


Bituminous Surfacing - Tender Preparation and Contract Administration Toolkit

Institute of Public Works Engineering Australia

IPWEA (Tasmania Division), Royal Engineers Building, 2 Davey Street, HOBART TAS 7000

Contents

Why a toolkit?

Historically tender documents for bituminous surfacing works prepared by councils in Tasmania have been produced in various forms and with varying amounts of project specific detail provided. This has resulted, in some circumstances, where the tenderer has had to make assumptions with regard to specific project quantities and locations and which may have led to less than optimal tender pricing.

This document has been produced to assist Tasmanian IPWEA member organizations in the preparation of tender documentation for bituminous surfacing treatments. It aims to provide guidance for Municipal Officers responsible for the issuing of tender documentation to ensure sufficient project specific information is provided in the tender documents and appropriate referencing of other specifications is undertaken in such a manner that will facilitate fair and transparent tendering outcomes.

DIER specifications

In Tasmania the Department of Infrastructure, Energy and Resources (DIER) maintain a series of Roadworks Specifications applicable specifically to the department's requirements, however, a considerable proportion of the content is equally applicable to municipal government applications and are often cross referenced in Municipal Standard Specifications and Drawings. These specifications are available on the DIER website where they can be accessed and downloaded for use. Relevant specifications available through this source are:

Tasmanian Roadworks Specification

- G6 – Production of Aggregates and Rock Products
- G7 – Asphalt Production
- R50 – Glossary of Terms – Bituminous Operations
- R51 – Sprayed Bituminous Surfacing
- R52 – Polymer Modified Binder Sealing
- R55 – Asphalt Placement
- R55 – Explanatory Notes
- R57 – Bituminous Slurry Surfacing

Whilst it is acknowledged that much of the content of the DIER specifications is equally applicable to municipal government road works, it should be noted that, the principal focus of the DIER specifications is directed towards the construction, maintenance and management of the national and state highway and main road network.

An important distinction that needs to be made when applying State Road Authority specifications to municipal government applications is the recognition of the different end use applications of products such as asphalt and aggregate properties specified for sprayed seals. Where the DIER specifications typically are aimed at high speed, high traffic volume roads with a large proportion of heavy commercial vehicles, this is often not the case for local government roads.

Asphalt – general information

The selection of an appropriate asphalt type and the corresponding specification conformance requirements will differ significantly depending on the end use requirements.

The selection of an appropriate asphalt mix size for various applications is important. The nominal size of an asphalt mix refers to the maximum particle size present in the mix. The selected nominal size of the mix will be determined by:

- Location of the asphalt course in the pavement
- Proposed compacted thickness of the layer
- Functional requirements of the asphalt layer.

Generally asphalt should be placed in layers with a compacted thickness of not less than 2.5 times the nominal size of the mix to ensure adequate compaction and the attainment of suitable surface properties. For heavy duty asphalt mixes, which typically have a coarser grading, a minimum of 3 times the nominal thickness is recommended.

Careful consideration should be given to the selection of the most appropriate mix type for each application. Austroads 2007 - Guide to pavement technology. Part 4B: Asphalt, provides guidance on mix type and layer thickness requirements.

Austroads 2007 Part 4B Asphalt - Table A 5: Selection of nominal size of dense graded asphalt mixes (Part only)

Nominal size (mm)	Typical layer thickness (mm)	Typical use
5	15 – 20	Available in limited locations for use as very thin surfacing layer with fine surface texture
7	20 – 30	Commonly used for surfacing residential streets and foot traffic areas where thin layers and fine surface texture required.
10	25 – 40	General purpose wearing course suitable for both light and moderate traffic applications.
14	35 – 55	Wearing course mix for heavier traffic applications. Also intermediate course to suit layer thickness.
20	>50	General purpose base and intermediate course mix for wide range of uses.

Traffic Category

Different traffic volumes require different combinations of size, type, and proportion of aggregate, filler and binder in the asphalt mix to provide appropriate levels of structural stiffness, deformation resistance, flexibility, permeability, surface texture and durability.

Austroads 2007 Part 4B Asphalt - Table A 2 of the Guide provides a guide to traffic category.

