



Guidelines and Specifications for Microsurfacing

14 June 2018



Today's moderator



Eliz Esteban

Communications Officer
Austroads

P: +61 2 8265 3302

E: eesteban@austrroads.com.au



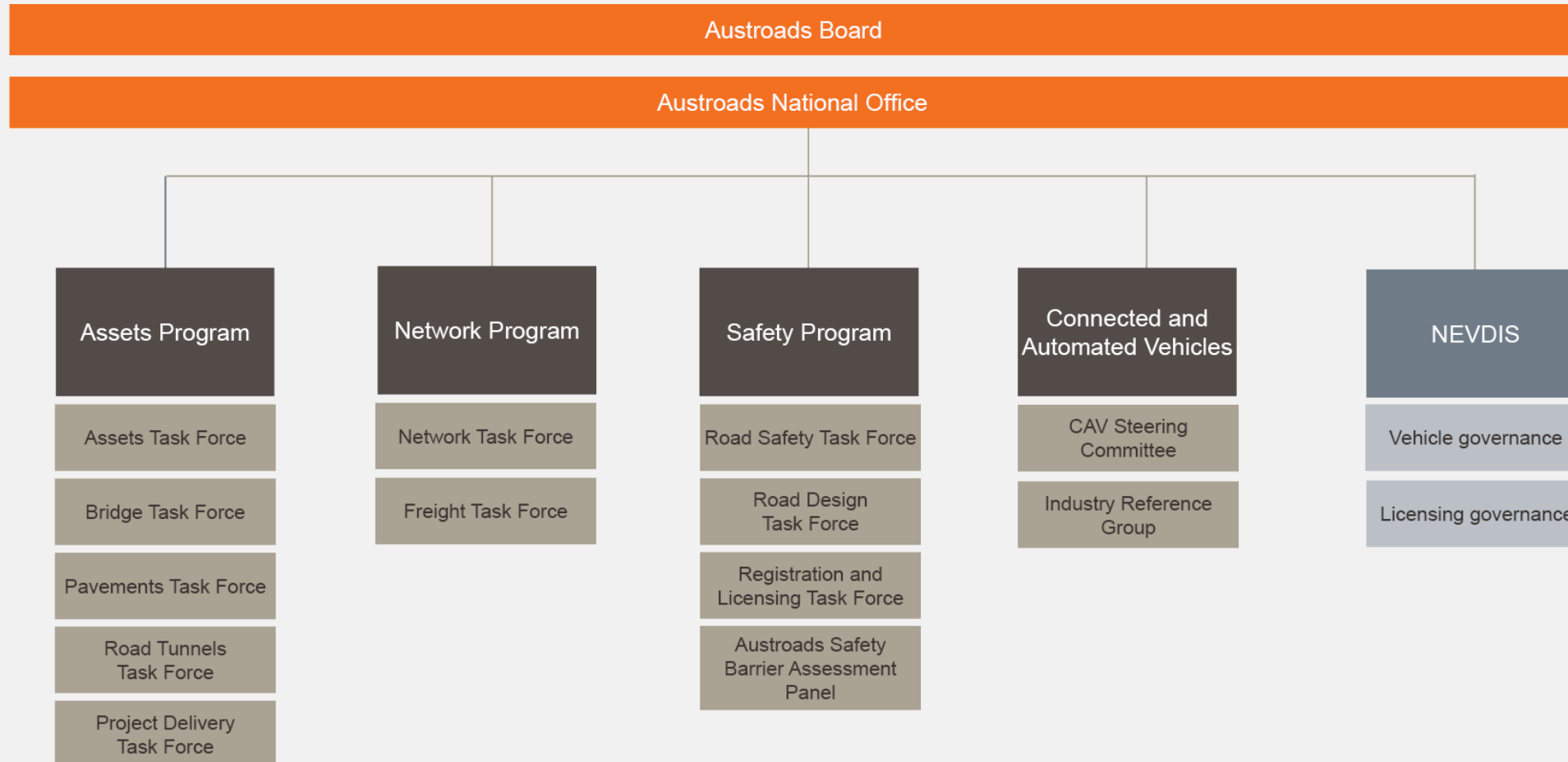
About Austroads



The peak organisation of Australasian road transport and traffic agencies

- Roads and Maritime Services New South Wales
- Roads Corporation Victoria
- Department of Transport and Main Roads Queensland
- Main Roads Western Australia
- Department of Planning, Transport and Infrastructure South Australia
- Department of State Growth Tasmania
- Department of Transport Northern Territory
- Transport Canberra and City Services Directorate, Australian Capital Territory
- Department of Infrastructure, Regional Development and Cities
- Australian Local Government Association
- New Zealand Transport Agency

Our structure



Housekeeping



Presentation = 35 mins

Question time = 15 mins



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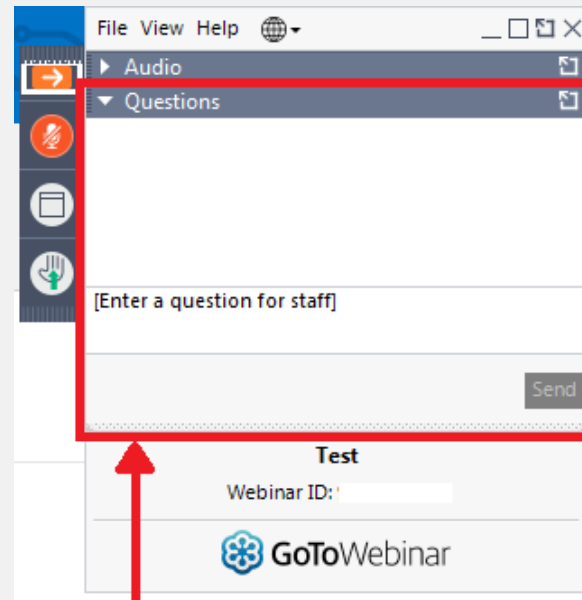
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Austrroads report



Download from Austrroads Website:

<https://www.onlinepublications.austrroads.com.au/items/AP-R569-18>

Today's presenter

Steve Patrick

Senior Professional Leader

Future Transport Infrastructure

Australian Road Research Board (ARRB)

