

Main Roads Technical Standard

MRTS86

Preparation for Bridge Widening

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Preparation for Bridge Widening

1 INTRODUCTION

This Standard applies to the operations required to be carried out in preparation for the widening of a bridge.

This Technical Standard shall be read in conjunction with MRTS01 *Introduction to Technical Standards*, MRTS50 *Specific Quality System Requirements* and other Technical Standards as appropriate.

This Technical Standard forms part of the Main Roads Specifications and Technical Standards Manual.

The requirements for preparation for bridge widening shall include the use of suppliers and products for the items listed in Table 1 that are registered by Transport and Main Roads.

Table 1 – Items Requiring Use of Registered Suppliers and Products

Clause	Category of Work
7.3	Surface Tolerant epoxy coating
9.3.2	Epoxy Adhesive

Registered products for the above items are listed in the relevant clauses in Annexure MRTS86.1

For further information regarding registered suppliers and products for the above items refer to –

Queensland Department of Transport and Main Roads
 Bridge Branch
 GPO Box 1412
 Brisbane Qld 4001

2 DEFINITION OF TERMS

The terms used in this Standard shall be as defined in Clause 2 of MRTS01 *Introduction to Technical Standards*.

3 REFERENCED DOCUMENTS

Table 3 lists documents referenced in this Technical Standard

Table 3 – Referenced Documents

Reference	Title
AS/NZS 3678	Structural steel - Hot-rolled plates, floorplates and slabs
AS/NZS 3679	Structural steel - Hot-rolled bars and sections

4 QUALITY SYSTEM REQUIREMENTS

4.1 Hold Points, Witness Points and Milestones

General requirements for Hold Points, Witness Points and Milestones are specified in Clause 5.2 of MRTS01 *Introduction to Technical Standards*.

The Witness Points applicable to this Standard are summarised in Table 4.1. There are no Hold Points or Milestones defined.

Table 4.1 - Witness Points

Clause	Witness Point
7.3	Breaking back concrete.
9.4	Installation of steel reinforcing bars.

5 TRAFFIC RESTRICTIONS DURING CONSTRUCTION

Notwithstanding any other provision of the Contract regarding traffic restrictions during construction, the requirements of this clause shall apply where traffic is allowed to use a bridge during widening works.

During placing of concrete in abutment and pier extensions and for a period of 1 day afterwards, the speed of traffic on the bridge shall be restricted to a maximum of 60 km/hr.

During placing of concrete in cross girders and the bridge deck and for a period of 3 days afterwards, traffic shall not be permitted to use the lane adjacent to the work and the speed of traffic shall be restricted to a maximum of 60 km/hr.

6 REMOVAL OF EXISTING BRIDGE RAILS AND POSTS

6.1 General

Clause 6 describes the work to be carried out where existing bridge rails and posts are to be removed under the Contract.

6.2 Not Used

6.3 Construction

Where specified in the Drawings, the Contractor shall remove the bridge rails from the existing bridge superstructure and demolish the existing posts. The Contractor shall ensure that no damage is caused to the railing, or to any existing reinforcing steel which is to be retained.

Where specified in the Drawings, bridge rail shall be re-erected under the Contract. If the bridge rail is not to be re-used, it shall be stockpiled, in good order and condition.

Demolished materials and rubbish shall be removed from the Site in accordance with the requirements of Clause 11 of MRTS01 *Introduction to Technical Standards*.

7 BREAKING BACK OF EXISTING CONCRETE

7.1 General

Clause 7 describes the work to be carried out where existing concrete is to be broken back under the Contract.

7.2 Not Used

7.3 Construction

Where specified in the Drawings, existing concrete shall be broken back to the extent shown. Before demolition commences, the extremity of the proposed break back of concrete, including the underside of decks, shall be saw cut on all faces to the depth specified in the Drawings, but not less than 20 mm.

Care shall be exercised during demolition work to prevent damage to the existing reinforcing bars which are to be incorporated into the new work.

Breaking back of concrete shall be a **Witness Point**.

Explosives shall not be used for breaking back the existing concrete.

Where concrete has been broken back and it is not being extended, reinforcing bars shall be cut off and coated with a minimum of three coats of a registered surface tolerant epoxy coating (refer Clause 2).

Approved products are listed in Clause 1 of Annexure MRTS86.1. Alternative products, including full technical details of the alternative formulation, may be submitted to the Administrator for approval.

Demolished materials and rubbish shall be removed from the Site in accordance with the requirements of Clause 11 of MRTS01 *Introduction to Technical Standards*.

8 REMOVAL OF EXISTING RUBBLE MASONRY AT ABUTMENTS

8.1 General

Clause 8 describes the work to be carried out where existing rubble masonry at abutments is to be removed under the Contract.

8.2 Not Used

8.3 Construction

Where specified in the Drawings, existing rubble masonry at abutments shall be removed to the extent specified in the Drawings and/or to the extent necessary to allow construction of the new work to proceed.

