

# Master Specification

## Part RD-BP-C6

### Slurry / Microsurfacing of Pavements

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**Government of South Australia**  
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## RD-BP-C6 Slurry / Microsurfacing of Pavements

### 1 General

- a) This Master Specification Part sets out the requirements for the design, supply and application of bituminous slurry / microsurfacing including:
  - i) the documentation requirements, as set out in section 2;
  - ii) the material requirements, as set out in section 3;
  - iii) the constraints to work, as set out in section 4;
  - iv) the requirements for the design of mix, as set out in section 5;
  - v) the requirements for the manufacture of mix, as set out in section 6;
  - vi) the requirements for sampling and testing, as set out in section 7;
  - vii) the requirements for application of product, as set out in section 8;
  - viii) the requirements for finished surfacing, as set out in section 9;
  - ix) the requirements for records of work, as set out in section 10;
  - x) the test procedures, as set out in section 11; and
  - xi) the verification requirements and records, as set out in section 12.
- b) This Master Specification Part does not apply to cape seals or other forms of thin surfacing less than 30 mm nominal thickness.
- c) The slurry / microsurfacing of pavements must comply with the Reference Documents, including:
  - i) Austroads Test Method AGPT-T234 Asphalt Binder Content (Ignition Oven Method);
  - ii) Austroads Test Method AGPT-T271 Determination of Set and Cure for Bituminous Slurry (Cohesion Test);
  - iii) Austroads Test Method AGPT-T272 Determination of Abrasion Loss of Bituminous Slurry (Wet Track Abrasion Test);
  - iv) Austroads Test Method AGPT-T273 Determination of Excess Binder in Bituminous Slurry (Loaded Wheel Test);
  - v) AP-R569 Guidelines and Specifications for Microsurfacing;
  - vi) AS 1141.11.1 Methods for sampling and testing aggregates, Method 11.1: Particle size distribution - Sieving method;
  - vii) AS 1289.2.1.1 Methods of testing soils for engineering purposes, Method 2.1.1: Soil moisture content tests - Determination of the moisture content of a soil - Oven drying method (standard method);
  - viii) AS 1289.2.1.4 Methods of testing soils for engineering purposes, Method 2.1.4: Soil moisture content tests - Determination of the moisture content of a soil - Microwave-oven drying method (subsidiary method);
  - ix) AS/NZS 2891.3.3 Methods of sampling and testing asphalt, Method 3.3: Binder content and aggregate grading - Pressure filter method; and
  - x) Department Test Procedure TP346 Determination of Average Texture Depth of a Pavement Surface Using the Sand Patch Method (available from: [https://dit.sa.gov.au/standards/test\\_procedures](https://dit.sa.gov.au/standards/test_procedures)).

## 2 Documentation

### 2.1 Construction Documentation

In addition to the requirements of PC-CN3 “Construction Management”, the Construction Documentation must include:

- a) the details of slurry / microsurfacing mix design, as required by section 5c)i);
- b) the details of the slurry / microsurfacing mix to be placed at each site, as required by section 5c)ii);
- c) processes which will ensure consistency in the manufacture of the slurry / microsurfacing layer, including such aspects as maximum and minimum pavement temperatures, drainage, coating of the individual stones and the quality assurance of raw material feed stock;
- d) the method of cleaning the existing surface of the road;
- e) the method of placing and spreading of mix including the maximum layer thickness for each mix size and the minimum time between the placement of layers; and
- f) the trial batch test results, in accordance with section 5b).

### 2.2 Quality Management Records

In addition to the requirements of PC-QA1 “Quality Management Requirements” or PC-QA2 “Quality Management Requirements for Major Projects” (as applicable), the Quality Management Records must include:

- a) the paving unit calibration documentation with the component materials of the approved mix, as required in section 6b);
- b) test results as required by section 7.1a);
- c) confirmation that the audit samples have been received at the Principal’s nominated laboratory, required in section 7.2c);
- d) the certified daily record sheets, in accordance with section 10a);
- e) the records of all materials applied, in accordance with section 10b); and
- f) the verification records required by section 12.

## 3 Materials

- a) The Contractor must ensure that aggregate complies with:
  - i) RD-PV-S1 “Supply of Pavement Materials”, for asphalt aggregates; and
  - ii) AP-R569 Guidelines and Specifications for Microsurfacing.
- b) In the event of any conflict between the documents included in section 3a), the Contractor must comply with AP-R569 Guidelines and Specifications for Microsurfacing.
- c) The Contractor must ensure that binder complies with RD-BP-S1 “Supply of Bituminous Material”.