P: +61 3 9881 1678

E: steve.patrick@arrb.com.au



Agenda



Topic	Presenter
Project Background and Introduction	Steve Patrick
Microsurfacing Overview	
Microsurfacing Guidelines	
Model Specification	
Test Methods	
Q&A	

Project Background and Introduction




Introduction to team




Project Team



Austroads Project Manager
John Esnouf



Project Leader, ARRB
Steve Patrick



Team Member, MRWA
Steve Halligan

Review Team




Austroads Project Working Group



Stakeholders- Road and Traffic Authorities



Austroads Pavements Task Force



Austroads Board

The review teams



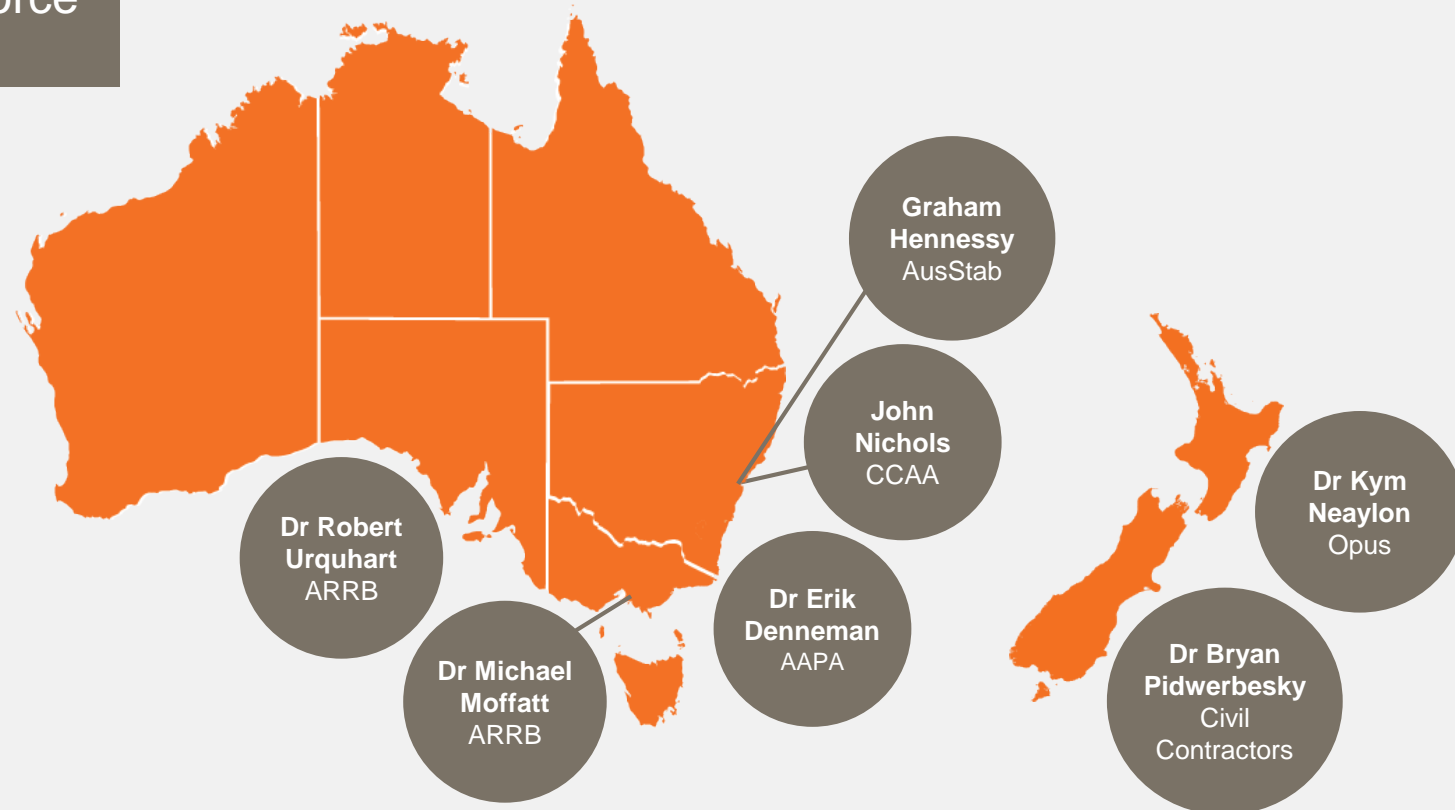
**Austroads
Pavements Task Force**
Road and Traffic Authorities



The review teams



Austroads
Pavements Task Force
Industry



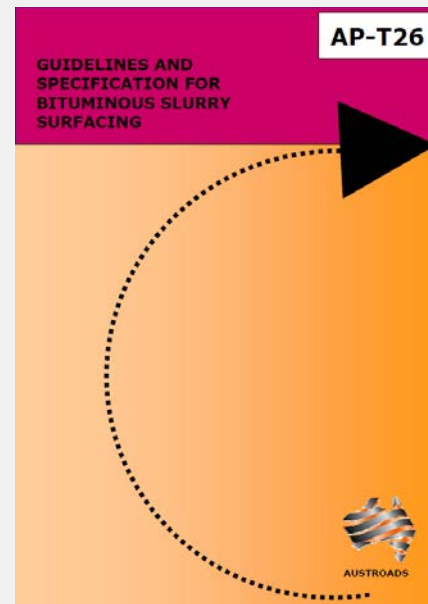
Project purpose

- Update Austroads microsurfacing documentation
 - Guidelines and Specification
 - Test Methods
- Reflect current industry practice and terminology
- Ensure use of up-to-date and cost effective treatments



Guidelines and specification

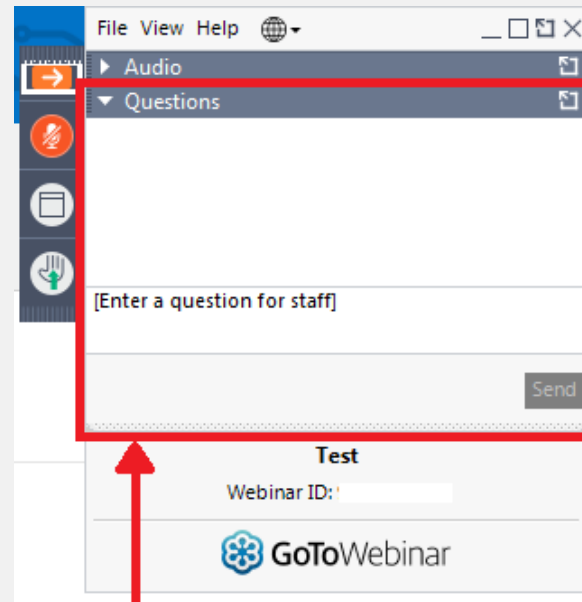
- Updated version now published at <https://www.onlinepublications.austroads.com.au/>
 - AP-R569-18 *Guidelines and Specifications for Microsurfacing*
- Replaces previous version published in 2003
 - AP-T26-03 *Guidelines and Specification for Bituminous Slurry Surfacing*



