



## Bridge design

### Part 8: Rehabilitation and strengthening of existing bridges



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. This Standard was published on 31 March 2017.

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The following are represented on Committee BD-090:

- 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
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  - 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
- 

This Standard was issued in draft form for comment as DR AS 5100.8:2016.

Standards Australia wishes to acknowledge the participation of the expert individuals that contributed to the development of this Standard through their representation on the Committee and through the public comment period.

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Australian Standard<sup>®</sup>

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**Part 8: Rehabilitation and strengthening  
of existing bridges**

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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.

## CONTENTS

	<i>Page</i>
<b>SECTION 1 SCOPE AND GENERAL</b>	
1.1 SCOPE.....	5
1.2 NORMATIVE REFERENCES .....	6
1.3 DEFINITIONS.....	8
1.4 NOTATION.....	12
1.5 DURABILITY CONSIDERATIONS .....	13
1.6 SERVICE ENVIRONMENTS FOR BRIDGE STRUCTURES .....	13
1.7 MATTERS FOR RESOLUTION BEFORE DESIGN COMMENCES .....	14
1.8 APPROPRIATE SUPERVISION .....	14
<b>SECTION 2 DESIGN REQUIREMENTS AND PROCEDURES</b>	
2.1 GENERAL .....	15
2.2 ASSESSMENT OF EXISTING STRUCTURAL CAPACITY .....	15
2.3 DESIGN .....	15
<b>SECTION 3 CONCRETE STRUCTURES</b>	
3.1 GENERAL.....	17
3.2 CONDITION ASSESSMENT .....	17
3.3 ASSESSMENT FOR CATHODIC PROTECTION (CP).....	22
3.4 ASSESSMENT OF FIRE-AFFECTED CONCRETE .....	23
3.5 METHODS OF REPAIR AND REHABILITATION OF CONCRETE STRUCTURES.....	25
3.6 STRENGTHENING OF CONCRETE STRUCTURES .....	34
<b>SECTION 4 STEEL STRUCTURES</b>	
4.1 GENERAL.....	37
4.2 CONDITION ASSESSMENT .....	37
4.3 ASSESSMENT FOR CATHODIC PROTECTION (CP).....	42
4.4 INSPECTION AND ASSESSMENT OF FIRE-AFFECTED STEEL .....	42
4.5 METHODS OF REPAIR AND REHABILITATION OF STEEL STRUCTURES ...	43
4.6 STRENGTHENING OF STEEL STRUCTURES .....	45
<b>SECTION 5 TIMBER STRUCTURES</b>	
5.1 GENERAL .....	47
5.2 CONDITION ASSESSMENT .....	47
5.3 TYPES OF REPAIRS AND STRENGTHENING WORKS .....	51
<b>SECTION 6 MASONRY STRUCTURES</b>	
6.1 GENERAL.....	53
6.2 CONDITION ASSESSMENT .....	53
6.3 ASSESSMENT OF FIRE-AFFECTED MASONRY .....	55
6.4 METHODS OF REPAIR, PROTECTION AND STRENGTHENING OF MASONRY STRUCTURES.....	56
6.5 STRENGTHENING OF MASONRY STRUCTURES .....	60

SECTION 7 BEARINGS	
7.1	GENERAL..... 62
7.2	INSPECTION AND CONDITION ASSESSMENT ..... 62
7.3	REPAIR OPTIONS..... 62
7.4	REPAIR DESIGN..... 63
7.5	REPAIR DESIGN OUTPUT ..... 63
7.6	BEARING REPAIR WORK..... 64
SECTION 8 DECK JOINTS	
8.1	GENERAL..... 66
8.2	INSPECTION AND CONDITION ASSESSMENT ..... 66
8.3	REPAIR OPTIONS..... 66
8.4	REPAIR DESIGN..... 66
8.5	REPAIR DESIGN OUTPUT ..... 66
8.6	DECK JOINT REPAIR WORK..... 69
SECTION 9 BARRIERS	
9.1	GENERAL..... 70
9.2	REPAIR DESIGN..... 70
9.3	INSPECTION AND CONDITION ASSESSMENT ..... 70
9.4	REPAIR OPTIONS..... 71
9.5	FULL BARRIER REPLACEMENT OR MAJOR UPGRADE ..... 71
SECTION 10 CULVERTS	
10.1	GENERAL..... 72
10.2	CONDITION ASSESSMENT CRITERIA..... 72
10.3	REPAIR, REHABILITATION AND STRENGTHENING OF STRUCTURES ..... 75
10.4	DESIGN REQUIREMENTS..... 76
10.5	TESTING..... 76
SECTION 11 WORK, HEALTH AND SAFETY AND QUALITY REQUIREMENTS	
11.1	GENERAL..... 77
11.2	HANDLING PRECAUTIONS..... 77
11.3	FIRST AID..... 77
11.4	CLEANING UP..... 77
11.5	QUALITY REQUIREMENTS..... 77
APPENDICES	
A	FIBRE REINFORCED POLYMER (FRP) STRENGTHENING ..... 78
B	CATHODIC PROTECTION OF REINFORCED CONCRETE STRUCTURES ..... 110
C	EXISTING TRAFFIC BARRIER ASSESSMENT ..... 115
D	DESIGN OF TIMBER ELEMENTS IN BRIDGES ..... 117
E	BRIDGE SPECIFIC ASSESSMENT LIVE LOADING (BSALL)..... 130
F	TIMBER STRUCTURES—TYPES OF REPAIRS AND STRENGTHENING WORKS..... 131
BIBLIOGRAPHY..... 134	

# STANDARDS AUSTRALIA

## Australian Standard Bridge design

### Part 8: Rehabilitation and strengthening of existing bridges

#### 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 a 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 (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.
- A the requirements of this Standard may not be applicable to emergency response situations.