

Main Roads Specification

MRS70

Concrete

October 10

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Concrete

1 INTRODUCTION

This Specification applies to the construction of road and bridge structures in concrete.

The aim of this Specification is to achieve concrete of the required strength, durability and appearance. It describes the materials, supply, placing, compacting, finishing, curing and measurement of concrete, including mass concrete, reinforced concrete, prestressed concrete and no-fines concrete.

All concrete shall be manufactured and supplied in accordance with the requirements of AS 1379 and the additional requirements of this Specification.

This Specification shall be read in conjunction with Specifications MRS01 *Introduction to Specifications* and other Specifications as appropriate.

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

2 MEASUREMENT OF WORK

2.1 *Standard Work Items*

This Specification contains no Standard Work Items. Subject to the provisions of Clause 2.2 supply and installation of concrete may be measured by Standard Work Items associated with particular elements of work contained in the following Standard Specifications –

- a) MRS03 *Drainage, Retaining Structures and Protective Treatments*;
- b) MRS04 *General Earthworks*;
- c) MRS39 *Concrete Pavements - Subbase*;
- d) MRS40 *Concrete Pavements - Base*;
- e) MRS62 *Bridge Substructure*;
- f) MRS63 *Cast-In-Place Piles*; and
- g) MRS77 *Bridge Deck*.

2.2 *Concrete Not Always Measured Separately*

The supply and installation of concrete shall be measured under a separate Standard Work Item only when incorporated in the following elements of work –

- a) bored and cast-in-place piles;
- b) bridge abutment and pier footings;
- c) bridge abutments;
- d) bridge piers;
- e) bridge deck;
- f) bridge cross girders;
- g) bridge parapets, insitu kerbs and medians;
- h) bridge relieving slabs;
- i) concrete retaining walls, excluding culvert end structures; and
- j) concrete pavements.

Additionally, blinding concrete shall be measured under a separate Standard Work Item.

In all other structures, slabs, footings and precast elements, payment for concrete shall be deemed to be included in the rate or lump sum amount for the relevant Standard Work Item(s) for that structure, slab, footing or precast element.

2.3 Calculation of Quantities

Except where the methods of measurement for products made from concrete are specified in another Specification or Supplementary Specification, the quantity of concrete shall be calculated from the dimensions shown in the Drawings or any revisions to the Drawings.

Deductions shall be made for the volumes of all embedded items except –

- a) the volume occupied by reinforcing steel;
- b) expansion and contraction joint material;
- c) conduits, pipes and ducts less than or equal to 100 mm in internal diameter;
- d) voids less than or equal to 100 mm maximum dimension; and
- e) chamfers 100 mm or less in size.

No measurement shall be made for concrete required to fill over-break in excavation.

The provision of all surface finishes, unless a specific Standard Work Item exists, shall be deemed to be included in the Standard Work Items for concrete and shall not be measured separately.

2.4 No Additional Payment for Compliance with MRTS70

Irrespective of the method of measurement and payment for concrete, as defined in Clause 2.1, payment for work or activities as listed in Table 2.4, and detailed in the associated clauses in MRTS70, shall be deemed to be included in the scheduled rate for concrete and no additional payment shall be made.

Table 2.4 – Compliance with MRTS70

Clause	Description
7.2	Use of Type HE “high early strength cement” in areas other than where its use is designated
7.2	Retesting of cement, more than 3 months old, for conformance
7.7	Testing of water to demonstrate compliance with AS 1379
8.1	Replacement of cement containing lumps, where rejected by the Superintendent
9	Provision of air content gauging device
11.6	Proving new mix after withdrawal of mix design approval
13	Manufacture and testing of all cylinders
13.3.3	Additional sampling where post-tensioning of an element is to be combined with pre-tensioning
13.3.4.1	Increased frequency of initial sampling to determine standard deviation
13.3.4.2	Additional sampling and early age testing where early stripping or loading has been proposed
13.3.4.3	Additional sampling and early age testing where further construction is proposed prior to 28-Day testing
13.6	Proposed corrective actions where hardened concrete is rejected
17	Restoration or repair of any resulting damage to the Works caused by falsework.
18	Increase of cover where buried concrete members are constructed without the use of back forms
20.2.1	Transverse mechanical grooving, if required, of the concrete surface of decks and relieving slabs

2.5 Reduced Level of Service of Hardened Concrete

Where hardened concrete is accepted in accordance with Clause 13.6 of MRTS70, but the characteristic strength of the supplied concrete is below the specified value, the reinforced or prestressed concrete element shall have its value reduced in proportion to the reduction in specified characteristic strength achieved.

Where hardened concrete has been rejected, in addition to options (a) and (b) detailed in Clause 13.6 of MRTS70, the Contractor may offer a third alternative as below **Nonconformance**.–

- c) the rejected concrete may remain in place and the Contractor shall agree to a reduction in the scheduled rate for the quantity of concrete rejected equal to the supply cost of the concrete on the Site per cubic metre as determined by the Superintendent.