Australian Standard®

Precast reinforced concrete box culverts

Part 2: Large culverts (from 1500 mm span and up to and including 4200 mm span and 4200 mm height)

This Australian Standard was prepared by Committee CE/26, Precast Reinforced Concrete Box Culverts. It was approved on behalf of the Council of Standards Australia on 5 December 1995 and published on 5 April 1996.

The following interests are represented on Committee CE/26:

Association of Consulting Engineers, Australia

Australian Chamber of Commerce and Industry

Australian Geomechanics Society

AUSTROADS

Cement and Concrete Association of Australia

Concrete Pipe Association of Australasia

Institute of Municipal Engineering, Australia

Institution of Engineers, Australia

National Precast Concrete Association

Railways of Australia

Swinburne Institute of Technology

University of Adelaide

University of Sydney

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PREFACE

This Standard was prepared by the Standards Australia Committee CE/26 on Precast Reinforced Concrete Box Culverts.

In the course of preparation of this Standard, the Committee found that there was support for specifying design by prototype testing as well as for specifying limit states design using load factors. The Committee agreed that both criteria be specified as alternative but not coincidental as a basis for design and acceptance of the culverts and culvert units.

The objective of this Standard is to set out minimum requirements for the design, testing, manufacture and installation of precast reinforced concrete rectangular box culverts of span 1500 mm or greater. AS 1597.1—1974, *Precast reinforced concrete box culverts*, Part 1: *Small culverts not exceeding 1200 mm width and 900 mm depth*, covers box culverts up to 1200 mm span and 900 mm height. It is intended to revise AS 1597.1 and to extend the range of that Standard to include box culverts up to 1200 mm span and 1200 mm height.

The term 'culvert cell' is commonly used to refer to a complete conduit made up of a number of units placed end-to-end. For the purposes of this Standard, the term 'culvert' is used to refer to a single cell or a multiple cell structure, and associated link slabs and base slabs.

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.

CONTENTS

Page

Page

First published as AS 1597.2— 1996.

STANDARDS AUSTRALIA

Australian Standard

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SECTION 1 SCOPE AND GENERAL

1.1 SCOPE This Standard sets out minimum requirements for the design, testing, manufacture and installation of precast reinforced concrete rectangular box culverts for conveying water not under pressure, and for carrying roadway and railway loadings permitted by Australian road and railway authorities.

Design requirements are based on the methods of limit state design, using theoretical strength and serviceability calculations, or prototype testing.

This Standard is applicable to rectangular precast culvert units having a maximum length of 3600 mm, a maximum height of 4200 mm and a span from 1500 mm to 4200 mm and having a height of fill over the top of the culvert unit not exceeding 10 m.

NOTES:

1 Guidelines to purchasers on requirements that may need to be agreed upon at the time of calling for tenders or quotations are detailed in Appendix A.

2 Methods for demonstrating compliance with this Standard are given in Appendix B.

3 For precast reinforced box culverts of internal dimensions exceeding 4200 mm span or height, additional design considerations may be necessary. Additional design considerations are required for special culverts, e.g. skewed ends, culvert units with large holes, culverts subject to loading other than standard roadways and railways loadings.

1.2 APPLICATION All large precast reinforced concrete rectangular box culverts designed, manufactured, tested and installed in accordance with this Standard shall comply with the relevant requirements of Sections 1 to 6, with the alternative requirements as applicable.

1.3 REFERENCED DOCUMENTS The following documents are referred to in this Standard:

AS	
1012	Methods of testing concrete
1012.1	Part 1: Sampling of fresh concrete
1012.8	Part 8: Method for making and curing concrete compression, indirect tensile and flexure test specimens, in the laboratory or in the field
1012.9	Part 9: Method for the determination of the compressive strength of concrete specimens
1199	Sampling procedures and tables for inspection by attributes
1289	Methods of testing soils for engineering purposes
1289.5	Part 5: Soil compaction and density tests
1289.5.1.1	Determination of the dry density/moisture content relation of a soil using standard compactive effort