BRITISH STANDARD

BS 5266-1:2005

Emergency lighting —

Part 1: Code of practice for the emergency lighting of premises

ICS 13.200; 29.120.99; 91.160.10

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British Standards

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Committees responsible for this British Standard

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Association of British Theatre Technicians

Association of County Councils

British Cables Association

British Fire Consortium

Chartered Institution of Building Services Engineers

Cinema Exhibitors Association

Department of Trade and Industry, Consumer and Competition Policy Directorate

Electrical Contractors Association

Electricity Association

Engineering Industries Association

GAMBICA (BEAMA Ltd.)

Industry Committee for Emergency Lighting

Institute of Fire Prevention Officers

Institute of Fire Safety

Institution of Electrical Engineers

Institution of Lighting Engineers

Lighting Industry Federation Ltd.

London District Surveyors Association

London Fire and Emergency Planning Authority

National Illumination Committee of Great Britain

National Inspection Council for Electrical Installation Contracting

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Foreword

This part of BS 5266 has been prepared by Subcommittee CPL/34/9. Together with BS EN 50172:2004, it supersedes BS 5266-1:1999, which is withdrawn. It also supersedes CP 1007:1955, which is withdrawn.

The 1999 edition of this standard no longer covered the levels of illumination required as these are dealt with in BS EN 1838:1999 (also numbered BS 5266-7:1999). References to BS EN 1838:1999/BS 5266-7:1999 are made at the relevant points in the text.

The standard has now been revised again to remove recommendations and guidance on the characteristics of emergency lighting systems that are now specified in BS EN 50172:2004 (also numbered BS 5266-8:2004). References to BS EN 50172:2004/BS 5266-8:2004 are made at the relevant points in the text.

This part of BS 5266 has thus become a base document, which, in addition to giving basic guidance on emergency lighting, provides a guide to navigation of the other parts of the BS 5266 series.

This revision of BS 5266-1 is applicable to cinemas, and also to other premises used for entertainment, some of which were excluded from the 1999 edition.

BS EN 50172:2004, **4.1** specifies compliance with the wiring rules given in HD 384/HD 60364. The UK applicable parts of HD 384/HD 60364 are implemented in the IEE Wiring Regulations (BS 7671).

This revision of BS 5266-1 incorporates changes necessitated by the publication of BS EN 50172. It does not represent a full review or revision of the standard, which will be undertaken in due course.

The other parts of this standard are:

— *Part 2: Code of practice for electrical low mounted way guidance systems for emergency use;*

— *Part 3: Specification for small power relays (electromagnetic) for emergency lighting applications up to and including 32 A;*

— *Part 4: Code of practice for design, installation, maintenance and use of optical fibre systems;*

— *Part 5: Specification for components parts of optical fibre systems;*

— *Part 6: Code of practice for non-electrical low mounted way guidance systems for emergency use — Photoluminescent systems;*

— *Part 7: Lighting applications — Emergency lighting* (Also numbered BS EN 1838)*;*

— *Part 8: Emergency escape lighting systems* (Also numbered BS EN 50172).

The aim of this standard is to promote wider understanding of the different types of emergency lighting system which may be employed and to give guidance on their correct application to the varied requirements of different categories of premises.

The recommendations given in this standard have been drawn up to encourage uniformity of application, based on providing adequate safety to persons in the event of interruption of the normal lighting and having due regard to the hazard level and degree of familiarity of occupants with particular premises. The standard recognizes that, in addition to ensuring safe unobstructed means of escape from the premises at all times, an important function of emergency lighting is to make possible the immediate location and operation of fire alarm points and fire fighting equipment, and another is to minimize the chance of panic arising in enclosed spaces, such as lifts. Although the standard makes recommendations for the provision of emergency lighting in a wide variety of premises, the fact that particular types of premises are mentioned in Clause **10** does not necessarily mean that all such premises will be required by law to have emergency lighting installed. For certain types of premises the provisions of this standard may be supplemented or replaced by alternative requirements at the discretion of the enforcing authority.

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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 part of BS 5266 is intended for use in conjunction with BS EN 1838:1999/BS 5266-7:1999 and BS EN 50172:2004/BS 5266-8:2004.

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 the Regulatory Reform (Fire Safety) Order 2005 [1], which was placed on the statute book on 7 June 2005 and will be implemented on 1 April 2006, the Building Regulations 2000 [2], the Fire (Scotland) Act 2005 [3], the Building (Scotland) Regulations 2004 [4] and the Building Regulations (Northern Ireland) 2000 [5].

Attention is also drawn to the Fire Precautions (Workplace) Regulations 1997 [6], which will be withdrawn by the implementation of the Regulatory Reform (Fire Safety) Order 2005 [1] on 1 April 2006.

Summary of pages

This document comprises a front cover, an inside front cover, pages i to iii, a blank page, pages 1 to 25 and a back cover.

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1 Scope

This part of BS 5266 gives recommendations and guidance on the factors that need to be considered in the design of, and the installation and wiring of, the electrical emergency lighting systems specified in BS EN 50172/BS 5266-8 in order to provide the lighting parameters specified in BS EN 1838/BS 5266-7. Guidance on the illumination needed for safe movement, and recommendations for lighting in areas with fixed seating, are also given.

This part of BS 5266 is not applicable to dwellings; its provisions, however, are applicable to common access routes within multi-storey dwellings.

NOTE 1 Central power supply systems for electrical emergency lighting systems are specified in BS EN 50171. Luminaires for emergency lighting systems are specified in BS EN 60598-2-22.

NOTE 2 A summary of the hierarchy of standards covering the different aspects of emergency lighting systems is given in Annex A.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

BS 7629-1, *Specification for 300/500 V fire resistant electric cables having low emission of smoke and corrosive gases when affected by fire — Part 1: Multicore cables.*

BS 7629-2, *Specification for 300/500 V fire resistant electric cables having low emission of smoke and corrosive gases when affected by fire — Part 2: Multipair cables.*

BS 7671, *Requirements for electrical installations. IEE Wiring Regulations. Sixteenth edition.*

BS 7846, *Electric cables — 600/1 000 V armoured, fire resistant cables having thermosetting insulation and low emission of smoke and corrosive gases when affected by fire.*

BS EN 1838:1999 (also numbered BS 5266-7:1999), *Lighting applications — Emergency lighting.*

BS EN 50171:2001, *Central power supply systems.*

BS EN 50172:2004 (also numbered BS 5266-8:2004), *Emergency escape lighting systems.*

BS EN 60598-2-22:1999, *Luminaires — Part 2: Particular requirements — Section 2-22: Luminaires for emergency lighting.*

BS EN 60702-1, *Mineral insulated cables and their terminations with a rated voltage not exceeding 750 V — Part 1: Cables.*

BS EN 60702-2, *Mineral insulated cables and their terminations with a rated voltage not exceeding 750 V — Part 2: Terminations.*

3 Terms and definitions

For the purposes of this part of BS 5266 the terms and definitions given in BS EN 1838:1999/ BS 5266-7:1999, BS EN 50171:2001, BS EN 50172:2004/BS 5266-8:2004, BS EN 60598-2-22:1999 and the following apply.

3.1
emergency lighting
lighting provided for use when the supply to the normal lighting fails
[BS EN 1838:1999/BS 5266-7:1999, **3.1**]

3.2
escape route
route designated for escape to a place of safety in the event of an emergency
[BS EN 50172:2004/BS 5266-8:2004, **3.2**]

3.3
emergency escape lighting
that part of emergency lighting that provides illumination for the safety of people leaving a location or attempting to terminate a potentially dangerous process before doing so
[BS EN 1838:1999/BS 5266-7:1999, **3.3**]

3.4
standby lighting
that part of emergency lighting provided to enable normal activities to continue substantially unchanged
[BS EN 1838:1999/BS 5266-7:1999, **3.7**]

3.5
emergency exit
way out that is used during an emergency [BS EN 50172:2004/BS 5266-8:2004, **3.8**]

3.6
final exit
terminal point of an escape route [BS EN 50172:2004/BS 5266-8:2004, **3.9**]

3.7
slave luminaire
luminaire for maintained or non-maintained operation which is energized from a central emergency power system that is not contained within the luminaire

NOTE Adapted from BS EN 60529-2-22:1999, **22.3.9**.

