

# Main Roads Specification

## MRS40

### **Concrete Base in Pavements Jointed Unreinforced, Jointed Reinforced, Continuously Reinforced and Steel Fibre Reinforced Pavements**

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# Concrete Base in Pavements

## Jointed Unreinforced, Jointed Reinforced Continuously Reinforced and Steel Fibre Reinforced Pavements

### 1 INTRODUCTION

This specification applies to the construction of road pavements using concrete base for jointed unreinforced, jointed reinforced, continuously reinforced and steel fibre reinforced pavements. It does not include jointed unreinforced dowelled base. The specified flexural strength is given in the Addendum.

This Specification shall be read in conjunction with 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 WORKS

#### 2.1 General

The standard Work items for Work carried out in accordance with this specification are listed in Clause 2.2.

Work operations common to all Work Items include those given in MRS01 *Introduction to Specifications* and those given in the next two paragraphs in this Clause. Work operations that are particular to a Work Item are given in Clause 2.3.

Work operations include the furnishing and cost of all labour, plant, materials, overheads, testing, establishment and disestablishment, royalties, permit fees, rent, hire, lease and all other costs required to complete the Works.

Work operations also 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 which conform to the requirements of the documents or Drawings for the project. Payment shall be made only for conforming work and such payments shall be as set out in MRS01 *Introduction to Specifications*. A reduced payment may be made for Work which is accepted for a reduced level of service.

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

#### 2.2 Standard Work Items

The standard Work items covered by this specification are listed in Table 2.2.

**Table 2.2 – Standard Work Items**

Standard Work Item No.	Description	Unit of Measurement
4512	Supply and Place Concrete Jointed Unreinforced Base.	m <sup>3</sup>
4514	Supply and Place Concrete Continuously Reinforced Base.	m <sup>3</sup>
4516	Supply and Place Concrete Jointed Reinforced Base.	m <sup>3</sup>
4518	Supply and Place Concrete Steel Fibre Reinforced Base.	m <sup>3</sup>
4520	Supply and Place Concrete Non-Integral Shoulders Without Gutter.	m <sup>3</sup>
4522	Supply and Place Concrete Non-Integral Shoulders With Gutter.	m <sup>3</sup>
4524	Supply and Place Concrete Gutter.	m
4526	Supply and Place Concrete Anchors.	m <sup>3</sup>
4528	Supply and Place Concrete Bridge Approach Slabs.	m <sup>3</sup>
4530	Finish, Cure and Texture Base.	m <sup>2</sup>

<b>Standard Work Item No.</b>	<b>Description</b>	<b>Unit of Measurement</b>
4532	Install, including Supply of Materials: Longitudinal Joints.	m
4534	Install, including Supply of Materials: Expansion Joints and Isolation Joints.	m
4536	Install, including Supply of Materials: Transverse Contraction and Contraction Joints.	m
4538	Supply Reinforcing Mesh.	m <sup>2</sup>
4540	Supply Steel Bar Reinforcement.	t
4542	Monitoring Testing (as per Clause 8 of MRTS40).	m <sup>3</sup> of base

### **2.3 Work Operations**

#### **Item 4512 Supply and Place Concrete Jointed Unreinforced Base.**

The Contractor is responsible for all costs associated with carrying out the Works including the following –

- a) Supply, handling and storage of materials;
- b) Quality assessment of materials;
- c) Trial mixing and quality assessment of concrete, including trial paving lengths;
- d) Mixing and delivery of concrete;
- e) Placement of wax de-bonding, except where bitumen de-bonding is specified, and placement and compaction of concrete;
- f) Supply and placement of miscellaneous falsework and formwork items including temporary cages, tie wire and other items necessary for the completion of the Work;
- g) Installation, support and maintenance of reinforcing mesh in odd-shaped and mismatched slabs and other nominated slabs;
- h) Installation of construction joints;
- i) Installation, maintenance and removal of temporary works;
- j) Maintenance of the subgrade and/or lower subgrade and/or working platform and/or controlled subgrade pavement courses;
- k) Provision of all labour and equipment;
- l) Provision, calibration and maintenance of laboratory facilities;
- m) Sampling, testing and quality assurance requirements; and
- n) Delivery of the results of all tests and inspections, including monitoring testing, within five working days of the specified time for the test or inspection.

