

AS 5100.4:2017
(Incorporating Amendment No. 1)



Bridge design

Part 4: Bearings and deck joints



AS 5100.4:2017

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- Cement and Concrete Association of New Zealand
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Preface

This Standard was prepared by the Standards Australia Committee BD-090, Bridge Design to supersede AS 5100.4—2004.

This Standard is also designated as Austroads publication AP-G51.4-17.

A1 *This Standard incorporates Amendment No. 1 (December 2023). The start and end of changes introduced by the Amendment are indicated in the text by tags including the Amendment number 1.* **A1**

The objectives of the AS(AS/NZS) 5100 series are to provide nationally acceptable requirements for—

- (a) the design of road, rail, pedestrian and cyclist-path bridges;
- (b) the specific application of concrete, steel and composite steel/concrete construction, which embody principles that may be applied to other materials in association with relevant Standards; and
- (c) the assessment of the load capacity of existing bridges.

The objective of this Part (AS 5100.4) is to specify requirements for the design and selection of bearings and deck joints for bridges in Australia.

The requirements of the AS(AS/NZS) 5100 series are based on the principles of structural mechanics and knowledge of material properties, for both the conceptual and detailed design, to achieve acceptable probabilities that the bridge or associated structure being designed will not become unfit for use during its design life.

Whereas earlier editions of the Bridge design series were essentially administered by the infrastructure owners and applied to their own inventory, an increasing number of bridges are being built under the design-construct-operate principle and being handed over to the relevant statutory authority after several years of operation. This Standard includes clauses intended to facilitate the specification to the designer of the functional requirements of the owner, to ensure the long-term performance and serviceability of the bridge and associated structure.

Significant differences between this Standard and AS 5100.4—2004 are the following:

- (i) Tables of standard elastomeric bearing properties have all been updated to add additional numbers of elastomer layers in each plan size.
- (ii) The requirements for the sealing rings of pot bearing have been modified.
- (iii) Spherical advanced composite material bearings have been introduced.
- (iv) The movement range deck joints need to be designed for have been modified.
- (v) Load distribution from bearings to concrete surfaces has been introduced.
- (vi) Project-specific requirements ([Appendix E](#)) have been added.
- (vii) Provisions for modular bridge expansion joints (MBEJ) have been added.

In line with Standards Australia policy, the words 'shall' and 'may' are used consistently throughout this Standard to indicate, respectively, a mandatory provision and an acceptable or permissible alternative.

A1 **[Text deleted.]** **A1**

The terms 'normative' and 'informative' have been used in this Standard to define the application of the appendix to which it applies. A 'normative' appendix is an integral part of the Standard. An 'informative' appendix is only for information and guidance.

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Australian Standard®

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Part 4: Bearings and deck joints

1 Scope

This Standard sets out minimum design and performance requirements for bearings and deck joints for the articulation and accommodation of movements of bridge structures. It applies to elastomeric, pot, spherical and mechanical bearings and deck joints, all of which are locations where rotation or translation, or both, can take place. It does not apply to concrete hinges.

2 Normative references

The following are the normative documents referenced in this Standard.

NOTE Documents referenced for informative purposes are listed in the [Bibliography](#).

AS 1683.11, *Methods of test for elastomers, Method 11: Tension testing of vulcanized or thermoplastic rubber*

AS 1683.12, *Methods of test for elastomers, Method 12: Rubber, vulcanized or thermoplastic—Determination of tear strength (trouser, angle and crescent test pieces)*

AS 1683.14.1, *Methods of test for elastomers, Method 14.1: Adhesive strength of vulcanized or thermoplastic rubber—One-plate method*

AS 1683.15.1, *Methods of test for elastomers, Method 15.1: International rubber hardness*

AS 1683.15.2, *Methods of test for elastomers, Method 15.2: Durometer hardness*

AS 1683.22, *Methods of test for elastomers, Method 22: Determination of vulcanization characteristics using the oscillating disc curemeter*

AS 1683.24, *Methods of test for elastomers, Method 24: Determination of the resistance of vulcanized or thermoplastic rubbers to ozone cracking—Static strain test*

AS 1683.26, *Methods of test for elastomers, Method 26: Rubber, vulcanized or thermoplastic—Accelerated ageing or heat-resistance tests*

AS 5100.2, *Bridge design, Part 2: Design loads*

AS 5100.5, *Bridge design, Part 5: Concrete*

AZ/NZS 1554.5, *Structural steel welding, Part 5: Welding of steel structures subject to high levels of fatigue loading*

AZ/NZS 2312, *Guide to the protection of structural steel against atmospheric corrosion by the use of protective coatings*

AZ/NZS 5100.6, *Bridge design, Part 6: Steel and composite construction*

ISO 815-1, *Rubber, vulcanized or thermoplastic—Determination of compression set, Part 1: At ambient or elevated temperatures*

ISO 13000-1, *Plastics—Polytetrafluoroethylene (PTFE) semi-finished products, Part 1: Requirements and designation*

EN 1337-5, *Structural Bearings, Part 5: Pot bearings*