

TRUNK ROAD INFRASTRUCTURE STANDARD No. 07

BRIDGES AND RELATED STRUCTURES

Supplement to Austroads Guide: Bridge Technology



ACT
Government

Territory and Municipal Services

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PREFACE

The Austroads series of Guides for provision and management of road and transport infrastructure provides a level of consistency across all jurisdictions in Australia and New Zealand. All road authorities have agreed to adopt the Austroads Guides as the primary technical reference, together with the relevant Australian and New Zealand Standards.

The Australian Capital Territory has adopted the Austroads Guides, and has issued a revised series of documents to reflect this development in standards and specifications for practice in the ACT. This present document is part of the ACT Trunk Road Infrastructure Standard (TRIS) series spanning the broad scope of road infrastructure development in the ACT:

- TRIS 01 – Road Planning
- TRIS 02 – Road Design
- TRIS 03 – Traffic Management
- TRIS 04 – Road Safety
- TRIS 05 – Asset Management
- TRIS 06 – Pavement Design
- TRIS 07 – Bridges and Structures
- TRIS 08 – Road Tunnels
- TRIS 09 – Project Delivery
- TRIS 10 – Project Evaluation.

Each of the TRIS documents indicates adoption of the relevant Austroads Guide, sets out specific requirements for implementation in ACT, and calls up more detailed Specifications.

This ACT Trunk Road Infrastructure Standard No.07 - Bridges and Related Structures constitutes a supplement to the

AUSTROADS GUIDE TO BRIDGE TECHNOLOGY

The Territory and Municipal Services Directorate accepts the principles and general guidance in the Guide to Bridge Technology. However, AS 5100: Bridge Design is the main and overarching guidance document for all matters related to bridge design. This Trunk Road Infrastructure Standard is issued to clarify any exceptions or additional requirements for implementation in the ACT, and to identify relevant complementary documents.

The planning, design and management of Bridges and Related Structures in the ACT must be implemented in general accordance with AS 5100, supported by the Austroads Guide above, and in accordance with specific provisions of this Trunk Road Infrastructure Standard

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1. GENERAL

Austrroads has released the Guide to Bridge Technology and all road agencies across Australasia have agreed to adopt the Austrroads guides to provide a level of consistency and harmonisation across all jurisdictions. This agreement means that the new Austrroads guides and the Australian Standards, which are referenced in them, will become the primary technical references for use within the Authority.

This supplement is issued to clarify, add to, or modify the Austrroads Guide to Bridge Technology. Specifications of detailed requirements for materials, processes, or procedures specific to the ACT are prescribed in:

ACT Trunk Road Infrastructure Technical Specification No.10 - Major Concrete Works

Implementation of Bridges and Related Structures must be undertaken in accordance with that Specification.

2. GENERAL PRINCIPLES

The ACT Government accepts the principles in the Austrroads Guide to Bridge Technology with variations documented in this supplement under the following categories:

- ACT Government Enhanced Practice: RMS Bridge Technical Directions and relevant manuals which enhance the Austrroads Guide.
- ACT Government Complementary Material: RMS Bridge reference material that complements the Austrroads Guide. These documents include RMS Manuals, Technical Directions and other relevant reference material that are to be read in conjunction with the Austrroads Guide.
- ACT Government Departures: RMS Bridge Technical Directions and relevant manuals that depart from the Austrroads Guide.

Note:

For any differences in practice between the ACT Government Supplement and other ACT Government complementary materials, the ACT Government Supplement will apply.

Where found in the referenced material, references to state specific documents and positions are to be substituted with ACT specific documents and position as needed regardless of whether or not a prompt is given.

3. REFERENCE DOCUMENTS

3.1 GUIDELINES

Austrroads Guide to Bridge Technology

- Part 1: Introduction and Bridge Performance
- Part 2: Materials
- Part 3: Typical Bridge Superstructures, Substructures and Components
- Part 4: Design Procurement and Concept Design
- Part 5: Structural Drafting
- Part 6: Bridge Construction
- Part 7: Maintenance and Management of Existing Bridges.

3.2 RELATED TECHNICAL SPECIFICATIONS

- Australian Standard AS 5100: Bridge design
- Part 1: Scope and general principles
 - Part 2: Design loads
 - Part 3: Foundations and soil-supporting structures
 - Part 4: Bearings and deck joints
 - Part 5: Concrete
 - Part 6: Steel and composite construction
 - Part 7: Bridge ratings.

4. SUPPLEMENTARY MATERIAL

Supplement to the Austroads Guide to Bridge Technology

6 (34 PAGES)

4.4	<p>ACT Government enhanced practice for proprietary concrete arch and steel culverts:</p> <ul style="list-style-type: none"> RMS publication BTD2007/09 Soil-arch structures. The construction contractor to provide detailed design information on whom is to give approval of the soil arch bridge system to the superintendent and principal at the earliest stage. <p>ACT Government enhanced practice for deck joints:</p> <ul style="list-style-type: none"> BTD2008/10 Bridge Deck Joints, with RMS bridge policy document “Bridge Deck Joint Selection, Design, Installation and Maintenance” (May 2008). <p>ACT Government enhanced practice for design of support structures:</p> <ul style="list-style-type: none"> BTD2009/01 rev1 Design of Sign Structures. 	
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SUPPLEMENT TO THE AUSTRROADS GUIDE TO BRIDGE TECHNOLOGY PART 2: MATERIALS PUBLICATION DATE: 2009		
Reference Section	ACT Practice, Complementary Material, or Departures	Date
General	<p>ACT Government complementary materials:</p> <ul style="list-style-type: none"> RMS Bridge Technical Direction Manual <p>ACT Government direction on supply of steel materials:</p> <ul style="list-style-type: none"> The steel products for bridge works shall be originated from an Australian Certification Authority for Reinforcing Steels (ACRS) registered manufacturer. 	
Section 2 2.3	<p>ACT Government enhanced practice for Supplementary Cementitious Materials:</p> <ul style="list-style-type: none"> CBE 1997/01 Variability of Concrete Properties. Effects on creep and shrinkage not mentioned in AGBT. 	
Section 3 3.4 3.4.4 3.4.5 3.5	<p>ACT Government enhanced practice for Carbon Steel Reinforcement:</p> <ul style="list-style-type: none"> BPC 2004/09 Policy Circulars Made Redundant by AS 5100:2004. <p>ACT Government complementary material for Packaging and Handling:</p> <ul style="list-style-type: none"> BDI 1985/06 Bent on Site Reinforcing Bars. <p>ACT Government enhanced practice for Ductility:</p> <ul style="list-style-type: none"> BTD 2008/09 Link Slabs for Precast Pretensioned Concrete Girder Bridges. <p>ACT Government enhanced practice for Stainless Steel Reinforcement:</p> <ul style="list-style-type: none"> BPC 2007/03 Changes to Standard Bridge Drawings – Quarterly Update – Revised Australian Standards. <p>ACT Government enhanced practice for Prestressing Steel:</p> <ul style="list-style-type: none"> BPC 2004/09 Policy Circulars Made Redundant by AS 5100:2004. <p>ACT Government enhanced practice for Steel and Polymer Fibres:</p> <ul style="list-style-type: none"> BPC 2005/05 Use of Steel Fibre Reinforced Reactive Powder Concrete ('Ductal') in RMS Works. 	