4 Consultation and records

4.1 Consultation

Consultation between the owner/developer and/or occupier of the premises, the architect, the lighting engineer, the installation contractor, the enforcing authorities (e.g. the building control and fire authorities), the electricity authority and any others concerned, should be arranged at a very early stage. In addition to the recommendations of this standard, it is important that the requirements of any national and/or local legislation which may apply to the premises in question are fully recognized and discussed at this time. This includes the need for a risk assessment (see **5.2**).

4.2 Supply of plans

The supply of plans is specified in BS EN 50172:2004/BS 5266-8:2004, **5.1**.

NOTE It is important that the plans are obtained at an early stage for use during the consultations recommended in **4.1**.

4.3 Records

Records and reporting are specified in BS EN 50172:2004/BS 5266-8:2004, Clause **6**.

NOTE Recommendations on the measuring of illuminance of emergency lighting are given in Annex B.

5 Need for emergency lighting

5.1 General

When the supply to normal lighting of premises fails, emergency lighting may be required. Throughout this standard reference to “emergency lighting” covers “emergency escape lighting” in particular, but also includes any element of standby lighting which may be used for emergency escape lighting.

5.2 Risk assessment

Under the Management of Health and Safety At Work Regulations 1999 [7], every employer is required to carry out a risk assessment to identify the risks to people who enter the employer’s premises; the employer is required to take measures on the basis of the risk assessment to safeguard building occupants. These measures need to include the provision of safe means of escape, including, where necessary, emergency lighting, taking into account the needs of people with disabilities, in particular people with visual impairment.

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5.3 Emergency escape lighting

General requirements for emergency escape lighting are specified in BS EN 50172:2004/BS 5266-8:2004, **4.1** and BS EN 1838:1999/BS 5266-7:1999, **4.1**.

Escape route lighting is covered in BS EN 50172:2004/BS 5266-8:2004, **4.3** and BS EN 1838:1999/BS 5266-7:1999, **4.2**.

Open area (anti-panic) lighting is covered in BS EN 50172:2004/BS 5266-8:2004, **4.4** and BS EN 1838:1999/BS 5266-7:1999, **4.3**.

High risk task area lighting is covered in BS EN 50172:2004/BS 5266-8:2004, **4.5** and BS EN 1838:1999/BS 5266-7:1999, **4.4**.

5.4 Standby lighting

Standby lighting is specified in BS EN 50172:2004/BS 5266-8:2004, **4.6** and BS EN 1838:1999/BS 5266-7:1999, **4.5**.

6 Illumination for safe movement

6.1 General

The safe movement of persons along escape routes towards and through the exits provided to a place of safety depends upon the illumination and the ability to see hazards, changes of level and direction.

6.2 Vision and visibility

The stimulus for vision is not the light which falls on objects but the light reflected to the eyes. Different objects are distinguished by contrast, the changes in light reflected to the eyes. A light coloured object on a dark background can be made conspicuous with far less light than a dark coloured object on a dark background.

The amount of light falling on an object (illuminance) is affected not merely by the power and position of the lamps used for illumination but also by reflection from the surroundings. In many interior spaces, a high proportion of the light falling on any surface comes from light from the light sources reflected by other surfaces in the room. Where the walls, floor and ceiling are light in colour, up to 60 % of the illuminance at floor level may have been reflected from the walls or ceiling.

In a room where the decorative finishes are dark in colour (i.e. have low reflectance), the contribution of reflected light to the illuminance is much smaller. The reflected light may be negligible in, say, a discotheque or restaurant, where the carpets, walls and ceiling have been deliberately kept dark in colour to produce a feeling of intimacy and relaxation.

All potential obstructions or hazards on an escape route should be light in colour with contrasting surround. Such hazards include the nosings of stair treads, barriers and walls at right angles to the direction of movement.

In restricted spaces such as corridors, light coloured decoration throughout is an advantage. Prominent edges to vertical surfaces at changes of direction can assist emergency evacuation.

Special consideration should be given to emergency escape lighting for people with visual impairments. Further guidance is given in BRE information paper 9/97 [8].

6.3 Minimum illuminance and adaptation

6.3.1 *General*

Visual acuity varies considerably from one person to another with regard to the amount of light required to perceive an object clearly and the time taken to adapt to changes in the illuminance (visual adaptation). In general, older people need more light to follow an escape route and have longer visual adaptation times.

The maximum period which should be allowed to elapse between failure of the normal supply and the switch-on of the emergency lighting depends upon the rate at which panic may be expected to mount in a particular building. It also depends upon the time taken to adapt to the new, and normally much lower, illuminance provided by the emergency lighting. The illuminances in this standard have been determined from experience and practical test.

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6.3.2 *Defined escape routes and response times*

NOTE Illuminances, including the provision of appropriate illuminance at exit doors and other positions to be emphasized, and response times, are specified in BS EN 1838:1999/BS 5266-7:1999, Clause **4**. The text below contains the detail of the UK "A"-deviation given in BS EN 1838:1999/BS 5266-7:1999, Annex B.

For routes that are permanently unobstructed and up to 2 m wide, the horizontal illuminance at floor level on the centre line of the escape route should be not less than 0.2 lx but preferably 1 lx. For points of emphasis the minimum horizontal illuminance at the floor along the centre line of the escape route should be not less than 1 lx. In addition, for escape routes up to 2 m wide, 50 % of the route width should be lit to a minimum of 50 % of the minimum horizontal illuminance value at the centre line.

The emergency lighting detailed in this clause should be provided within 5 s of the failure of the normal lighting supply, but at the discretion of the enforcing authority this period may be extended to a maximum of 15 s in premises likely to be occupied for the most part by persons who are familiar with them and the escape routes.

A wider escape route can be treated as a number of 2 m wide bands or as an open area.

6.3.3 *Open areas and response times*

Illuminances and response times for open areas are given in BS EN 1838:1999/BS 5266-7:1999, **4.3**.

6.3.4 *Design conditions*

Reference should be made to BS EN 1838:1999/BS 5266-7:1999.

The recommended illuminances that are given as a minimum or average should be regarded as the lowest value acceptable during the rated duration, taking into account the effects of reduction in voltage, voltage drop in the system wiring, battery ageing, lamp ageing and the accumulation of dirt and dust.

Calculations of illuminance, except where uplighting is used, should be made ignoring reflectance.

Recommendations on the measuring of illuminance of emergency lighting are given in Annex B.

NOTE Further guidance on design can be found in CIBSE/SLL publication LG12 *Emergency lighting design guide* [9].

6.4 Uniformity and diversity of illuminance

Uniformity of illuminance is specified in BS EN 1838:1999/BS 5266-7:1999, **4.4.2** and diversity (ratio of maximum to minimum illuminance) is given in BS EN 1838:1999/BS 5266-7:1999, **4.2.2** and **4.3.2**.

Care should be taken to avoid abrupt changes between excessive dark and light areas on the floor of the escape route. It is therefore necessary to illuminate the route reasonably uniformly.

6.5 Glare

Limitation of disability glare is specified in BS EN 1838:1999/BS 5266-7:1999, **4.2.3**, **4.3.3** and **4.4.3**.

6.6 Identification of exits and escape routes by signs

The luminance of escape route signs is specified in BS EN 1838:1999/BS 5266-7:1999, Clause **5**.

BS EN 50172:2004/BS 5266-8:2004, Note to **4.2**, recommends that a maintained mode of operation should be considered for illumination of emergency escape route signs in locations where occupants may be unfamiliar with the building.

Safety signs for emergency escape should be in accordance with BS 5499-5 and BS 5499-4. The mounting height of the signs should be in accordance with BS 5499-4:2000, **4.6**.

7 Emergency lighting design

7.1 General

Emergency lighting is provided for use when the normal lighting fails and has therefore to be powered from a source independent of that supplying the normal lighting (see **7.10**).

