

ARCHITECTURAL SERVICES DEPARTMENT
BUILDING SERVICES BRANCH
GENERAL SPECIFICATION FOR FIRE SERVICE INSTALLATION
2001 EDITION

Corrigendum No. GSFS01
(March 2006)

The following clauses are amended in the above General Specification.

B7.3 VISUAL SYSTEM

Visual system shall consist of a system of coloured and flashing lights incorporated into the illuminated exit signs and related directional signs, and low-level illuminated directional signs to assist building occupants and public visitors to escape quickly during fire and shall comply with FSDCOP, FSD Requirements and Circular Letters, BS 5499-1, BS 5499-4, BS 4533-101 (or EN 60598-1), BS 4533-102.22 (or EN 60598-2-22), BS 5266-1 and BS 5266-7 (or BS EN 1838) unless otherwise specified. Design and construction details of visual system shall be submitted for approval.

- (a) The design of illuminated exit signs and related directional signs shall conform to Section B11.2. A flashing light control gear shall be integrated with each sign as required. An independent circuit including a separate set of lamp-holder, wiring and protective gear shall be provided for each lamp element. In normal situation, the lamp elements shall be in the ON condition and they can be changed to flashing mode in emergency. Where separate set of flashing lights is proposed, they shall be submitted to the Architect for approval.

- (b) Low-level directional signs shall be internally illuminated and comply with BS 5499-1, BS 5499-4 and relevant requirements in Section B11.2. For flashing signs, a flashing light control gear shall be provided with each sign. During fire condition, flashing directional sign shall be operated in a way to indicate the direction of exit on a floor or floors requiring evacuation. The evacuation routes may also be supplemented by low-level non-flashing photo-luminous directional signs or signs to the approval of the Architect.

Construction of signs in visual system, the luminance output, and the words, colour and size of signs used in the system shall comply with Section B11.2 and to the approval of the Architect. The signs and associated flashing lights shall be of design easily visible, conspicuous and legible in fire and smoke conditions.

The sign in visual system shall be safe in construction and use. It shall not create any harmful effect and not generate any additional risk and liability to the building occupants, workers and public visitors during the whole period of use.

The construction details, finishes, appearance and performance data of the signs shall be submitted to the Architect for approval before fabrication. The Contractor shall allow modifying the appearance and details of the signs to the satisfaction of the Architect.

The average luminance of visual system shall not decrease by more than 30% of its initial design value throughout its rated life in continuous operation when operated at ambient temperature between 5°C and 40°C.

The battery, battery charger, wiring, testing facilities, automatic changeover switch, accessories and related provisions of illuminated signs shall comply with relevant requirements of emergency lighting installation and the requirements specified in Section B8.10, Section B11.1, Section B11.2, BS 5266-1 and BS 5266-7. The battery shall be of capacity adequate to maintain light output of all lamps as well as the flashing lights for a period of not less than the period specified for emergency lighting installation during emergency in Section B11.1 and in any case shall be not less than two hours after mains failure.

B11.2 EXIT SIGN

Exit sign shall conform to BS 5499-1, BS 5499-4, BS 4533-101 (or EN 60598-1), BS 4533-102.22 (or EN 60598-2-22), BS 5266-1 and BS 5266-7 (or BS EN 1838) unless otherwise specified. Exit sign shall be visible and conspicuous from any position within the premises to ensure that exit routes can be easily recognised and followed in an emergency and in fire and smoke conditions. The provision of exit sign shall deem to include all related directional signs or series of signs for the exit routes as specified in clause 6.9.1 in BS 5266-1 to assist progression towards the exit as indicated by the exit sign.

To ensure the visibility and conspicuousness of the exit sign at all times including fire and smoke conditions, exit signs shall conform to all the following requirements as the minimum:

- (a) Exit signs shall be internally illuminated bearing the words “EXIT 出口” in block letters and characters of not less than 125mm high with 15mm wide strokes. Colour contrast for translucent surrounds to lettering shall be either one of the following combinations or as specified: -

<u>Colour</u>	<u>Contrasting Colour</u>
Green	White
White	Green

The colour combination selected shall be consistent throughout the same building. The colour shall not deteriorate or become faint throughout the service life and lasts for at least ten years.