Test methods

- Updated test methods now published on [Austroads Publications website](#)
 - AGPT-T221 *Sampling of Bituminous Slurry*
 - AGPT-T270 *Determination of Optimum Amount of Added Water for Bituminous Slurry (Consistency Test)*
 - AGPT-T271 *Cohesion Determination of Set and Cure for Bituminous Slurry (Cohesion Test)*
 - AGPT-T272 *Determination of Abrasion Loss of Bituminous Slurry (Wet Track Abrasion Test)*
 - AGPT-273 *Determination of Excess Binder in Bituminous Slurry (Loaded Wheel Test)*
- Previous versions published between 2005 and 2007

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Microsurfacing Overview



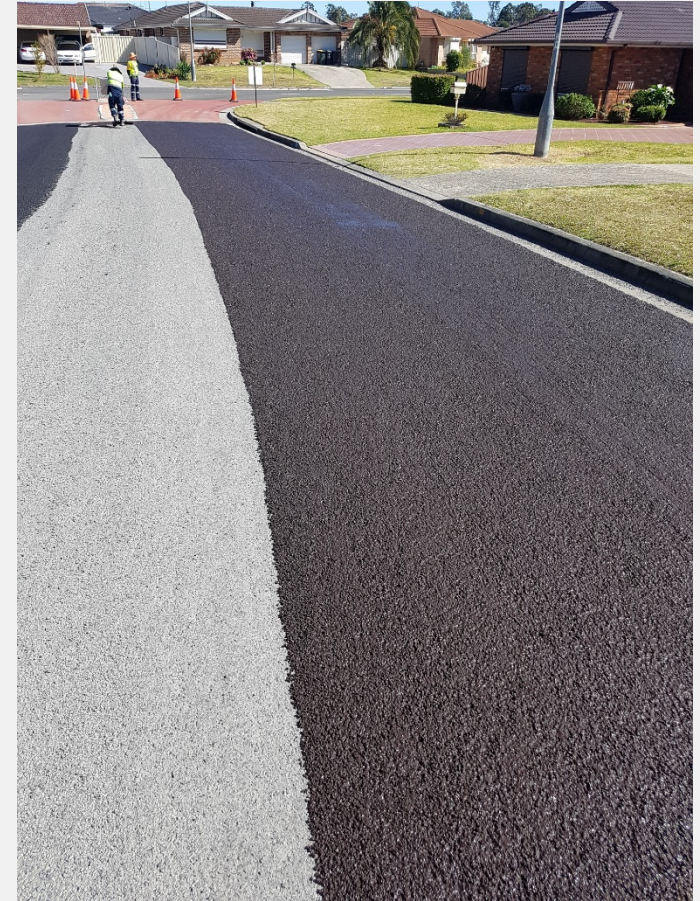
Definition of microsurfacing

See Section 2



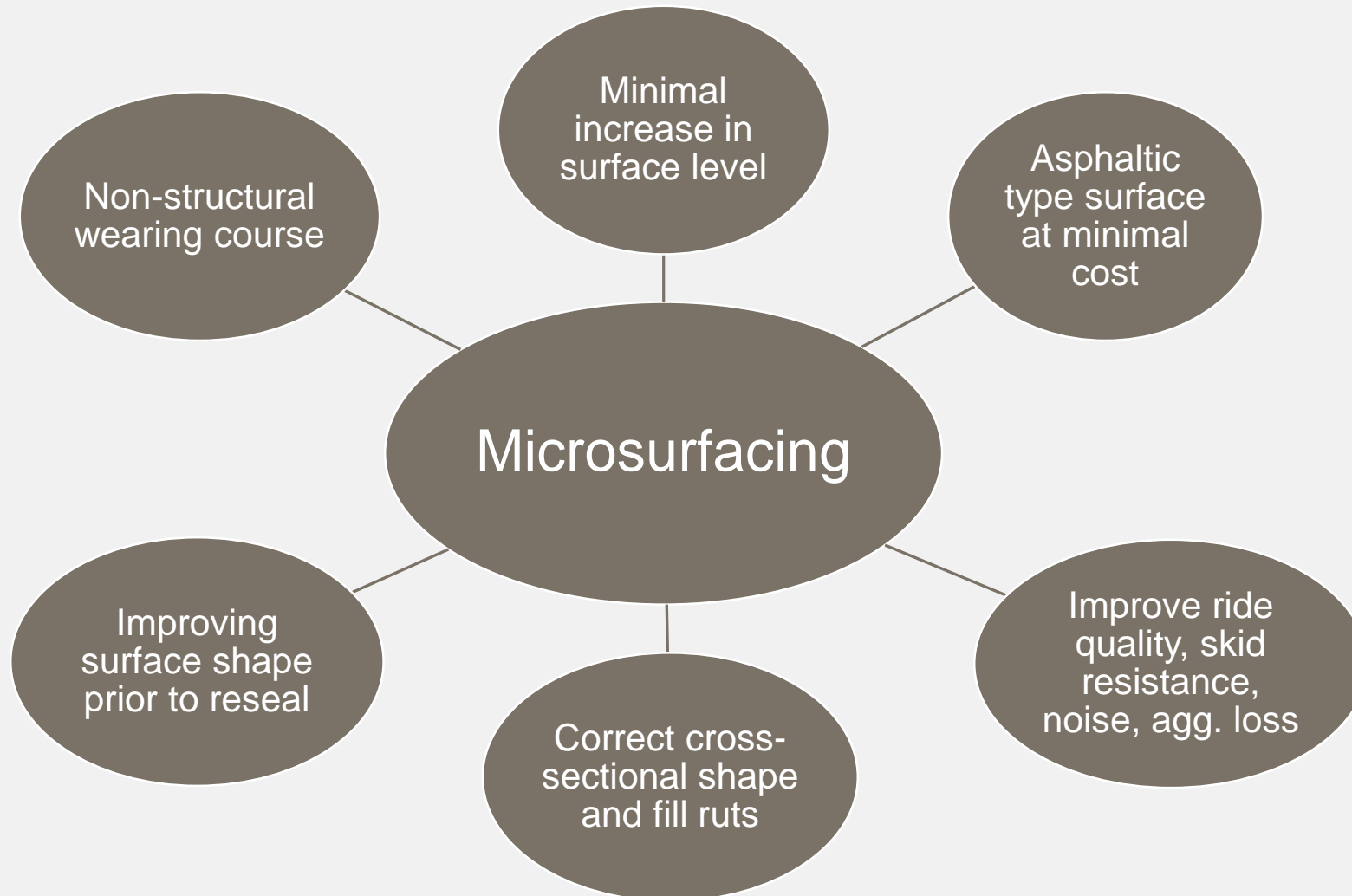
A bituminous slurry surfacing that contains polymer modified emulsion binder, which is capable of being spread in layers with variable thickness for rut-filling and correction courses, and for wearing course applications requiring good surface texture