7.2 Failure of normal supply to part of a premises

Operation of emergency escape lighting in the event of failure of part of the normal lighting supply is specified in BS EN 50172:2004/BS 5266-8:2004, **5.2**.

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7.3 Failure of individual lamp

This is covered by BS EN 50172:2004/BS 5266-8:2004, Note to **5.3**.

7.4 Failure of emergency lighting luminaire

System integrity is specified in BS EN 50172:2004/BS 5266-8:2004, **5.3**.

NOTE The term "compartment" in BS EN 50172:2004/BS 5266-8:2004, **5.3** is used to mean a part of the escape route reliant on illumination located within it. This term is not used in the sense of compartmentation under the Building Regulations as part of the fire precautions.

7.5 Mounting height of luminaires

For mounting height of luminaries see BS EN 1838:1999/BS 5266-7:1999, **4.1**.

Where smoke reservoirs are provided, the luminaires should be mounted below these.

7.6 Spacing between luminaires

The provision of a highly reliable illuminance on the escape route is essential. It is therefore better to use a larger number of low power luminaires placed close together than a few high powered units spaced further apart, in case a single lamp fails.

7.7 Siting of essential emergency escape lighting luminaires

Siting of essential emergency escape lighting luminaires is specified in BS EN 1838:1999/ BS 5266-7:1999, **4.1**.

7.8 Siting of additional emergency lighting

7.8.1 *General*

Consideration should be given to provision of additional emergency lighting at the locations described in **7.8.2** to **7.8.7**.

7.8.2 *External areas in the immediate vicinity of exits*

Illumination of these areas is recommended in BS EN 50172:2004/BS 5266-8:2004, **5.4.1**.

7.8.3 *Lift cars*

Illumination of lift cars is specified in BS EN 50172:2004/BS 5266-8:2004, **5.4.2**.

NOTE If disabled people are given access to a building, one of their means of escape in emergency conditions may involve use of a lift (in accordance with BS 5588-5 or BS 5588-8).

7.8.4 *Moving stairways and walkways*

Moving stairways and walkways should be illuminated as if they were part of an escape route.

7.8.5 *Toilet facilities*

Facilities exceeding 8 m^2 gross area should be provided with emergency lighting as if they were open areas. Those for disabled use, and any multiple closet facilities without borrowed light, should have emergency illumination from at least one luminaire.

NOTE Provision of emergency lighting in accordance with this subclause does not necessitate the provision of emergency lighting in toilets designed to accommodate only a single able bodied person or en suite toilets or bathrooms in hotel bedrooms.

7.8.6 *Motor generator, control and plant rooms*

Battery powered emergency lighting should be provided in all motor generator rooms, control rooms, plant rooms, switch rooms and adjacent to main control equipment associated with the provision of normal and emergency lighting to the premises.

7.8.7 *Covered car parks*

The pedestrian escape routes from covered and multi-storey car parks should be provided with emergency lighting.

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7.9 Construction of emergency escape lighting luminaires

BS EN 50172:2004/BS 5266-8:2004, **5.5.1** specifies that emergency escape lighting luminaires shall be designed and constructed in accordance with EN 60598-2-22. It also specifies that they shall be selected to be appropriate for their location.

Emergency escape lighting luminaires can be either self-contained (sometimes referred to as self-contained emergency luminaires) or slave luminaires. Both may be used for escape route signs or emergency escape lighting. For certain applications the luminaire itself should have satisfactory protection against the ingress of foreign bodies or moisture; such protections are indicated by the IP classification as defined in BS EN 60529.

Furthermore, if used in hazardous areas, where luminaires are certified to national or international standards by a recognized certification authority, compliance with temperature limits and explosion protection may be required. (See BS EN 60079-14 and BS 6467-2.)

NOTE See BS EN 50172:2004/BS 5266-8:2004, Note to **5.5.1**.

7.10 Categories of operation of emergency lighting systems

Categories of operation are specified in BS EN 50172:2004/BS 5266-8:2004, **5.6**.

In this standard, emergency lighting systems are classified according to the following parameters, as given for luminaires in BS EN 60598-2-22:1999, Annex B:

a) Type:

X self-contained;

Y central supply;

b) Mode of operation:

0 non-maintained;

1 maintained;

2 combined non-maintained;

3 combined maintained;

4 compound non-maintained;

5 compound maintained;

6 satellite;

c) Facilities:

A including test device;

B including remote rest mode;

C including inhibiting mode;

D high risk task area luminaire;

d) Duration of emergency mode (in minutes) for a self-contained system:

10 to indicate	10 min duration;
60	1 h duration;
120	2 h duration;
180	3 h duration.

Previously, emergency lighting systems were categorized by the prefix “M” for maintained and “NM” for non-maintained systems, followed by an “/” and the number of hours duration claimed for the installation, e.g. for self-contained systems:

— M/1 was a maintained 1 h duration system; this is now

X	1	****	60

— NM/3 was a non-maintained 3 h duration system; this is now

X	0	****	180

NOTE **** in the third box stands for the facilities [see item c)], details of which are added, as applicable, at the time of installation.

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8 Batteries

Battery powered central power supply systems are specified in BS EN 50172:2004/BS 5266-8:2004, **5.5.2**. Batteries for self-contained systems are specified in BS EN 60598-2-22.

9 Wiring systems and circuit requirements

9.1 General

Wiring of emergency escape lighting is specified in BS EN 50172:2004, **4.1**, which specifies compliance with the wiring rules given in HD 384/HD 60364. The UK applicable parts of HD 384/HD 60364 are implemented in the IEE Wiring Regulations (BS 7671).

The emergency lighting installation is required to comply with any statutory requirements applicable to the particular building and with any local regulations.

9.2 Wiring for central power supply systems

9.2.1 *Quality of installation*

The importance of reliability of an emergency lighting system makes a high standard of wiring essential and limits the permissible systems to those described in **9.2.2**. Wiring within a luminaire is excluded from this clause and is covered separately in the appropriate luminaire standard.

Cables or cable systems used for the connection of an emergency escape lighting luminaire to the standby power supply should adequately resist the effects of fire and mechanical damage. This should be achieved either through the use of cables or cable systems with an inherently high resistance to the effects of fire and mechanical damage, or through the use of additional fire protection and/or mechanical protection.

9.2.2 *Fire protection of cables and cable systems*

Cables or cable systems should be routed through areas of low fire risk wherever practicable. It may be possible to reduce the degree of fire protection of cables or cable systems where they follow routes of very low fire risk and such areas also contain a sprinkler installation. The following cables or cable systems should be used.

a) *Cables with an inherently high resistance to attack by fire.*

The cables should have a duration of survival of 60 min when tested in accordance with BS EN 50200:2000 (which corresponds to a classification of PH 60 as detailed in BS EN 50200:2000, Annex D).

Cables with an inherently high resistance to attack by fire that may be suitable for use in emergency lighting systems include cables conforming to BS EN 60702-1, with terminations conforming to BS EN 60702-2, and cables conforming to BS 7629 or to BS 7846.

b) *Cable systems with an inherently high resistance to attack by fire.*

The system should comprise fire resistant cables enclosed in steel conduit, such that the cable system has a duration of survival of 60 min when tested in accordance with BS EN 50200:2000, where the conduit is considered as cable armour for the purposes of testing.

c) *Cables and cable systems requiring additional fire protection.*

Cables and cable systems which require additional fire protection include cables conforming to BS 6004 or BS 7211 in conduit conforming to BS EN 50086, and steel wire armoured cables conforming to BS 5467 or BS 6724.

Additional fire protection may be present if, for example, the cables are buried in the structure of the building or situated where there is negligible fire risk and separated from any significant fire risk by a wall, partition or floor having at least 1 h fire resistance as ascertained by compliance with any of the following:

1) specifications tested or assessed under the appropriate part of BS 476;

2) appropriate British Standard specifications or codes of practice;

3) specifications referred to by building regulations applicable for the building.

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Cable supports and fixings should be fire resistant, such that circuit integrity is not reduced below that afforded by the cable used.

NOTE In effect, this recommendation precludes the use of plastics supports and fixings where these would be the sole means of cable support.

