



Bridge design

Part 8: Rehabilitation and strengthening of existing bridges



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 - 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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Australian Standard®

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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>
SECTION 1 SCOPE AND GENERAL	
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
SECTION 2 DESIGN REQUIREMENTS AND PROCEDURES	
2.1 GENERAL	15
2.2 ASSESSMENT OF EXISTING STRUCTURAL CAPACITY	15
2.3 DESIGN	15
SECTION 3 CONCRETE STRUCTURES	
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
SECTION 4 STEEL STRUCTURES	
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
SECTION 5 TIMBER STRUCTURES	
5.1 GENERAL.....	47
5.2 CONDITION ASSESSMENT	47
5.3 TYPES OF REPAIRS AND STRENGTHENING WORKS	51
SECTION 6 MASONRY STRUCTURES	
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..... 67
8.5	REPAIR DESIGN OUTPUT 68
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.
- 2 All the requirements of this Standard may not be applicable to emergency response situations.