Indicative traffic volume		Traffic category	
Commercial vehicles / lane/day	Structural design level	Free flowing vehicles	Stop/start or climbing lane or slow moving
<100	5×10^5 ESA's	Light	Medium
100 to 500	5×10^5 to 5×10^6 ESA's	Medium	Heavy
501 to 1,000	5×10^6 to 2×10^7 ESA's	Heavy	Very Heavy
>1,000	2×10^7 ESA's	Very Heavy	Very Heavy

Austroads design method

The design concept described in Austroads Guide to Pavement Technology – Part 4B: Asphalt (2007), provides for a three level mix design procedure. Level 1 addresses the very important volumetric properties of a mix. Level 2 looks at mainly mechanical properties, such as modulus and creep together with some optional tests, while Level 3 is concerned with evaluating rut resistance.

The cost and resources required for mix design testing must be balanced against the circumstances in which the mix will be used and the consequences of early failure. For this reason, only a small amount of testing is required for light traffic mixes, and they are only required to undergo Level 1 (volumetric) testing. Medium and heavy traffic mixes undergo Level 1 and Level 2 testing, while very heavy mixes proceed through Levels 1, 2 and 3.

The design levels for different traffic categories are summarised in Table A 6 of the Austroads Guide.

Austroads 2007 Part 4B Asphalt - Table A 6 Appropriate level of mix design for traffic category.

Traffic category	Design level	Laboratory compaction (cycles)
Light	1	50
Medium	2	80
Heavy	2	120
Very heavy	3	120 + 250

The binder type and design air voids appropriate to the specific traffic category applications are based upon the expected end use and performance requirements of the asphalt mix. Table A.3 of the Austroads Guide summarises the selection of dense graded asphalt wearing courses.

Austroads 2007 Part 4B Asphalt - Table A 3 Guide to the selection of dense graded asphalt.

Traffic category	Laboratory compaction level	Typical* design air voids (%)	Binder (class / type)	Recommended use
Light	50 cycles	4.0	170	Residential streets and car parks. Foot traffic
			320	Sometimes used for above in warmer climates.
Medium	80 cycles	4.0	170	Normal conditions and lower traffic ranges, particularly in cooler regions.
			320	Good general purpose mix for a wide range of applications.
Heavy	120 cycles	4.0	320	General purpose mix for heavily trafficked applications. Generally combined with use of polish resistant aggregates.
			600, Multigrade or PMB	High performance mixes for greater traffic loadings. Stiffer binders require strong, stiff base.
			320	Heavily trafficked intersections, slow moving traffic, requires coarse grading.
Very heavy	120 and 350 cycles	5.0	600, Multigrade or PMB	Special applications such as very heavily trafficked intersections, heavy duty industrial pavements, and aircraft hard standing. Requires coarse grading.

NOTE * Whilst the DIER R55 specification would permit the use of a Class 170 bitumen binder for heavy and very heavy traffic applications, Austroads guidelines would recommend the use of stiffer binders.

DIER Specification of Asphalt

There are three parts to the DIER specification of asphalt:

1. The Project Specification. It defines the specific requirements for the project;

2. Specification G7 – 'Asphalt Production'. Includes materials, mix design, and production quality control for all asphalt types; and

3. Specification R55 – 'Asphalt Placement'. It covers the properties required of asphalt, in composition and when placed. The particular design and test requirements for each asphalt type are defined in Specification R55 'A' series Appendices.

Part 1, the project specification, details the project specific details of the works including;

- The type of asphalt required, eg AC14, OGA 10 etc;
- Binder grade, eg Class 170 bitumen, Class 320 bitumen, Polymer Modified Binder (PMB) etc;
- Traffic Category (light, medium, heavy, very heavy); and
- PAFV for wearing course asphalt.

The DIER specification includes mandatory requirements for items that may not always be required in some local government applications. DIER Specification G7 – Asphalt Production, requires a minimum Polished Aggregate Friction Value (PAFV) of 48 for all wearing courses of asphalt. For example, for surfacing treatments on residential, low volume, low speed roads the requirement for a minimum PAFV may not be required. The contract administrator should give consideration to what should be mandated with regard to specification compliance and explicitly identify any non mandatory requirements.

Toolkit Tip 1

Have you clearly described the project specifics?

Have you documented exactly what you want and where?

Have you read the DIER G7 & R55 Explanatory Notes?

Do you require high PAFV aggregate for this job?

Is Class 170 bitumen appropriate for the application?