9.2.3 ***Cable sizes***

In selecting cable sizes, due regard should be paid to limitations imposed by voltage drop and physical strength. Each conductor should be of copper having a nominal cross-sectional area of not less than 1.5 mm^2.

The voltage drop in cables connecting a central battery or generator to a slave luminaire should not exceed 4 % of the system nominal voltage at maximum rated current and at the highest working temperature likely to be experienced (see also **9.3.5** regarding the compatibility of slave luminaires with central systems).

9.2.4 ***Conduit, ducting, trunking and channel***

If an emergency lighting system cable is to be run in conduit, ducting, trunking or channel, the material of the conduit, ducting, trunking or channel should either be metallic or be non-metallic of adequate strength and resistance to fire. Non-flame propagating trunking conforming to BS 4678-4 may be used, bearing in mind that the non-flame propagating test does not indicate the suitability of the trunking to maintain the circuit integrity under fire conditions. Additional fire protection is required.

Where cables are run in conduit, either screwed metal or rigid PVC conduit may be used.

Additional protection should be provided at any point where PVC conduit or non-metallic ducting or trunking is likely to suffer physical damage. It should not be assumed that the use of this conduit will indicate the suitability of the conduit to maintain circuit integrity under fire conditions. Additional fire protection is required.

9.2.5 ***Segregation***

It is essential that the wiring of emergency escape lighting installations is exclusive to the installation and separate from the wiring of any other circuits, either by installation in a separate conduit, ducting, or trunking or, when installed in common trunking, by separation from the conductors of all other services by a mechanically strong, rigid and continuous partition. Alternatively, where such separation is not provided, cables listed in **9.2.2**a) should be used.

Ducting, trunking or channel reserved for emergency escape lighting system cable should be marked to indicate this reservation.

Multicore cables should not be used to serve both emergency escape lighting and any other circuit.

9.2.6 ***Joints***

Cables should be installed without external joints, wherever practicable. All terminations and other accessories should be such as to minimize the probability of an early failure in the event of a fire. Joints, other than those at or within system components such as luminaires or control units, should be constructed of materials that will withstand a similar temperature and duration to that specified for the cable. A joint, except a joint in an emergency lighting luminaire or a control unit, should be enclosed in a suitable box labelled "EMERGENCY LIGHTING" or "EMERGENCY ESCAPE LIGHTING" or "STANDBY LIGHTING" as appropriate, to avoid confusion with other services, and also with the warning "MAY BE LIVE".

9.2.7 ***Overhead lines***

Overhead lines for an emergency lighting system should be avoided.

9.2.8 ***Damp, corrosive or underground locations***

Cables intended for installation in damp, corrosive or underground locations should be sheathed overall. Where the environment is particularly aggressive, a suitable sheath should be adopted. In some locations further protection may be necessary.

Some plasters have a corrosive effect on metals.

9.2.9 ***Ambient temperatures***

Cables should not be installed in locations where the combination of ambient temperature and temperature rise due to load currents results in a conductor temperature exceeding the cables' rated temperature.

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9.2.10 ***Protection against physical damage***

Suitable additional protection should be provided at any point where cables are likely to be subjected to accidental damage, for example by the passage of vehicles or persons carrying goods, ladders being rested on them, or articles falling from racks.

9.2.11 ***Avoidance of flue-like structures***

In order to reduce the likelihood of damage by fire, emergency lighting system cables should not be run in unprotected shafts. Cables, other than those feeding emergency lighting luminaires in lifts, should not be run in lift shafts or lift wells.

9.2.12 ***Wiring to emergency lighting supply power sources***

BS EN 50171:2001, **6.9.1** specifies that internal wiring used to carry a.c. supply and safety equipment circuits shall be separated from each other either by running through separate compartments or by double insulation.

Where the emergency lighting supply source is a secondary battery/battery charger combination, the wiring from the normal supply to the battery charger should be a fixed installation, not incorporating plugs and sockets unless they are of a type requiring a tool to separate them or are sited so as to prevent unauthorized interference.

9.3 Circuit requirements

9.3.1 ***General***

The normal supply to the emergency lighting system should be so arranged that continuity of supply is assured. Where it is the practice to switch off the normal supply to the premises, for example when unoccupied or for economy in the use of electricity, the electrical design should ensure that such switching off does not interrupt the normal supply to the emergency lighting.

Circuits incorporating rest mode and/or inhibiting mode facilities should conform to BS EN 60598-2-22 and BS EN 50171.

9.3.2 ***Isolators, switches and protective devices***

Inadvertent operation of an isolator, switch or protective device causing prolonged interruption of the normal supply could result in the premature failure of the emergency lighting standby power source. To reduce this risk, the number of such devices should be kept to a minimum.

Each isolator, switch and protective device associated with an emergency lighting system should be situated in a position inaccessible to unauthorized persons or be protected against unauthorized operation.

Each isolator switch, protective device, key and operating device should be marked “EMERGENCY LIGHTING”, “EMERGENCY ESCAPE LIGHTING” or “STANDBY LIGHTING” as appropriate, and the marking should indicate its use.

If an emergency lighting system is supplied from a standby source, other than a safety source installed in accordance with the supplies for safety sources detailed in BS 7671, the earth leakage and protective measures will need special consideration.

9.3.3 ***Test facility***

Each emergency lighting system should have suitable means for simulating failure of the normal supply for test purposes.

NOTE An international standard, IEC 62034, on automatic test systems for battery powered systems is in preparation.

9.3.4 ***Isolation and maintenance hazards***

Warning labels should be provided in positions where they can be readily seen and read. The labels should state that switching off the normal supply to an emergency lighting system may not make it safe for maintenance purposes. Such warnings are necessary because, for example, non-illumination of a lamp does not always indicate that a circuit is dead, and a circuit that is still live could present a hazard to maintenance personnel.

A test for voltage should be made before touching parts which may be live.

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9.3.5 ***Voltage compatibility of a slave luminaire and a central battery system***

The luminaires to be used for emergency escape lighting are specified in BS EN 50172:2004/BS 5266-8:2004, **5.5.1**.

Slave luminaires should be selected to be compatible with the central power supply to which they are to be connected. The slave luminaires selected should be compatible with an a.c. or a d.c. voltage, as applicable, and with the input voltage range, taking into account load voltage regulation, end of duration battery voltage and cable voltage drop.

9.4 Electromagnetic compatibility

Attention is drawn to the Electromagnetic Compatibility Regulations 1992 (as amended) [10].

10 Choice of appropriate emergency lighting systems

10.1 Duration

BS EN 1838:1999/BS 5266-7:1999, **4.2.5**, and **4.3.5** specifies a minimum duration of the emergency escape lighting of 1 h.

The time required to evacuate premises depends upon their size and complexity but it should normally be possible to complete an orderly evacuation, even of the largest premises, in less than 1 h. However, in an emergency, evacuation times may be considerably increased because, for example, some of the escape routes may have been cut off, or injured people may have to be found and possibly given on-the-spot medical treatment. The time for which emergency escape lighting is required to operate will therefore always be longer than the absolute minimum time required to evacuate the premises under ideal conditions. Furthermore, particularly in larger premises, emergency lighting which will remain in operation after the evacuation of the building has been substantially completed may be a necessary safety requirement in order, for example, to enable an adequate search of the premises to be carried out easily and quickly to ensure that no one has been left behind, or to allow reoccupation of the premises after the emergency in order to get people off the street and into a place of relative safety.

10.2 Type and category of system to be adopted

The type and category of system to be used should be selected on the basis of the size, function and risk assessment of the premises.

The available options for emergency lighting systems are fully described in Clauses **6**, **7** and **11**. For many types of premises there are regulatory requirements relating to emergency lighting, and it is important that the appropriate authority is consulted.

10.3 Typical premises

10.3.1 ***General***

The premises to which this standard applies may be divided into the broad classes described in **10.3.2** to **10.3.11**. Examples of premises falling within each of these classes are given but these are not necessarily comprehensive. In case of doubt, the appropriate class should be agreed with the enforcing authority.