#### **Item 4514 Supply and Place Concrete Continuously Reinforced Base.**

The Contractor is responsible for all costs associated with carrying out the Works including the following –

- a) Supply, handling and storage of materials;
- b) Quality assessment of materials;
- c) Trial mixing and quality assessment of concrete, including trial paving lengths;
- d) Mixing and delivery of concrete;
- e) Placement of wax de-bonding, except where bitumen de-bonding is specified, and placement and compaction of concrete and also including the particular placement requirements for continuously reinforced pavements and compaction of concrete;
- f) Installation, support and maintenance of all reinforcing steel;

- g) Supply and placement of miscellaneous falsework and formwork items including temporary cages, tie wire (including tie wire for CRC steel) and other items necessary for the completion of the Works;
- h) Installation of construction joints;
- i) Installation, maintenance and removal of temporary Works;
- j) Maintenance of the subgrade and/or lower subgrade and/or working platform and/or controlled subgrade pavement courses;
- k) Provision of all labour and equipment;
- l) Provision, calibration and maintenance of laboratory facilities;
- m) Sampling, testing and quality assurance requirements; and
- n) Delivery of the results of all tests and inspections, including monitoring testing, within five working days of the specified time for the test or inspection.

**Item 4516 Supply and Place Concrete Jointed Reinforced Base.**

The Contractor is responsible for all costs associated with carrying out the Works including the following –

- a) Supply, handling and storage of materials;
- b) Quality assessment of materials;
- c) Trial mixing and quality assessment of concrete, including trial paving lengths;
- d) Mixing and delivery of concrete;
- e) Placement of wax de-bonding, except where bitumen de-bonding is specified, and placement and compaction of concrete and also including any particular placement requirements for the reinforced base;
- f) Installation, support and maintenance of all steel reinforcement;
- g) Supply, installation and maintenance of dowels and their supporting system;
- h) Installation and support of reinforcing mesh;
- i) Supply and placement of miscellaneous falsework and formwork items including temporary cages, tie wire and other items necessary for the completion of the work;
- j) Installation of construction joints;
- k) Installation, maintenance and removal of temporary works such as ramps;
- l) Maintenance of the subgrade and/or lower subgrade and/or working platform and/or controlled subgrade pavement courses;
- m) Provision of all labour and equipment;
- n) Provision, calibration and maintenance of laboratory facilities;
- o) Sampling, testing and quality assurance requirements; and
- p) Delivery of the results of all tests and inspections, including monitoring testing, within five working days of the specified time for the test or inspection.

**Item 4518 Supply and Place Concrete: Steel Fibre Reinforced Base.**

The Contractor is responsible for all costs associated with carrying out the Works including the following –

- a) Supply, handling and storage of materials including the steel fibre;
- b) Quality assessment of materials;
- c) Trial mixing and quality assessment of concrete, including trial paving lengths;
- d) Mixing and delivery of concrete including the incorporation and mixing of the steel fibre;
- e) Placement of wax de-bonding, except where bitumen de-bonding is specified, and placement and compaction of concrete;

- f) Supply and placement of miscellaneous falsework and formwork items including temporary cages, tie wire and other items necessary for the completion of the work;
- g) Installation of construction joints;
- h) Installation, maintenance and removal of temporary works such as ramps;
- i) Maintenance of the subgrade and/or lower subgrade and/or working platform and/or controlled subgrade pavement courses;
- j) Provision of all labour and equipment;
- k) Provision, calibration and maintenance of laboratory facilities;
- l) Sampling, testing and quality assurance requirements; and
- m) Delivery of the results of all tests and inspections, including monitoring testing, within five working days of the specified time for the test or inspection.

