AS 5100.5 Supp 1—2008

AS 5100.5 Supplement 1—2008

Bridge design—Concrete—Commentary (Supplement to AS 5100.5—2004)

This is a preview. Click here to purchase the full publication.

This Australian Standard Supplement was prepared by Committee BD-090, Bridge Design. It was approved on behalf of the Council of Standards Australia on 23 May 2008.
This Supplement was published on 21 August 2008.

The following are represented on Committee BD-090:

- Association of Consulting Engineers Australia
- Australasian Railway Association
- AUSTROADS
- Bureau of Steel Manufacturers of Australia
- Cement Concrete & Aggregates Australia—Cement
- Engineers Australia
- Queensland University of Technology
- Steel Reinforcement Institute of Australia
- University of Western Sydney

Standards Australia wishes to acknowledge the participation of the expert individuals that contributed to the development of this Standard through their representation on the Committee.

Keeping Standards up-to-date

Australian Standards® are living documents that 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Standards may also be withdrawn.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 that may have been published since the Standard was published.

Detailed information about Australian Standards, drafts, amendments and new projects can be found by visiting **www.standards.org.au**

Standards Australia welcomes suggestions for improvements, and encourages readers to notify us immediately of any apparent inaccuracies or ambiguities. Contact us via email at **mail@standards.org.au**, or write to Standards Australia, GPO Box 476, Sydney, NSW 2001.

This is a preview. Click here to purchase the full publication.

AS 5100.5 Supplement 1—2008

Bridge design—Concrete—Commentary (Supplement to AS 5100.5—2004)

Originated as HB 77.5 Supp 1—1996.
Revised and designated as AS 5100.5 Supp 1—2008.

COPYRIGHT

© Standards Australia

All rights are reserved. No part of this work may be reproduced or copied in any form or by any means, electronic or mechanical, including photocopying, without the written permission of the publisher.

Published by Standards Australia GPO Box 476, Sydney, NSW 2001, Australia

ISBN 0 7337 8871 8

This is a preview. Click here to purchase the full publication.

PREFACE

This Commentary was prepared by the Standards Australia Committee BD-090, Bridge Design, to supersede HB 77.5 Supp 1, *Australian Bridge Design Code—Concrete—Commentary (Supplement to SAA HB 77.5—1996)*.

The objective of this Commentary is to provide users with background information and guidance to AS 5100.5.

The Standard and Commentary are intended for use by bridge design professionals with demonstrated engineering competence in their field.

In this Commentary, AS 5100.5—2004 is referred as 'the Standard'.

The clause numbers and titles used in this Commentary are the same as those in AS 5100.5, except that they are prefixed by the letter 'C'. To avoid possible confusion between the Commentary and the Standard, a Commentary clause is referred to as 'Clause C…..' in accordance with Standards Australia policy.

This is a preview. Click here to purchase the full publication.

CONTENTS

Page

This is a preview. Click here to purchase the full publication.

Page

This is a preview. Click here to purchase the full publication.

Page

This is a preview. Click here to purchase the full publication.

This is a preview. Click here to purchase the full publication.

STANDARDS AUSTRALIA

Australian Standard

Bridge design—Concrete—Commentary (Supplement to AS 5100.5—2004)

SECTION C1 SCOPE AND GENERAL

C1.1 SCOPE AND APPLICATION

C1.1.1 Scope

The Standard sets out minimum provisions and criteria. Design engineers should always consider whether or not these will be sufficient for their particular structure, both from the point of view whether the given criteria are stringent enough and whether or not other considerations, not mentioned therein, need to be taken into account.

The provisions have been formulated on the basis of typical bridge structures. Design engineers are alerted to the fact that they should exercise engineering judgement when applying them to other structures. For example it may be appropriate to use the criteria for concrete properties for the concrete in a tunnel but the criteria for fire resistance may not be used, as the type of fire, fire load and structure behaviour under fire may be quite different.

