AS 1597.2 Supplement 1—1997

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)—Commentary

(Supplement to AS 1597.2—1996)

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 24 January 1997 and published on 5 March 1997.

The following interests are represented on Committee CE/26:

Association of Consulting Engineers, Australia

Australasian Railway Association

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

Swinburne Institute of Technology

University of Adelaide

University of Sydney

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PREFACE

This Commentary was prepared by the Standards Australia Committee CE/26, Precast Reinforced Concrete Box Culverts. It is intended that it be read in conjunction with AS 1597.2—1996, *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)*, but does not form part of that Standard.

In preparing AS 1597.2, the Committee considered it desirable that only necessary requirements be detailed in the new Standard and that any additional explanations, advice or comments be brought to the attention of the designer and other users of the Standard by this Commentary.

The purpose of this Commentary is as follows:

(a) To provide background reference material to the clauses of the Standard.

(b) To indicate the origin of particular requirements.

(c) To indicate departures from existing codes or Standards for concrete structure design practice.

(d) To explain the application of certain clauses.

For ease of cross-reference, section numbers, paragraph numbers and titles used in the Commentary are the same as those used in the body of the Standard but are prefixed with the letter C. Figures, however, are designated C1, C2 and the like and do not correspond to those in the Standard.

References noted in the Commentary text are listed at the end of the Commentary.

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SECTION C1 SCOPE AND GENERAL

C1.1 SCOPE Although the primary use of the box culverts is for carrying water, the application of this Standard's requirements to box culverts used for other purposes such as pedestrian or vehicular underpasses, escape or reclaim tunnels or earth-retaining structures is considered to be acceptable.

The limit on culvert dimensions of length, height and span are set only to give acceptable boundaries for the work of the Committee. The design of culvert units with larger dimensions may be carried out using the principles given in Section 3 or Section 4 provided that the designer has adequately addressed the effects of increased dimension on load and structural responses. Particular care should be exercised in the adoption of equivalent loadings which may not be suitable for culverts larger than 4200 mm span and 4200 mm leg height.

Each special culvert should be individually designed for its unique condition. Where large holes are required in a unit, the remaining cross-section should be designed to resist the total bending moment and shear applied to the culvert. A similar approach should be adopted for a skewed unit in combination with the relevant provisions of this Standard.

The maximum height of fill is limited to 10 m since the effect of soil arching in deep fills has not been considered when determining loads on the culvert. This simplification will result in a conservative result in high fill situations, however the degree of conservatism was considered acceptable by the Committee for fills up to 10 m.

C1.2 APPLICATION No comment.

C1.3 REFERENCED DOCUMENTS The Standards listed are subject to revision from time to time. A check should be made with Standards Australia as to the currency of any Standard referenced in the text.

C1.4 DEFINITION

C1.4.1 Administrative No comment.

C1.4.2 Technical

C1.4.2.12 *Fill* The term 'fill' is used throughout with a qualifier indicating particular requirements as follows:

(a) *Backfill or embankment fill* The Standard deals with the backfill and embankment fill from the aspect of culvert performance only. In installations involving road and railway embankments, or trenches through urban areas, the stability criteria for the finished surface above the culverts may impose more restrictive requirements on the fill specification.