

Specification (Measurement)

**Transport and Main Roads Specifications
MRSxx Concrete Pavements Base (Ancillary Works)**

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1 Introduction

This Specification applies to the construction of concrete pavement base using fixed forms (hand placement). Base types included in this Specification are Plain Concrete Pavements (PCP), Jointed Reinforced Concrete Pavements (JRCP), Continuously Reinforced Concrete Pavements (CRCP) and Steel Fibre Reinforced Concrete Pavements (SFCP).

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

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

2 Measurement of work

2.1 General

All requirements in the Specification are the responsibility of the Contractor and are a cost to the Contractor unless specifically stated otherwise.

The Administrator may alter the base thickness and levels by up to 30 mm before the commencement of each section of work. Such variations in the scope of work will be covered by the scheduled rate, and the Contractor is not entitled to any additional payment over and above payment at the scheduled rate.

2.2 Standard Work Items

In accordance with the provisions of Clause 2 of MRS01 *Introduction to Specifications*, the Standard Work Items covered by this Specification are listed in Table 2.2.

Table 2.2 – Standard Work Items

Standard Item No. **	Description	Unit of measurement
Concrete Pavement Base		
A	Supply and place concrete in jointed unreinforced base	m ³
B	Supply and place concrete in continuously reinforced base	m ³
C	Supply and place concrete in jointed reinforced base	m ³
D	Supply and place steel fibre reinforced concrete base	m ³
E	Terminal and slab anchors	m ³
F	Finish, cure and texture base	m ²
G	Longitudinal joints	m
H	Expansion joints and isolation joints	m
I	Transverse contraction joints	m
J	Supply and place reinforcing mesh	m ²
K	Supply and place steel bar reinforcement	tonne

** Work Item Numbers will be added prior to publication of this Specification..

2.3 Work Operations

Work Operations include the removal from the site and safe disposal of Work and materials which do not conform and are not accepted for a reduced level of service, and their replacement with Work and materials that conform to the requirements of the documents and Standard Drawings for the project.

Item A Supply and place concrete in jointed unreinforced base

Item B Supply and place concrete in continuously reinforced base

Item C Supply and place concrete in jointed reinforced base

Work Operations incorporated in the above items include:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*, and
- b) the costs of mix designs and trials, paving trials, construction joints, outer edges and all concrete required to produce paved concrete.

The width and length are as specified on the Standard Drawings or as directed by the Administrator. The thickness is the thickness specified or as directed by the Administrator across each section. Include in the measurement the additional base above terminal anchors, taken from the Standard Drawings.

Item D Supply and place steel fibre reinforced concrete base

Work Operations incorporated in the above item include:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*, and
- b) the costs of steel fibre reinforcement, mix designs and trials, paving trials, construction joints, outer edges and all concrete required to produce paved concrete.

The width and length are as specified on the Standard Drawings or as directed by the Administrator. The thickness is the thickness specified or as directed by the Administrator across each section. Include in the measurement the additional base above terminal anchors, taken from the Standard Drawings.

Item E Terminal and slab anchors

Work Operations incorporated in the above item include:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) excavation for the anchor, and
- c) the provision of concrete anchors.

The volume is taken from the Drawings or as directed by the Administrator. The depth is measured from the top of the subbase.

Item F Finish, cure and texture base

Work Operations incorporated in the above item include:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*, and
- b) the achievement of conforming finish, cure and texture.

The width and length are as specified on the Standard Drawings or as directed by the Administrator. The sides of the slabs must not be included in the measurement of surface area.

Item G Longitudinal joints

Work Operations incorporated in the above item include:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*, and
- b) the provision of tiebars (where specified) and the application of debonding treatment at formed joints.

The measurement is along the line of the joint.

Item H Expansion joints and isolation joints

Work Operations incorporated in the above item include:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*, and
- b) the provision of dowels (where specified).

The measurement is along the line of the joint.

Item I Transverse contraction joints

Work Operations incorporated in the above item include:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*, and
- b) the provision of dowels (where specified).

The measurement is along the line of the joint. Provide a separate rate for SFCP (where applicable).

Item J Supply and place reinforcing mesh

Work Operations incorporated in the above item include:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*, and
- b) the supply and placement of reinforcing mesh.

The width and length are as specified on the Standard Drawings or as directed by the Administrator. The areas that contain laps must only be measured once.

Item K Supply and place steel bar reinforcement

Work Operations incorporated in the above item include:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*, and
- b) the supply and placement of bar reinforcement in base and anchors, but excluding dowels and tiebars.

The mass is determined from the unit masses given in Clause 7 of AS/NZS 4671 *Steel Reinforcing Materials* and the actual length of bar, excluding laps and splices, measured in place. Only one bar may be measured within a lap or splice.

3 Utilisation of a rejected lot for a reduced level of service

3.1 Acceptances of nonconformances

Unless specified elsewhere in the Contract, pre-determined acceptance criteria in the form of payment deduction(s), as provided in this Specification, will be applied to nonconformances for the following properties:

- a) Concrete mix properties
 - a. Compressive strength (PCP, PCP-R, JRCP, CRCP)
 - b. Flexural strength (SFCP)
- b) Ride quality

Deductions apply to the scheduled rate for the relevant Standard Work Item (A, B, C or D) for supply and placement of concrete for the lot.

Where a nonconformance is accepted for more than one of these properties, the total payment reduction (%) to be applied to the scheduled rate shall be determined by adding together the individual payment reduction (%) calculated for each property in accordance with Clauses 3.2 to 3.4.

3.2 Compressive strength (PCP, PCP-R, JRCP, CRCP)

Nonconforming concrete accepted by the Administrator at a reduced level of service will be subject to a deduction of 4% of the schedule rate for each 0.5 MPa or part thereof deficiency in 28 day compressive strength.

MRTS70 Concrete includes criteria for rejection of concrete with very low compressive strength, in which case the concrete would not usually be accepted at a reduced level of service.

3.3 Flexural Strength (SFCP, SFCP-R)

Concrete with 28 day flexural strength between 5.0 MPa and 5.5 MPa may be accepted by the Administrator at a reduced level of service. Nonconforming concrete accepted by the Administrator at a reduced level of service will be subject to a deduction of 8% of the schedule rate for each 0.1 MPa or part thereof deficiency in 28 day flexural strength.

3.4 Ride quality

Concrete base with ride quality up to 0.80 m/km greater than the specified limit may be accepted by the Administrator at a reduced level of service. Nonconforming concrete accepted by the Administrator at a reduced level of service will be subject to the deductions in Table 3.4.

Table 3.4 – Deductions for ride quality

Ride Quality in Excess of Specified Limit by (m/km)	Deduction (% of Lot Value)
< 0.20	2
0.20 – 0.39	4
0.40 – 0.59	8
0.60 – 0.80	16

4 Incentives

Unless specified elsewhere in the Contract, pre-determined incentives for base concrete ride quality shall be applied in accordance with Table 4. Incentives apply to the scheduled rate for the relevant Standard Work Item (A, B, C or D) for supply and placement of concrete for the lot. However, the ride quality incentive does not apply to base concrete which is nonconforming in terms of thickness, compaction or strength.

Table 4 – Incentives for ride quality

Ride Quality Below Specified Limit by (m/km)	Incentive (% of Lot Value)
< 0.40	0
0.40 – 0.59	1
0.60 – 0.80	2
> 0.80	3