10.3.2 ***Premises used as sleeping accommodation***

This class includes such premises as hospitals, nursing homes, hotels, guest houses, clubs, colleges and schools.

NOTE Guidance for hospitals is given in the *Emergency electrical services* series of publications [11], [12], [13] and [14]. Advice on the application of this guidance in relation to that given in this standard should be obtained from the enforcing authority.

Persons using premises of this kind may be unfamiliar with their overall layout and/or may be infirm. Furthermore, particularly in the case of hospitals and similar premises, large hotels on busy thoroughfares, etc., it may be desirable to reoccupy the premises as soon as the normal lighting has been restored, or to delay evacuation after the initial failure of the normal supply, should this be permitted.

Based on these considerations, it is recommended that 3 h duration emergency lighting should be installed.

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10.3.3 ***Non-residential premises used for treatment or care***

This class includes such premises as special schools, clinics and similar premises. Reaction time to an emergency in premises of this class may be expected to be shorter than when emergencies arise during the night in residential premises and it will normally be satisfactory to provide a 1 h duration emergency lighting system.

10.3.4 ***Non-residential premises used for recreation***

This class includes such premises as theatres, cinemas, concert halls, exhibition halls, sports halls, public houses and restaurants.

The people using such premises can be expected to be unfamiliar with the layout. Also it may be desirable to reoccupy the premises once the normal lighting has been restored, or to delay evacuation after the initial failure of the normal supply, should this be permitted.

Based on these considerations, it is recommended that 3 h duration emergency lighting should be installed.

Where the normal lighting may be dimmed or turned off, a maintained emergency lighting system should be installed. However, it is not necessary for the full emergency lighting level to be provided when the normal lighting system is functioning.

NOTE 1 Full details of lighting requirements for places of entertainment are given in *Technical standards for places of entertainment* [15].

Provided cinema and theatre seating is fixed to the floor, the seating rows will direct people to the aisles, so these do not need to be treated as open areas.

NOTE 2 This includes seating fixed to the floor which is removable with the aid of a tool, for example to provide access for wheelchair users.

For the areas of cinema and theatre auditoria with seating which is fixed to the floor, the minimum illuminance of emergency lighting should be 0.1 lx on a plane 1 m above the floor. All other emergency lighting parameters should be as required for open areas. However, the gangways should be treated as escape routes. (See **5.3**.)

10.3.5 ***Non-residential premises used for teaching, training and research, and offices***

This class includes such premises as schools, colleges, technical institutes and laboratories.

In general, persons using this class of premises will be reasonably familiar with the layout and safety provisions and orderly evacuation can normally be expected in the event of an emergency. Also, except possibly in some types of process laboratories, there will not normally be any safety requirement for early reoccupation after an emergency and the minimum duration of emergency escape lighting should therefore be adequate.

It is recommended, therefore, that emergency lighting systems of 1 h duration be used in premises of this class unless there is a particular requirement for early reoccupation, in which case a longer duration may be necessary.

10.3.6 ***Non-residential public premises***

This class includes such premises as town halls, libraries, shops, shopping malls, art galleries and museums.

The majority of persons present in this class of premises will be unfamiliar with the layout, and evacuation may involve discharging large numbers of persons (from large shops) or gathering together smaller numbers of persons from large dispersed areas.

However, early reoccupation following an emergency is not usual. Thus a 1 h duration system is recommended.

10.3.7 ***Industrial premises used for manufacture, processing or storage of products***

This class includes such premises as factories, workshops, warehouses and similar establishments for which a 1 h duration system is recommended.

In certain industrial processes, a break in the power supply of even 5 s may constitute a hazard to personnel. In such circumstances a supplementary battery system will always be necessary for use with a generator, even where the generator can be run up to its required output within a period of 5 s.

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10.3.8 ***Multiple use of premises***

Where any premises fall into more than one of the broad classes of **10.3.2** to **10.3.7**, the whole premises should be treated in accordance with the most stringent of the applicable recommendations.

Where, however, the differing uses are contained within separate fire compartments having independent escape routes, they may be considered separately.

10.3.9 ***Common access routes within multi-storey dwellings***

Common access routes in multi-storey dwellings up to 10 storeys should have a 1 h duration emergency lighting system.

For buildings in excess of 10 storeys it is recommended that a 3 h duration system should be installed.

10.3.10 ***Covered car parks***

The pedestrian escape routes from covered and multi-storey car parks should be easily identifiable and should be provided with emergency lighting (see **7.8.7**). The emergency lighting should be to the same standard as that on escape routes within non-residential public premises.

10.3.11 ***Sports stadia***

Lighting for indoor and outdoor sports events is specified in BS EN 12193:1999.

Reference should be made to *Guide to safety at sports grounds* [16].

11 Emergency lighting design procedure

11.1 General

Before any detailed design work commences it is essential that consultation is carried out in accordance with Clause **4**. The design procedure should proceed as set out in **11.2** to **11.6**.

11.2 Determine requirements

Complete the following actions, by consultation (see Clause **4**) when necessary.

a) Verify escape routes.

b) Establish fire alarm call point positions (see BS EN 1838:1999/BS 5266-7:1999, **4.1**).

c) Establish position of fire fighting equipment (see BS EN 1838:1999/BS 5266-7:1999, **4.1**).

d) Establish position of fire and safety signs (see BS EN 1838:1999/BS 5266-7:1999, Clause **5** and BS 5499-4).

e) Investigate potential hazards on escape routes.

f) Establish open areas that require emergency lighting (see BS EN 50172:2004/BS 5266-8:2004, **4.4**).

g) Establish requirements for external emergency escape lighting (see **7.8.2**).

h) Locate lifts (see **7.8.3**).

i) Locate moving stairways and walkways (see **7.8.4**).

j) Locate toilet, lobby and closet accommodation over 8 m^2 gross area, facilities less than 8 m^2 without borrowed light and those for disabled use (see **7.8.5**).

k) Locate motor generator, control and plant rooms (see **7.8.6**).

l) Locate covered car parks (see **7.8.7**).

m) Investigate need for standby lighting (see BS EN 50172:2004/BS 5266-8:2004, **4.6** and BS EN 1838:1999/BS 5266-7:1999, **4.5**).

n) Establish areas for the location of central power supply units and routes of low fire risk for distribution cables.

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11.3 Design of illuminance

Having determined the positions and areas which need to be illuminated from the emergency lighting system, the detailed design can commence, as set out below.

a) Position emergency luminaires on the plan (see **11.2**).

b) Verify mounting height of luminaires (see **7.5**).

c) Investigate possible deterioration of luminaire light output due to dirt and dust (see **6.3.4**).

d) Check voltage and possible voltage drop (see Clause **9**).

e) Determine the duration (see **10.1**).

f) Determine the mode of operation (see **7.10**).

g) Choose emergency lighting luminaires.

h) Obtain detailed light distribution of the luminaires.

i) Calculate the illuminance (see **6.3**).

j) Check uniformity (see **6.4**).

11.4 Design of system

The design of the electrical installation will involve additional consultation with various organizations in order to verify certain facts, e.g. the facilities for maintenance of the system when installed. Aspects to be covered are as follows.

a) Determine the type of system of emergency lighting (see **10.2**) (central battery, self-contained etc.).

b) Establish mode of operation (see **7.10**).

c) Choose the wiring system (see Clause **9**).

d) Determine the routes of cable installation (see Clause **9**).

e) Ensure correct fire protection of cables (see **9.2.2**).

f) Ensure wiring is segregated (see **9.2.5**).

g) Check suitability of wiring and circuit components for use in any damp, corrosive or underground locations (see **9.2.8**).

h) Check protection of wiring and circuit components against mechanical damage (see **9.2.10**).

i) Ensure avoidance of flue-like structures (see **9.2.11**).

j) Check joints in cables, and warning labels (see **9.2.6** and **9.3.4**, respectively).

k) Establish voltage drop calculations (see **9.2.3**).

l) Ensure electromagnetic compatibility (see **9.4**).

11.5 Design of circuit protection and controls

The design of the circuit protection and controls requires consultation with those responsible for the continued operation and maintenance of the system.