Where specified in the Drawings, rock shall be stored on the Site for re-use under the Contract.

If the rock is not to be re-used, it, together with all other demolished materials and rubbish, shall be removed from the Site in accordance with the requirements of Clause 11 of MRTS01 *Introduction to Technical Standards*.

9 INSTALLATION OF STEEL REINFORCING AND DOWEL BARS

9.1 General

Clause 9 describes the work to be carried out where steel reinforcing bars and dowel bars are required to be installed in existing concrete under the Contract.

9.2 Not Used

9.3 Materials

9.3.1 Dowel Bars and Reinforcing Bars

Dowel bars and reinforcing bars shall be steel reinforcing bar of the diameter, length and grade specified in the Drawings supplied in accordance with MRTS71 *Reinforcing Steel*.

9.3.2 Epoxy Adhesive

Epoxy adhesive shall be a registered product (refer Clause 1) capable of forming a superior adhesion to concrete and steel.

Approved products are listed in Clause 1.1 of Annexure MRTS86.1. Alternative products, including full technical details of the alternative formulation, may be submitted to the Administrator for approval.

9.4 Installation of Reinforcing Bars

Installation of reinforcing bars shall be a **Witness Point**.

Where reinforcing bars are specified in the Drawings, holes shall be drilled into the existing concrete, to the size, depth and angle specified in the Drawings.

Holes shall be cleaned out with dry air to remove dust and loose particles.

Epoxy adhesive shall be mixed and applied strictly in accordance with the manufacturer's recommendations.

Sufficient epoxy adhesive shall be placed in each drilled hole before insertion of the steel reinforcing bar, to completely fill the space remaining after insertion of the bar.

The reinforcing bar shall be inserted in the hole and rotated several times to ensure that the epoxy adhesive has thoroughly coated both the reinforcing bar and the inside of the hole.

Reinforcing bars shall not be disturbed further until the epoxy adhesive has set.

9.5 Construction of Dowel Bars

Dowel bars shall be installed to details specified in the Drawings.

Dowel bars shall be set true to the locations specified in the Drawings and shall be held firmly in position so that they are not displaced during placement of concrete.

10 SCABBLING CONCRETE FACES

10.1 General

Clause 10 describes the work to be carried out where existing concrete faces are required to be scabbled under the Contract.

10.2 Not Used

10.3 Construction

The contact area between the existing concrete and new concrete shall be well scabbled to expose the existing aggregate and remove laitance.

The scabbled face shall be cleaned with a water blast to remove all dust and loose particles.

11 TEMPORARY BARRIER GUARDRAIL

11.1 General

Clause 11 describes the work to be carried out where temporary guardrail is required to be erected under the Contract to act as a barrier during bridge widening.

11.2 Not Used

11.3 Materials

11.3.1 Posts

Posts for temporary barrier shall be fabricated as specified in the Drawings.

Steel plate shall conform to the requirements of AS/NZS 3678 and rolled steel channel shall conform to the requirements of AS/NZS 3679.

Fabrication shall be carried out in accordance with the requirements of MRTS78 *Fabrication of Structural Steelwork*.

11.3.2 Steel Beam Guardrail

Steel beam guardrail panel, fittings and fixings shall conform to the requirements of Clause 13 of MRTS14A *Road Furniture (Steel Work)*.

11.3.3 Anchor Bolts

Anchor bolts shall consist of proprietary chemical anchors of the size specified in the Drawings.

11.3.4 Cement Mortar

Cement mortar shall consist of 1 part of Type GP cement and 3 parts of clean sharp sand with just sufficient water added to form a dry packing mortar.

11.4 Construction

11.4.1 Erection and Dismantling Sequence

Where an erection and/or dismantling sequence or other requirements are stated in Clause 3 of Annexure MRTS86.1, such sequence and/or requirements shall be followed by the Contractor.

11.4.2 Installation

Holes for chemical anchors shall be core drilled in the existing deck or kerb as appropriate to the size recommended by the manufacturer of the chemical anchors.

Chemical anchors shall be installed strictly in accordance with the recommendations of the manufacturer.

The temporary barrier shall be assembled and installed in accordance with the details specified in the Drawings

The base plates of the posts shall be packed with cement mortar.

11.4.3 Dismantling

Following completion of the work behind the barrier or at the appropriate time during construction, the temporary barrier shall be dismantled and removed.

The anchor bolts shall be cut off level with the surface of the concrete. If gas cutting is used, the operation shall be carried out by a competent operator who shall ensure that the cutting is performed quickly to reduce to a minimum the heat transfer in the concrete along the anchor bolt.

After cutting of anchor bolts, a liberal coating of bitumen shall be applied over the exposed steel to prevent corrosion.

12 SUPPLEMENTARY REQUIREMENTS

The requirements of MRTS86 *Preparation for Bridge Widening* are varied by the supplementary requirements given in Clause 4 of Annexure MRTS86.1.