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AS 5100.7:2017
AP-G51.7-17

AS 5100.7:2017

Australian STANDARD

Bridge design

Part 7: Bridge assessment

STANDARDS Australia

Austroads

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- Australian Industry Group
- Australian Steel Institute
- Austroads
- Bureau of Steel Manufacturers of Australia
- Cement and Concrete Association of New Zealand
- Cement Concrete & Aggregates Australia—Cement
- Concrete Institute of Australia
- Consult Australia
- Engineers Australia
- New Zealand Heavy Engineering Research Association
- Rail Industry Safety and Standards Board
- Steel Construction New Zealand
- Steel Reinforcement Institute of Australia
- Sydney Trains

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Bridge design

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PREFACE

This Standard was prepared by the Standards Australia Committee BD-090, Bridge Design, to supersede AS 5100.7—2004, *Bridge design*, Part 7: *Rating of existing bridges*.

This Standard is also designated as Austroads publication AP-G51.7-17.

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, timber and composite construction, which embody principles that may be applied to other materials in association with relevant Standards;

(c) the assessment of the load capacity of existing bridges; and

(d) the strengthening and rehabilitation of existing bridges.

The objectives of this Part (AS 5100.7) are to specify requirements for assessment of the geometry, condition, fatigue life, capacity and loading of existing bridges and associated structures, and to specify the method of calculation of the load rating factor of a bridge for a nominated rating vehicle.

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.

Significant differences between this Standard and AS 5100.7—2004 are the following:

(i) *Methodology* Overall there is a clearer methodology for bridge assessment and load rating including a step-by-step guide and flowchart.

(ii) *Load rating vehicles* Improved definition and clarity have been provided regarding vehicles used for bridge load rating.

(iii) *Structural capacity* Greater detail and guidance have been provided including data collection, material properties, and considerations and assessment methods.

(iv) *Loads* Improved guidance and detail have been provided with standardization of vehicle positioning and multiple vehicles.

(v) *Structural health monitoring* This has been included in the Standard to provide an overview of the latest technology and guidance on its potential use for bridge assessment.

(vi) *Historical material standards* Information on past material Standards has been provided to assist bridge assessors in understanding the probable material properties of bridges built to previous Standards.

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.

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 the Standard, whereas an ‘informative’ appendix is only for information and guidance.

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