

Road lighting —

Part 5: Code of practice for lighting for grade-separated junctions

Committees responsible for this British Standard

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- Automobile Association
- British Lighting Association for the Preparation of Standards (Britlaps)
- British Precast Concrete Federation Ltd.
- Chartered Institution of Building Services Engineers
- Council for the Protection of Rural England
- County Surveyors' Society
- Department of Transport
- Institution of Civil Engineering Surveyors
- Institution of Civil Engineers
- Institution of Electrical Engineers
- Institution of Lighting Engineers
- Institution of Mechanical Engineers
- Lighting industry Federation Ltd.
- Royal Fine Art Commission
- Scottish Office (Building Directorate)

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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the direction of the Electrical Illumination Standards Policy Committee and is a new edition of BS 5489-5:1989 which is withdrawn.

The 1989 edition reviewed the special problems of lighting grade-separated junctions and enhancements were made to the process of selecting the most appropriate type of installation. Recommendations related to the use of lighting by systems given in BS 5489-2 and BS 5489-3 and to high-mast techniques and reflected the need to provide good levels of illumination.

This edition incorporates editorial improvements but it does not reflect a full review or revision of the standard, which will be undertaken in due course.

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Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 10, an inside back cover and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

1 Scope

This Part of BS 5489 gives recommendations for the lighting of grade-separated junctions and provides guidance on the factors which may influence a choice between, or a combination of, lighting systems in accordance with BS 5489-2, or high-mast lighting. Guidance on the lighting of roundabouts, bridges, elevated roads, underpasses and subsidiary roads which may be associated with grade-separated junctions is given in BS 5489-3, BS 5489-4, BS 5489-6, BS 5489-7 and BS 5489-10.

NOTE The titles of the publications referred to in this standard are listed on the inside back cover.

2 Definitions

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

2.1

grade-separated junction

a road junction at which at least one road passes over another

2.2

high-mast lighting

a system of lighting for large areas in which masts giving a mounting height of 18 m, or more, carry clusters of high-output luminaires

3 Need for lighting

There are three main characteristics of grade-separated junctions where the provision of lighting should be considered:

- a) where some or all of the approach roads concerned are lit;
- b) where the junction design involves abrupt changes of horizontal or vertical curvature;
- c) where the junction is so complicated that lighting is essential for safety and night-time visibility.

4 General principles

4.1 Extent of lighting

Consideration should be given to the number of roads present and their relative dispositions. This may indicate the need for either lighting of individual roads or an integrated lighting system covering large areas.

4.2 Recommended values

Recommendations on values of luminance and uniformity ratios and limits of threshold increment (TI) are given in BS 5489-2, BS 5489-4, BS 5489-6 and BS 5489-7.

4.3 Deviations from luminance-based assessment

A luminance-based design should be applied as in BS 5489-2, where it can be calculated. Assessment of this design should be based on a limited number of prescribed observer positions. Other areas, such as sharp bends, junctions and changes in gradient, should be designed on an illuminance basis. Values of average illuminance in these other areas should be not less than those calculated or measured on the adjacent roads. The ratio of minimum illuminance to average illuminance should be not less than 0.5 for main carriageways and not less than 0.4 for slip roads, over any 60 m length of road.

4.4 Route merge points

At some grade-separated junctions, the roads associated with the junction may be widely spread. Lighting should be provided to cover all points where these roads merge with each other so that drivers are able to determine their intended route as clearly as possible. The luminance or illuminance of these merge areas should be not less than those values of lighting for the approach roads.

4.5 Route guidance

Whilst lighting can show the various routes available, it does not usually provide the information necessary to assist in the choice of route. Such information should normally be furnished by traffic signs. The road lighting and signing requirements should be considered jointly so that a coordinated layout is achieved without impairing daytime sight lines.

5 Aesthetic considerations

The important points to be considered in the design of lighting for grade-separated junctions are:

- a) the daytime appearance of road lighting schemes as described in BS 5489-1;
- b) that the column, bracket projections, luminaire, and, for high-mast lighting, the mast, headframe and luminaire assembly, should be of good integrated design;
- c) that the scheme as a whole should be compatible with its setting by day and night. At the approaches to a junction, it is desirable to avoid the appearance of a confusing array of columns or luminaires. Also, it is desirable in the design of complex layouts that involve both horizontal and vertical curves and changes of radius, to avoid using equipment with complex outlines. Where bracket projections are used, simple straight designs with a uniform uplift are to be preferred to avoid the tangled-web effect of curved bracket projections of varying projections and alignment.