AS/NZS 1158.2:2020

Australian/New Zealand Standard™

Lighting for roads and public spaces

Part 2: Computer procedures for the calculation of light technical parameters for Category V and Category P lighting

STANDARDS Australia

STANDARDS NEW ZEALAND PAEREWA AOTEAROA

This Joint Australian/New Zealand Standard was prepared by Joint Technical Committee LG-002, Lighting for Road and Public Spaces. It was approved on behalf of the Council of Standards Australia on 20 March 2020 and by the New Zealand Standards Approval Board on 4 March 2020.
This Standard was published on 27 March 2020.

The following are represented on Committee LG-002:

Astronomical Society of Australia
Australian Industry Group
Australian Local Government Association
Centre for Pavement Engineering Education
CIE Australia
Consumers Federation of Australia
Department of Planning, Transport and Infrastructure, SA
Department of Transport and Main Roads, Qld
Energy Efficiency and Conservation Authority, New Zealand
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Standards are living documents which reflect progress in science, technology and systems. To maintain their currency, all Standards are periodically reviewed, and new editions are published. Between editions, amendments may be issued. Standards may also be withdrawn. It is important that readers assure themselves they are using a current Standard, which should include any amendments which may have been published since the Standard was purchased.

Detailed information about joint Australian/New Zealand Standards can be found by visiting the Standards Web Site at www.standards.org.au or Standards New Zealand web site at www.standards.govt.nz and looking up the relevant Standard in the on-line catalogue.

For more frequent listings or notification of revisions, amendments and withdrawals, Standards Australia and Standards New Zealand offer a number of update options. For information about these services, users should contact their respective national Standards organization.

We also welcome suggestions for improvement in our Standards, and especially encourage readers to notify us immediately of any apparent inaccuracies or ambiguities. Please address your comments to the Chief Executive of Standards Australia or the New Zealand Standards Executive at the address shown on the back cover.

This Standard was issued in draft form for comment as DR AS/NZS 1158.2:2017.

Australian/New Zealand Standard™

Lighting for roads and public spaces

Part 2: Computer procedures for the calculation of light technical parameters for Category V and Category P lighting

Originated in Australia as AS 1158.2—1986.
Originated in New Zealand as AS/NZS 1158.2:2005.
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PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee LG-002, Lighting for Roads and Public Spaces, to supersede AS/NZS 1158.2:2005.

The objective of this Standard is to specify the computer-based design procedures applicable to Category V and Category P lighting for the calculation of light technical parameters (LTPs), as required, for the design or evaluation of road lighting in accordance with the requirements of AS/NZS 1158.1.1 and AS/NZS 1158.3.1.

This Standard forms Part 2 of the AS/NZS 1158 series, which covers lighting schemes for the generality of roads and outdoor public areas.

The AS/NZS 1158 series consists of the following:

AS/NZS
1158 Lighting for roads and public spaces
1158.0 Part 0: Introduction
1158.1.1 Part 1.1: Vehicular traffic (Category V) lighting—Performance and installation design requirements
1158.1.2 Part 1.2: Vehicular traffic (Category V) lighting—Guide to design, installation, operation and maintenance
1158.2 Part 2: Computer procedures for the calculation of light technical parameters for Category V and Category P lighting (this Standard)
1158.3.1 Part 3.1: Pedestrian area (Category P) lighting—Performance and installation design requirements
1158.4 Part 4: Lighting of pedestrian crossings
1158.5 Part 5: Tunnels and underpasses

SA/SNZ TS
1158.6 Part 6: Luminaires—Performance

The following document also relates to road and street lighting:

AS/NZS 60598.2.3, *Luminaires Part 2.3: Particular requirements — Luminaires for road and street lighting (IEC 60598-2-3. Ed.3.1 (2011) MOD).*

For each lighting subcategory described in this series of Standards the light technical parameters (LTPs) and their prescribed values are both necessary and sufficient for the particular application. Conformance with the relevant Standard will be achieved by meeting all the required values of the LTPs for the designated subcategory. A higher quality of lighting scheme can be achieved within a subcategory by, for example, increasing the minimum level of uniformity or reducing the glare allowable, or both.

The significant technical changes that have been made in this Standard in relation to the previous publication include the following:

(a) Appendix B revised to include test calculations for LED luminaires.

(b) Appendix C rewritten to provide guidance and requirements for software vendors.

(c) Appendix D revised to show road surface reflectance tables for both Australia and New Zealand.

(d) Corrections to formulae.

(e) For New Zealand users, the previous NZN4 and NZR2 r-tables (both with $Q_0 = 0.09$) have been replaced by a single r-table R2 with a $Q_0 = 0.07$. This change uses the results of recent research to better align the r- table with road surfaces in use in New Zealand today.

The source code (SAA STAN) and shell program (STANSHELL) are available to purchasers of this Standard. Purchasers are not limited to the accompanying SAA STANSHELL software when applying this Standard. Alternative shell programs, using the SAA STAN source code, may be used to achieve conformance with the requirements of this Standard.

The source code and shell program are available to purchasers of this Standard in downloadable zipped format. Delivery methods of the product containing the source code and related program may change over time.

The source code and shell program in the accompanying product are only permitted to be used, reproduced or modified by an authorized user in a way that meets the requirements of this Standard. They are not to be used for any other purposes.

The terms 'normative' and 'informative' have been used in this Standard to define the application of the appendices to which they apply. A 'normative' appendix is an integral part of a Standard, whereas an 'informative' appendix is only for information and guidance.

Statements expressed in mandatory terms in notes to figures are deemed to be requirements of this Standard.

This Standard includes a commentary on some of the clauses. The commentary directly follows the relevant clause, is designated by 'C' preceding the clause number and is printed in italics in a box. The commentary is for information and guidance and does not form part of the Standard.

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SECTION 1 SCOPE AND GENERAL

1.1 SCOPE

This Standard specifies the computer-based design procedures applicable to Category V and Category P lighting for the calculation of light technical parameters (LTPs), as required, for the design or evaluation of road lighting in accordance with the requirements of AS/NZS 1158.1.1 and AS/NZS 1158.3.1.

It gives the basic formulae for the LTPs and the associated grid of points (i.e. the calculation field) over which the calculation is to be made. The source code of the computer program, designated SAA STAN, together with a shell program designated STANSHELL, is given for the calculation of the LTPs for Category V lighting on straight sections of road.

This Standard also includes the general requirements for computer programs used to calculate LTPs for other road and public space elements in both Category V and Category P lighting, luminaire light distribution and road surface reflection input data and computer program test data.

NOTES:

1 Refer to AS/NZS 1158.1.1 and AS/NZS 1158.3.1 for information on the types of road for which Category V and Category P lighting, respectively, are appropriate.

2 It is expected that persons using this Standard will have some expertise in lighting design and be familiar with the nature of computer-generated data.

3 The requirements regarding the use of the program SAA STAN are described in Section 4 and other relevant information is given in Appendices A, B and C.

1.2 NORMATIVE REFERENCES

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document:

NOTE: Documents referenced for informative purposes are listed in the Bibliography.

AS/NZS

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