8 (34 PAGES)

<p>Section 5</p> <p>5.1</p> <p>5.1.7</p> <p>5.1.8</p> <p>5.2</p> <p>5.2.8</p>	<p>ACT Government enhanced practice for Concrete Distress Mechanisms:</p> <ul style="list-style-type: none"> • BPC 2004/11 Strategies for Enhancing the Durability of Post-Tensioned Concrete Bridges. <p>ACT Government enhanced practice for Sulphate Attack:</p> <ul style="list-style-type: none"> • BTD 2008/12 Provisions for Concrete Structures in Acid Sulfate Soils. <p>ACT Government enhanced practice for Acid Attack:</p> <ul style="list-style-type: none"> • BTD 2008/12 Provisions for Concrete Structures in Acid Sulfate Soils. <p>ACT Government enhanced practice for Protection of Concrete in Adverse Environments:</p> <ul style="list-style-type: none"> • BTD 2008/12 Provisions for Concrete Structures in Acid Sulfate Soils. <p>ACT Government enhanced practice for Cathodic Protection:</p> <ul style="list-style-type: none"> • BTD 2008/13 Provisions for Future Cathodic Protection of Reinforced Concrete Bridges. 	
<p>Section 6</p> <p>6.5</p>	<p>ACT Government enhanced practice for Stainless Steel:</p> <ul style="list-style-type: none"> • CBE 1993/03 Socket Inserts for Precast Concrete Girders. 	
<p>Section 7</p> <p>7.1</p> <p>7.2</p> <p>7.3</p> <p>7.4</p>	<p>ACT Government enhanced practice for Corrosion:</p> <ul style="list-style-type: none"> • BPC 2004/11 Strategies for Enhancing the Durability of Post-Tensioned Concrete Bridges. • BTD 2007/13 Durability of Steel Piles in Contact with Acid Sulfate Soils. <p>ACT Government enhanced practice for Fatigue:</p> <ul style="list-style-type: none"> • BPC 2005/08 Welding of Bridges. • BTD 2008/10 Bridge Deck Joints. <p>ACT Government enhanced practice for Brittle Fracture:</p> <ul style="list-style-type: none"> • BPC 2005/08 Welding of Bridges. • BTD 2008/10 Bridge Deck Joints. <p>ACT Government complementary material for Protective Coatings:</p> <ul style="list-style-type: none"> • BTD 2008/05 Splicing of Steel Girders Using Bolts. 	
<p>Section 8</p> <p>8.2</p> <p>8.5</p> <p>8.5.5</p>	<p>ACT Government complementary material for Connections And Fabrication Bolts:</p> <ul style="list-style-type: none"> • BTD 2008/05 Splicing of Steel Girders Using Bolts. • BTD 2008/10 Bridge <p>ACT Government enhanced practice for Connections And Fabrication Welding:</p> <ul style="list-style-type: none"> • 2005/08 Welding of Bridges. • BTD 2008/10 Bridge Deck Joints. <p>ACT Government departure in practice for Connections And Fabrication Weld Categories:</p> <ul style="list-style-type: none"> • CBE 1990/09 Weld Category - Fabricated Steelwork. 	

<p>Section 9 9.1</p> <p>9.2.7</p>	<p>ACT Government enhanced practice for Elastomers:</p> <ul style="list-style-type: none"> • BPC 2005/03 Installation of Elastomeric Bearings for Pretensioned Concrete Girders – Standard Drawings. • BPC 2007/02 Changes to Standard Bridge Drawings – Installation of Elastomeric Bearings for PSC Girders. <p>ACT Government complementary material for FRP Timber Member Replacement:</p> <ul style="list-style-type: none"> • BPC 2003/06 Timber Truss Cross Girder Replacements. 	
<p>Section 10 10.2</p> <p>10.3</p> <p>10.5.1</p> <p>10.7</p> <p>10.8</p>	<p>ACT Government complementary material for Timber:</p> <ul style="list-style-type: none"> • BTD 2008/16 Timber Bridge Manual. Details the policy document for the maintenance, repair and rehabilitation of timber bridges. <p>ACT Government complementary material for Moisture Content of Timber:</p> <ul style="list-style-type: none"> • BPC 2003/03 Bituminous Surfacing for Timber Bridge Decks. Details the policy for the bituminous surfacing of traditional timber and stress laminated timber decks. Stress laminated timber decks to be provided with a waterproof membrane below the wearing surface. • BPC 2003/06 Timber Truss Cross Girder Replacements. <p>ACT Government complementary material for Shrinkage:</p> <ul style="list-style-type: none"> • BPC 2003/03 Bituminous Surfacing for Timber Bridge Decks. <p>ACT Government complementary material for Timber Visual Grading Australia:</p> <ul style="list-style-type: none"> • BPC 2003/06 Timber Truss Cross Girder Replacements. <p>ACT Government complementary material for Timber Deterioration Mechanisms:</p> <ul style="list-style-type: none"> • BPC 2003/03 Bituminous Surfacing for Timber Bridge Decks. Details the policy for the bituminous surfacing of traditional timber and stress laminated timber decks. Stress laminated timber decks to be provided with a waterproof membrane below the wearing surface. • BPC 2003/06 Timber Truss Cross Girder Replacements. Details the policy for the replacement of cross girders for on all types of timber trusses including the use of temporary members and temporary support. The Guide provides information on inspection, maintenance, design, durability, detailing, timber supply and relevant specifications. <p>ACT Government complementary material for Timber Durability:</p> <ul style="list-style-type: none"> • BPC 2003/06 Timber Truss Cross Girder Replacements. Details the policy for the replacement of cross girders for on all types of timber trusses including the use of temporary members and temporary support. The Guide provides information on inspection, maintenance, design, durability, detailing, timber supply and relevant specifications. • BPC 2003/03 Bituminous Surfacing for Timber Bridge Decks. 	
<p>References</p>	<ul style="list-style-type: none"> • BPC 2007/03 Changes to Standard Bridge Drawings – Quarterly Update – Revised Australian Standards. 	

SUPPLEMENT TO THE AUSTRROADS GUIDE TO BRIDGE TECHNOLOGY PART 3: TYPICAL SUPERSTRUCTURES, SUBSTRUCTURES AND COMPONENTS PUBLICATION DATE: 2009		
Reference Section	ACT Practice, Complementary Material, or Departures	Date
Section 2	<p>ACT Government direction on Timber Bridges:</p> <ul style="list-style-type: none"> Timber shall not be used as a structural member in any new bridge regardless of loading. <p>ACT Government complementary material for Timber Bridges:</p> <ul style="list-style-type: none"> BTD 2008/16 Timber Bridge Manual. 	
2.2	<p>ACT Government complementary material for Timber Truss:</p> <ul style="list-style-type: none"> BPC 2003/06 Timber Truss Cross Girder Replacements. Guidance on cross girder replacements on timber trusses. 	
2.3	<p>ACT Government complementary material for Stress Laminated Timber Bridge Decks:</p> <ul style="list-style-type: none"> CBE 1995/02 Stress Laminated Timber Bridges. Background on use of 'Recommended Guide for Design of Stress Laminated Timber Plate Bridge Decks'. 	
2.4	<p>ACT Government complementary material for Timber/Concrete Composite Bridge Deck:</p> <ul style="list-style-type: none"> CBE 1999/15 Timber/Concrete Composite Bridge Modules Test Loading of Module Design Criteria. Details on test loading, design details and construction specifications. 	
Section 5	<p>ACT Government complementary material for Reinforced Concrete Bridges:</p> <ul style="list-style-type: none"> BTD 2010/01 Use of Proprietary Precast Reinforced Concrete Modular Bridge Deck. Updated information re difficulty of construction, high maintenance costs and direction not to use the Rocla M-Lock and other proprietary bridge deck systems and specifies conditions for use of proprietary modular concrete bridge deck systems. 	
Section 6	<p>ACT Government complementary material for Prestressed Concrete Bridges:</p> <ul style="list-style-type: none"> CBE 1994/06 Pretensioned Bridge Members - Concrete Transfer Strength Requirements. Additional information specific to the concrete transfer strength should not be higher than 35 MPa. <p>ACT Government complementary material for Pre-tensioning and Post-tensioning:</p> <ul style="list-style-type: none"> BPC 2004/11 Strategies for Enhancing the Durability of Post-Tensioned Concrete Bridges. Additional information regarding environment and protection strategies for post-tensioning. <p>ACT Government complementary materials for Super T-Girders:</p> <ul style="list-style-type: none"> BTD 2008/17 Changes to Standard Bridge Drawings - RC Link Slab for Super T Girder Decks. Standard drawing reference to RTAB057. CBE 1997/03 Detailing of "Super T" Girders. Detailed RMS requirements. 	
Section 9 9.4	<p>ACT Government complementary material for Proprietary Designs:</p> <ul style="list-style-type: none"> BPC 2006/03 RMS Approval of Proprietary Bridging Systems. General direction - Use of proprietary bridging systems must be assessed and conform to AS5100 Bridge Design, RMS Policy. 	
Section 10	<p>ACT Government complementary materials for design requirements of Pedestrian and Cycle Facilities:</p> <ul style="list-style-type: none"> TRITS 13 Pedestrian and Cycle Facilities. Geometric and clearance requirements for bicycles. Austroroads Guide to Road Design Part 6A: Pedestrian and Cyclist 	