- (b) The viewing distance of exit sign shall be not less than 25 m under ambient no smoke condition with and without normal lighting. The words shall be easily legible. Uniformity of luminance is the critical factor. The ratio of the maximum to the minimum luminance within either white or green colour area shall be not greater than 10:1.

- (c) The exit sign shall be easily visible and conspicuous in fire and smoke conditions. The viewing distance shall not be greatly reduced in the presence of smoke. Brightness of exit sign is the critical factor for visibility in fire and smoke conditions. The exit sign shall produce an average luminance of not less than 100 cd/m^2 unless otherwise specified. The ratio of the luminance at white area of the exit sign to the luminance at green area shall be not less than 5:1 and not greater than 15:1.

For exit sign of lower average luminance but which is capable of achieving equivalent or better viewing distance, visibility and legibility as the 100 cd/m^2 fluorescent exit sign in smoke condition (at optical density not less than 1 m^{-1}) with and without normal lighting, test reports carried out and certified by approved independent laboratory/testing body shall be provided for substantiation and approval.

The exit sign shall be capable of operating satisfactorily in the emergency mode at an ambient temperature of 70°C for at least half of the rated duration in emergency mode as specified in EN 60598-2-22.

The average luminance of the exit sign shall not decrease by more than 30% of its initial design value throughout its rated life in continuous operation when operated at ambient temperature between 5°C and 40°C .

Where it is shown on the Drawings that a sign cannot be installed immediately above an exit or when an exit sign is not easily visible from all positions within the premises served by the exit sign, additional internally illuminated directional signs or other signs conforming to BS 5499-1 and BS 5266-1 shall be supplied and installed at conspicuous locations to indicate the route to the exit. The graphic design of directional sign shall conform to FSDCOP, FSD Requirements and Circular Letters.

Where illuminated exit signs are supplied and installed in places like theatres, cinemas, etc. and other specified premises used for entertainment with normal operation and performance mostly conducted in dark environment, the maximum luminance of any patch on the exit sign shall not exceed 80 cd/m^2 . The average luminance shall however be not less than 25 cd/m^2 . Adequate number of exit signs and directional signs shall be provided in these places to enable the signs indicating the exit routes and progressing towards the exit to be seen at all positions.

Exit sign shall be safe in construction and use. It shall not create any harmful effect and not generate any additional risk and liability to the building occupants, workers and public visitors during the whole period of use.

The construction details, finishes, appearance and performance data of exit signs shall be submitted to the Architect for approval before fabrication. The Contractor shall allow modifying the appearance and details of the exit signs to the satisfaction of the Architect.

Illuminated exit signs shall be connected to the mains supply, and to the emergency power supply where available in the building and where indicated. All wirings for the exit signs commencing from the power supply points as shown on the Drawings shall be supplied and installed by the Contractor.

The luminaires for exit signs shall be maintained type. The number of lamps for each internally illuminated sign shall be not less than two. The failure of one or more lamps shall not interrupt the charging current to the battery and shall not cause an overload.

Where fluorescent lamp is used as the light source for exit sign, energy saving T5 fluorescent lamps or fluorescent lamps demonstrated to be equivalent or better in terms of functions and performance shall be provided. Where LED emitter is used as the light source for exit sign, the input current to each LED emitter shall be set at no more than the manufacturer's recommended design value for continuous operation in order to achieve the rated operation life. Exit sign shall be manufactured under quality control standard such as ISO9000/9002 or equivalent.

Self-contained exit signs shall be provided with secondary battery(s). Centrally supplied exit signs shall be connected to the central battery set of emergency lighting installation provided on the same floor or in the same premise.

Where batteries are provided, the design operating life of the batteries shall be not less than four years. In emergency mode without mains and emergency power supply, the batteries shall be capable of maintaining the operation of exit signs and related directional signs for not less than the period specified for emergency lighting installation in Section B11.1 and in any case shall be not less than two hours after mains failure.

The battery, battery charger, wiring, testing facilities, automatic changeover switch, accessories and related provisions of exit signs shall comply with relevant requirements of emergency lighting installation and the requirements as specified in Section B11.1, BS 5266-1 and BS 5266-7. Internal wiring and electronic circuits shall be protected from excessive current that may occur during fault conditions by incorporation of safety devices between the batteries and the electronic circuits. There shall be no switch between the batteries and the emergency lighting lamps other than the changeover device. Changeover from normal to emergency supply mode shall be set at 0.85 times rated supply voltage or below.

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