Guidance for Electrical Contracts on Emergency Lighting Legislation

1. **Upgrading Fire Safety signs**

Although most people have become aware that new formats of the Fire Safety signs have been introduced in the UK over the past decade, the introduction of legislation that demanded that the oldest format of sign be replaced is still unknown to many people.

The Health and Safety (Safety Signs and Signals) Regulations I, SI 341, introduced in 1996 to enact the EU Signs Directive ii, required that all text-only fire safety signs (i.e. EXIT or FIRE EXIT signs) produced to comply with the BS 2560 should be replaced by 24th December 1998 with the pictogram format “running man” signs.

The mandatory change in signage present a considerable opportunity for business. Text only signs may still be seen in many premises and the occupiers are quite unaware that their Fire Safety signs are no longer acceptable and should be replaced.

The Industry Committee for Emergency Lighting Ltd. (ICEL) publishes a useful guide to the design of emergency lighting installations, ICEL 1006 iii, which offers additional advice on the requirements for the siting of Fire Safety signs.

Consideration should not only be given to updating signs by changing the legend panels or diffusers, but also to taking the opportunity to test the installed signage products. Testing will often reveal that the internal battery also needs replacing. Replacement of just the legend panels or diffusers may be difficult if the sign luminaire type has been discontinued by the maker. This, combined with the possible need to replace the internal battery, will usually mean that it is more cost effective to replace the whole sign luminaire.

**Choice of Replacement Sign Format**

Considerable debate continues about whether the running man signs should be of the BS 5499 type, with the man in the doorway, or of the more recently introduced EU Signs Directive type, with the man running toward the door.

The Health and Safety (Safety Signs and Signals) Regulations, as explained in the HSE guidance document “Safety Signs and Signals – Guidance on Regulations” iv, states that small differences in the pictogram or symbols are acceptable providing that they do not affect or confuse the message that the sign conveys. Thus, either format of pictogram sign is acceptable providing that all signs within the installation are of the same format.

If Fire Safety signs are to be fitted to a new installation, it is recommended that they should be of the EU Signs Directive type format. When signs are fitted to extend an existing installation they shall be of the same format as those previously fitted if complying with either BS 5499 Pt. 1, or the EU Signs Directive type format.

**Minimum Height of Signs**

The viewing distance (d) of any exit sign should be no more than 200 times the height (H) of the sign if internally illuminated or 100 times the height (H) of the sign if externally illuminated.

1. **Emergency Lighting Maintenance**

All emergency lighting systems are required to be suspected to regular testing and inspection to ensure correct operation when required to operate in an emergency.

All too often emergency lighting has been seen as a ‘fit and forget’ product. A consultant or specifier may have carefully designed an emergency lighting installation, the equipment may have been correctly installed and certified as complying with the appropriate standards and then it is totally neglected. It should not, then, be a surprise when it fails to operate when required.

The implications of failure of the emergency lighting may of course be catastrophic, with the lives of building occupants being put at risk.

**Maintenance Business Opportunities**

Both BS 5266 and European draft standard prEN 50172 define detailed requirements for inspection and testing at regular intervals. Emergency lighting testing requirements are detailed in ICEL 1008 and the general schedule of requirements is shown as follows:

Daily

* Visually check that all maintained lamps are operating and that all system healthy indicators on Central Power Supply Systems (sometimes called Central Battery Systems) are illuminated.
* Check that any recorded system fault is given urgent attention and record all corrective actions in the logbook provided.

Monthly

* Check all luminaires and other emergency lighting equipment are in a good condition, all lamps and light controllers are clean, undamaged and not blackened.
* Briefly test all emergency lighting equipment by stimulating a failure of normal lighting supply. The test should not exceed a quarter of the equipment rated duration. Check that all equipment functions correctly.
* Check that, upon restoring the mains supply, all supply healthy indicators are again illuminated.

Six Monthly

* Carry out the inspection and testing as describing in the monthly test schedule, but conduct a test of equipment for one third of its rated duration.

Annually

* A full system test should be conducted by a competent service engineer including a full rated duration test of the system
* Compliance of the installation and system with the requirements of BS 5266 should be considered and documented.

The result of all testing and any necessary corrective action shall be recorded in a log record held on site and shall be made available, if required, for inspection by any authorised person.

Insurance cover of premises may also be affected if emergency lighting systems are not correctly maintained.

The majority of occupiers of premises do not understand the operation of their emergency lighting systems. If occupiers realise their obligation to test and maintain emergency lighting at all, most are only concerned to maintain the systems to correctly fulfil their statutory obligations. Sub-contracting the task of maintaining systems is therefore an attractive proposition to many occupiers and landlords.

Although some central battery systems may need to be maintained by specialists, trained, competent electrical contractors can maintain many emergency lighting systems.

Routine maintenance contracts can be good business if well managed but it is necessary to follow the schedules of routine maintenance described in BS 5266 and the European draft standard prEN 50172. Inspection completion of routine maintenance and testing.

**Methods of testing**

All emergency lighting installations should be provided with a method of testing, usually by means of simulating failure of the normal lighting supply, through a test switch. Test switches must be designed or positioned to avoid unauthorised switching and be arranged to ensure the supply is never unintentionally left disconnected.

Some emergency lighting manufacturers provide automatic test systems that conduct tests in accordance with the requirements of the standards. Advice on their availability can be obtained through ICEL.

Because of the risk of failure of the normal lighting supply just after a test has been conducted and subsequent risk of having too little charge in the batteries to provide the required discharge duration, tests must be conducted at a time of least risk. Additionally, if possible, only alternative fittings should be tested at any time to further minimise the risk of having insufficient emergency lighting cover after testing.