Microsurfacing



Applications

See Section 3.1



Limitations of microsurfacing

See Section 3.1



- No structural strength
 - Not suitable for pavements with high curvature values – will crack early in life
- Not suitable to prevent crack reflection
 - Likely to reflect existing cracks within months of placement
 - Recommended to use with SAM / GRS to mitigate crack reflection

Moving on from Slurry

See Section 3.2



Slurry seals

- Applied as thin wearing course
- Typically for low volume roads
- Preventative or corrective maintenance

Microsurfacing

- Improved binder characteristics through the incorporation of polymer
- Allows use of larger sized aggregate
- Thicker layers
- Suitable for higher traffic areas

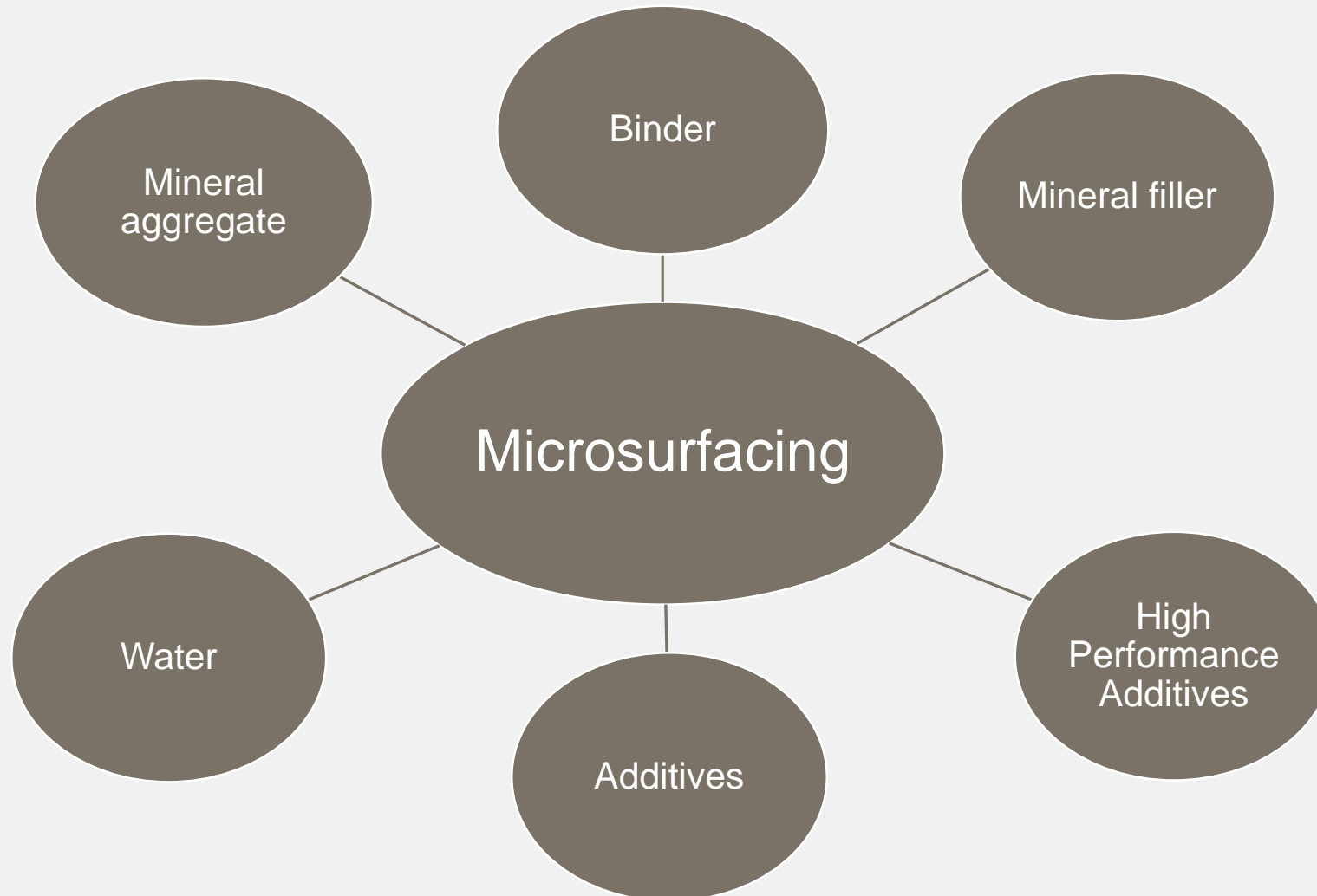


Nominal sizes

See Section 3.3



Size (mm)	Common application
4 & 5	Local government residential resurfacing type works, airfield and shared pathways
7	State road agencies for shape and correction courses, or as a final wearing course
10	Deep rut or shape correction, or on sites where higher final texture is required



High performance additives

See Section 4.6



- Enhanced properties
 - Flexibility
 - Strength
- Specified in mix design
 - Type
 - Dosage rates
- Must be approved for use prior to commencing works