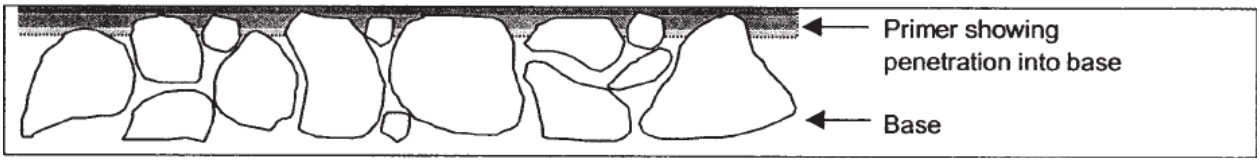
Spray Sealing – general information

Sprayed seals are the most common surfacing treatment in Australia comprising about 90% of the total Australian sealed road network. Bituminous sprayed treatments are broadly separated into two main types;

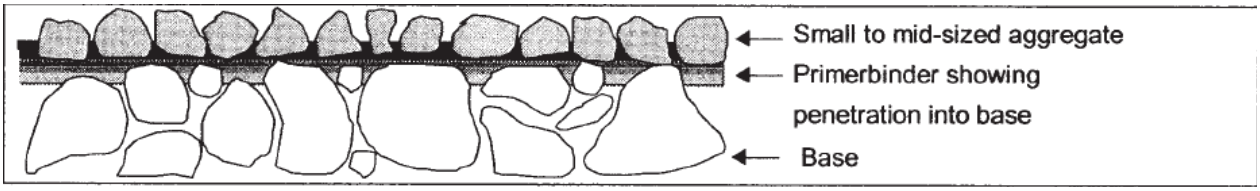
- Initial treatments on new pavements, and
- Reseals over existing bituminous surfacings.

Initial treatments on new pavements are typically a prime and seal or a primerseal followed by a final seal usually applied between one and two years after the initial treatment. A prime consists of the application of a suitable viscosity primer to the prepared pavement as a preliminary treatment to the application of a seal or asphalt surfacing. Primerseals were originally developed as an alternative to a prime and seal when it was not practical to prime, such as in cold or damp conditions.

Austroads 2004 Sprayed Sealing Guide - Figure 3.1 Prime

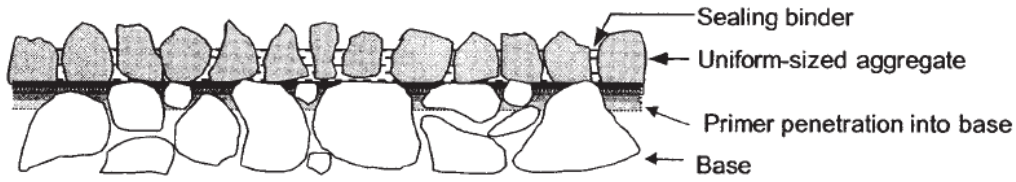


Austroads 2004 Sprayed Sealing Guide - Figure 3.2 Primerseal



The most common form of reseals is the single application of binder and single application of aggregate, termed a single/single seal. The design of rates of application of binder and aggregate for single/single seals forms the basis of the design procedures for all other sprayed seal types including modified binders or multiple applications of binder and aggregate.

Austroads 2004 Sprayed Sealing Guide - Figure 3.4 Single/Single Seal



Austroads 2004 Sprayed Sealing Guide - Table 3.1 Advantages and disadvantages of primerseals and prime and seals

Initial Treatment Type	Advantages	Disadvantages
Prime and Seal	1. Generally more economic in overall cost 2. Reduces the absorption of seal coat binder into the pavement 3. Thicker waterproof layer 4. Strong bond to the pavement 5. May be used to protect pavement prior to sealing 6. Easier to cope with non-uniform pavement condition and texture	1. The pavement surface must be dry 2. Best results are obtained in dry/warm conditions 3. Two-stage process 4. The primer must be dry and set up before sealing 5. Use of pavement by traffic is restricted 6. Rain may cause uncured primer to be washed off the pavement with loss of primer and risk of environmental damage
Primerseal	1. Can be placed on a damp pavement (dried back to about 60–70% of optimum) 2. One step process that can be opened to controlled traffic immediately it is completed 3. Allows repair of pavement deficiencies prior to final seal.	1. Relatively short term treatment and must be followed by a final seal to complete the treatment within 1 to 3 years 2. Cutback bitumen primerseals require 3 to 12 months curing 3. Rain soon after pavement construction can lead to problems such as aggregate embedment, binder emulsification, stripping of aggregates and pick-up on vehicles

From a Contract Administrators perspective, the important elements for sprayed sealing works can be broadly categorised as:

- Selection of surfacing type / sprayed seal type
- Selection of component materials
- Design of rates of application of aggregate and binder
- Quality of materials
- Field procedures
- Monitoring of performance

The success of sprayed seal surface treatments requires care in both the selection of surfacing type and the design process.