In the preparation of a Standard such as this, a certain level of knowledge and competence is assumed. It was assumed that the predominant users of the Standard would be professionally qualified civil or structural engineers experienced in the design of concrete bridge structures, or equally qualified but less experienced persons working under their guidance. It is intended that the Standard be applied and interpreted primarily by such persons. It should be noted that the Standard is neither: a textbook, a design handbook nor a Guide to good practice. Users should consult other references for this type of information.

C1.1.2 Application

The lower limit on the characteristic compressive strength of concrete has been imposed because strengths less than this are not considered suitable for structural use. The upper limit has been imposed taking into account test data available on the behaviour of members made using higher strength concrete. It should be noted that within the Standard, concrete properties and design equations vary depending on the strength adopted.

Concretes made from naturally occurring Australian coarse aggregates have surface-dry densities falling in the range 2100 kg/m^3 to 2800 kg/m^3. Lightweight structural concretes in Australia generally use naturally occurring sands combined with manufactured lightweight coarse aggregates, for which the surface-dry density is seldom less than 1800 kg/m^3. Density limits have been set accordingly.

The reinforcing steel Standard AS/NZS 4671 refers to three ductility classes of which two Class L and N are commonly available in Australia. The third, Class E, is formulated to meet the requirements for earthquake design in New Zealand and is normally not available in Australia. Thus provisions are given for only the two former classes.

The provisions of the Standard may be used for the design of structures with unbonded tendons, provided the design engineer recognizes the inherent differences in the behaviour of these structures and those with bonded tendons under both serviceability and ultimate limit states.

This is a preview. Click here to purchase the full publication.
© Standards Australia

C1.2 REFERENCED DOCUMENTS

The Standards listed in Appendix A are subject to revision from time to time. A check should be made with Standards Australia (see its website www.standards.org.au) as to the currency of any Standard referenced in the text.

C1.3 DEFINITIONS

Technical definitions are provided in Clause 1.3 of the Standard. Some technical definitions that are applicable to only one Section are given in the Section in which they are relevant.

C1.4 NOTATION

The basis of the notation is generally in accordance with ISO 3898, *Bases for Design of Structures—Notations—General Symbols*. Standards Australia's policy is to use ISO recommendations on notation, wherever practicable, in structural design Standards such as AS/NZS 1170, AS 2327, AS 3600, AS 4100 and AS/NZS 4600.

The notation used in the Standard is consistent with AS 3600. This may result in some of the notation having a different definition to that of other parts of AS 5100.

C1.5 USE OF ALTERNATIVE MATERIALS OR METHODS

C1.5.1 General

(No Commentary)

C1.5.2 Use of other materials or methods

Where alternative materials or methods are to be used, the design engineer is required to seek approval from the appropriate authority.

C1.5.3 Existing structures

The evaluation of an existing structure from drawings should be undertaken with caution as the size and condition of the members and materials together with the properties of the materials may be significantly different to those indicated in the drawings. Actual bridge details and condition should be clarified by field inspection (see AS 5100.7 (Ref. 1)).

C1.5.4 Lightweight structural concrete

Lightweight structural concrete should be limited to material made with lightweight coarse and normal weight fine aggregates.

If lightweight structural concrete is to be used, due account should be taken of the variation of concrete properties from normal weight concrete and the effect on serviceability limit states.

C1.6 DESIGN

The information applicable to most members may be shown in only one of the drawings, usually the first sheet, or cited in the project specification as appropriate.

C1.6.1 Design data

The relevant requirements from AS 5100.2 should be included in the drawings.

C1.6.2 Design details

The class of formwork required for the specified surface finish should be as required by the authority. If the class of formwork is not specified, reference should be made to AS 3610.

Where a casting procedure has been assumed in the design process, that casting procedure should be shown in the drawings.

© Standards Australia
This is a preview. Click here to purchase the full publication.