Microsurfacing Guidelines



Mix design - Components

See Section 5



- Aggregate and binder properties
- Abrasion (wear) loss (AGPT/T272)
- Traffic time/material cohesion (AGPT/T271)
- Excess binder content (AGPT/T273)
- Mix consistency (AGPT/T270)
- Mix performance
- Mix design currency



Plant

See Section 6



- Truck mounted or continuous paver
 - Material feeders
 - Guidance system
 - Maintained and calibrated
- Spreader box
- Ancillary equipment

Field application

See Section 7.1



- Preparation of existing surface
 - Set out
 - Cleaning
 - Protection of services and road fixtures
 - Surface defects
 - Tack coat
 - Water fog coat



Field application

See Section 7



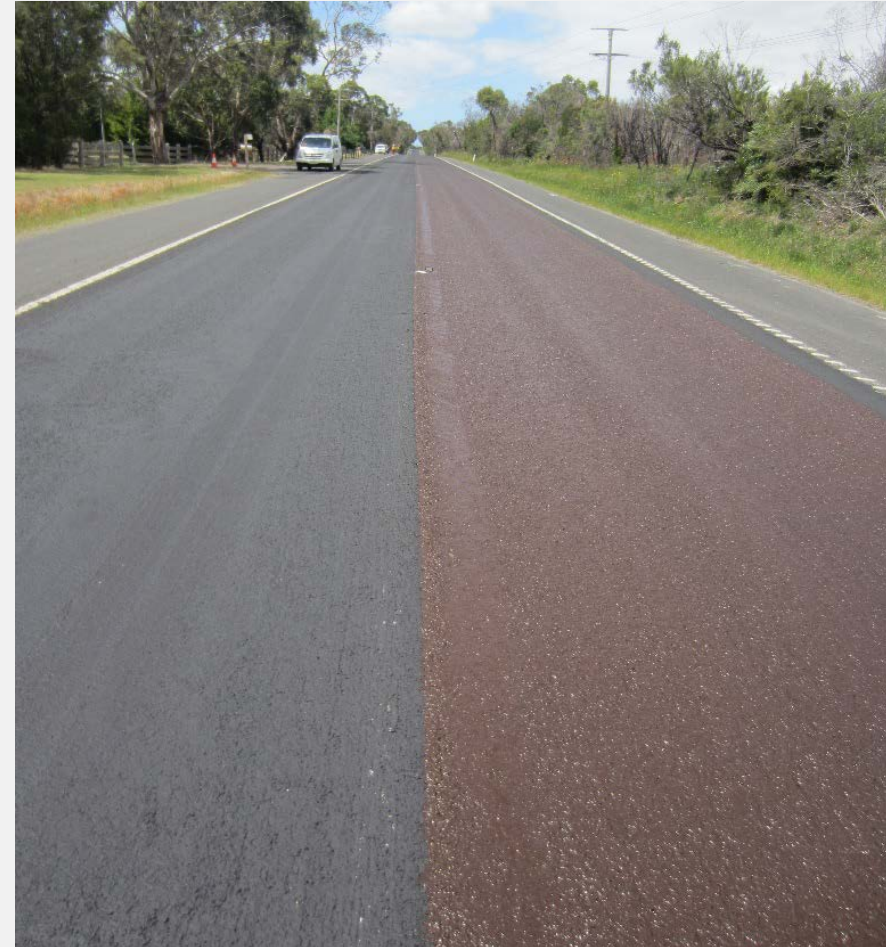
- Weather limitations
- Rut-filling and correction
- Multiple-layer applications
- Spreading
 - Process
 - Surface finish
 - Shape
 - Joints
 - Traffic time
 - Rolling

Sampling and testing

See Section 8

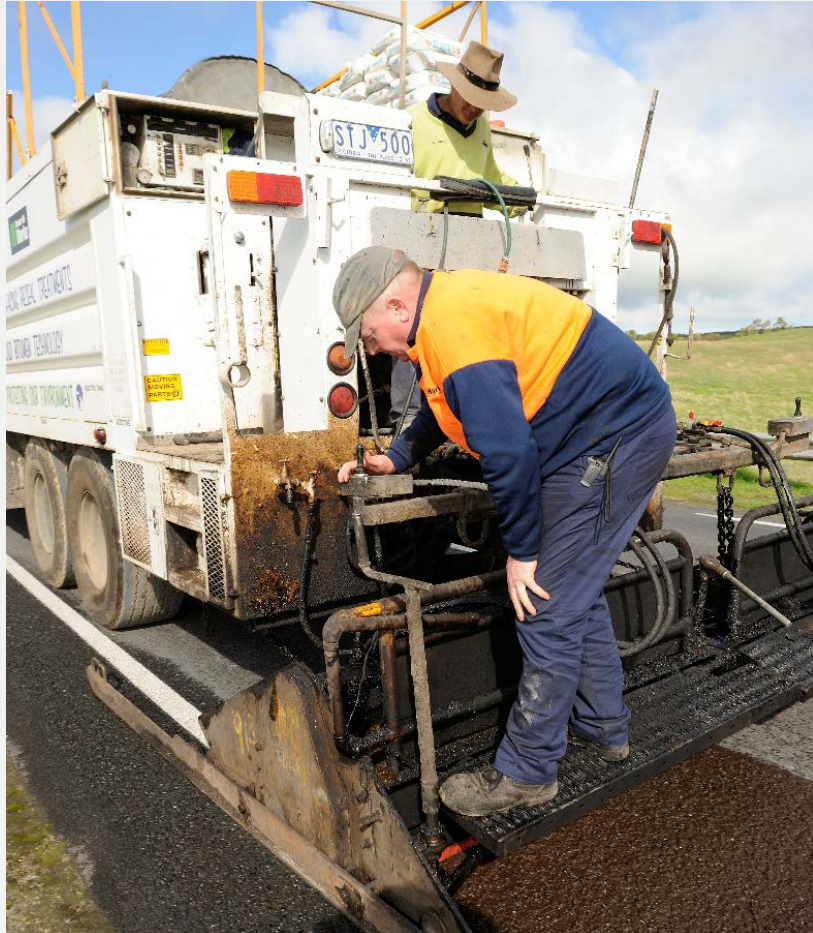


- Compliance testing
- Compliance criteria
 - Method of Sampling (AGPT/T221)
 - Frequency of Testing
 - Surface Finish



