then be sought. Failure to follow all the recommendations of this part of BS 5588 should not be used as grounds for excluding disabled people.

A.2 Refuges

Refuges meeting the recommendations given in **8.2** exist in some buildings and can often be easily created in others. Wherever refuges are provided the principles given in **8.1** should be followed even if it is not possible to fully follow the recommendations set down in **8.2**.

A.3 Stairways

Stairways should, as far as is possible, be in accordance with the recommendations given in Clause **9**. However, where there are several practical constraints on the overall size of stairway, for example in a small building, spiral stairs with a rise not exceeding 190 mm and a centre going (see BS 5395-2:1984, **5.4**) not less than 230 mm (i.e. a small semi-public stair, category C, as specified in BS 5395-2:1984, Table 2) may be acceptable. Exceptionally a particular storey height or the need to gain access beneath an intermediate landing may dictate a larger rise.

A.4 Ramps

Exit ramps should have a slope of not more than 1 in 12. The suitability of particular ramps will depend upon the people who have to use them and the assistance available. The best measure of acceptability will be whether such gradients can be negotiated safely in a fire drill.

A.5 Lifts

The installation of a new lift in an existing building should be in accordance with the recommendations given in Clause **11** if the lift is to be used for the evacuation of disabled people during a fire.

However, whilst there are established standards which specify dimensions of lift cars, the type and position of landing and car controls etc. for different types of use (including facilities for disabled people), it is impracticable to lay down detailed recommendations for existing lift installations in this part of BS 5588. As with other aspects of fire precautions, the circumstances of the particular case will dictate the needs, whether it is for a bed lift in a hospital, or a lift in an office building that will accommodate one person in a wheelchair including space for those rendering assistance.

In existing buildings where the recommendations given in **11.2** cannot be met, it may be possible to obtain the same measure of structural protection in other ways, for example, where more than one enclosure is provided with a lift and the enclosure wall provides the necessary line of protection between any fire and a lift. In such circumstances a reliable evacuation ▌A1⟩ procedure ⟨A1▐ and its management are of the utmost importance to ensure that the safest lift is used ▌A1⟩ (see BS 5588-12) ⟨A1▐.

There will be circumstances where it is difficult to assess the fire resistance of lift landing doors. Imperforate steel panel doors are acceptable in the following circumstances:

a) where the lift landing doors are not directly exposed to the effects of fire through the lobby doorway to the accommodation;

b) where the structure of the lift lobby, including its floor, is of non-combustible construction;

c) where the lobby contains no significant fire load and its wall and ceiling linings would be classified as class 1 if tested by the relevant licensing authority in accordance with BS 476-7;

d) where the lift car is of substantially non-combustible construction;

e) where the power supply cable is protected from fire or is routed through areas of low fire risk.

However, it is essential that all existing lift installations used as evacuation lifts:

1) are provided with an independent alternative power supply in accordance with **11.2.2**f); or

2) are hydraulic lifts, provided with a manually operated valve that allows the car to be lowered to a lower storey in the event of a failure of the power supply, and which serve two storeys only, the lower of which contains a final exit.

Annex B (informative)
Sources of information

The following organizations can provide information on equipment and procedures for aiding the safe evacuation of disabled people.

Access Committee for England, 12 City Forum, 250 City Road, London EC1V 8AF.

Access Committee for Wales/Cyngor Cymru l'r Anabl/Wales Council for the Disabled, Llys Ifor Crescent, Caerphilly, CF83 1XL.

Disability Scotland, Princes House, 5 Shandwick Place, Edinburgh EH2 4RG.

Disabled Living Foundation, 380-384 Harrow Road, London W9 2HU.

Northern Ireland Council on Disability, 2 Annadale Avenue, Belfast BT7 3JR.

Royal Association for Disability and Rehabilitation, 12 City Forum, 250 City Road, London, EC1V 2AS.

Royal National Institute for the Blind, 224 Great Portland Street, London W1N 6AA.

Royal National Institute for Deaf People, 19-23 Featherstone Street, London EC1Y 8SL.
(Technical aids/adaptations supplier, RNID/Sound Advantage, 1 Metro Centre, Welbeck Way, Peterborough PE2 7UH.)

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BS 5588-5:1991, *Fire precautions in the design and construction of buildings — Part 5: Code of practice for firefighting stairways and lifts.*

BS 5950-8:1990, *Structural use of steelwork in building — Part 8: Code of practice for fire-resistant design.*

BS 6262, *Code of practice for glazing for buildings.*

BS 8214:1990, *Code of practice for fire door assemblies with non-metallic leaves.*

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