

# Bituminous surfacing works treatment and selection

Technical directive

<b>Document title</b>	Bituminous surfacing works treatment and selection
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<b>Approved by</b>	Project Director Civil Assets Management
<b>Date approved</b>	29/11/2019
<b>Document review</b>	Annually
<b>TRM number</b>	2017/0362-0001.03

Version	Date	Author	Changes made
1.0	29/11/2019	Andrew Batson	New template, minor format changes replaces version 9, 12 March 2019, added reference to Type 4 A15E asphalt pavements

Acronyms	Full form

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## 1. Purpose

The purpose of this technical directive is to outline the default position for the selection of Binder Types, Aggregate sizes and Asset Treatments Type for Spray Sealing and Asphalt Surfacing works for Northern Territory government road and civil assets. The document is applied across all regions in the NT.

This standard aims to ensure that all Government assets are managed consistently and use best practices when using bituminous products and treatments.

This standard has combined four previous former Department of Transport and Department of Infrastructure policies and guidance documents regarding binder selection, aggregate selection, and treatment types, inclusive of what type of treatment is required at defined locations.

This standard replaces these former documents:

- Spray Seal Surfacing Part 1 – Selection of Binder Type - DoT
- Work Instruction – Spray Seal Surfacing Part 3 – Selection of Aggregate Sizes – CD
- Work Instruction – Surfacing Types – DoI
- Asphalt and Spray Seal in Urban Areas - RND

## 2. Scope

This policy is applicable to all Departmental staff and contracted parties that manage construction and or design works on Government assets.

The policy applies to all new construction works, maintenance works and 3<sup>rd</sup> party developments on Government assets administered by the Department of Infrastructure and Planning and Logistics.

Variations and exemptions to the policy can be approved by the Director of Engineering and Environment Services.

The selections and treatments set out in this document are based on materials and workmanship being carried out using Northern Territory specifications and directives.

### 3. Binder selection

All = All regions

#### Priming and Primersealing

Region	Binder Type
All <sup>1</sup> - Prime	AS2008 Class bitumens
All <sup>1</sup> - Primerseal (AMC 5 and 6)	Class C240/C320
All - Emulsion Primes	Proprietary Products - approval from DIPL Bitumen section required before use

<sup>1</sup>Prime is required when detours are in place and primerseal when construction is under traffic.

#### Initial Seal Work

Region - All	Binder Type
Carriageways	S10E
Truck Bays and Heavy Vehicle Areas	S20E

#### Resealing Work

Region - All	Binder Type
Carriageways	S10E
Truck Bays and Heavy Vehicle Areas	S20E

#### Emulsion Treatments

Region - All	Binder Type
Tack coat	CRS170/60
Enrichment	CMS 170/60

#### SAMI Seals

Region	Binder Type
All <sup>4</sup>	S25E

#### Asphalt

Region - All	Binder Type
Major Urban Roads*	A15E
Regional Urban Subdivisions	A20E
Regional Rural Asphalt	A20E
Car Parks <sup>2</sup>	S10E
Shared paths	Class 320
Port Facilities	A35P
All Racetracks	A35P
Very High Stress Intersections <sup>3</sup>	A35P

\*Refer to section 5 and 6 for roads requiring "Asphalt Surfacing".

<sup>2</sup> Minimum bitumen properties required. Bitumen with properties exceeding S10E may be substituted, example A20E, A15E with an increase to bitumen content.

<sup>3</sup> Approval from Executive Director Civil Services required before specified.

<sup>4</sup> For SAMI seals S25E can be substituted with A15E

Selection of binder type other than those specified above can be considered in special circumstances to the approval of the Director of Engineering and Environment Services. For example, resealing a heavily

cracked surface may require a Geotextile seal, S20E, S25E type binders or crumb rubber S45R. Seek specialised advice from the DIPL Bitumen section on the use of these products.