Hence there is a need to complete the following actions.

a) Establish siting of equipment (see **9.3**).

b) Choose isolators, switches and protective devices (see **9.3.2**).

c) Determine, and site, test facilities (see **9.3.3**).

d) Specify warning notices relating to isolation and maintenance hazards (see **9.3.4**).

11.6 Operation and maintenance following design and installation

The designer should include the preparation of instructions on the operation and maintenance of the system in the design schedule. The instructions should preferably be in the form of a manual for retention by the occupier.

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12 Certificates and log book

12.1 Completion certificate

On completion of the work of installing an emergency lighting system, or part thereof, or of a major alteration to an existing installation, a completion certificate should be supplied to the occupier/owner of the premises. A copy of this certificate may be required by the enforcing authority. A model completion certificate is given in Annex C.

Recommendations on the measuring of illuminance of emergency lighting are given in Annex B.

12.2 Periodic inspection and test certificate

Provision of a periodic inspection and test certificate is covered by BS EN 50172:2004/BS 5266-8:2004, **6.2**.

An example of a suitable inspection and test certificate is given in Annex D.

12.3 Log book

Provision of a log book is specified in BS EN 50172:2004/BS 5266-8:2004, **6.3**.

13 Servicing

13.1 Supervision

Supervision of servicing is specified in BS EN 50172:2004/BS 5266-8:2004, **7.1**.

13.2 Batteries

In all cases the manufacturer's instructions should be followed. It is particularly important that where applicable:

a) the tops of batteries and their terminals are kept clean and unobstructed and that battery cases are periodically checked for leaks;

b) the electrolyte is, at all times, kept at the correct level as recommended by the manufacturer;

c) any replacement battery should be compatible with the battery charger;

d) any replacement cell should be compatible with the battery;

e) any replacement battery charger should be compatible with the battery;

f) automotive batteries should not be used as replacement batteries.

13.3 Generators

The manufacturer’s instructions as given in the associated instruction manual or other literature should always be followed. It should be noted, however, that the failure of engines to start up readily often arises from poor maintenance or defects in the starting battery or in electromechanical apparatus, e.g. relays incorporated in the starting system.

Dust and damp, singly or in combination, can have an adverse effect on electromechanical apparatus and it is therefore important that a system of regular cleaning and, where necessary, adjustment is carried out.

Some parts of the starting system may be sited where they are subject to vibration and great care should therefore be taken in such instances to ensure that all connections are mechanically and electrically sound.

It is essential that air intakes and exhausts are unobstructed.

13.4 Routine inspections and tests

Routine inspections and tests are specified in BS EN 50172:2004/BS 5266-8:2004, **7.2**.

Consideration should be given to the use of an automatic test system.

NOTE An automatic test system for battery powered systems is specified in IEC 62034[1)].

[1)] In preparation.

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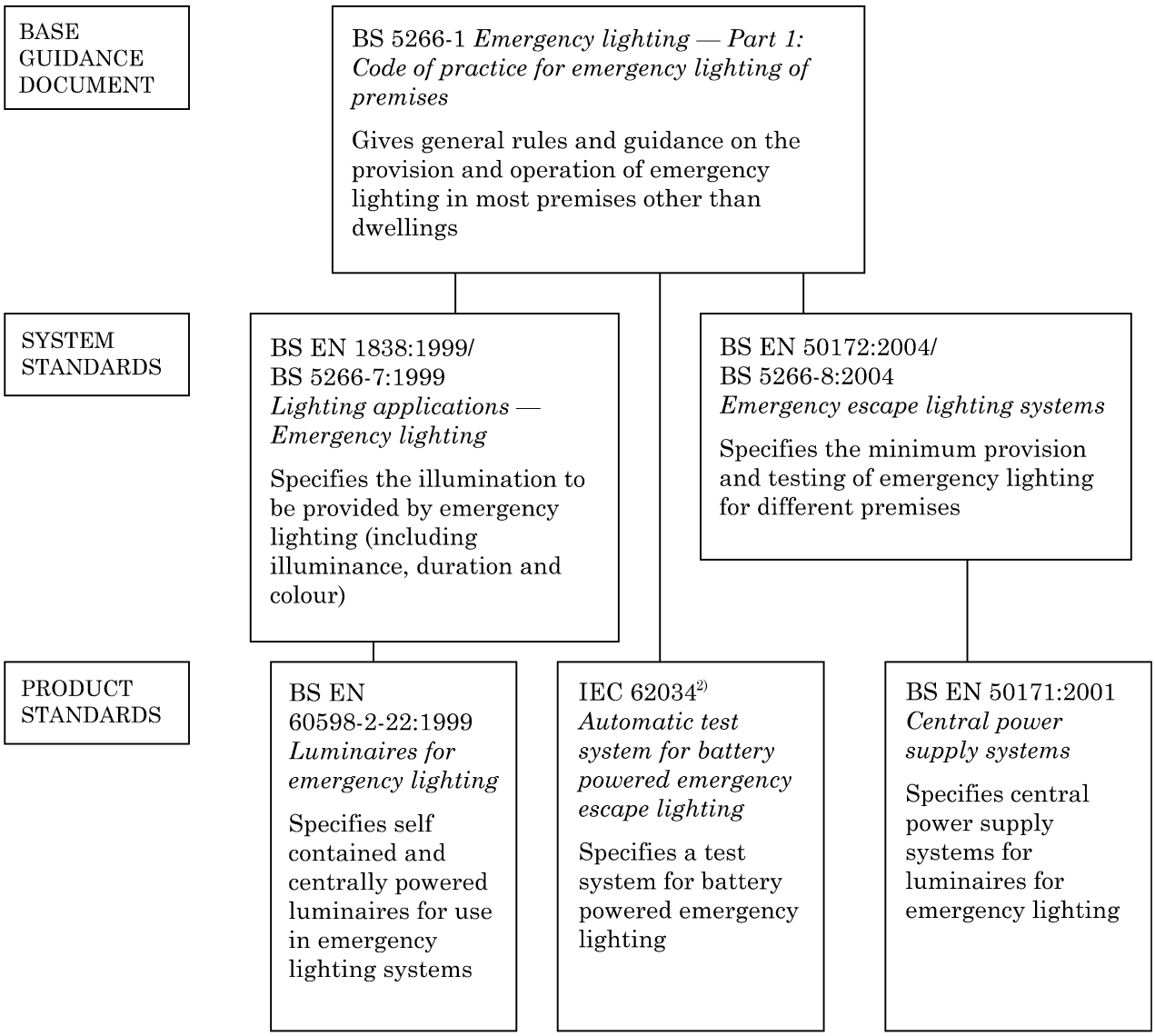
Annex A (informative)
Summary of standards covering emergency lighting

Emergency lighting is now covered by a series of interdependent standards which can be seen as forming a hierarchy as shown below.



[2)] In preparation.

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Annex B (informative)
Measuring illuminance of emergency lighting

Where authenticated data, mentioned in BS EN 1838:1999/BS 5266-7:1999, is not available, the following measurement method may be used.

Measurement of illuminance of emergency lighting installations can be very difficult and should be carried out with good instrumentation and great care. All site test work should be carried out by simulating a failure of the normal electrical supply and, where practicable, this should be done using the test facilities provided.

It is essential that the light meter used has a photocell having good cosine correction as a large proportion of the incident light is at glancing angles. The meter should be suitable for taking readings at the low illuminances involved. It should have a minimum range of 1 mlx to 100 lx and sensitivity of 1 mlx. Care has to be taken not to overshadow the light sensor and for this reason a sensor remote from the readout is preferable.

The measurement of the illuminance should be made on the same plane as that used for design, which should accord with the recommendations of Clause **11**.

The effect of stray light (e.g. street lighting or moonlight) can be substantial and, as far as practicable, it should be masked out. Where it cannot be excluded, the illuminance from the emergency lighting should be obtained by taking readings at appropriate positions inside the building with all interior lighting, including the emergency lighting, switched off. The readings so obtained should be deducted from readings taken at the same positions with the emergency lighting switched on.

The light output of the emergency lighting system will vary with time. The test should therefore be completed as quickly as is practicable within the rated duration.