10.3	<p>Paths. Section 11 provides design guidelines for cycle paths on structures.</p> <p>ACT Government complementary material for concrete parapets on Pedestrian Bridges:</p> <ul style="list-style-type: none"> • BTD 2008/15 Concrete Parapets on Pedestrian Overbridges. Use of “U” shaped concrete girders for pedestrian bridges. <p>ACT Government complementary material for disabled access:</p> <ul style="list-style-type: none"> • BTC 2005/09 Provision of Disabled Access for Pedestrian Bridges. Direction to AS5100 and AS1428.1. 	
<p>Section 11</p> <p>11.2</p> <p>11.3</p>	<p>ACT Government complementary material for Major Bridge Substructure Elements</p> <ul style="list-style-type: none"> • BCP 2008/11 Lists of RMS Approved Bridge Components and Systems. Further information for RMS list of approved components and systems. <p>ACT Government complementary materials for Access for Inspection:</p> <ul style="list-style-type: none"> • BTD 2008/02 Access for Inspection, Monitoring and Repair or Replacement of Bridge Components. Further information for access for inspection. • BPC 2004/08 Inspection of Modular Bridge Expansion Joints and Control of Noise. Information relating to inspection and minimisation of deck joint noise by design. <p>ACT Government complementary material for Approach Slabs:</p> <ul style="list-style-type: none"> • BPC 2004/10 Bridge Approach Slabs - Standard Drawings Advice in regard to approach slab design and detailing material. 	
Section 12	<p>ACT Government direction on bridge foundation:</p> <ul style="list-style-type: none"> • Continuous Flight Auger (CFA) piles shall not be used. <p>ACT Government complementary materials for Bridge Foundations:</p> <ul style="list-style-type: none"> • BTD 2008/12 Provisions for Concrete Structures in Acid Sulphate Soils. Additional information re advice for design and construction in acid sulphate soils. • CBE 2000/09 Geotechnical Information for Bridge. Policy regarding cross referencing of geotechnical reports and bridge drawings. 	
<p>Section 13</p> <p>13.2</p> <p>13.10.1</p> <p>13.10.2</p>	<p>ACT Government direction on bridge bearings and expansion joints:</p> <ul style="list-style-type: none"> • For bridges up to and including 60m and up to 30° skew, elimination of bridge bearings is preferred where practical. <p>ACT Government complementary materials for Ancillary Bridge Components - Bearings:</p> <ul style="list-style-type: none"> • CBE 1998/08 Bridge Bearings - Design for Maintenance or Replacement. Guidance on design of bridge bearings. • BTD 2007/12 Design for Replacement of Bridge Bearings. Guidance on design and detailing bearing replacement. • CBE 1997/05 Design of Bearings for Durability. Guidance on design of bridge bearings. <p>ACT Government complementary materials for</p> <ul style="list-style-type: none"> • BPC 2007/02 Changes to Standard Bridge Drawings – Installation of Elastomeric Bearings for PSC Girders. RMS direction for bridge designers. • BPC 2005/03 Installation of Elastomeric Bearings for Pretensioned Concrete Girders – Standard Drawings. RMS direction for bridge designers. <p>ACT Government complementary material for Pot Bearings:</p> <ul style="list-style-type: none"> • BPC 2005/04 Rev1 Pot Bearing Attachment Plates. Guidance on pot bearing steel attachment plates and cement mortar pad. 	

<p>Section 14 14.3</p>	<p>ACT Government complementary material for Ancillary Bridge Components Decks:</p> <ul style="list-style-type: none"> • BTD 2008/11 Lists of RMS Approved Bridge Components and Systems. Further information for RMS list of approved components and systems. 	
<p>Section 15 15.1</p>	<p>ACT Government direction on bridge bearings and expansion joints:</p> <ul style="list-style-type: none"> • For bridges up to and including 60m and up to 30° skew shall have no expansion joints where practical. <p>ACT Government complementary material for Ancillary Bridge Components – Deck Joints:</p> <ul style="list-style-type: none"> • BTD 2008/10 Bridge Deck Joints. Guidance to policy document Bridge Deck Joint Selection, Design, Installation and Maintenance – May 2008. <p>ACT Government complementary materials for Deck Joints - General:</p> <ul style="list-style-type: none"> • BTD 2008/09 Link Slabs for Precast Pretensioned Concrete Girder Bridges. Information relating to minimisation of deck joints. • BPC 2004/08 Inspection of Modular Bridge Expansion Joints and Control of Noise. Information relating to minimisation of deck joint noise by design. 	
<p>Section 16 16.1 16.1.2 16.4</p>	<p>ACT Government complementary materials for Traffic Barriers (Approach Transition):</p> <ul style="list-style-type: none"> • BCP 2007/04 Changes to Standard Bridge Drawings – Steel Traffic Barrier Railing Joints. Guidance to RMS Standard Bridge Drawings. • BPC 2006/04 Changes to Standard Bridge Drawings – Bridge Traffic Barriers – Standard Cross Sections. Guidance to RMS Standard Bridge Drawings. • BTD 2008/01 Changes to Standard Bridge Drawings – Bridge Traffic Barrier Termination Details. Guidance to RMS Standard Bridge Drawings. • BTD 2008/08 Provision of Conduits in Bridge Traffic Barriers. Guidance on conduit size for bridge traffic barriers. <p>ACT Government complementary material for Existing Bridges:</p> <ul style="list-style-type: none"> • BTN2005-001 Improving existing bridge barriers. VicRoads guidance for design of replacement traffic barriers for existing bridges. <p>ACT Government complementary material for Protection Screens on Road and Pedestrian Bridges:</p> <ul style="list-style-type: none"> • BPC 2003/08 Bridge Screens. Guide to TD 2002/RS02 and relationship to Clause 12.3 of AS 5100.1. 	
<p>Appendix A</p>	<p>ACT Government complementary material for Summary of Deck Types and Associated Superstructure Type:</p> <ul style="list-style-type: none"> • BTD 2010/01 Use of Proprietary Precast Reinforced Concrete Modular Bridge Deck Systems. Updated information re difficulty of construction, high maintenance costs and direction not to use the Rocla M-Lock and other proprietary bridge deck systems and specifies conditions for use of proprietary modular concrete bridge deck systems. 	

SUPPLEMENT TO THE AUSTROADS GUIDE TO BRIDGE TECHNOLOGY PART 4: DESIGN PROCUREMENT AND CONCEPT DESIGN PUBLICATION DATE: 2009		
Reference Section	ACT Practice, Complementary Material, or Departures	Date
General	ACT Government complementary materials: <ul style="list-style-type: none"> RMS Bridge Technical Direction Manual 	
Section 3 3.1	ACT Government complementary material for Bridge Design Code Issues : <ul style="list-style-type: none"> BPC 2002/05 Bridge Concept. Sets out the requirement for Project Managers to complete the 'Bridge Design Proposal' form for all bridges and bridge size culverts and forward to Bridge Engineering for concurrence. BPC 2004/06 Implementation of AS 5100-2004: Australian Bridge Design Code. Sets out policy to adopt the vehicle design loads as set out in AS 5100 except for specific cases where a departure from the standard must be approved on a case-by-case basis by satisfying particular criteria. BPC 2006/03 RMS Approval of Proprietary Bridging Systems. Details the procedure to be adopted for prior to using proprietary. The assessment of the system is to include whether it conforms to AS 5100, RMS policy and structural suitability. BPC 2004/09 Policy Circulars Made Redundant by AS 5100:2004. Details policy changes in design and material issues in AS 5100 - crack control, development length of prestressing strand and use of Grade 500 reinforcement. 	
3.2	ACT Government complementary material for Specifying for Local Conditions : <ul style="list-style-type: none"> BPC 2002/05 Bridge Concept. Sets out the requirement for Project Managers to complete the 'Bridge Design Proposal' form for all bridges and bridge size culverts and forward to Bridge Engineering for concurrence. 	
3.3	ACT Government complementary material for Geometric Details Including Clearances: <ul style="list-style-type: none"> CBE 1991/11 Bridges over Roads. Horizontal Clearances and Visual Perceptions. Guide provides additional information and links, AS5100 requirements and aesthetics considerations and resource information. BPC 2002/05 Bridge Concept. Sets out the requirement for Project Managers to complete the 'Bridge Design Proposal' form for all bridges and bridge size culverts and forward to Bridge Engineering for concurrence. 	
3.4	ACT Government complementary material for Gathering and Integrating Data for a Bridge Design: <ul style="list-style-type: none"> BPC 2002/05 Bridge Concept. Sets out the requirement for Project Managers to complete the 'Bridge Design Proposal' form for all bridges and bridge size culverts and forward to Bridge Engineering for concurrence. BPC 2004/09 Policy Circulars Made Redundant by AS 5100:2004. Details policy changes in design and material issues in AS 5100 - crack control, development length of prestressing strand and use of Grade 500 reinforcement. BTD 2009/02 Management of Bridge Rehabilitation Design Projects. Details the policy for the management of bridge rehabilitation projects including the use of external consultants. 	
3.5	ACT Government complementary material for Design Statement: <ul style="list-style-type: none"> BPC 2002/05 Bridge Concept. Sets out the requirement for Project 	