## 4. Aggregate selection for spray sealing

### New Works - Sealing

Region - all	Treatment
Urban Arterials	14 and 7
National Highway	14 and 7
Rural Arterial > 100 vpd	14 and 7
Rural Arterial < 100 vpd <sup>4</sup>	14
Local Roads > 100 vpd	14 and 7
Local Roads < 100 vpd	14
Airstrips	14 and 7
Remote Localities <sup>5</sup>	14 and 7

<sup>4</sup>Where there is greater than 35% heavy vehicles use 14/7 two coat seal

<sup>5</sup>Where there is a high cost of mobilisation, example: Nhulunbuy, Docker River and Kintore.

NOTE: 14 and 7 are a 2 coat process.

### New Works - Seal Widenings

Region	Treatment
All	Match existing size, type and colour

### Resealing

Region	Treatment
All - Existing size	generally one size smaller than existing size as follows
20mm	14mm
14mm	10mm
10mm	7mm
7mm	14mm
14/7 - 2 Coat	10mm
All - Urban Arterials	14/7 - 2 coat process
Airstrips	Seek specialised advice from the DIPL Bitumen section

**Note: National Highways - Do not use 7mm for resealing works.**

**Microsurfacing / Slurry**

Region	Treatment
All	7 mm

Variations to above selections can be considered in special circumstances, but requires approval, from the Director of Engineering and Environment Services.

## 5. Asset type and treatment selection

Asset Type	Construction Type	Product Name	Bitumen Type	Aggregate Size (mm)	Depth (mm)
Urban Footpaths / Cycle paths	New	Concrete	N/A	10	100
Urban Footpaths / Cycle paths	New / Overlay	AC10 - Type 2	320	10	30
Rural Footpaths / Cycle	New / Reseal	Seal	320	10	N/A
Carparks - Light Vehicles only	New / Overlay	AC10 - Type 2	S10E	10	30
Carparks - Light / Some Heavy Vehicles	New / Overlay	AC14 - Type 5	S10E	14	35
Urban Roads	New / Overlay	AC14 - Type 5	A15E	14	40
Urban Intersections	New / Overlay	AC14 - Type 5	A15E	14	50
Urban Roundabouts	New / Overlay	AC14 - Type 5	A15E	14	50
Urban Subdivisions <sup>6</sup>	New / Overlay	AC14 - Type 5	A15E	14	40
Asphalt Pavements	New	AC20 - Type 4	A15E	20	Varies
Regional Urban Subdivisions <sup>7</sup>	New / Overlay	AC14 - Type 3	A20E	14	40
Regional Rural Asphalt <sup>7</sup>	New / Overlay	AC14 - Type 3	A20E	14	40
Regional Rural Towns – Subdivisions or Arterial Roads <sup>8</sup>	New / Reseal	Seal	S10E	14/7	N/A
New works - Urban Industrial Subdivisions	New / Overlay	AC14 - Type 5	A15E	14	40
New works - Urban Industrial Intersections – Light and Heavy Vehicles	New / Overlay	AC14 - Type 5	A15E	14	50
Urban Roads – Spray Sealing	New	Seal	S20E	14/7	N/A
Rural Roads <sup>9</sup>	New/Reseal	Seal	S10E	refer “new seal” table above	

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Rural Roads - Intersections with heavy vehicle movements	New /Reseal	Seal	S20E	14/7	N/A
Rural Roads – Intersections minimal / no heavy vehicle movements	New /Reseal	Seal	S10E	14/7	N/A
Rural Roads - Property Intersections / access Light Vehicles Only	New /Reseal	Seal	S10E	14/7	N/A
Rural Roads - Property Intersections / access Some Heavy Vehicles	New /Reseal	Seal	S10E	14/7	N/A
Rural Industrial Intersections - Light and Heavy Vehicles	New /Reseal	Seal	S20E	20/10	N/A
Floodway - Rural	New/Reseal	Seal	S10E	14/7	N/A
Flood Plains, Waterways and Flood Zones	New/Reseal	Seal	S10E	20/10	N/A
Truck Bays	New	Seal	S20E	20/10	N/A
Truck Bays	Reseal	Seal	S20E	14/7	N/A
Rest Areas	New	Seal	S10E	14/7	N/A
Rest Areas	Reseal	Seal	S10E	14/7	N/A

<sup>6</sup> Where A15E is manufactured or mobile plants are available / specified