When carrying out a test by stimulating a mains failure, safe procedures must be followed:-

1. Do not switch off other essential services or equipment.
2. Do not fully discharge a system if the building has to be re-occupied before re-charge is completed (typically 24 hours)
3. Do not test by removing fuses. This practice I not acceptably safe. Purpose designed test switches or systems should be utilised.

Existing luminaires should be regularly checked to ensure lamps and lighting controllers are clean, undamaged and not blackened. Clean as required and lamps should be replaced as required.

1. Emergency lighting must be included in Risk Assessments

If artificial lighting is installed in the workplace, some form of Emergency Lighting is likely to a mandatory requirement.

Emergency lighting is installed to assist occupants to evacuate the premises in case of an emergency. The effectiveness of the escape routes can be very much improved by the provision of adequate emergency lighting which is properly maintained. This is why emergency lighting installations must be examined as a part of the overall fire precautions risk assessment.

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| **Section Ref** | **B25266 Clause Ref** | **E.1 Assessment of the Escape Routes** | **Complies** | **Not Applicable** | **Does Not Comply** |
|  |  | Where artificial lighting is installed, is emergency lighting fitted on the escape routes and in open areas? |  |  |  |
|  |  | Is emergency lighting and fire safety signage on the existing escape routes adequate to permit occupants to reach a place of safety within 2-3 minutes?  |  |  |  |
|  |  | Is emergency lighting installed in all open areas of greater than 60m2? |  |  |  |
|  |  | Is there any special risks e.g. Flammable materials used in processes, areas having restricted access, is emergency lighting fitted?  |  |  |  |
| **Section Ref** | **B25266 Clause Ref** | **E.2 Assessment of existing Emergency Lighting Luminaires and Escape Route Signs**  | **Complies** | **Not Applicable** | **Does Not Comply** |
|  |  | Are the existing luminaires clean, undamaged and are all lamps intact, operational and un-blackened? |  |  |  |
|  | 6.10.2 | Are luminaire housings on escape routes fire retardant? |  |  |  |

1. **The Health and Safety (Safety Signs and Signals) Regulations 1996**

This regulation requires the adequate provision of signs protected by emergency lighting. It details that signs should be located at all final exits and also on the escape routes at any location where the route may be in doubt.

**Other Requirements**

In addition to ire safety legislation, some workplaces require a license from the Local Authority, including theatres and cinemas, sport stadiums and premises from public entertainment, music, dancing, gambling and the sale of alcohol. Other premises must be registered with the Local Authority and be inspected by the Fire Authority, including nursing homes, children’s homes, residential care homes and independent schools. Both licensed and registered premises have to pass a fire inspection to confirm that they have systems complying with BS 5266-1 for the emergency lighting and BS 5839 for fire equipment. Records of a system are now essential to maintain the validity of approvals and licenses.

1. **Emergency Lighting – System Design**

This second provides guidance on system design to meet BS 5266 Parts 1 and 7: 1999 and so achieve compliance legislation.

**Design Objective**

BS 5266, when referring to the provision of Escape Lighting in section 4.2, requires that when the supply to all or part of the normal lighting in occupied premises fails, escape lighting is required to fulfil the following function:

1. To indicate clearly and unambiguously the escape routes
2. To provide illumination along such routes to allow safe movement towards and through the exits provided
3. To ensure that fire alarm call points and fire-fighting equipment provided along escape routes can be readily located
4. To permit operations concerned with safety measures.

BS 5266-1 recommends that discussions should be held prior to commencing the design, to establish the areas to be covered, the method of operation, the testing regime and the most suitable type of system. These discussions should include the owner or occupier of the premises, the system designer, the installer, the supplier of the equipment and the fire authority.

Note: BS 5266 will be revised during 2004 following the publication of EN50172. Visit the British Standards Institute website, at ww.bsi-global.com, for the latest information.

**Testing and Log Book**

The Fire Precautions (Workplace) Regulations 19997 require that appropriate testing is performed to maintain compliance of the system. The system should include adequate facilities for testing and recording the system condition. These need to be appropriate for the specific site and should be considered as part of the system design. Discussions with the user or system designer should identify:

* The calibre and reliability of staff available to do the testing
* The level of difficulty in performing the test
* If discharge tests need to be done outside normal working hours, or passed so only alternate luminaires are tested in buildings that are permanently occupied.

The testing requirements in the code of practice are:

* **Function test**

All emergency luminaires should be tested by breaking the supply to them and checking that they operate satisfactorily.

The supply must then be restored and the charging indicators must be seen to be operating correctly. This test must be performed at least once per month and the results logged.

* **Discharge test**

The luminaires must be tested for their full rated duration period and check for satisfactory operation. The supply must then be restored and the charging indicators rechecked. This test must be performed at least annually and the results logged.

Note: BS 5266-1:1999 allows a one hour test to be performed as an alternative every six months for the first 3 years of the system, but the guidance document to the Fire Precaution Regulations calls for the annual test at all stages of equipment life.

**Manual Testing**

If manual testing is utilised, the following points should be considered:

**Commissioning certificate**

BS5266 Pt 1:1999 and the European Standard both require written declarations of compliance to be available on site for inspection. These consist of:

* Installation quality

IEE regulations must have been conformed with and non-maintained fittings fed from the final circuit of the normal lighting in each, as required BS 5266

* Photometric performance

Evidence of compliance with light levels has to be supplied by the system designer. Photometric tests for Cooper Lighting and Security luminaires are performed at BSI and spacing data is registered by the ICEL scheme. Therefore, copies of the spacing data in this catalogue provide the verification required.

* Declaration of a satisfactory test of operation.

A log of all system tests and results must be maintained. System log books, with commissioning forms, testing forms and the instructions are available from Cooper Lighting and Security.