AS 3610.1:2018

Formwork for concrete

Part 1: Specifications

This Australian Standard® was prepared by Committee BD-043, Formwork. It was approved on behalf of the Council of Standards Australia on 8 March 2018.
This Standard was published on 16 April 2018.

The following are represented on Committee BD-043:

- Australian Council of Trade Unions
- Australian Industry Group
- Australian Steel Institute
- Concrete Institute of Australia
- Concrete Masonry Association of Australia
- Consult Australia
- Engineered Wood Products Association of Australasia
- Engineers Australia
- Forest and Wood Products Australia
- Master Builders Australia
- National Precast Concrete Association Australia
- SafeWork NSW
- University of Sydney

This Standard was issued in draft form for comment as DR AS 3610.1:2017.

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 and through the public comment period.

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Standards may also be withdrawn.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.

Australian Standard®

Formwork for concrete

Part 1: Specifications

First published in part as AS CA70—1971.
AS CA72.1 first published in 1971.
AS 1082 first published in 1971.
AS CA70—1971 revised and redesignated AS 1509—1974.
AS CA72.1—1971 revised and redesignated AS 1510.1—1974.
AS 1082—1971, AS 1509—1974 and AS 1510.1—1974 revised, amalgamated and redesignated as AS 3610—1990.
Second edition 1995.
AS 3610—1995 revised and redesignated, in part, AS 3610.1—2010.
This edition 2018.

Published by SAI Global Limited under licence from Standards Australia Limited, GPO Box 476, Sydney, NSW 2001, Australia

ISBN 978 1 76072 034 6

PREFACE

This Standard was prepared by the Standards Australia Committee BD-043, Formwork, to supersede, in part, AS 3610.1—2010, *Formwork for concrete*, Part 1: *Documentation and surface finish*.

The objective of this Standard is to set out requirements for the specification and documentation of architectural, structural and construction information necessary for formwork design and construction. This Standard also sets out requirements for documentation of formwork designs and information on proprietary formwork. It also sets out the requirements for the assessment and evaluation of completed surface quality and repairs.

The full review of AS 3610 series is in progress and therefore it was considered appropriate to issue the Standard in two Parts:

(a) AS 3610.1, *Formwork for concrete*, Part 1: Formwork specification (this Standard), focuses on surface finish and covers various types of documentation applicable to formwork. This Part was revised and published in 2010. This latest revision includes relevant commentary clauses from AS 3610 Supplement 2—1996 Formwork for concrete—Commentary

(b) AS 3610.2, will cover aspects of formwork and falsework design, construction and testing, including Section 4 of AS 3610.1—2010.

NOTE: At the time of publication, this Standard is still under review.

AS 3610.2, AS 3610—1995 and AS 3610.1 will coexist. Sections 2, 3 and 5 in this Standard (AS 3610.1) supersede Sections 2 and 3, as well as Clauses 4.7 and 5.6 of AS 3610—1995.

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

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

This Standard incorporates 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 only and does not form part of this Standard.

CONTENTS

Page

STANDARDS AUSTRALIA

Australian Standard
Formwork for concrete

Part 1: Specifications

SECTION 1 GENERAL

1.1 SCOPE

This Standard sets out—

(a) the requirements for the documentation of architectural, structural and construction information necessary for formwork design and construction;

(b) architectural requirements and procedures covering the specification of the quality, tolerance, colour, and evaluation of off-form or as-repaired in situ or precast concrete surfaces; and

(c) structural requirements that—

  (i) are critical to the stability, strength and serviceability of the permanent structure during construction and once completed; and

  (ii) affect the formwork design and construction.

This Standard does not apply to unformed surfaces. The requirements in this Standard apply to plain concrete surfaces left off-form or prior to application of surface treatment or coating. This Standard does not cover the specification of textured finishes, surface treatment, coatings or paint.

1.2 APPLICATION

Project, construction, formwork and proprietary documentation shall conform with Section 2.

The physical quality, colour control, evaluation and repairs of the concrete surface, as well as test panels, shall conform with Section 3.

Structural requirements for limitations on construction loads, multistorey shoring, minimum stripping times and procedures, construction sequence and other specific information are set out in Section 4.

Appendix A provides formwork importance levels in different situations.

Appendix B provides blowhole photographs which are intended for use in the evaluation of completed work.

Appendix C provides guidance on the documentation of formwork stripping times.

Appendix D provides general commentary on Section 3.

Appendix E provides an informative glossary of terms.

1.3 NORMATIVE REFERENCES

The following are normative documents referenced in this Standard.

AS
3600 Concrete structures

3610 Formwork for concrete

1.4 ALTERNATIVE CONCEPTS AND MATERIALS

Alternative concepts, materials, designs, methods of assembly and procedures, which are not mentioned in this Standard, may be used provided it can be demonstrated that the resulting formwork conforms to the requirements specified in this Standard.

1.5 DEFINITIONS

For the purpose of this Standard, the definitions below apply.

NOTE: For guidance and informative purposes, a glossary of terms is listed in Appendix E.

1.5.1 Administrative definitions

1.5.1.1 *Acceptable*

Conforms with the criteria set out in this Standard.

1.5.1.2 *Back form*

A form for a concrete surface that is totally concealed in the finished structure.

1.5.1.3 *Bearer*

Part of soffit form framing. A primary member supported on formwork supports or hangers and carrying joists.

1.5.1.4 *Cantilever forms*

Forms that are solely supported by anchors embedded in the exposed face of previously placed concrete.

1.5.1.5 *Competent person*

A person who has acquired through training, qualification or experience or a combination of these, the knowledge and skills that enable the person to safely and effectively perform the task required.

