AS 3600—2009 Supp 1:2014

AS 3600 Supplement 1:2014

Concrete structures—Commentary (Supplement to AS 3600—2009)

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PREFACE

This Commentary was prepared by Standards Australia Committee BD-002, Concrete Structures, to supersede AS 3600 Supp 1—1994. It provides detailed background information to the fourth edition of the Concrete Structures Standard, AS 3600–2009. This is the third edition of the Commentary, which was first published in 1990. While it is intended that this Commentary be read in conjunction with AS 3600–2009, it does not form an integral part of that Standard.

The objectives of this Commentary are to—

(a) provide background reference material to the Clauses of the Standard;

(b) indicate the origin of particular requirements;

(c) indicate departures from previous practice; and

(d) explain the application of certain Clauses.

The paragraph numbers of this Commentary are prefixed with the letter 'C' and refer directly to the respective clause numbers of AS 3600 (e.g. C1.1 refers to Clause 1.1).

To avoid possible confusion between Commentary and Standard Clauses that are cross-referenced within the text, Commentary clauses are referred to as 'Paragraph C...'. This is in accordance with Standards Australia policy.

Where appropriate, each Section of the Commentary concludes with a list of references that are cross-referenced numerically in the text, e.g. (Ref. 6) or (Refs. 6, 7 and 8). In some sections, additional references for further reading, or as a lead to specialist literature, have also been listed.

As noted in the Preface to AS 3600—2009, the new edition of the Standard is a revision of the third edition, AS 3600—2001, which incorporates Amendments published in 2001 and 2004, as well as changes and updates that take account of the significant developments that have occurred over the past decade in construction practice and theory. The main changes are listed in the Preface to AS 3600—2009. Background information on these changes is given in this new edition of the Commentary, as well as on Clauses that have remained largely unchanged from the previous edition of the Standard. The opportunity has also been taken to include improvements suggested in the interim by users.

Like the Standard itself, this Commentary is an ongoing work-in-progress. Suggestions for improvements to both the Standard and to the Commentary, in regard either to content or to clarity of wording, are therefore welcomed by Standards Australia.

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SECTION C1 SCOPE AND GENERAL

C1.1 SCOPE AND APPLICATION

C1.1.1 Scope

Most concrete structures in Australia are designed and constructed to comply with the National Construction Code (NCC) (Ref. 1) and for such structures the design requirements are set out in the NCC and in AS/NZS 1170.0 (Ref. 2). The' Concrete structures' Standard, AS 3600—2009, which sets out minimum provisions for the design and construction of concrete structures in Australia, is called up by the NCC so that compliance with the requirements of the BCA is deemed to be satisfied by following the provisions of this Standard.

AS 3600—2009 covers reinforced and prestressed concrete structures. It does not provide rules for all plain concrete structures, as was the case in previous editions; only rules for plain concrete footings and pedestals are given. The exclusion of mass concrete structures recognizes the fact that they are generally outside the range of normal structures. The treatment of plain concrete members in the Standard is thus limited, and other design criteria, not covered therein, will usually need to be considered in the design of plain concrete members and structures.

The first Note to Clause 1.1.1 points out that much of the content of the Standard is based on general principles and, therefore, may be applicable to design situations not specifically covered by the Standard.

In the preparation of a Standard such as this, a certain level of knowledge and competence of the users has to be assumed. As indicated by the second Note, it is assumed that the users would be professionally qualified civil or structural engineers experienced in the design of concrete structures, or equally qualified but less experienced persons working under their guidance. Therefore, it is intended that the Standard be applied and interpreted primarily by such persons. Similarly, it is intended that the construction of the structure be carried out and supervised by suitably qualified persons using appropriate quality control systems.

C1.1.2 Application

This Clause places various restrictions on the materials that can be used in conjunction with AS 3600—2009.

A lower limit on concrete compressive strength of 20 MPa is imposed because strength grades less than this are not normally suitable for structures. In AS 3600—2009, the upper limit for the concrete compressive strength is 100 MPa, a strength that can be achieved in commercial premix production plants around Australia and for which concrete properties are specified in the Standard. The design procedures in the Standard apply to structures with concrete strengths within these limits. This is not to suggest that concretes with greater strength cannot be produced commercially or not be used in the construction of concrete structures; however, when used in such situations, the applicability of the rules given in the Standard needs to be checked.