Australian Standard®

GUIDE TO SPORTS LIGHTING

Part 1—GENERAL PRINCIPLES

This Australian standard was prepared by Committee LG/9, Sports Lighting. It was approved on behalf of the Council of the Standards Association of Australia on 7 June 1982 and published on 6 September 1982.

The following interests were represented on the committee responsible for the preparation of this standard:

Australian Council of Local Government Engineers Associations

Australian Electrical and Electronic Manufacturers Association

Confederation of Australian Industry

Department of Sport, Qld

Department of Sport and Recreation, N.S.W.

Department of Youth, Sport and Recreation, Vic.

Electricity Supply Association of Australia

Illuminating Engineering Societies of Australia

Recreation and Sport Office, S.A.

Royal Australian Institute of Architects

Royal Australian Institute of Parks and Recreation

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This Standard was issued in draft form for comment as DR 81200.

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Part 1—GENERAL PRINCIPLES

First published 1982

PUBLISHED BY STANDARDS AUSTRALIA
(STANDARDS ASSOCIATION OF AUSTRALIA)
1 THE CRESCENT, HOMEBUSH, NSW 2140

ISBN 0 7262 2625 4

PREFACE

This standard was prepared by the Association's Committee on Sports Lighting. Request for preparation of the standard came from the Illuminating Engineering Societies of Australia as a consequence of a national conference at which many organizations with an interest in sports lighting were represented.

The complete standard is in two main parts: Part 1 which outlines general principles and recommendations for the lighting of places, both indoors and outdoors, where sport is played; and Part 2 which is a collection of separately issued sections, setting out specific recommen–dations for the lighting of individual sports or sporting venues.

A section of Part 2 dealing with lighting for outdoor tennis has been published as AS 2560, Part 2.1. Other sections of Part 2 covering the lighting of sports halls, lighting for football (all codes), and lighting for netball and basketball are in course of preparation.

The committee has decided that the standard should not embrace lighting requirements for television broadcasting, in view of the fact that specialist advice is normally required for such installations and that, in any event, there are international recommendations* on this subject.

In the preparation of this standard, reference was made to the following publications:

IES Lighting Guide–Sports, Publication No 7 (1974), The Illuminating Engineering Society, London.

IES RP–6, Current Recommended Practice for Sports Lighting, The Illuminating Engineering Society, New York.

Various sports lighting recommendations published by the International Commission on Illumination (CIE), Paris.

Acknowledgement is made of the assistance derived from the abovementioned publications.

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* CIE Publication No 28, The Lighting of Sports Events for Colour Television Broadcasting, published by the International Commission on Illumination (CIE).

CONTENTS

STANDARDS ASSOCIATION OF AUSTRALIA

Australian Standard
GUIDE TO SPORTS LIGHTING

PART 1—GENERAL PRINCIPLES

SECTION 1. SCOPE AND GENERAL

1.1 SCOPE. This standard sets out recommendations for the lighting of places, both indoors and outdoors, where sport is played. It includes general principles and recommendations for sports lighting, descriptions of suitable types of lighting equipment, and methods for the assessment of measurement of sports lighting installations.

This standard and AS 2560, Part 2 together cater for the requirements of different levels of play as appropriate for each sport, i.e. for recreational, training, club, national and international play. The recommendations provide for the visual requirements of both players and spectators, but specific recommendations for television coverage of sporting events are not included.

NOTE: AS 2560, Part 2 comprises a collection of separate Sections which provide specific recommendations for the lighting of individual sports or sporting venues. Each Section of AS 2560, Part 2 is intended to be read in conjunction with the general recommendations of this standard.

1.2 APPLICATION. In order that this standard may be properly applied, the lighting requirements of sports areas should be considered at the design and layout stage of the planning of such venues, in order that lighting equipment and supporting structures may be located so as to provide the required uniformity of illumination, and to minimize glare and obstruction to players and play respectively.

For each type of sport there are preferred locations for the mounting of lighting equipment which are related to the nature of the game, the direction of play and other factors. Early consultation between the architect (venue designer) and the lighting engineer is desirable to ensure provision is made for suitable locations and mountings for lighting equipment. A completely satisfactory installation is often difficult to achieve when limited by physical constraints which can be avoided if lighting is considered at the design stage.

1.3 REFERENCED DOCUMENTS. The following standards are referred to in this standard:

AS 1170 SAA Loading Code

AS 1250 SAA Steel Structures Code

AS 1680 Code of Practice for Interior Lighting and the Visual Environment

AS 1798 Preferred Dimensions for Lighting Columns and Bracket Arms

AS 1939 Classification of Degrees of Protection Provided by Enclosures for Electrical Equipment

AS 2293 Emergency Evacuation Lighting in Buildings
Part 1—Installation Requirements
Part 2—Maintenance Procedures

AS 3000 SAA Wiring Rules

AS 3137 Approval and Test Specification for Luminaires (Lighting Fittings)

1.4 DEFINITIONS. For the purpose of this standard, the following definitions apply.

1.4.1 Quantities and Units of Light.

1.4.1.1 *Luminous flux*—the light emitted by a light source or luminaire, or received by a surface, irrespective of the directions in which it is distributed. The unit is the lumen (lm).

1.4.1.2 *Luminous intensity* (of a light source in a given direction)—the luminous flux emitted by the source in an infinitesimal cone containing the given direction divided by the solid angle of that cone. The unit is the candela (cd).

1.4.1.3 *Illuminance*—the luminous flux incident on a surface per unit area. The unit is the lux (lx); 1 lx = 1 lm/m^2. Symbol : *E*.

1.4.1.4 *Illumination*—the process of lighting an object.

1.4.1.5 *Service illuminance*—the mean illuminance throughout the life of a lighting installation averaged over a particular area.

NOTE: As explained in Clause 3.2.5, the illuminance from a given installation will decrease with time from several causes. The service value, defined as an average throughout life, will thus depend on the initial value, the rate of depreciation and the frequency of maintenance.

1.4.1.6 *Luminance* (at a point of a surface and in a given direction)—the luminous intensity per unit projected area of a surface; e.g. if a very small portion of a surface has a luminous intensity of 1 cd in a particular direction, and if the orthogonal projection (on a plane perpendicular to the given direction) of that portion has an area of *A*, the luminance in that direction is 1/*A* candelas per unit area. The unit is the candela per square metre (cd/m^2).

1.4.1.7 *Brightness* (*luminosity*)—the attribute of visual sensation according to which a surface appears to emit or reflect more or less light.

NOTE: This is a subjective effect which cannot be measured in absolute units, and the term should only be used to describe the appearance of a source or surface.

1.4.2 Luminaires and Lighting Systems.

1.4.2.1 *Luminaire*—apparatus (fixed or portable) which distributes, filters or transforms the light given by a lamp or lamps and which includes all the items necessary for fixing and protecting these lamps and for connecting them to the supply circuit. It does not include permanent parts of a building such as a ceiling or other structural element.