

BRITISH STANDARD

**BS 5489 :
Part 9 : 1990**

Road lighting

Part 9. Code of practice for lighting for urban centres and public amenity areas

Eclairage routier
Partie 9. Code de bonne pratique pour
l'éclairage des centres urbains et des zones
d'aménagement public

Strassenbeleuchtung
Teil 9. Beleuchtung von städtischen Zentren
und öffentlichen Freizeitflächen

Committees responsible for this British Standard

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Automobile Association
 British Lighting Association for the Preparation of Standards
 British Precast Concrete Federation Ltd.
 Chartered Institution of Building Services Engineers
 County Surveyors' Society
 Department of the Environment (Property Services Agency)
 Department of Transport
 Department of Transport (Transport and Road Research Laboratory)
 Electricity Supply Industry in England and Wales
 Institution of Civil Engineers
 Institution of Electrical Engineers
 Institution of Lighting Engineers
 Institution of Mechanical Engineers
 Lighting Industry Federation Ltd.
 Royal Automobile Club
 Royal Fine Art Commission
 Royal Institute of British Architects
 Royal Town Planning Institute
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Foreword

This Part of BS 5489 has been prepared under the direction of the Electrical Illumination Standards Policy Committee and is a revision of BS 5489 : Part 9 : 1969 which is withdrawn.

This Part of BS 5489 extends the code of practice on road lighting to those areas within villages, towns and cities which have an importance for social or other reasons, and for which lighting conditions different from those described in other Parts are considered desirable or appropriate.

Lighting is a fundamental part of the creation of the nighttime urban scene. Apart from the benefits of improved road safety and crime reduction, the creation of an attractive and pleasing nighttime environment can bring a sense of order to a space where it is lacking and enhance those buildings of significant architectural merit. This is a community benefit which can be realized in pleasure, social and commercial terms.

This revision was undertaken as part of a continuing process of updating all the Parts of BS 5489.

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

Section 1. General

0 Introduction

The general principles of road lighting are given in Part 1 of this code of practice. In urban and amenity areas, people should be attracted by a pleasant visual scene. During the hours of darkness, the surrounding environment and people need to be easily recognized. While business and commercial concerns are open, a relatively high level of lighting is required which can usually result from a combination of public and private lighting.

In view of the diverse nature of each particular site being considered no uniform method of lighting provision is suggested and it is most important to recognize that an individualized approach has to be made. For this reason this Part of the code of practice makes basic recommendations only in regard to the overall lighting provisions, related to each area.

In most of these areas, lighting is required on surfaces other than the horizontal. Light in many instances is particularly required on the faces of pedestrians to ease identification.

During the day it is important to ensure that all lighting equipment complements rather than detracts from the appearance of the area. As will be detailed later, all the physical and psychological criteria such as height of columns and size, design and light distribution of luminaires should be in accord. The general lighting should define the area rather than the traffic route. During the early evening when all shop window lights and signs are illuminated this should all be considered as a part of the lit environment. However it is important to be remember that during the late evening and during the night when shops are closed and the commercial light is reduced or extinguished, the public lighting should aid the security of shops and pedestrians' safety as well as the safe passage of any vehicular traffic. For an attractive and dynamic side to the general lighting installation, this can in many cases be left to the supplementary commercial lighting referred to above which if carefully controlled can introduce useful variations in overall lighting effects.

1 Scope

This Part of BS 5489 deals with the lighting of urban centres and public amenity areas for all road users. Vehicular and pedestrian traffic is involved and, therefore, all exterior public areas alongside, under or over roads are included. As visual orientation and location are important to both drivers and pedestrians within urban centres, the highlighting of landmarks at night is also discussed.

2 Definitions

For the purposes of this Part of BS 5489 the definitions given in BS 5225 : Part 1, BS 5489 : Parts 1 and 7 and BS 6100 : Subsection 2.4.1 apply, together with the following.

2.1 background luminance

The average luminance of the immediate surround of the object being viewed.

2.2 conservation area

A statutory, designated area of architectural merit requiring special attention to preserve its character.

2.3 cyclepath

A means of passage designed for cyclists.

2.4 footpath

A means of passage for pedestrians.

NOTE. Footpaths may be across open spaces or between buildings.

2.5 horizontal illuminance

The illuminance on a horizontal surface of the area being considered (in lx).

NOTE. In the text it is denoted by the symbol E_H .