Outcomes

See Sections 9,10, 11



- Defective work or materials
- Measurement and payment
- Quality assurance

Model Specification



Scope

See Sections 9,10,11



- Requirements for manufacture and placement
 - Component materials
 - Properties of microsurfacing
 - Mix design responsibility
 - Manufacturing and application
 - Sampling and testing
- Intended as a reference to prepare national or local specifications



Additives

See Sections A.6.5



- Allowed for various purposes
 - Material break accelerant / retardant
 - Provision of higher performance service attributes
- Likely range of additive levels expected stated in mix design
- Testing at both extremes of nominated design range for additive
 - Wear loss
 - Traffic time
 - Excess binder content
- Allows for emerging technologies

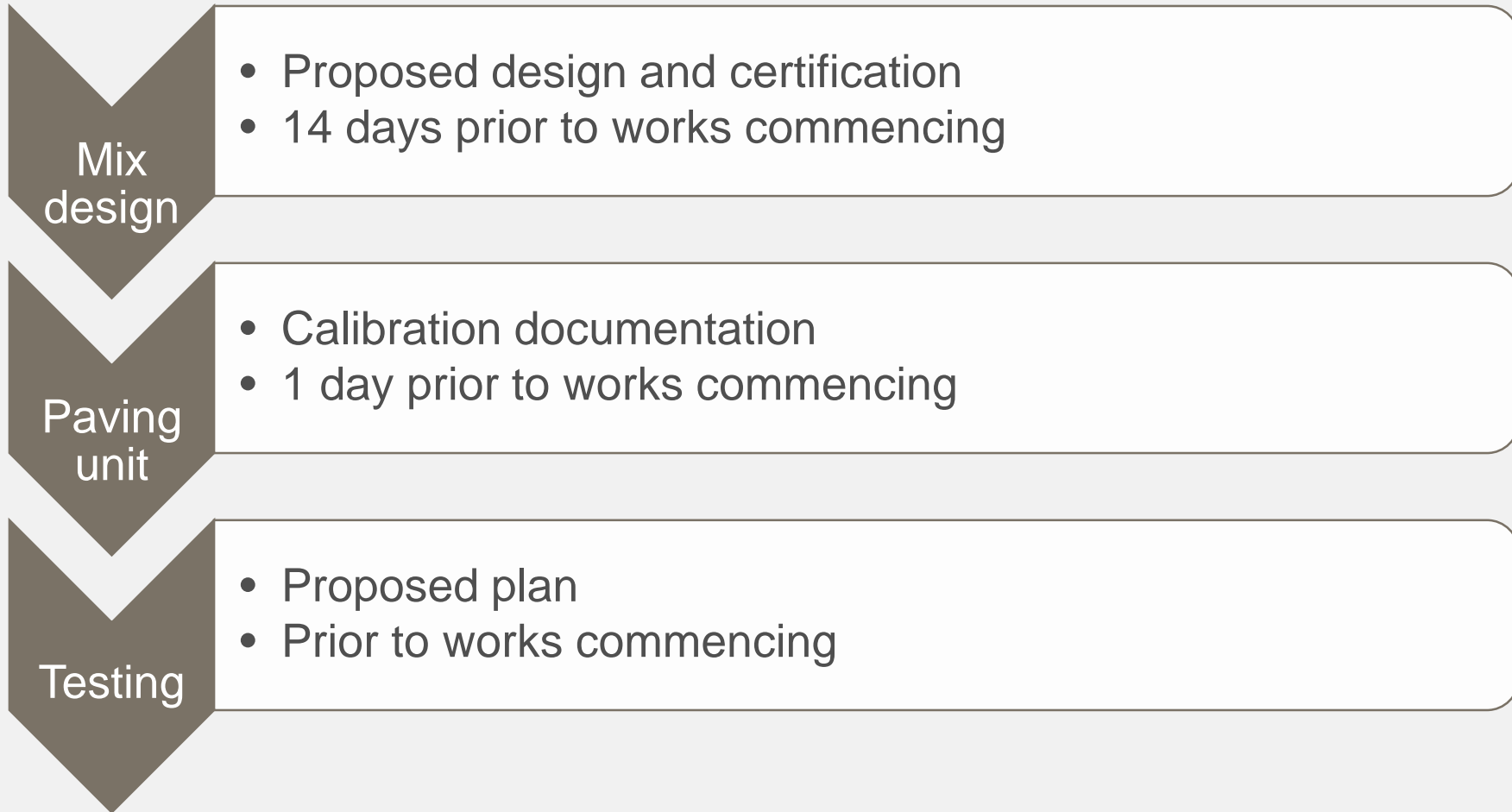
Mix design

See Sections A.7



- Contractor is responsible for mix design
- Mix property criteria
- Mix design submission. Remains valid for two-years if:
 - Sources and quality of component materials remain unchanged
 - Proportions of component materials remain unchanged
 - Performance in service is satisfactory

Hold points



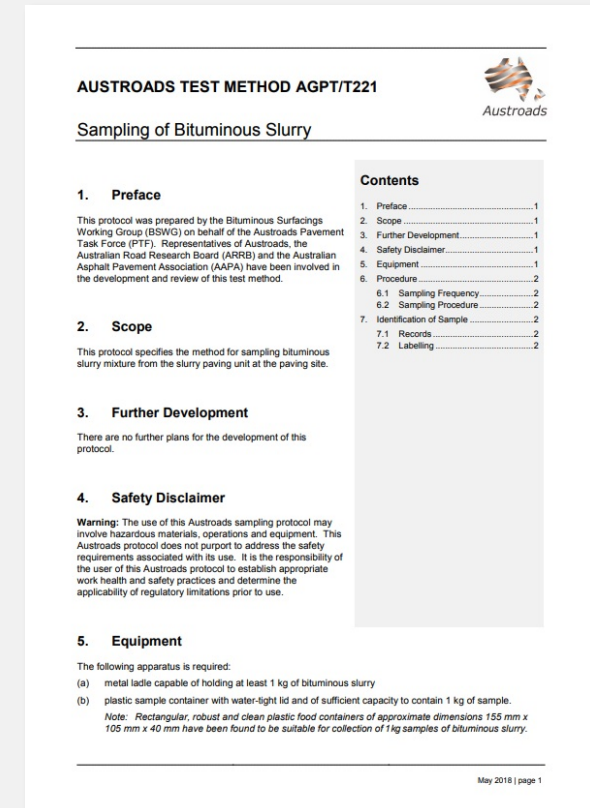
Test Methods



Sampling

AGPT/T221 Sampling of Bituminous Slurry

- Specifies method for sampling from paving unit
 - Equipment
 - Ladle
 - Containers
 - Procedure
 - Frequency – start, middle and end of paving run for three 1 kg samples
 - Procedure
 - Sample identification