<p>3.6</p>	<p>Managers to complete the 'Bridge Design Proposal' form for all bridges and bridge size culverts and forward to Bridge Engineering for concurrence.</p> <p>ACT Government enhanced practice for Design Statement:</p> <ul style="list-style-type: none"> • BPC 2004/06 Implementation of AS 5100-2004: Australian Bridge Design Code. Sets out policy to adopt the vehicle design loads as set out in AS 5100 except for specific cases where a departure from the standard must be approved on a case-by-case basis by satisfying particular criteria. Vehicle and barrier loads for existing bridges are also to be assessed on a case-by-case basis. • BPC 2006/03 RMS Approval of Proprietary Bridging Systems. Details the procedure to be adopted for prior to using proprietary. The assessment of the system is to include whether it conforms to AS 5100, RMS policy and structural suitability. <p>ACT Government complementary material for Requirements of AS5100, Australian Standard for Bridge Design:</p> <ul style="list-style-type: none"> • CBE 1991/11 Bridges over Roads. Horizontal Clearances and Visual Perceptions. Guide provides additional information and links, AS5100 requirements and aesthetics considerations and resource information. • BPC 2002/05 Bridge Concept. Sets out the requirement for Project Managers to complete the 'Bridge Design Proposal' form for all bridges and bridge size culverts and forward to Bridge Engineering for concurrence. <p>ACT Government enhanced practice for Requirements of AS5100, Australian Standard for Bridge Design:</p> <ul style="list-style-type: none"> • BPC 2004/06 Implementation of AS 5100-2004: Australian Bridge Design Code. Sets out policy to adopt the vehicle design loads as set out in AS 5100 except for specific cases where a departure from the standard must be approved on a case-by-case basis by satisfying particular criteria. Vehicle and barrier loads for existing bridges are also to be assessed on a case-by-case basis. • BPC 2006/03 RMS Approval of Proprietary Bridging Systems. Details the procedure to be adopted for prior to using proprietary. The assessment of the system is to include whether it conforms to AS 5100, RMS policy and structural suitability. • BPC 2006/04 Changes to Standard Bridge Drawings – Bridge Traffic Barriers – Standard Cross Sections. Details the changes to standard traffic barrier drawings required for compliance with AS 5100 requirements. • BTB 2007/10 Restraint of Longitudinal Reinforcement in Columns. Details clarification where the AS 5100 requirement for lateral restraint is not required. • BTB 2007/11 Horizontal Reinforcement for Crack Control in Walls and Wall Type Pier. Provides design requirements above that required in AS 5100 for reinforcement in walls based on the length and provision of contraction and expansion joints. • BTB 2008/01 Changes to Standard Bridge Drawings – Bridge Traffic Barrier Termination Details. Details the changes to standard traffic barrier drawings for traffic barrier terminations required for compliance with AS 5100 requirements. • BTB 2008/04 Design of Precast Reinforced Concrete Box Culverts. Details design life and specific design requirements for precast box culverts on RMS works. • BTB 2008/07 Design of Bridge Supports for Collision Load from Road Traffic. Details policy in regard to the design loads and protection of bridge supports from traffic impact. Where protection is required road safety barriers are not assumed to provide protection. Protective measures are to be shown on the bridge drawings. • BTB 2008/10 Bridge Deck Joints. Details the policy for the
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<p>3.7</p>	<p>selection, design, installation and maintenance of bridge decks. A policy document provides information on the field performance of various joint types.</p> <ul style="list-style-type: none"> • BPC 2008/11 Lists of RMS Approved Bridge Components and Systems. Details the requirements to utilise only approved bridge components and systems. Where the design requirements warrant the use of non-approved components or systems or where new products are available the approval process is provided. • BTD2008/15 Concrete Parapets on Pedestrian Overbridges. Details the change in policy to allow the use of U-shaped concrete girders for pedestrian overbridges provided safety screens are installed. <p>ACT Government complementary material for Application of Authority Requirements for Road Users, OHS and Design Parameters:</p> <ul style="list-style-type: none"> • BPC 2002/05 Bridge Concept. Sets out the requirement for Project Managers to complete the 'Bridge Design Proposal' form for all bridges and bridge size culverts and forward to Bridge Engineering for concurrence. <p>ACT Government enhanced practice for Application of Authority Requirements for Road Users, OHS and Design Parameters:</p> <ul style="list-style-type: none"> • BPC 2005/06 Bird Nesting in Bridge Abutments & Box Girders. Details policy in the design of abutments with voids and box girders to prevent birds entering the void space. • Wisconsin DOT's Transport Synthesis Report "Control of roosting birds on transport structures". • BPC 2006/04 Changes to Standard Bridge Drawings – Bridge Traffic Barriers – Standard Cross Sections. Details the changes to standard traffic barrier drawings required for compliance with AS 5100 requirements. • BTD 2007/10 Restraint of Longitudinal Reinforcement in Columns. Details clarification where the AS 5100 requirement for lateral restraint is not required. • BTD 2007/11 Horizontal Reinforcement for Crack Control in Walls and Wall Type Pier. Provides design requirements above that required in AS 5100 for reinforcement in walls based on the length and provision of contraction and expansion joints. • BTD 2008/01 Changes to Standard Bridge Drawings – Bridge Traffic Barrier Termination Details. Details the changes to standard traffic barrier drawings for traffic barrier terminations required for compliance with AS 5100 requirements. • BTD 2008/04 Design of Precast Reinforced Concrete Box Culverts. Details design life and specific design requirements for precast box culverts on RMS works. • BTD 2008/07 Design of Bridge Supports for Collision Load from Road Traffic. Details policy in regard to the design loads and protection of bridge supports from traffic impact. Where protection is required road safety barriers are not assumed to provide protection. Protective measures are to be shown on the bridge drawings. • BTD 2008/10 Bridge Deck Joints. Details the policy for the selection, design, installation and maintenance of bridge decks. A policy document provides information on the field performance of various joint types. • BPC 2008/11 Lists of RMS Approved Bridge Components and Systems. Details the requirements to utilise only approved bridge components and systems. Where the design requirements warrant the use of non-approved components or systems or where new products are available the approval process is provided. • BTD2008/15 Concrete Parapets on Pedestrian Overbridges. Details the change in policy to allow the use of U-shaped concrete girders for pedestrian overbridges provided safety screens are installed. • BTD 2009/02 Management of Bridge Rehabilitation Design Projects.
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3.8	<p>Details the policy for the management of bridge rehabilitation projects including the use of external consultants.</p> <ul style="list-style-type: none"> • Queensland Transport and Main Roads, Scope of Works and Technical Criteria – Design criteria for bridges and other structures (2011). Sets out the requirements for the design and manufacture of precast reinforced concrete arch units. <p>ACT Government complementary material for Design Surveillance and Achievement of Design Intent:</p> <ul style="list-style-type: none"> • BPC 2002/05 Bridge Concept. Sets out the requirement for Project Managers to complete the 'Bridge Design Proposal' form for all bridges and bridge size culverts and forward to Bridge Engineering for concurrence. 	
<p>Section 4</p> <p>4.1</p> <p>4.2</p> <p>4.2.3</p> <p>4.3</p> <p>4.3.2</p>	<p>ACT Government complementary material for Design and Delivery Management:</p> <ul style="list-style-type: none"> • BPC 2002/05 Bridge Concept. Sets out the requirement for Project Managers to complete the 'Bridge Design Proposal' form for all bridges and bridge size culverts and forward to Bridge Engineering for concurrence. <p>ACT Government enhanced practice for Considerations in the Design Process</p> <ul style="list-style-type: none"> • BTB 2009/02 Management of Bridge Rehabilitation Design Projects. Details the policy for the management of bridge rehabilitation projects including the use of external consultants. <p>ACT Government complementary material for Checking and Review Concepts:</p> <ul style="list-style-type: none"> • BPC 2002/05 Bridge Concept. Sets out the requirement for Project Managers to complete the 'Bridge Design Proposal' form for all bridges and bridge size culverts and forward to Bridge Engineering for concurrence. <p>ACT Government enhanced practice for Road Safety Audit:</p> <ul style="list-style-type: none"> • BTB 2008/07 Design of Bridge Supports for Collision Load from Road Traffic. Details policy in regard to the design loads and protection of bridge supports from traffic impact. Where protection is required road safety barriers are not assumed to provide protection. Protective measures are to be shown on the bridge drawings. <p>ACT Government complementary material for Standardised Components:</p> <ul style="list-style-type: none"> • BPC 2002/05 Bridge Concept. Sets out the requirement for Project Managers to complete the 'Bridge Design Proposal' form for all bridges and bridge size culverts and forward to Bridge Engineering for concurrence. <p>ACT Government enhanced practice for Standardised Components:</p> <ul style="list-style-type: none"> • BTB 2008/04 Design of Precast Reinforced Concrete Box Culverts. Details design life and specific design requirements for precast box culverts on RMS works. <p>ACT Government complementary material for Proprietary Items:</p> <ul style="list-style-type: none"> • BTB 2010/01 Use of Proprietary Precast Reinforced Concrete Modular Bridge Deck Systems. Details policy for the limiting the use of the Rocla M-Lock bridging system following problems with AC wearing course. In addition the conditions applicable for the use of proprietary bridging systems are set out. <p>ACT Government enhanced practice for Proprietary Items:</p> <ul style="list-style-type: none"> • CBE 1998/12 Tech Culvert™. AGBT needs addition Section in regard to design issues for proprietary arch structures. • BPC 2008/11 Lists of RMS Approved Bridge Components and Systems. Details the requirements to utilise only approved bridge 	