<sup>7</sup> Mix Design is to be “Heavy”

<sup>8</sup> Where Asphalt is not produced locally, design shall be based on a seal or Rural Communities

<sup>9</sup> Includes Remote towns and communities



## 6. Mandatory asphalt placement areas

Region	Road Extent
Darwin	<ul style="list-style-type: none"> <li>• Stuart Hwy McMinn St - Hickman Street</li> <li>• Stuart Hwy Inbound- Hickman Street - Hook Road</li> <li>• McMinn St Stuart Hwy to Frances Bay Drive</li> <li>• Tiger Brennan Drive McMinn Street to Benison Street</li> <li>• Bagot Road Stuart Highway to Nightcliff Drive</li> <li>• Trower Road Nightcliff Drive - Vanderlin Drive</li> <li>• Vanderlin Drive Trower Road - McMillans Road</li> <li>• McMillans Road Bagot Road - Vanderlin Drive</li> </ul> <p>Henry Wrigley Drive Mcmillans Rd to Airport boundary</p>
Palmerston	<ul style="list-style-type: none"> <li>• Stuart Hwy TBD Roystonea Overpass All sections</li> <li>• Temple Tce Stuart Hwy - Chung Wah Tce</li> <li>• Chung Wah Terrace Temple Terrace - Elrundie Avenue</li> <li>• University Ave Roystonea Avenue to Erlrundie Avenue</li> <li>• Lambrick Ave Chung Wah Terrace- Stuart Highway</li> <li>• Roystonia Avenue Stuart Hwy to Owston Avenue</li> <li>• Wishart Road Berrimah Road - 1000m mark</li> <li>• Howard Springs Road Stuart Hwy to Whitewood Rd</li> </ul>
Katherine	<ul style="list-style-type: none"> <li>• Katherine Tce Lindsay Street - O'Shea Terrace</li> </ul>
Tennant Creek	<ul style="list-style-type: none"> <li>• Paterson St 200m Nth of Blain St - Weaber Rd</li> </ul>
Alice Springs	<ul style="list-style-type: none"> <li>• Stuart Hwy Dixon Road to Traeger Avenue</li> <li>• Stephens Road South Terrace to Barret Drive</li> <li>• Larapinta Drive Stuart Hwy - Lovegrove Drive</li> <li>• Larapinta Drive Bradshaw Drive to Taylor Street</li> <li>• Stott Tce Stuart Hwy - East Side of Todd River Bridge</li> <li>• Tom Brown Roundabout</li> </ul>
Nhulunbuy	Nil
Rural Towns - New Works	Nil

## 7. Asphalt types

All Asphalt is to be dense graded, no stone mastic or open graded asphalt types are permitted. Grades are as per Northern Territory Standard Specification for Roadworks.

## 8. Definitions and abbreviations

**PMB** – A binder consisting of polymeric materials dispersed in bitumen with enhanced binder performance for particular applications.

**Prime** - An application of a primer to a prepared base, without cover aggregate, to provide penetration of the surface, temporary waterproofing and to obtain a bond between the pavement and subsequent seal or asphalt. It is a preliminary treatment to a more permanent bituminous surfacing.

**Primerseal** – An application of primer binder with fine cover aggregate to a prepared base to provide penetration of the surface to retain a light cover aggregate. It is used as a preliminary treatment to a more permanent bituminous surfacing. It is intended to carry traffic for a longer period than a prime.

**Reseal** – A sprayed seal applied to a surface which has an existing seal.

**SAMI** – Strain Alleviating Membrane Interlayer. Similar to a SAM, but provided as an interlayer before placing an asphalt overlay.

**Seal** – A thin surface layer of bituminous material into which aggregate is incorporated.

**Regional Rural** (In relation to A20E) - Outside of major town boundaries, on major arterial roads

**Regional Rural Towns** (in relation to sealing of new works) – any town outside of the major towns

## 9. Associated control documents

DIPL Standard Specification for Roadworks

- Spray Sealing
- Dense Graded Asphalt
- Slurry Surfacing

Development Guidelines for Northern Territory Government Controlled Roads

Australian Standards AS 2008

Austrroads AGPT T190