AUSTROADS TEST METHOD AGPT/T221
Sampling of Bituminous Slurry

Contents

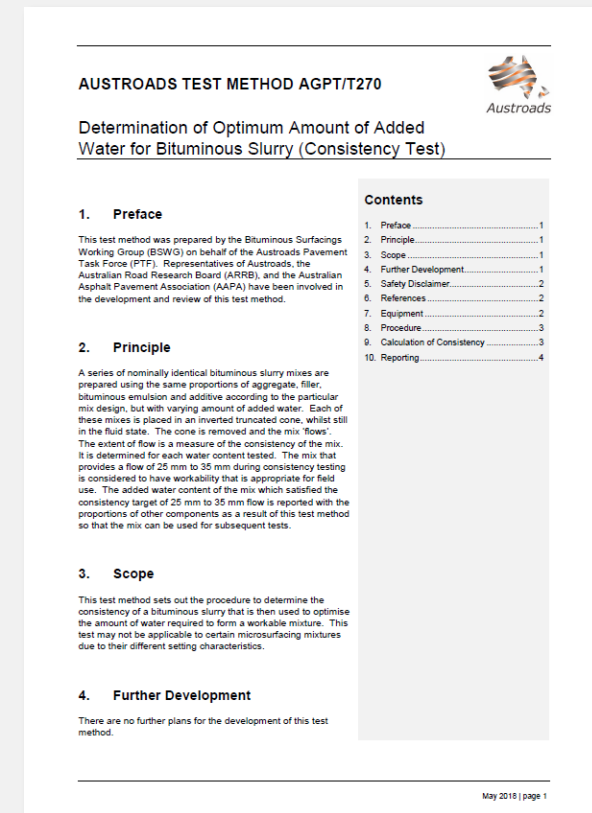
1. Preface	1
2. Scope	1
3. Further Development	1
4. Safety Disclaimer	1
5. Equipment	1
6. Procedure	2
6.1 Sampling Frequency	2
6.2 Sampling Procedure	2
7. Identification of Sample	2
7.1 Records	2
7.2 Labelling	2

May 2016 | page 1

Consistency

AGPT/T270 Determination of Optimum Amount of Added Water for Bituminous Slurry (Consistency Test)

- Optimising water proportion for mixture workability
- A series of identical mixes are produced
 - Aggregate, filler, bituminous emulsion and additives constant
 - Varying amounts of water added
- Mixes placed in inverted truncated cones in fluid state
- Extent of flow is a measure of mix consistency



AUSTROADS TEST METHOD AGPT/T270

Determination of Optimum Amount of Added Water for Bituminous Slurry (Consistency Test)

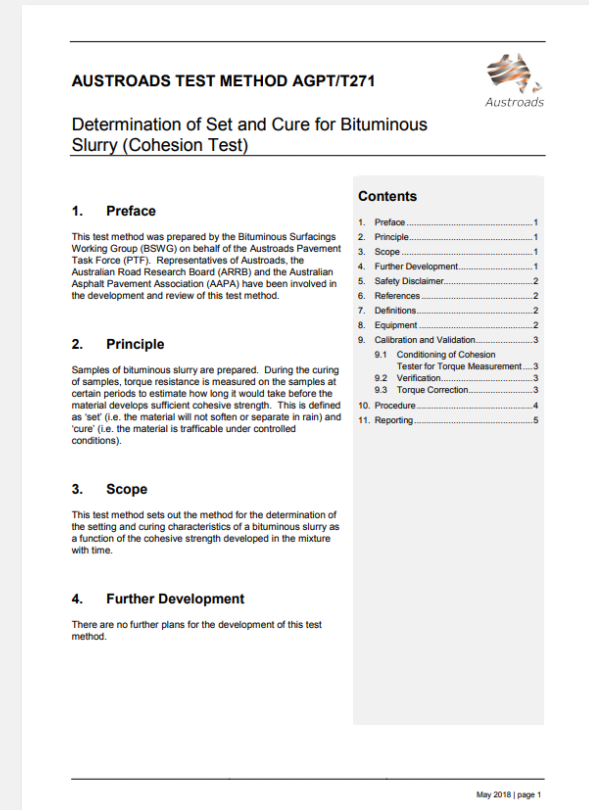
Contents	
1. Preface	1
2. Principle	1
3. Scope	1
4. Further Development	1
5. Safety Disclaimer	2
6. References	2
7. Equipment	2
8. Procedure	3
9. Calculation of Consistency	3
10. Reporting	4

May 2018 | page 1

Cohesion

AGPT/T271 *Determination of Set and Cure for Bituminous Slurry (Cohesion Test)*

- Determines time for sufficient cohesive strength development
 - ‘set’ is when material will not soften or separate in rain
 - ‘cure’ is when the material is trafficable under controlled conditions
- Torque applied to prepared samples at chosen time intervals



AUSTROADS TEST METHOD AGPT/T271

Determination of Set and Cure for Bituminous Slurry (Cohesion Test)