<p>4.4</p>	<p>components and systems. Where the design requirements warrant the use of non-approved components or systems or where new products are available the approval process is provided.</p> <p>ACT Government complementary material for Aesthetics/Architectural Requirements:</p> <ul style="list-style-type: none"> • CBE 1991/11 Bridges over Roads. Horizontal Clearances and Visual Perceptions. Provides policy on the options for the configuration of bridges over roads that relate to batters, horizontal and vertical clearances, barriers and structural design requirements. • BPC 2002/05 Bridge Concept. Sets out the requirement for Project Managers to complete the 'Bridge Design Proposal' form for all bridges and bridge size culverts and forward to Bridge Engineering for concurrence. • BTB 2008/06 Joints in Precast Concrete Barrier Elements on a Grade. Policy for when joints in barriers are to be vertical or normal to the grade. <p>ACT Government enhanced practice for Aesthetics/Architectural Requirements:</p> <ul style="list-style-type: none"> • BTB 2008/04 Design of Precast Reinforced Concrete Box Culverts. Details design life and specific design requirements for precast box culverts on RMS works. <p>ACT Government complementary material for Presentation of Drawings and Reports:</p> <ul style="list-style-type: none"> • BPC 2002/05 Bridge Concept. Sets out the requirement for Project Managers to complete the 'Bridge Design Proposal' form for all bridges and bridge size culverts and forward to Bridge Engineering for concurrence. <p>ACT Government complementary practice for Constructability and Maintenance Issues:</p> <ul style="list-style-type: none"> • BTB 2008/06 Joints in Precast Concrete Barrier Elements on a Grade. Policy for when joints in barriers are to be vertical or normal to the grade. <p>ACT Government enhanced practice for Constructability and Maintenance Issues:</p> <ul style="list-style-type: none"> • CBE 2000/05 Compaction of Concrete in Solid and Non-circular Bridge Columns. Provides additional technical and OHS information related to constructability of concrete columns. • BTB 2007/12 Design for Replacement of Bridge Bearings. Sets out the design requirements for the replacement of bearings including the conditions under which the replacement is to be carried out. The details are to be included on the drawings. Preload in bearing needs to be considered, clearance to bolts must allow for existing bearing to be removed. • BTB 2008/10 Bridge Deck Joints. Details the policy for the selection, design, installation and maintenance of bridge decks. A policy document. 	
<p>Section 5</p> <p>5.1</p> <p>5.2</p>	<p>ACT Government complementary material for Design Process:</p> <ul style="list-style-type: none"> • BPC 2002/05 Bridge Concept. Sets out the requirement for Project Managers to complete the 'Bridge Design Proposal' form for all bridges and bridge size culverts and forward to Bridge Engineering for concurrence. <p>ACT Government complementary material for Construction:</p> <ul style="list-style-type: none"> • BPC 2002/05 Bridge Concept. Sets out the requirement for Project Managers to complete the 'Bridge Design Proposal' form for all bridges and bridge size culverts and forward to Bridge Engineering for concurrence. 	

5.3	<p>Roads ACT complementary material for Aesthetics:</p> <ul style="list-style-type: none"> • CBEC1991/11 Bridges over Roads. Horizontal Clearances and Visual Perceptions. Provides policy on the options for the configuration of bridges over roads that relate to batters, horizontal and vertical clearances, barriers and structural design requirements. • BPC 2002/05 Bridge Concept. Sets out the requirement for Project Managers to complete the 'Bridge Design Proposal' form for all bridges and bridge size culverts and forward to Bridge Engineering for concurrence. • BTB 2008/06 Joints in Precast Concrete Barrier Elements on a Grade. Policy for when joints in barriers are to be vertical or normal to the grade. 	
5.4	<p>ACT Government complementary material for Cost Effective Design:</p> <ul style="list-style-type: none"> • BPC 2002/05 Bridge Concept. Sets out the requirement for Project Managers to complete the 'Bridge Design Proposal' form for all bridges and bridge size culverts and forward to Bridge Engineering for concurrence. 	
5.5	<p>ACT Government complementary material for Live Loads:</p> <ul style="list-style-type: none"> • BPC 2002/05 Bridge Concept. Sets out the requirement for Project Managers to complete the 'Bridge Design Proposal' form for all bridges and bridge size culverts and forward to Bridge Engineering for concurrence. <p>ACT Government enhanced practice for Live Loads:</p> <ul style="list-style-type: none"> • BPC 2004/06 Implementation of AS 5100-2004: Australian Bridge Design Code. Sets out policy to adopt the vehicle design loads as set out in AS 5100 except for specific cases where a departure from the standard must be approved on a case-by-case basis by satisfying particular criteria. Vehicle and barrier loads for existing bridges are also to be assessed on a case-by-case basis. 	
5.5.4	<p>ACT Government enhanced practice for Pedestrian Bridges:</p> <ul style="list-style-type: none"> • BPC 2005/09 Provision of Disabled Access for Pedestrian Bridges. Sets out the requirement to comply with AS5100 in regard to disabled access specifically in regard to the maximum grade of ramps. Situations where the requirements of AS 1428.1 in regard grade can be relaxed are set out. • BTB 2008/15 Concrete Parapets on Pedestrian Overbridges. Details the change in policy to allow the use of U-shaped concrete girders for pedestrian overbridges provided safety screens are installed. 	
5.6	<p>ACT Government complementary material for Location:</p> <ul style="list-style-type: none"> • BPC 2002/05 Bridge Concept. Sets out the requirement for Project Managers to complete the 'Bridge Design Proposal' form for all bridges and bridge size culverts and forward to Bridge Engineering for concurrence. <p>ACT Government enhanced practice for Location:</p> <ul style="list-style-type: none"> • BTB 2008/12 Provisions for Concrete Structures in Acid Sulfate Soils. Policy for the design of bridges in acid sulphate soils. 	
5.7	<p>ACT Government complementary material for Traffic and Traffic Considerations:</p> <ul style="list-style-type: none"> • BPC 2002/05 Bridge Concept. Sets out the requirement for Project Managers to complete the 'Bridge Design Proposal' form for all bridges and bridge size culverts and forward to Bridge Engineering for concurrence. 	
5.8	<p>ACT Government complementary material for Public Utilities:</p> <ul style="list-style-type: none"> • BPC 2002/05 Bridge Concept. Sets out the requirement for Project 	