This is particularly relevant in an occupied building or one in daily use as, with discharged batteries, the building could have reduced emergency lighting cover for up to 24 h following the test.

For measurement of emergency lighting on emergency escape routes it is advisable to select for test a number of specific areas likely to have minimum illuminance. Suggested locations are:

a) half-way between luminaires, especially in stairwells;

b) where highest luminaire mounting height occurs;

c) where widest spacing of luminaires occurs;

d) at changes in direction of route;

e) at thresholds of doorways forming part of the exit route.

In open areas, tests should be carried out over the whole of the relevant area (see BS EN 1838:1999/BS 5266-7:1999, **4.3.1**).

The results of the measurements should be checked against design data.

The rated duration of self-contained luminaires will need to be checked individually. For a central system it is only necessary to carry out the test at one luminaire, preferably that luminaire subject to the highest voltage drop.

On-site testing will only prove or indicate to some degree the accuracy of the design data and in most cases the illuminance measured will be higher than the minimum design level. The minimum value of illuminance will always occur at 5 s after switch on, at the end of the battery discharge when the voltage is at a minimum value, and at the end of useful lamp life.

Such combinations are not usually encountered on site, except where unsatisfactory equipment has been used or maintenance has been poor. When carrying out these tests it is therefore necessary to have data which relates to the lumen output of the luminaire during the lamp/battery life cycle.

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Annex C (informative)
Model completion certificate

Serial Number:……..

EMERGENCY LIGHTING COMPLETION CERTIFICATE

For New Installations and Verification of Existing Installations

Occupier/owner

……

Address of premises

……

……

Declaration of Conformity

In consequence of acceptance of the appended declarations, I/we* hereby declare that the emergency lighting system installation, or part thereof, at the above premises conforms, to the best of my/our* knowledge and belief, to the appropriate recommendations and requirements given in BS 5266-1:2005, *Emergency lighting — Part 1: Code of practice for the emergency lighting of premises*, BS EN 1838:1999/BS 5266-7:1999 *Lighting applications — Emergency lighting* and BS EN 50172:2004/BS 5266-8:2004, *Emergency escape lighting systems*, as set out in the accompanying declarations, except as stated below/overleaf.

* Delete as appropriate.

Signed, on behalf of owner/occupier

…… Name……

Deviations from standards

Declaration (Design, installation or verification)	**Requirement number**	**Details of deviation**

This Certificate is only valid when accompanied by current:

a) Signed declaration(s) of design, installation and verification, as applicable (see overleaf).

b) Photometric design data. This can be in any of the following formats but in all cases appropriate de-rating factors must be used and identified to meet worst case requirements.
- — Authenticated spacing data such as ICEL 1001 registered tables**.
- — Calculations as detailed in CIBSE/SLLGuide LG12***.
- — Appropriate computer print of results.

c) Test log book.

**Available from Industry Committee for Emergency Lighting, 207 Balham High Road, London SW17 7BQ.

***Available from Chartered Institution of Building Services Engineers, Delta House, 222 Balham High Road, London SW12 9BS.

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Serial Number:……..

Design — Declaration of conformity

BS 5266-1 clause reference	Requirements	System conforms (if NO, record a deviation)		
		YES	NO	N/A
4.2	**D1** Accurate plans available showing escape routes, fire alarm control panel, call points and fire extinguishers			
6.6	**D2** Fire safety signs in accordance with BS 5499-4 and -5, clearly visible and adequately illuminated			
7.9	**D3** The luminaires conform to BS EN 60598-2-22			
6.3.2	**D4** Luminaires located at following positions: (NOTE Near means within 2 m horizontally) a) At each exit door intended to be used in an emergency b) Near stairs so each tread receives direct light, and near any other level change c) Near mandatory emergency exits and safety signs d) At each change of direction and at intersections of corridors e) Outside and near to each final exit f) Near each first aid post g) Near fire fighting equipment and call points			
7.4	**D5** At least two luminaires illuminating each compartment of the escape route			
7.8.3 **7.8.4** **7.8.5** **7.8.6** **7.8.7**	**D6** Additional emergency lighting provided where needed to illuminate: a) Lift cars b) Moving stairways and walkways c) Toilet facilities larger than 8 m^2 floor area or without borrowed light, and those for disabled use d) Motor generator, control and plant-rooms e) Covered car parks			
10.1	**D7** Design duration adequate for the application			
11.6; **12.3**	**D8** Operation and maintenance instructions and a suitable log book produced for retention and use by the building occupier			
6.3.2; **6.3.3**	**D9** Illuminance. Escape routes for any use: 1 lx min. on the centre line Open areas above 60 m^2: 0.5 lx min. anywhere in the core area Permanently unobstructed routes: 0.2 lx min. on centre line NOTE If the system was designed to the illuminance levels given in BS 5266-1:1988, this should be recorded as a deviation.			

Deviations from standards
(to be entered on Completion Certificate)

Requirement number	Details of deviation

Signature of person making design conformity declaration.....

Qualifications.....

For and on behalf of ..... Date.....

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Serial Number:……..

Installation — Declaration of conformity

BS 5266-1 clause reference	Requirements	System conforms (if NO, record a deviation)		
		YES	NO	N/A
6.3	**IN1** The system installed conforms to the agreed design			
7.2	**IN2** All non-maintained luminaires fed or controlled by the final circuit supply of their local normal mains lighting			
7.5	**IN3** Luminaires mounted at least 2 m above the floor			
7.5	**IN4** Luminaires mounted at a suitable height to avoid being located in smoke reservoirs or other likely area of smoke accumulation			
6.6	**IN5** Fire safety signs in accordance with BS 5499-4 and -5, clearly visible and adequately illuminated			
9.2	**IN6** The wiring of central power systems has adequate fire protection and is appropriately sized			
9.3.5	**IN7** Output voltage range of the central power system is compatible with the supply voltage range of the luminaries, taking into account supply cable voltage drop			
7.9	**IN8** No glow starters in any emergency circuits (see BS EN 60598-2-22)			
9.2.12	**IN9** All plugs and sockets protected against unauthorized use			
9.3.3	**IN10** The system has suitable and appropriate testing facilities for the specific site			
12.1	**IN11** The equipment manufacturers' installation and commissioning procedures satisfactorily completed			
9.1	**IN12** The system conforms to BS 7671			

Deviations from standards
(to be entered on Completion Certificate)

Requirement number	Details of deviation

Signature of person making installation conformity declaration.....

Qualifications.....

For and on behalf of..... Date.....

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Serial Number:……..

Verification — Declaration of conformity

BS 5266-1 clause reference	Requirements	System conforms (if NO, record a deviation)		
		YES	NO	N/A
4.2	**V1** Plans available and correct			
9.3.3	**V2** System has a suitable test facility for the application			
6.6	**V3** All escape route safety signs and fire fighting equipment location signs visible with the normal lighting extinguished			
6.3	**V4** Luminaires correctly positioned and oriented as shown on the plans			
7.9	**V5** Luminaires conform to BS EN 60598-2-22			
7.9	**V6** Luminaires have an appropriate category of protection against ingress of moisture or foreign bodies for their location as specified in the system design			
12.2	**V7** Luminaires tested and found to operate for their full rated duration			
12.2	**V8** Under test conditions, adequate illumination provided for safe movement on the escape route and the open areas NOTE This can be checked by visual inspection and checking that the illumination from the luminaires is not obscured and that minimum design spacings have been met.			
12.2	**V9** After test, the charging indicators operate correctly			
9.2	**V10** Fire protection of central wiring systems satisfactory			
9.2.5	**V11** Emergency circuits correctly segregated from other supplies			
11.6; **12.3**	**V12** Operation and maintenance instructions together with a suitable log-book showing a satisfactory commissioning test provided for retention and use by the building occupier			
Clause **13**	**V13** Building occupier and their staff trained on suitable maintenance, testing and operating procedures, or a suitable maintenance contract agreed			
Additional requirements for verification of an existing installation				
Clause **12**	**V14** Test records in the log book complete and satisfactory			
Clause **13**	**V15** Luminaires clean and undamaged with lamps in good condition			
6.3	**V16** Original design still valid NOTE If the original design is not available this needs to be recorded as a deviation.			