1.5.1.6 *Construction documentation*

Documents that set out information on the planned construction method for the permanent structure, which are required for the formwork design and construction.

1.5.1.7 *May*

Indicates the existence of an option.

1.5.1.8 *Project documentation*

Drawings, specifications and associated documents that set out the information required for the construction of the permanent structure.

1.5.1.9 *Proprietary documentation*

Brochures, catalogues, drawings, specifications and associated documents that detail proprietary formwork.

1.5.1.10 *Shall*

Indicates that a statement is mandatory.

1.5.1.11 *Should*

Indicates a recommendation.

1.5.1.12 *Soldier*

Part of a side form. A vertical primary member supported by form ties or form bracing.

1.5.1.13 *Waler*

Part of a side form, either—

(a) a horizontal primary member supported by form ties or form bracing; or

(b) a horizontal secondary member.

1.5.2 Technical definitions

1.5.2.1 *Action*

Set of concentrated or distributed forces acting on a structure (direct action), or deformation imposed on a structure or constrained within it (indirect action).

NOTE: The term 'load' is also often used to describe direct actions.

1.5.2.2 *Backpropping*

A process by which adjustable supports are placed to give support to the cast in situ concrete during the removal of the soffit formwork, which may also remain in position to act as multistorey shoring (see Figure 1.5.2.2).

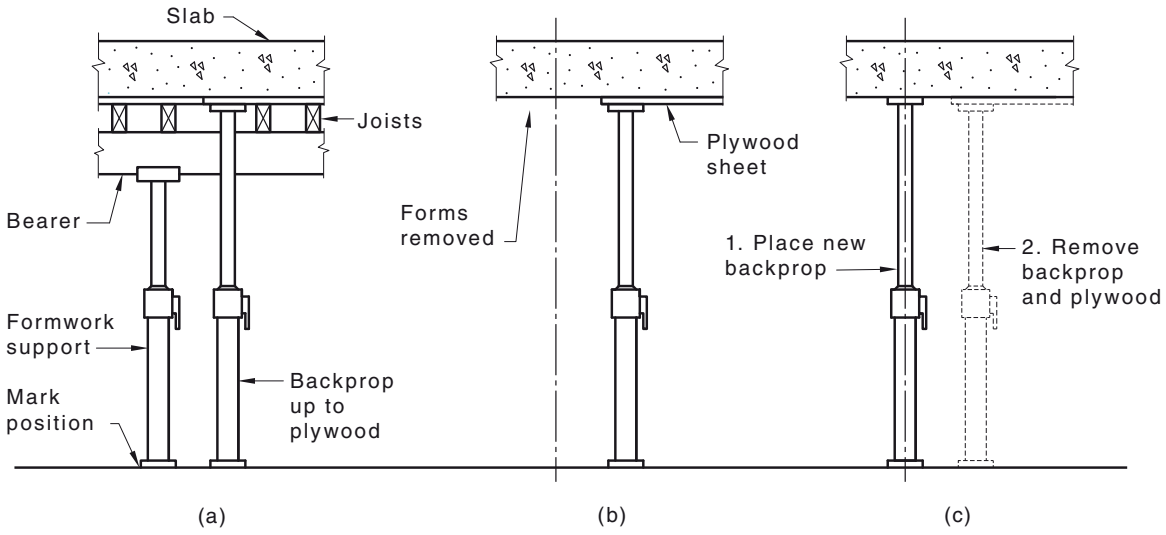

FIGURE 1.5.2.2 EXAMPLE OF BACKPROPPING

1.5.2.3 *Blowhole*

Shallow pocket or void in the formed surface of the concrete caused by a bubble of fluid or air trapped against the form face.

1.5.2.4 *Bracing*

Members that normally do not support gravity loads but are required to provide lateral stability or restraint to other members or to transfer horizontal actions to anchorage or reaction points.

1.5.2.5 *Camber*

The intentional curvature of formwork prior to concrete placement to compensate for the deflection of the formwork or element under load.

1.5.2.6 *Cast in situ concrete*

Concrete that is placed, as plastic concrete, in its final location.

1.5.2.7 *Class of surface finish*

Standard of the untreated concrete surface of the formed concrete.

NOTE: Also known as 'class'.

1.5.2.8 *Colour control*

The limitation of tonal range of cast in situ concrete and precast concrete.

1.5.2.9 *Component*

A structural member.

1.5.2.10 *Construction joint*

A joint, including a joint between precast segments, that is located for the convenience of construction.

1.5.2.11 *Deflection*

Flexural movement of a structural member or assembly in response to the forces acting on it.

1.5.2.12 *Design service load*

The permanent and imposed loads for which the design of the permanent structure is based.

1.5.2.13 *Deviation*

The divergence from the specified position.

1.5.2.14 *Element*

That concrete portion of the permanent structure defined by the formed concrete faces, mandatory joints, construction joints and the completed concrete surfaces, which is cast in one continuous operation.

1.5.2.15 *Falsework*

A part of the formwork that supports the form and transfers all the loads to a stable surface(s) prior to, during and following concrete placement.

1.5.2.16 *Flatness*

The variations in the formed surface resulting from movement of the formwork.

1.5.2.17 *Footing*

A part of the falsework in direct contact with, and transmitting load to, the supporting foundation.

NOTE: A footing may be purpose built, such as a simple sole plate, concrete footing or pile. Alternatively, an element may be used as a footing.

1.5.2.18 *Form*

A part of the formwork that contains and moulds the cast in situ concrete to the required dimensions.

NOTE: This includes the form face and framing.

1.5.2.19 *Form face*

That part of the form which comes in direct contact with the plastic concrete.