Toolkit Tip 2

Have you selected the correct treatment for the site conditions?

Have you documented exactly what you want and where?

Have you read the DIER R51 spec and completed the Annexure C forms?

Do you require high PAFV aggregate for this job?

Is Class 170 bitumen appropriate for the application?

Austroads 2004 Sprayed Sealing Guide - Table 3.4 Aggregate sizes for spray seal treatments

Treatment	Common sizes	Comment
Initial treatment (Primerseal)		
To be resealed before opening to traffic	Sand or 5 or 7 mm	A small sized aggregate will carry construction traffic at lowest cost and avoid presenting a very coarse texture that may require additional binder when applying the final seal.
Under traffic	7 mm for firm pavements and low traffic, or 10 mm in all other cases	The maximum size used in primersealing is 10 mm due to the use of low viscosity binders.
Initial treatment (Prime and seal)		
As a temporary treatment to be resealed before opening to traffic	Sand or 5 or 7 mm	For low traffic roads, 7 mm and 10 mm sprayed seals can provide adequate service at lowest initial cost. 14 mm sizes are initially more expensive but can be cost effective in some light traffic applications where surface enrichment is used to extend the life of the seal. (Surface enrichment may be done a number of times)
To be opened to traffic after sealing	7 or 10 mm for firm pavements and low traffic. 10 mm for soft pavements and low traffic. 14 mm or 10 mm for high traffic pavements	
Final seal or reseal		
Existing seal 7 mm, or asphalt surface	Generally 7 or 10 mm for low traffic and 14 mm for high traffic (but reduce to 10 mm if noise is an issue)	If the existing surface texture is uneven, it may be very difficult to successfully reseal. In such cases a corrective treatment using 5 or 7 mm aggregate may provide a more even surface texture which can subsequently be resealed with a larger aggregate size.
Existing seal 10 mm	7 mm for low traffic or 14 mm for high traffic (see comment)	
Existing seal 14 or 16 mm	7 mm for low traffic or 10 mm for high traffic (see comment)	
SAM		
Existing seal 7 mm or an asphalt surface	Generally 14 mm	SAM seals for resistance to cracking should use aggregates of 14 mm size to provide a suitable heavy binder application. This may be reduced to 10 mm if noise is an issue or where required to mesh with an existing coarse textured seal but performance levels will be reduced. Alternatively, double application seals can be considered.
Existing seal 10 mm	14 mm	
Existing seal 14 mm	10 mm (see comment)	
SAMI Seals		
Asphalt surface or sprayed seal surface	Generally 10 mm	Generally, a SAMI seal requires 1.6 to 2.0 L/m^2 of polymer modified binder to provide sufficient binder to resist reflection cracking . Risk of flushing of a 10mm seal at such application rates is minimal where the seal is only trafficked for a short period before applying asphalt.
Geotextile Reinforced sprayed seals		
To remain as a sprayed seal surface	Generally 14 mm	Single application geotextile reinforced sprayed seals require high binder application rates and highly modified binder to effectively hold aggregate in place. Risks of poor performance are increased with 10 mm aggregates although 10 mm aggregates are suitable where the seal is to be covered with asphalt. Alternatively, double application geotextile reinforced sprayed seals using PMB or Class 170 binder substantially reduce the risk associated with premature stripping.
To be surfaced with asphalt	Generally a 10 mm	If the existing surface on which a single application geotextile sprayed seal is placed is coarse (>1.5mm) an initial application of a 7mm sprayed seal may be used reduce the texture and reduce risk of premature stripping.
Special seal locations		
Fords/areas subject to inundation	A heavy robust surfacing is required. Generally this involves a double application seal using combinations of 20 mm with 10 or 7 mm, or 14 mm with 7 mm.	
Flushed areas	If single application seals or corrective treatments are considered unsuitable, then an effective alternative can be a double application seal using 20 mm with 10 or 7 mm.	
Shoulders on highways and freeways	Generally the greatest durability is obtained with two application seals using a combination of 14 mm with 7 mm (or 20 mm plus 10 mm where a heavier treatment is required to resist reflection cracking).	
Dusty desert country	Consider double application seal where the role of the top seal coat is to protect the binder in the bottom coat from deterioration/contamination from dust.	