## 4 Constraints to work

Constraints to slurry / microsurfacing Works include:

- a) trafficking of the surface must not occur until the application of the slurry / microsurfacing is complete and has had sufficient time to cure in accordance with the manufacturer’s recommendations; and

- b) traffic control related constraints as set out in PC-SM1 “Traffic and Pedestrian Management”.

## 5 Design of mix

- a) The design of the slurry / microsurfacing mix must be in accordance with AP-R569 Guidelines and Specifications for Microsurfacing and submitted by the Contractor as part of the Construction Documentation.
- b) The Contractor must prepare a trial batch of each proposed mix produced by the mixing plant from which the slurry / microsurfacing layer is to be supplied. Test results of the following properties must be submitted from each trial batch, as part of the Construction Documentation:
  - i) aggregate grading; and
  - ii) binder content (by mass of the total mix).
- c) The Contractor, as part of the Construction Documentation, must submit:
  - i) details of the slurry / microsurfacing mix design required in section 5a), in accordance with AP-R569 Guidelines and Specifications for Microsurfacing, including evidence of past performance, the mix design parameters and test results; and
  - ii) details of the slurry / microsurfacing mix (size, type, and aggregate source) to be placed at each site.

## 6 Manufacture of mixes

- a) The slurry / microsurfacing mix must be prepared in a manufacturing plant or blending plant of proven performance which must be calibrated in accordance with the requirements of AP-R569 Guidelines and Specification for Microsurfacing.
- b) The Contractor must provide paving unit calibration documentation with the component materials of the approved mix as part of the Quality Management Records.
- c) Manufacturing variations must not exceed the limits specified in AP-R569 Guidelines and Specifications for Microsurfacing.

## 7 Sampling and testing

### 7.1 General

- a) The Contractor must conduct sampling and testing of the slurry / microsurfacing mix in accordance with AP-R569 Guidelines and Specifications for Microsurfacing, and provide the test results as part of the Quality Management Records.
- b) Sampling required by section 7.1a) must be undertaken on a random basis.

### 7.2 Audit samples

- a) The Contractor must provide duplicate samples from each Work Lot for product auditing purposes in accordance with section 7.1a) and provide the Principal with notification when sampling has occurred.
- b) All samples required in section 7.2a) must be delivered to the Principal’s nominated material laboratory, at a minimum of weekly intervals.
- c) The Contractor must provide confirmation that the samples required in section 7.2a) have been received at the Principal’s nominated laboratory as part of the Quality Management Records.
- d) All samples required by section 7.2a) must be clearly marked and traceable to the relevant Work Lot in accordance with PC-QA1 “Quality Management Requirements” or PC-QA2 “Quality Management Requirements for Major Projects” (as applicable).



## 8 Application of product

The Contractor must apply the slurry / microsurfacing mix in accordance with AP-R569 Guidelines and Specifications for Microsurfacing.

## 9 Properties of finished surfacing

### 9.1 General

- a) The Contractor must ensure that the slurry / microsurfacing Works produces a thin, durable surfacing layer that has sufficient bond strength, permeability, rideability and skid resistance to comply to this Master Specification Part.
- b) The Contractor must ensure that the slurry / microsurfacing Works complies with the requirements specified in:
  - i) section 12 as at the Date of Completion; and
  - ii) sections 9.2 and 9.3 for the duration of, and at the end of, the Defects Liability Period.

### 9.2 Surface characteristics

- a) The Contractor must ensure that the finished surface is free of Non-Conformances including:
  - i) segregated or “bony” areas;
  - ii) soft areas;
  - iii) “fatty” areas;
  - iv) ravelling and loss of material;
  - v) surface cracking;
  - vi) shoving; and
  - vii) ruts.
- b) The existence of any Non-Conformances must, in the first instance, be determined by visual inspection. Where deemed necessary by the Principal, the Contractor must undertake testing indicated in sections 12 and 9.3.

### 9.3 Texture

The Contractor must ensure that the texture of the finished wearing surface at the end of the Defects Liability Period is no less than the values listed in Table RD-BP-C6 9-1.

**Table RD-BP-C6 9-1 Surface texture requirements for wearing courses**

Mix size	Texture	
	90 km/h or less	More than 90 km/h
Size 4 and 5	0.4 mm	Not applicable <sup>(1)</sup>
Size 7 and 10	0.8 mm	1.0 mm

**Table notes:**

(1) Use of this size mix in this speed environment is not recommended.