<p>5.9</p>	<p>Managers to complete the 'Bridge Design Proposal' form for all bridges and bridge size culverts and forward to Bridge Engineering for concurrence.</p> <p>ACT Government enhanced practice for Public Utilities:</p> <ul style="list-style-type: none"> • BPC 2006/05 Pipes and Conduits for Bridgeworks. Sets out the applicable standards for pipes and conduits for bridgeworks. <p>ACT Government complementary material for Articulation:</p> <ul style="list-style-type: none"> • BDI 1986/02 Design for Continuous Superstructures. Details policy to use continuous superstructures to improve ride quality and minimise the number of joints and reduce subsequent maintenance costs unless site conditions do not permit full continuity. The Guide includes other considerations. • BPC 2002/05 Bridge Concept. Sets out the requirement for Project Managers to complete the 'Bridge Design Proposal' form for all bridges and bridge size culverts and forward to Bridge Engineering for concurrence. <p>ACT Government enhanced practice for Articulation:</p> <ul style="list-style-type: none"> • BPC 2005/04 rev1 Pot Bearing Attachment Plates. Details policy for the installation and replacement of pot bearings and particularly the design details for steel attachment plates and fixings. • BPC 2007/05 Design of Integral Bridges. Sets out requirements in addition to AS5100 for the design of integral bridges. • BTB 2008/09 Link Slabs for Precast Pretensioned Concrete Girder Bridges. Policy to provide continuous running surface on pretensioned girder bridges by using link slabs between spans. 	
<p>5.9.1</p>	<p>ACT Government complementary material for Definition:</p> <ul style="list-style-type: none"> • BDI 1986/02 Design for Continuous Superstructures. Details policy to use continuous superstructures to improve ride quality and minimise the number of joints and reduce subsequent maintenance costs unless site conditions do not permit full continuity. The Guide includes other considerations. 	
<p>5.9.2</p>	<p>ACT Government enhanced practice for Considerations:</p> <ul style="list-style-type: none"> • BPC 2005/04 rev1 Pot Bearing Attachment Plates. Details policy for the installation and replacement of pot bearings and particularly the design details for steel attachment plates and fixings. 	
<p>5.10</p>	<p>ACT Government complementary material for Skew:</p> <ul style="list-style-type: none"> • BPC 2002/05 Bridge Concept. Sets out the requirement for Project Managers to complete the 'Bridge Design Proposal' form for all bridges and bridge size culverts and forward to Bridge Engineering for concurrence. 	
<p>5.11</p>	<p>ACT Government complementary material for Information from Existing Bridge:</p> <ul style="list-style-type: none"> • BPC 2002/05 Bridge Concept. Sets out the requirement for Project Managers to complete the 'Bridge Design Proposal' form for all bridges and bridge size culverts and forward to Bridge Engineering for concurrence. 	
<p>5.11</p>	<p>ACT Government enhanced practice for Information from Existing Bridge:</p> <ul style="list-style-type: none"> • BTB 2009/02 Management of Bridge Rehabilitation Design Projects. Details the policy for the management. 	
<p>5.12</p>	<p>ACT Government complementary material for Temporary Bridging:</p> <ul style="list-style-type: none"> • BPC 2002/05 Bridge Concept. Sets out the requirement for Project Managers to complete the 'Bridge Design Proposal' form for all bridges and bridge size culverts and forward to Bridge Engineering for concurrence. 	
<p>5.13</p>		

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6.3	<ul style="list-style-type: none"> • BPC 2002/05 Bridge Concept. Sets out the requirement for Project Managers to complete the 'Bridge Design Proposal' form for all bridges and bridge size culverts and forward to Bridge Engineering for concurrence. <p>ACT Government complementary material for Dynamics, Stiffness Deflection, Span/Depth Ratio:</p> <ul style="list-style-type: none"> • BPC 2002/05 Bridge Concept. Sets out the requirement for Project Managers to complete the 'Bridge Design Proposal' form for all bridges and bridge size culverts and forward to Bridge Engineering for concurrence. 	
<p>Section 7</p> <p>7.1.3</p> <p>7.1.5</p> <p>7.2.1</p> <p>7.3</p> <p>7.5</p> <p>7.6</p>	<p>ACT Government complementary material for Environment:</p> <ul style="list-style-type: none"> • BTD 2002/05 Bridge Concept. Sets out the requirement for Project Managers to complete the 'Bridge Design Proposal' form for all bridges and bridge size culverts and forward to Bridge Engineering for concurrence. <p>ACT Government departure practice for Submergence:</p> <ul style="list-style-type: none"> • CBE 1994/05 Drainage of Voids in Bridge Deck. The Guide goes further in regard to the issue of drainage and the indeed the use of voided members for submersible bridges. This is a critical issue. Instances have occurred where a large volume of water was trapped in the void due to blocked drain holes. An addition silt build up occurs. <p>ACT Government complementary material for Scour:</p> <ul style="list-style-type: none"> • CBE 1996/04 Driven Piles. The Guide defines the types of scour, monitoring scour. Mentions danger of driven piles where scour is likely to rock level. Suggest a more definitive method of estimating scour be adopted. <p>ACT Government enhanced practice for Noise:</p> <ul style="list-style-type: none"> • BPC 2004/08 Inspection of Modular Bridge Expansion Joints and Control of Noise. Requires Designers and Project Managers to provide sufficient space under modular bridge expansion joints for installation of a Helmholtz Absorber as well as space for inspection and maintenance. <p>ACT Government direction on Scuppers on Bridges:</p> <ul style="list-style-type: none"> • The ACT Government does not support the use of scuppers on bridges. Other methods of draining stormwater off the bridge should be adopted. <p>ACT Government enhanced practice for Drainage:</p> <ul style="list-style-type: none"> • BPC 2006/05 Pipes and Conduits for Bridgeworks. Specifies pipes that are to be used in bridgeworks for services and drainage. <p>ACT Government complementary material for Durability:</p> <ul style="list-style-type: none"> • CBE 1997/05 Design of Bearings for Durability. Use of elastomeric or stainless steel bearings. <p>ACT Government enhanced practice for Durability:</p> <ul style="list-style-type: none"> • BTD 2008/13 Provisions for Future Cathodic Protection of Reinforced Concrete Bridges. Sets out requirements for the provision of future cathodic protection of concrete elements in all new bridges. <p>ACT Government enhanced practice for Protection:</p> <ul style="list-style-type: none"> • BPC 2003/02 Waterproofing Membranes for Concrete Bridge Decks. Requires all concrete bridge decks except those on modular bridges to be provided with a waterproofing membrane. <p>ACT Government enhanced practice for Protection:</p> <ul style="list-style-type: none"> • BTD 2008/13 Provisions for Future Cathodic Protection of Reinforced Concrete Bridges. Sets out requirements for the 	

	provision of future cathodic protection of concrete elements in all new bridges.	
Section 8	ACT Government complementary material for Geotechnical: <ul style="list-style-type: none"> • BPC 2002/05 Bridge Concept. Sets out the requirement for Project Managers to complete the 'Bridge Design Proposal' form for all bridges and bridge size culverts and forward to Bridge Engineering for concurrence. 	
8.4.1	ACT Government enhanced practice for Soft Soils: <ul style="list-style-type: none"> • BPC 2004/10 Bridge Approach Slabs - Standard Drawings. Approach slabs are to be used on all bridges. Length of slab is dependent on height of fill behind abutments and expected settlement. 	
8.4.3	ACT Government enhanced practice for Soil and Ground Water Aggressivity: <ul style="list-style-type: none"> • BTD 2008/12 Provisions for Concrete Structures in Acid Sulfate Soils. Guidance for design of concrete elements in acid sulfate soils. 	
8.4.4	ACT Government departure practice for Pile Relaxation In Fine Sands: <ul style="list-style-type: none"> • CBE 1996/04 Driven Piles. The Guide raises the issue. This situation results in loss of resistance as pore pressure built up during driving dissipates. Re-driving is required 12-24 hours. This needs to be a policy in regard to driven piles. 	
8.4.5	ACT Government enhanced practice for Height of Abutments: <ul style="list-style-type: none"> • BPC 2004/10 Bridge Approach Slabs - Standard Drawings. Approach slabs are to be used on all bridges. Length of slab is dependent on height of fill behind abutments and expected settlement. 	
8.5.2	ACT Government enhanced practice for Presentation of Geotechnical Information: <ul style="list-style-type: none"> • CBE 2000/09 Geotechnical Information for Bridges. Method of presenting geotechnical information. 	
Section 9	ACT Government complementary material for Foundation Selection : <ul style="list-style-type: none"> • BPC 2002/05 Bridge Concept. Sets out the requirement for Project Managers to complete the 'Bridge Design Proposal' form for all bridges and bridge size culverts and forward to Bridge Engineering for concurrence. 	
9.3.2	ACT Government departure practice for Dynamic Pile Testing: <ul style="list-style-type: none"> • CBE 1996/04 Driven Piles. The instruction states that long term effects of settlement cannot be estimated by dynamic testing. 	
9.4	ACT Government departure practice for Scour Susceptibility: <ul style="list-style-type: none"> • CBE 1996/04 Driven Piles. The Guide provides additional factors in considering potential for scour and loss of pile resistance. 	
Section 10	ACT Government complementary material for Construction Considerations: <ul style="list-style-type: none"> • BPC 2002/05 Bridge Concept. Sets out the requirement for Project Managers to complete the 'Bridge Design Proposal' form for all bridges and bridge size culverts and forward to Bridge Engineering for concurrence. 	
10.1	ACT Government complementary material for Construction Considerations <ul style="list-style-type: none"> • BPC 2002/05 Bridge Concept. Sets out the requirement for Project Managers to complete the 'Bridge Design Proposal' form for all bridges and bridge size culverts and forward to Bridge Engineering for concurrence. <p>ACT Government enhanced practice for Timber/Concrete Composite Bridge</p>	