2.6 luminaire

Apparatus which controls the distribution of light given by a lamp or lamps and which includes all the components necessary for fixing and protecting the lamps and for connecting them to the supply circuit.

2.7 maintained illuminance

The average illuminance on the reference surfaces ensured by appropriate lamp renewals and maintenance.

2.8 reflectance

The ratio of the light flux reflected from a surface to the light flux incident on it.

2.9 sparkle

The subjective contribution to the enhancement of the visual scene without causing visual discomfort or disabling glare.

2.10 floodlighting

Lighting, by projection, of a scene or object in order to increase considerably the illuminance relative to the surroundings.

2.11 isolux curve

Locus of points on a surface where the illuminance has the same value.

2.12 candela

The luminous intensity in a given direction of a source which emits monochromatic radiation of frequency 540×10^{12} Hz and of which the radiant intensity in that direction is 1/683 W/sr.

2.13 divergence of a beam

Angular extent of a beam, in a specified plane, which contains all the radius vectors of the polar curve of luminous intensity having lengths greater than a specified fraction of the maximum.

NOTE. Commonly used values of the specified fraction are 1/10 and 1/2; the divergence is then referred to as the one-tenth peak divergence or one-half peak divergence.

2.14 beam spread

One-tenth peak divergence.

Section 2. Lighting objectives: general

3 Objectives

This Part differs from most other Parts of this British Standard in that the efficient lighting of the road surface for traffic movement is not the only or main consideration. A balance with many other aspects has to be achieved.

Urban centres will serve many users, each with differing and sometimes conflicting lighting needs. A master plan should be drawn up which contains the various elements in order of their importance and emphasis. These may include many of the following which should, therefore, all be considered:

- (a) lighting design and choice of equipment in relation to the architectural scene and urban landscape;
- (b) lighting to provide safety for pedestrians from moving vehicles and to deter antisocial behaviour;
- (c) lighting commensurate with the character and volume of vehicular traffic (including cyclists);
- (d) control of illuminated advertisements in the interests of amenity;
- (e) control and integration of permanent floodlighting installations into the visual master plan;
- (f) control of temporary special lighting effects, such as floodlighting, festive decorations;
- (g) control of road and direction signs and their relationship with other illuminated material;
- (h) control and blending of lighting from both public and private sources e.g. bus shelters, telephone kiosks;
- (i) protection of residential developments from light pollution;
- (j) protection of installations from accidental or deliberate damage;
- (k) maintenance of installations.

4 Traffic

4.1 Categories

The relative balance of the needs listed in clause 3 will depend on the type of traffic which can be divided into the following categories:

- (a) primarily vehicular;
- (b) mixed vehicular and pedestrian;
- (c) wholly pedestrian.

4.2 Primarily vehicular traffic

The minimum level of provision should be that found in the appropriate category of BS 5489 : Part 2. However, there is a need for the lighting to accentuate the change in area use from that where the motorist has been the prime road user to where a growing number of pedestrian activities will be occurring. One way to mark this change of use is to alter the appearance of the lighting equipment to a more decorative type and/or change the colour of the light source. Whilst there will still be a need to define a traffic route, normally achieved by direction signs, the lighting should define the area and general street scene. This last point is of special relevance when considering the daytime appearance of the installation.

4.3 Mixed vehicular and pedestrian traffic

The principles of BS 5489 : Parts 2 and 3 should be regarded as minimum requirements. It is important that pedestrians should be able to recognize any potential danger as well as appreciate their surrounding environment.

Where pavements are narrow or subject to very considerable pedestrian traffic then consideration should be given to the removal of the lighting columns, and the use of wall brackets investigated as referred to in BS 5489 : Part 1. To the motorist, road surface luminance will still be important, but of equal importance will be the need to see and clearly define pedestrian movements on the adjacent pavements. For this, illuminance on other planes is of importance. For pedestrians there are more needs: to see the vehicles and to see each other. Luminaire brightness needs to be carefully controlled in order to avoid glare. It should be noted that this does not only apply to the public lighting installation but to the whole urban landscape of commercial signs, shop windows and the like.

At night, modest scale decorative floodlighting can assist traffic movement. A local landmark, known and used during the day as a means of orientation to both motorists and pedestrians, can be totally lost during the hours of darkness. This may be overcome by a purpose-designed floodlighting scheme, a single spotlight attached to an adjacent road lighting column or even by 'spill light' from strategically positioned road lighting luminaires (see clause 15).