**Item 4520 Supply and Place Concrete Non-Integral Shoulders Without Gutter.**

The Contractor is responsible for all costs associated with carrying out the Works including the following –

- a) Supply, handling and storage of materials;
- b) Quality assessment of materials;
- c) Trial mixing and quality assessment of concrete, including trial paving lengths;
- d) Mixing and delivery of concrete;
- e) Placement of wax de-bonding, except where bitumen de-bonding is specified, and placement and compaction of concrete;
- f) Supply and placement of miscellaneous falsework and formwork items including temporary cages, tie wire (including tie wire for CRC steel) and other items necessary for the completion of the work;
- g) Installation of construction joints;
- h) Installation, maintenance and removal of temporary works such as ramps;
- i) Maintenance of the subgrade and/or lower subgrade and/or working platform and/or controlled subgrade pavement courses;
- j) Provision of all labour and equipment;
- k) Provision, calibration and maintenance of laboratory facilities;
- l) Sampling, testing and quality assurance requirements;
- m) Installation of reinforcing mesh, where necessary to match the adjacent pavement;
- n) Supply and installation of dowels and support cages, where necessary to match the existing reinforced pavement; and
- o) Delivery of the results of all tests and inspections, including monitoring testing, within five working days of the specified time for the test or inspection.

**Item 4522 Supply and Place Concrete Non-Integral Shoulders with Gutter.**

The Contractor is responsible for all costs associated with carrying out the Works including the following –

- a) Supply, handling and storage of materials;
- b) Quality assessment of materials;
- c) Trial mixing and quality assessment of concrete, including trial paving lengths;
- d) Mixing and delivery of concrete;
- e) Placement and compaction of concrete;
- f) Supply and placement of miscellaneous falsework and formwork items including temporary cages, tie wire (including tie wire for CRC steel) and other items necessary for the completion of the work;



- g) Installation of construction joints;
- h) Installation, maintenance and removal of temporary works such as ramps;
- i) Maintenance of the subgrade and/or lower subgrade and/or working platform and/or controlled subgrade pavement courses;
- j) Provision of all labour and equipment;
- k) Provision, calibration and maintenance of laboratory facilities;
- l) Sampling, testing and quality assurance requirements;
- m) Installation of reinforcing mesh, where necessary to match the adjacent pavement;
- n) Supply and installation of dowels and support cages, where necessary to match the existing reinforced pavement; and
- o) Delivery of the results of all tests and inspections, including monitoring testing, within five working days of the specified time for the test or inspection.

**Item 4524 Supply and Place Concrete Gutter.**

The Contractor is responsible for all costs associated with carrying out the Works including the following –

- a) Supply, handling and storage of materials;
- b) Quality assessment of materials;
- c) Trial mixing and quality assessment of concrete;
- d) Mixing and delivery of concrete;
- e) Placement and compaction of concrete;
- f) Supply and placement of miscellaneous falsework and formwork items including temporary cages, tie wire and other items necessary for the completion of the Works;
- g) Installation of construction joints;
- h) Installation, maintenance and removal of temporary works such as ramps;
- i) Maintenance of the subgrade and/or lower subgrade and/or working platform and/or controlled subgrade pavement courses;
- j) Provision of all labour and equipment;
- k) Provision, calibration and maintenance of laboratory facilities;
- l) Sampling, testing and quality assurance requirements; and
- m) Delivery of the results of all tests and inspections, including monitoring testing, within five working days of the specified time for the test or inspection.