<p>10.1.2</p> <p>10.2</p> <p>10.3</p> <p>10.3.1</p>	<p>Modules :</p> <ul style="list-style-type: none"> • CBE 1999/15 Timber/Concrete Composite Bridge Modules Test Loading of Module - Design Criteria. Sets out the design criteria for the modules based on the ultimate test load and specific RMS requirements. <p>ACT Government enhanced practice for Stress Laminated Timber Decks:</p> <ul style="list-style-type: none"> • 2003/03 Bituminous Surfacing for Timber Bridge Decks. Sets out the bituminous surfacing to be used for traditional timber and stress laminated timber decks. The waterproofing systems to be used for stress laminated timber decks are set out in Appendix I. <p>ACT Government enhanced practice for Integral Bridges:</p> <ul style="list-style-type: none"> • BPC 2007/05 Design of Integral Bridges Design of Integral Bridges. Sets out requirements in addition to AS5100 for the design of integral bridges. <p>ACT Government enhanced practice for Precast Prestressed Concrete Members:</p> <ul style="list-style-type: none"> • CBE 2000/08 Bar Shapes and Steel Lists for Precast Concrete Members. Sets out policy that bar shapes and steel list are to be included on the drawings for all precast reinforced or prestressed concrete members. <p>ACT Government complementary material for Construction Considerations</p> <ul style="list-style-type: none"> • BPC 2002/05 Bridge Concept. Sets out the requirement for Project Managers to complete the 'Bridge Design Proposal' form for all bridges and bridge size culverts and forward to Bridge Engineering for concurrence. <p>ACT Government complementary material for Construction Considerations</p> <ul style="list-style-type: none"> • BPC 2002/05 Bridge Concept. Sets out the requirement for Project Managers to complete the 'Bridge Design Proposal' form for all bridges and bridge size culverts and forward to Bridge Engineering for concurrence. <p>ACT Government enhanced practice for Steel Pipe Culverts:</p> <ul style="list-style-type: none"> • BTB 2007/13 Durability of Steel Piles in Contact with Acid Sulfate Soils. Information for piles can be used for steel pipe culverts in contact with acid sulphate soils. 	
<p>Section 11</p>	<p>ACT Government complementary material for Design for Construction:</p> <ul style="list-style-type: none"> • BPC 2002/05 Bridge Concept. Sets out the requirement for Project Managers to complete the 'Bridge Design Proposal' form for all bridges and bridge size culverts and forward to Bridge Engineering for concurrence. 	
<p>Section 12</p> <p>12.2</p> <p>12.3</p>	<p>ACT Government complementary material for Design for Maintainability</p> <ul style="list-style-type: none"> • BPC 2002/05 Bridge Concept. Sets out the requirement for Project Managers to complete the 'Bridge Design Proposal' form for all bridges and bridge size culverts and forward to Bridge Engineering for concurrence. <p>ACT Government enhanced practice for access for inspection</p> <ul style="list-style-type: none"> • BTB 2008/02 Access for Inspection, Monitoring and Repair or Replacement of Bridge Components. Sets out policy to address OHS issues related to bridge inspection and related access. It also includes the requirement adequate working space to carry out maintenance work. Security of access is also addressed. <p>ACT Government complementary material for access for maintenance works</p> <ul style="list-style-type: none"> • BTB 2008/02 Access for Inspection, Monitoring and Repair or Replacement of Bridge Components. Sets out policy to address OHS issues related to bridge inspection and related access. It also includes the requirement adequate working space to carry out maintenance work. Security of access is also addressed. 	

12.4	<p>ACT Government complementary material for bearing replacement</p> <ul style="list-style-type: none"> • BTD 2007/12 Design for Replacement of Bridge Bearings. Sets out the design requirements for the replacement of bearings including the conditions under which the replacement is to be carried out. The details are to be included on the drawings. 	
Appendix A	<p>ACT Government complementary material for Action Check List for Resolution of Design Issues in AS5100-2004</p> <ul style="list-style-type: none"> • BPC 2002/05 Bridge Concept. Sets out the requirement for Project Managers to complete the 'Bridge Design Proposal' form for all bridges and bridge size culverts and forward to Bridge Engineering for concurrence. • BPC 2003/08 Bridge Screens. Sets out policy to assess the need for safety screens based on guidelines in Appendix A of the BPC. • BPC 2007/04 Changes to Standard Bridge Drawings – Steel Traffic Barrier Railing Joints. Policy that barrier railing joints be in accordance with the standard drawing. <p>ACT Government enhanced practice for Action Check List for Resolution of Design Issues in AS5100-2004</p> <ul style="list-style-type: none"> • BPC 2004/06 Implementation of AS 5100-2004: Australian Bridge Design Code. Sets out policy to adopt the vehicle design loads as set out in AS 5100 except for specific cases where a departure from the standard must be approved on a case-by-case basis by satisfying particular criteria. Vehicle and barrier loads for existing bridges are also to be assessed on a case-by-case basis. • BPC 2007/03 Changes to Standard Bridge Drawings – Quarterly Update – Revised Australian Standards. Relates to standards for stainless steel bars for dowels, prestressing strand and steel reinforcing wire. • BTD 2008/01 Changes to Standard Bridge Drawings – Bridge Traffic Barrier Termination Details. Details the changes to standard traffic barrier drawings for traffic barrier terminations required for compliance with AS 5100 requirements. 	
Appendix B	<p>ACT Government complementary material for Action Check List for Ensuring Coverage of Relevant Details for the Preparation of a Bridge Design Concept:</p> <ul style="list-style-type: none"> • BPC 2002/05 Bridge Concept. Sets out the requirement for Project Managers to complete the 'Bridge Design Proposal' form for all bridges and bridge size culverts and forward to Bridge Engineering for concurrence. <p>ACT Government enhanced practice for Action Check List for Ensuring Coverage of Relevant Details for the Preparation of a Bridge Design Concept:</p> <ul style="list-style-type: none"> • BPC 2004/06 Implementation of AS 5100-2004: Australian Bridge Design Code. Sets out policy to adopt the vehicle design loads as set out in AS 5100 except for specific cases where a departure from the standard must be approved on a case-by-case basis by satisfying particular criteria. Vehicle and barrier loads for existing bridges are also to be assessed on a case-by-case basis. • BTD 2008/01 Changes to Standard Bridge Drawings – Bridge Traffic Barrier Termination Details. Details the changes to standard traffic barrier drawings for traffic barrier terminations required for compliance with AS 5100 requirements. • BTD 2008/17 Changes to Standard Bridge Drawings - RC Link Slab for Super T Girder Decks. New Standard Drawing. • BTD 2008/10 Bridge Deck Joints. Details the policy for the selection, design, installation and maintenance of bridge decks. A policy document provides information on the field performance of various joint types. • BTD 2008/12 Provisions for Concrete Structures in Acid Sulphate Soils. Details policy for the design and construction protection of concrete structures subjected to acid sulphate soils. 	

SUPPLEMENT TO THE AUSTROADS GUIDE TO BRIDGE TECHNOLOGY PART 4: STRUCTURAL DRAFTING PUBLICATION DATE: 2009		
Reference Section	ACT Practice, Complementary Material, or Departures	Date
General	ACT Government complementary material: <ul style="list-style-type: none"> • RTA Structural Drafting and Detailing Manual. The current on-line RMS Structural Drafting and Detailing Manual supersedes all previous directions dealing with structural drafting and detailing. 	