Deviations from standards
(to be entered on Completion Certificate)

Requirement number	Details of deviation

Signature of person making verification conformity declaration .....

Qualifications .....

For and on behalf of..... Date.....

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Annex D (informative)
Model periodic inspection and test certificate

Emergency Lighting Inspection and Test Certificate For systems designed to BS 5266-1 and BS EN 50172/BS 5266-8			
WARNING **Full duration tests involve discharging the batteries, so the emergency lighting system will not be fully functional until the batteries have had time to recharge. For this reason, always carry out testing at times of minimal risk, or only test alternate luminaires at any one time.**			
System manufacturer Contact phone number			
System installer Contact phone number			
Competent engineer responsible for commissioning and annual tests			Phone number
Site address			
Responsible person			
Date the system was commissioned			
Details of system mode of operation	Non-maintained		
	Non-maintained luminaires, maintained signs		
	Maintained		
	Other		
Duration of system	..... Hours	Is automatic test system fitted?	Y/N
Details of additions or modifications to the system or the premises since original installation			
Addition or modification			**Date**

Action to be taken on finding a failure

- The supplier of the system or a competent engineer should be contacted to rectify the fault.
- A risk assessment of the failure should be conducted; this should evaluate the people who will be at increased risk and the level of that risk. Based on this data and, if necessary, advice from the Fire Authority, the appropriate action should be taken.
- Action may be:

  To warn occupants to be extra vigilant until the system is rectified
  To initiate extra safety patrols
  To issue torches as a temporary measure
  In a high risk situation, to limit use of all or part of the building

NOTE Test programs for identifying early failures can reduce the chances of failure of two adjacent luminaires at the same time.

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Emergency Lighting Inspection and Test Record	Sheet number:
Site:	

Test types: C = Commissioning test
M = Monthly test (see BS EN 50172:2004/BS 5266-8:2004, **7.2.3**)
A = Annual test (see BS EN 50172:2004/BS 5266-8:2004, **7.2.4**)

Date of test	**Test type**	**Result – Test Passed No action needed**	**Result — Test Failed**	
			Need for repair of system notified	**Need for safeguarding of premises notified**
		Sign below*	Sign below*	Sign below*
	C			
	M — 1st			
	M — 2nd			
	M — 3rd			
	M — 4th			
	M — 5th			
	M — 6th			
	M — 7th			
	M — 8th			
	M — 9th			
	M — 10th			
	M — 11th			
	A			
	M — 1st			
	M — 2nd			
	M — 3rd			
	M — 4th			
	M — 5th			
	M — 6th			
	M — 7th			
	M — 8th			
	M — 9th			
	M — 10th			
	M — 11th			
	A			
	M — 1st			
	M — 2nd			
	M — 3rd			
	M — 4th			
	M — 5th			
	M — 6th			
	M — 7th			
	M — 8th			
	M — 9th			
	M — 10th			
	M — 11th			
	A			

* Sign as applicable.

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Emergency Lighting Fault Action Record		Sheet number:	
Contact references	Contact name	Phone number	
Equipment supplier:			For replacement parts
Maintenance engineer:			Competent engineer
Responsible person:			Site control

Date of failure	**Action taken to safeguard the premises** (Details and signature)	**Action taken to rectify the system** (Details and signature)	**Date system repaired**

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Bibliography

Standards publications

BS 476 (all parts), *Fire tests on building materials and structures.*

BS 4678-4:1982, *Cable trunking — Part 4: Specification for cable trunking made of insulating material.*

BS 5467:1997, *Electric cables — Thermosetting insulated, armoured cables for voltages of 600/1 000 V and 1 900/3 300 V.*

BS 5499-4:2000, *Safety signs, including fire safety signs — Code of practice for escape route signing.*

BS 5499-5:2002, *Safety signs, including fire safety signs — Signs with specific safety meanings.*

BS 5588-5:2004, *Fire precautions in the design, construction and use of buildings — Part 5: Access and facilities for firefighting.*

BS 5588-8:1999, *Fire precautions in the design, construction and use of buildings — Part 8: Code of practice for means of escape for disabled people.*

BS 6004:2000, *Electric cables — PVC insulated, non-armoured cables for voltages up to and including 450/750 V, for electric power, lighting and internal wiring.*

BS 6467-2:1988, *Electrical apparatus with protection by enclosure for use in the presence of combustible dusts — Part 2: Guide to selection, installation and maintenance.*

BS 6724:1997, *Electric cables — Thermosetting insulated, armoured cables for voltages of 600/1 000 V and 1 900/3300 V having low emission of smoke and corrosive gases when affected by fire.*

BS 7211:1998, *Electric cables — Thermosetting insulated, non-armoured cables for voltages up to and including 450/750V for electric power, lighting and internal wiring, having low emission of smoke and corrosive gases when affected by fire.*

BS EN 12193:1999, *Light and lighting — Sports lighting.*

BS EN 50020:2000, *Method of test for resistance to fire of unprotected small cables for use in emergency circuits.*

BS EN 60079-14:2003, *Electrical apparatus for explosive gas atmospheres — Part 14: Electrical installations in hazardous areas (other than mines).*

BS EN 60529:1992, *Specification for degrees of protection provided by enclosures (IP code).*

HD 384/HD 60364, *Electrical installations of buildings.*

IEC 62034[3], *Automatic test system for battery powered emergency escape lighting.*

Other publications

[1] GREAT BRITAIN. Regulatory Reform (Fire Safety) Order 2005. (Placed on the statute book on 7 June 2005. Will be implemented on 1 April 2006.) London: The Stationery Office.

[2] GREAT BRITIAN. Building Regulations 2000. London: The Stationery Office.

[3] GREAT BRITAIN. Fire (Scotland) Act 2005. London: The Stationery Office.

[4] GREAT BRITAIN. Building (Scotland) Regulations 2004. London: The Stationery Office.

[5] GREAT BRITAIN. Building Regulations (Northern Ireland) 2000. London: The Stationery Office.

[6] GREAT BRITAIN. Fire Precautions (Workplace) Regulations 1997. London: The Stationery Office.

[7] GREAT BRITAIN. Management of Health and Safety at Work Regulations 1999. London: The Stationery Office.

[8] WEBBER, G.M.B., WRIGHT, M.S. and G.K. COOK. *Emergency lighting and wayfinding systems for visually impaired people*. Building Research Establishment Information Paper 9/97.

[9] CHARTERED INSTITUTION OF BUILDING SERVICES ENGINEERS, SOCIETY OF LIGHT AND LIGHTING. *Emergency lighting design guide*. LG12, 2004[4].

[10] GREAT BRITAIN. Electromagnetic Compatibility Regulations 1992, SI 1992 No. 2372. London, The Stationery Office.

[3] In preparation.

[4] Obtainable from CIBSE, Delta House, 222 Balham High Road, London SW12 9BS.

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[11] NHS ESTATES. *Emergency electrical services. Operational management*. Health Technical Memorandum 2011. HMSO, 1993.

[12] NHS ESTATES. *Emergency electrical services. Management policy*. Health Technical Memorandum 2011. HMSO, 1993.

[13] NHS ESTATES. *Emergency electrical services. Validation and verification*. Health Technical Memorandum 2011. HMSO, 1993.

[14] NHS ESTATES. *Emergency electrical services. Design considerations*. Health Technical Memorandum 2011. HMSO, 1993.

[15] DISTRICT SURVEYORS ASSSOCIATION/ASSOCIATION OF BRITISH THEATRE TECHNICIANS *Technical standards for places of entertainment*. 2005[5)].

[16] GREAT BRITAIN. DEPARTMENT OF NATIONAL HERITAGE, AND SCOTTISH OFFICE. *Guide to safety at sports grounds*. The Stationery Office. 1997.

[5)] Obtainable from ABTT, 55 Farringdon Road, London EC1M 3JB or LDSA Publications, PO Box 266, Bromley, Kent BR2 9ZN.

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