AS 5100.8:2017
AP-G51.8-17

AS 5100.8:2017

Australian STANDARD

Bridge design

Part 8: Rehabilitation and strengthening of existing bridges

STANDARDS Australia

Austroads

This Australian Standard® was prepared by Committee BD-090, Bridge Design. It was approved on behalf of the Council of Standards Australia on 15 March 2017.
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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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PREFACE

This Standard was prepared by the Standards Australia Committee BD-090, Bridge Design, in response to numerous requests from industry, designers and representatives in the field of Bridge Design, especially those in the area of rehabilitation and strengthening of existing bridges.

This Standard is also designated as Austroads publication AP-G51.8-17.

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.

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; and

The objective of this Part (AS 5100.8) is to provide requirements for the assessment of the load capacity, and for the strengthening and rehabilitation of existing bridges.

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 a Standard, whereas an 'informative' appendix is only for information and guidance.

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SECTION 1 SCOPE AND GENERAL

1.1 SCOPE

This Standard sets out minimum requirements and procedures to—

(a) repair or rehabilitate a structure in order to restore it to its original or intended level of service;

(b) extend the remaining service life of the structure;

(c) strengthen a structure (because of structural deterioration) to restore its original capacity;

(d) strengthen a structure to increase its capacity for live load (such as in response to a proposed increase in vehicle loads), barrier loading, collision loading, earthquake loading and other loading;

(e) change the function of a structure (such as road bridge to a pedestrian/cyclist bridge);

(f) widen an existing structure; or

(g) any combination of the above.

Structures covered in this Part of the AS/NZS 5100 series include existing bridges (both superstructure and sub-structure), approach slabs, wing walls and buried culverts.

NOTES:

1 Rehabilitation or strengthening may not be feasible for those structures that—

(a) have substandard horizontal and vertical clearances;

(b) have a poor alignment both on the structure and on the approaches;

(c) have extensive deterioration of the substructure, including active scour undermining, pronounced seismic vulnerability, and/or questionable foundations;

(d) have numerous deficiencies throughout the superstructure and/or substructure;

(e) have deficient in situ strength; or

(f) have structural systems that are non-redundant or incorporate poor details that require increased maintenance and inspection.

2 All the requirements of this Standard may not be applicable to emergency response situations.