## 10 Records of work

- a) The Contractor must complete daily record sheets, which must then be certified as being correct by the Contractor and submitted as part of the Quality Management Records.
- b) Details of all slurry / microsurfacing materials applied must be recorded immediately after each application and submitted as part of the Quality Management Records.

## 11 Test procedures

The Contractor must ensure that the following test procedures are undertaken to verify conformance with this Master Specification Part:

- a) the test procedures specified in AP-R569 Guidelines and Specifications for Microsurfacing;
- b) the test procedures specified in RD-BP-S1 "Supply of Bituminous Material";
- c) the test procedures specified in RD-BP-C5 "Application of Sprayed Bituminous Surfacing"; and
- d) the test procedures detailed in Table RD-BP-C6 11-1.

**Table RD-BP-C6 11-1 Test procedures**

Test	Test procedure
Aggregate grading	AS 1141.11.1 Methods for sampling and testing aggregates, Method 11.1: Particle size distribution - Sieving method
Binder content: pressure filtration method	AS/NZS 2891.3.3 Methods of sampling and testing asphalt, Method 3.3: Binder content and aggregate grading - Pressure filter method
Binder content: ignition oven method	AGPT-T234-05 Asphalt Binder Content (Ignition Oven Method)
Moisture content: oven drying method	AS 1289.2.1.1 Methods of testing soils for engineering purposes, Method 2.1.1: Soil moisture content tests - Determination of the moisture content of a soil - Oven drying method (standard method)
Moisture content: microwave method	AS 1289.2.1.4 Methods of testing soils for engineering purposes, Method 2.1.4: Soil moisture content tests - Determination of the moisture content of a soil - Microwave-oven drying method (subsidiary method)
Determination of average texture depth of a pavement surface using the sand patch method	Department Test Procedure TP346 Determination of Average Texture Depth of a Pavement Surface Using the Sand Patch Method
Traffic time (set and cure for bituminous slurry)	Austrroads Test Method AGPT-T271 Determination of Set and Cure for Bituminous Slurry (Cohesion Test)
Wear loss (abrasion loss of bituminous slurry)	Austrroads Test Method AGPT-T272 Determination of Abrasion Loss of Bituminous Slurry (Wet Track Abrasion Test)
Excess binder in bituminous slurry	Austrroads Test Method AGPT-T273 Determination of Excess Binder in Bituminous Slurry (Loaded Wheel Test)

## 12 Verification requirements and records

The Contractor must supply written verification as part of the Quality Management Records that the requirements listed in Table RD-BP-C6 12-1 have been complied with.

**Table RD-BP-C6 12-1 Verification requirements**

Subject	Property	Test procedure	Frequency	Acceptable limits
Supply of slurry / micro surfacing	Component material supply	In accordance with AP-R569 Guidelines and Specifications for Microsurfacing	In accordance with AP-R569 Guidelines and Specifications for Microsurfacing	In accordance with AP-R569 Guidelines and Specifications for Microsurfacing
Supply of slurry / micro surfacing	Production and laying	In accordance with AP-R569 Guidelines and Specifications for Microsurfacing	In accordance with AP-R569 Guidelines and Specifications for Microsurfacing	In accordance with AP-R569 Guidelines and Specifications for Microsurfacing



Subject	Property	Test procedure	Frequency	Acceptable limits
Surface finish	Longitudinal evenness	Deviation under a 1.2 m straight edge	6 random measurements per Work Lot and specific measurements at joints	Max of 5 mm deviation
Surface finish	Transverse evenness	Deviation under a 1.2 m straight edge	6 random measurements in left hand wheel paths per Work Lot	Max of 5 mm deviation, excluding designed points of crossfall change
Surface finish	Crossfall	Measurement with "smart level" or similar	6 random measurements per Work Lot	Crossfall must be a minimum of 3% (excluding superelevated curves), and must allow for continuous water drainage without ponding
Surface finish	Texture depth	In accordance with Department Test Procedure TP346 Determination of Average Texture Depth of a Pavement Surface Using the Sand Patch Method	4 random measurements in left hand wheel paths and 2 random measurements in right hand wheel paths per Work Lot	In accordance with section 9.3
Surface finish	Skid resistance	British pendulum (BP)	4 random measurements in left hand wheel paths and 2 random measurements in right hand wheel paths per Work Lot	BP 55 to 60 international friction index
Surface finish	Skid resistance	Griptester	Measurements in left hand wheel path in outermost lane in each direction	Grip Number greater than 0.60 (target values only, not acceptance limits). Refer RD-BP-D4 "Surface Characteristics of Flexible Pavements"