**Item 4526 Supply and Place Concrete Anchors.**

The Contractor is responsible for all costs associated with carrying out the Works including the following –

- a) Excavation for the anchor and disposal of excavated material;
- b) Supply, handling and storage of materials including concrete, reinforcing steel and the specified drain;
- c) Quality assessment of materials;
- d) Trial mixing and assessment of concrete;
- e) Mixing and delivery of concrete;
- f) Placement and compaction of concrete;
- g) Installation of the reinforcing steel and drain;
- h) Supply and placement of miscellaneous falsework and formwork items including temporary cages, tie wire and other items necessary for the completion of the Works;

- i) Maintenance of the subgrade and/or lower subgrade and/or working platform and/or controlled subgrade pavement courses;
- j) Provision, calibration and maintenance of laboratory facilities;
- k) Provision of all labour and equipment;
- l) Sampling, testing and quality assurance requirements; and
- m) Delivery of the results of all tests and inspections, including monitoring testing, within five working days of the specified time for the test or inspection.

**Item 4528 Supply and Place Concrete Bridge Approach Slabs.**

The Contractor is responsible for all costs associated with carrying out the Works including the following –

- a) Supply, handling and storage of materials including the concrete and the steel;
- b) Quality assessment of materials;
- c) Trial mixing and quality assessment of concrete, including trial paving lengths;
- d) Mixing and delivery of concrete;
- e) Placement and compaction of concrete;
- f) Installation of the reinforcing steel;
- g) Supply and placement of miscellaneous falsework and formwork items including temporary cages, tie wire (including tie wire for CRC steel) and other items necessary for the completion of the work;
- h) Installation of construction joints;
- i) Installation, maintenance and removal of temporary works such as ramps;
- j) Maintenance of the subgrade and/or lower subgrade and/or working platform and/or controlled subgrade pavement courses;
- k) Provision of all labour and equipment;
- l) Provision, calibration and maintenance of laboratory facilities;
- m) Sampling, testing and quality assurance requirements; and
- n) Delivery of the results of all tests and inspections, including monitoring testing, within five working days of the specified time for the test or inspection.

**Item 4530 Finish, Cure and Texture Base.**

The Contractor is responsible for all costs associated with carrying out the Works including the following –

- a) Supply, handling, storage and quality assessment of curing compounds;
- b) Finishing, application of curing agent and texturing of the slab;
- c) Supply and placement of miscellaneous falsework and formwork items including shading, gantries and other items necessary for the completion of the work;
- d) Maintenance of the subgrade and/or pavement courses;
- e) Provision of all labour and equipment;
- f) Provision, calibration and maintenance of laboratory facilities;
- g) Sampling, testing and quality assurance requirements; and
- h) Delivery of the results of all tests and inspections, including monitoring testing, within five working days of the specified time for the test or inspection.

**Items 4532 Install, including Supply of Materials: Longitudinal Joints; 45340 Install, including Supply of Materials: Expansion Joints and Isolation Joints; 45360 Install, including Supply of Materials: Transverse Contraction and Contraction Joints.**

The Contractor is responsible for all costs associated with carrying out the Works including the following –

- a) Joint construction including sawing or inducing;
- b) Supply, handling, storage and quality assessment of materials;
- c) Installation of temporary and permanent sealant and/or filler;
- d) Supply and installation (including any formwork cages) of ties and dowels;
- e) Provision of all labour and equipment;
- f) Maintenance of joints;
- g) Sampling, testing and quality assurance requirements; and
- h) Delivery of the results of all tests and inspections, including monitoring testing, within five working days of the specified time for the test or inspection.

**Items 4538 Supply Reinforcing Mesh and 45400 Supply Steel Bar Reinforcement.**

The Contractor is responsible for all costs associated with carrying out the Works including the following –

- a) Supply to the point of placement, handling and storage of materials;
- b) Sampling, testing and quality assurance requirements; and
- c) Delivery of the results of all tests and inspections, including monitoring testing, within five working days of the specified time for the test or inspection.

**Item 4542 Monitoring Testing (as per Clause 8 of MRS40).**

The Contractor is responsible for all costs associated with carrying out the Works including the following –

- a) Testing materials and determining results;
- b) Charting results; and
- c) Delivery of the results of all tests and inspections within five working days of the specified time for the test or inspection.