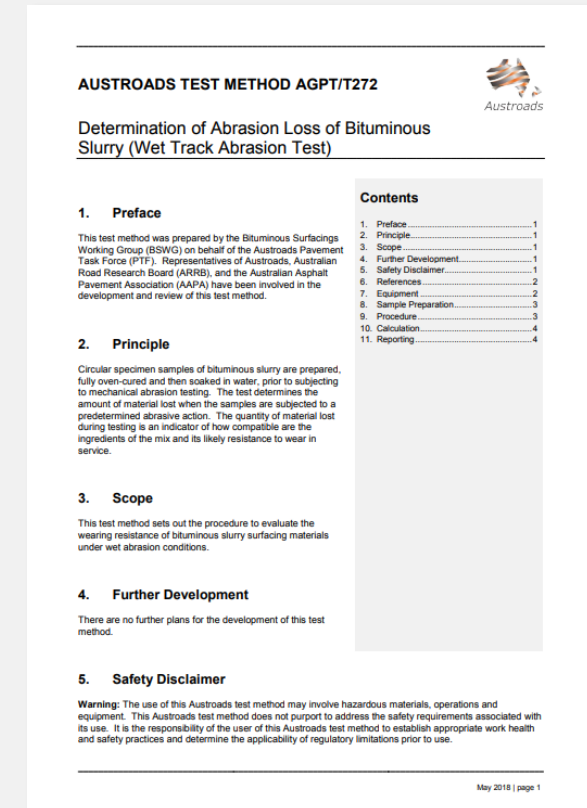
1. Preface	Contents
This test method was prepared by the Bituminous Surfacing Working Group (BSWG) on behalf of the Austroads Pavement Task Force (PTF). Representatives of Austroads, the Australian Road Research Board (ARRB) and the Australian Asphalt Pavement Association (AAPA) have been involved in the development and review of this test method.	1. Preface..... 1
2. Principle	2. Principle..... 1
Samples of bituminous slurry are prepared. During the curing of samples, torque resistance is measured on the samples at certain periods to estimate how long it would take before the material develops sufficient cohesive strength. This is defined as 'set' (i.e. the material will not soften or separate in rain) and 'cure' (i.e. the material is trafficable under controlled conditions).	3. Scope..... 1
3. Scope	4. Further Development..... 1
This test method sets out the method for the determination of the setting and curing characteristics of a bituminous slurry as a function of the cohesive strength developed in the mixture with time.	5. Safety Disclaimer..... 2
4. Further Development	6. References..... 2
There are no further plans for the development of this test method.	7. Definitions..... 2
	8. Equipment..... 2
	9. Calibration and Validation..... 3
	9.1 Conditioning of Cohesion Tester for Torque Measurement..... 3
	9.2 Verification..... 3
	9.3 Torque Correction..... 3
	10. Procedure..... 4
	11. Reporting..... 5

May 2018 | page 1

Abrasion

AGPT/T272 Determination of Abrasion Loss of Bituminous Slurry (Wet Track Abrasion Test)

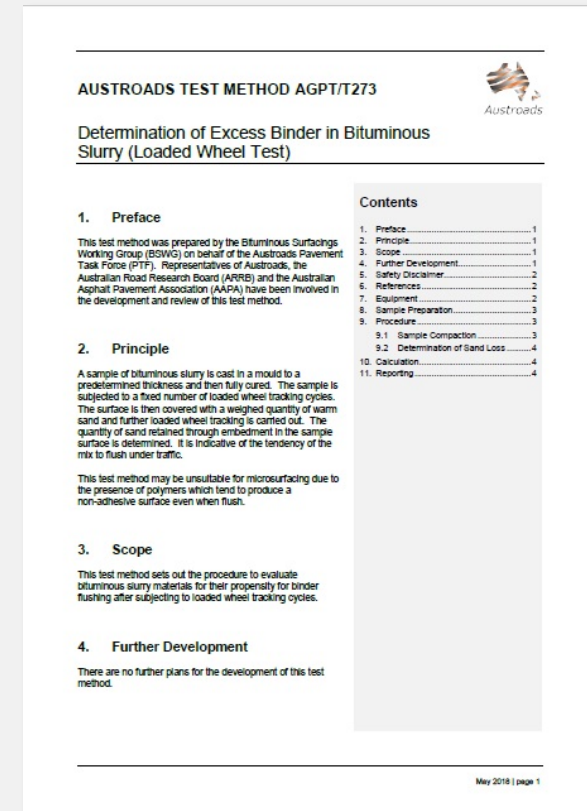
- Determines material loss when subject to abrasive action
 - Evaluates wearing resistance under wet abrasion conditions
- Prepared samples are soaked for set period
- Abrasion applied
- Mass loss evaluated



Excess binder

AGPT/T272 Determination of Excess Binder in Bituminous Slurry (Loaded Wheel Test)

- Indicates tendency of mix to flush under traffic
- Prepared samples subject to loaded wheel tracking cycles
- Surface covered with warm sand before further wheel tracking
- Quantity of sand retained through embedment



AUSTROADS TEST METHOD AGPT/T273

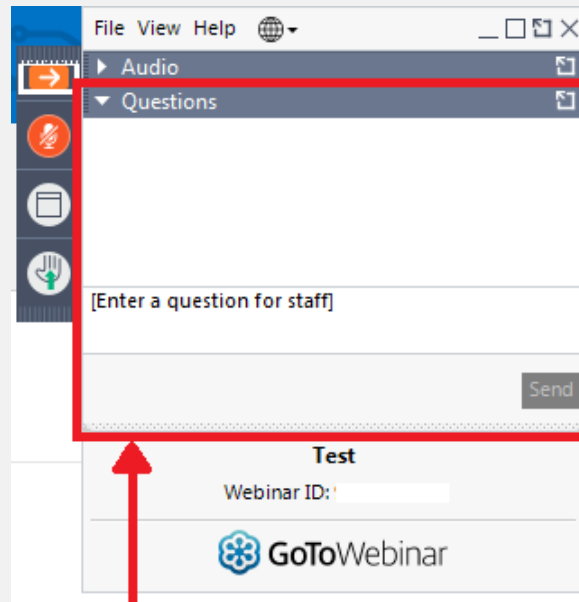
Determination of Excess Binder in Bituminous Slurry (Loaded Wheel Test)

Contents

1. Preface	1
2. Principle	1
3. Scope	1
4. Further Development	1
5. Safety Disclaimer	2
6. References	2
7. Equipment	2
8. Sample Preparation	3
9. Procedure	3
9.1 Sample Compaction	3
9.2 Determination of Sand Loss	4
10. Calculation	4
11. Reporting	4

May 2018 | page 1

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Questions?

Steve Patrick

Senior Professional Leader

Future Transport Infrastructure

Australian Road Research Board (ARRB)

P: +61 3 9881 1678

E: steve.patrick@arrb.com.au



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