SUPPLEMENT TO THE AUSTROADS GUIDE TO BRIDGE TECHNOLOGY PART 6: BRIDGE CONSTRUCTION PUBLICATION DATE: 2009		
Reference Section	ACT Practice, Complementary Material, or Departures	Date
General	ACT Government complementary material: <ul style="list-style-type: none"> • RTA Structural Drafting and Detailing Manual. The current on-line RMS Structural Drafting and Detailing Manual supersedes all previous directions dealing with structural drafting and detailing. 	
Section 4 4.4.6	ACT Government complementary material for Bearing setting-out: <ul style="list-style-type: none"> • BDI1980/03 Bearing Levels. 	
Section 6 6.4.4	ACT Government enhanced practice for Materials for Formwork (steel): <ul style="list-style-type: none"> • BTD2008/03 Use of Profiled Steel Sheeting. Proprietary profiled steel sheeting is not mentioned in AGBT Part 6. 	
Section 7 7.1	ACT Government direction on driven piles: <ul style="list-style-type: none"> • Concrete driven piles shall be prestressed only. ACT Government enhanced practice for Foundations and Piling: <ul style="list-style-type: none"> • BTD2007/13 Durability of steel piles in acid sulphate soils. RMS policy specifies corrosion allowances for design. • BTD2008/12 Provisions for concrete structures in acid-sulphate soils, with RMS publication “Concrete Structures – Advice for Design and Construction” (Review Report, Edition 3 – May 2008). Document is primary technical reference for structures in acid sulphate soils. • BTD2008/13 Provisions for Future Cathodic Protection of reinforced concrete bridges. RMS policy applicable to all concrete bridges. 	
7.5.1	ACT Government complementary material for Design Intention and Installation Compliance of Driven Piles: <ul style="list-style-type: none"> • CBE1995/03 Information to be shown on drawings for driven piles. 	
7.8.1	ACT Government enhanced practice for Dynamic Testing: <ul style="list-style-type: none"> • CBE1996/04 Driven piles. RMS policy provides additional information for design. 	
Section 9 9.2.2	ACT Government complementary material for Wall Cracking: <ul style="list-style-type: none"> • BTD2007/11 Horizontal Reinforcement for crack control in walls and wall type piers. 	
Section 10 10.2.1	ACT Government complementary material for Concrete Mix Design, Specification and Compliance: <ul style="list-style-type: none"> • BPC2002/02 Maximum concrete strengths for use in RMS works. 	
Section 12 12.4	ACT Government complementary material for Concrete Mix Design, Specification and Compliance: <ul style="list-style-type: none"> • BPC2002/02 Maximum concrete strengths for use in RMS works. 	

<p>Section 13 13.2.2</p> <p>13.2.3</p> <p>13.2.7</p>	<p>ACT Government enhanced practice for Construction Joints:</p> <ul style="list-style-type: none"> • BPC2003/04 Proprietary expanded metal CJ's and shear keys. RMS policy forbids use of expanded metal in construction joints. <p>ACT Government complementary material for Fixtures and Reinforcement:</p> <ul style="list-style-type: none"> • BDI1985/06 Detailing of bent-on-site reinforcing bars. <p>ACT Government enhanced practice for Fixtures and Reinforcement:</p> <ul style="list-style-type: none"> • BTD2008/13 Provisions for future Cathodic Protection in reinforced concrete Bridges. Cathodic protection is not mentioned in AGBT Part 6. <p>ACT Government enhanced practice for Compaction of concrete:</p> <ul style="list-style-type: none"> • CBE2000/05 Compaction of concrete in columns. RMS policy requires design to consider personnel access for carrying out compaction. 	
<p>Section 15 15.2.5</p> <p>15.3</p>	<p>ACT Government enhanced practice for Specified Requirements in pretensioning:</p> <ul style="list-style-type: none"> • BTD2010/03 Pretensioned bridge members – concrete transfer strength. RMS policy specifies maximum concrete strength at transfer of prestressing force. <p>ACT Government complementary material for Post-tensioning Hardware and Equipment and Grout:</p> <ul style="list-style-type: none"> • BTD2008/11 Lists of RMS-approved bridge components and systems. 	
<p>Section 16 16.5.1</p> <p>16.6.1</p> <p>16.9.3</p>	<p>ACT Government complementary material for General – weld classification:</p> <ul style="list-style-type: none"> • CBE1990/09 Weld Category – Fabricated Steelwork. <p>ACT Government enhanced practice for General – Field Splices:</p> <ul style="list-style-type: none"> • BTD2008/05 Splicing of steel girders using bolts. RMS policy restricts usage of bolted splices so as to maximise life of protective systems. <p>ACT Government enhanced practice for Erection Procedures:</p> <ul style="list-style-type: none"> • BDI1980/11 Provision of lifting lugs on steel girders. RMS policy provides requirements for lifting lugs. 	
<p>Section 17</p> <p>17.6</p>	<p>ACT Government enhanced practice for Timber Bridges:</p> <ul style="list-style-type: none"> • BTD2008/16 Timber Bridge Manual, referring to RMS publication "Timber Bridge Manual". RMS guidance manual for timber bridge design, rehabilitation, inspection, repair and maintenance of all types of timber bridges. This is a primary RMS technical reference. <p>ACT Government direction on Timber Bridges</p> <ul style="list-style-type: none"> • Timber shall not be used as a structural member in any new bridge regardless of loading. 	
<p>Section 19 19.3</p> <p>19.4.4</p> <p>19.4</p>	<p>ACT Government complementary material for Fixed and Expansion Bearings:</p> <ul style="list-style-type: none"> • BTD2008/11 Lists of RMS-approved bridge components and systems. <p>ACT Government enhanced practice for Installation – Laminated Bearings:</p> <ul style="list-style-type: none"> • BPC2005/03 Installation of elastomeric bearings for pretensioned concrete girders. RMS policy requires use of pre-moulded epoxy mortar pads on top of bearings. <p>ACT Government complementary material for elastomeric and pot bearings:</p> <ul style="list-style-type: none"> • BDI1980/03 Bearing Levels. 	

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22.4	<p>Concrete Arch Culvert:</p> <ul style="list-style-type: none"> • CBE1998/12 Tech culvert™. <p>ACT Government enhanced practice for proprietary Concrete arch and Steel culverts:</p> <ul style="list-style-type: none"> • BTD2007/09 Soil-arch Structures. RMS policy requires evidence of proof-checking of structure and of non-conforming backfill material. 	
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SUPPLEMENT TO THE AUSTRROADS GUIDE TO BRIDGE TECHNOLOGY PART 7: MAINTENANCE AND MANAGEMENT OF EXISTING BRIDGES PUBLICATION DATE: 2009		
Reference Section	ACT Practice, Complementary Material, or Departures	Date
General	<p>ACT Government complementary materials:</p> <ul style="list-style-type: none"> • RMS Bridge Technical Direction Manual 	
Section 3 3.9	<p>ACT Government complementary material for Feedback to Designers:</p> <ul style="list-style-type: none"> • BTD 2009/02 Management of Bridge Rehabilitation Design Projects. Procedures for managing bridge rehabilitation designs. 	
Section 7 7.2.1 7.1.7	<p>ACT Government complementary material for Timber Bridge Maintenance Issues:</p> <ul style="list-style-type: none"> • BTD 2008/16 Timber Bridge Manual. Guidance on the maintenance and rehabilitation of timber bridges. <p>ACT Government complementary material for Preventive Maintenance of Individual Timber Elements:</p> <ul style="list-style-type: none"> • BPC 2003/03 Bituminous Surfacing for Timber Bridge Decks. Guidance on Bituminous treatments on timber cross decking with longitudinal running sheeting and the selection of waterproofing systems for stress laminated timber decks. 	
Section 8 8.10	<p>ACT Government complementary material for Deterioration of Materials and Damage to Structures:</p> <ul style="list-style-type: none"> • CBE 1998/8 Bridge Bearings – Design for Maintenance or Replacement. Guidance on design life of bearings. 	
Section 9 9.2 9.3 9.4 9.10.3 9.10.5	<p>ACT Government enhanced practice for Concrete Bridges:</p> <ul style="list-style-type: none"> • BPC 2003/02 Waterproofing Membranes for Concrete Bridge Decks. Selection of waterproofing membranes for concrete decks. <p>ACT Government complementary material for Steel Bridges:</p> <ul style="list-style-type: none"> • BPC 2005/08 Welding of Bridges. Guidance to control unauthorised welding on steel bridge structures. <p>ACT Government enhanced practice for Timber Bridges:</p> <ul style="list-style-type: none"> • BPC 2003/06. Timber Truss Cross Girder Replacements. Guidance on adequate temporary structural support during cross girder replacement in timber truss bridges. • BPC 2003/07 Bridge Maintenance Piling Works. Guidance on the installation of timber replacement piles. <p>ACT Government complementary material for Deck Joints:</p> <ul style="list-style-type: none"> • BDI 2008/10 Bridge Deck Joints. Policy document on Bridge Deck Joint Selection, Design, Installation and Maintenance—May 2008. <p>ACT Government departure in practice for Holding Down Bolts:</p> <ul style="list-style-type: none"> • BDI 1985/7 Anchor Bolts. Direction to use terminology “anchor bolts” and not “holding down bolts”. 	

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