Austroads design method

The Austroads sprayed seal design method was revised in 2006 with the aim to improve the reliability of the design method. To design suitable rates of application of binder and aggregate for the service conditions, it is essential that, as a first step, an appropriate treatment is selected. Failure to do so may result in a treatment that cannot provide the surfacing characteristics and performance expected.

The importance of traffic and the average least dimension (ALD) of the aggregate is paramount in the design process. The life of a sprayed seal is highly dependent on the quality of the granular base materials and the standard of surface preparation of pavements prior to sealing.

Selection of the right surfacing type for the site conditions is critical for successful outcomes to be achieved. Guidance on selection of treatment type and materials is provided in;

- Austroads (2006), Update of the Austroads Sprayed Seal Design Method
- Austroads (2004), Austroads Sprayed Sealing Guide
- Austroads (2003), Austroads Guide to Selection of Road Surfacings

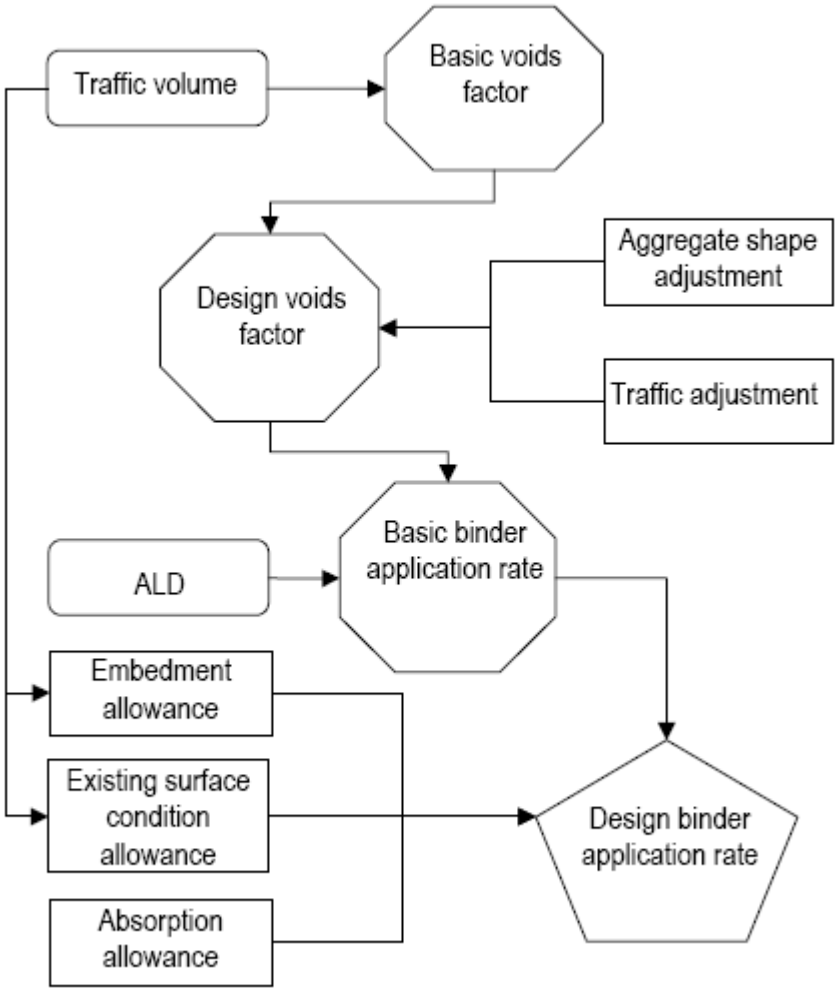
The Austroads design philosophy applies principally to the design of the most common type of sprayed seal, the single/single seal using conventional bitumen as the binder. Assumptions used in the design of single/single seals are:

- aggregate is single sized and appropriate quality
- average least dimension (ALD) must be representative of the aggregate being used
- design traffic volume is expressed in vehicles/lane/day (v/l/d) and based on Average Annual Daily Traffic (AADT)
- aggregate is spread in a uniform layer of one stone thickness, with particles in continuous, partly interlocked contact and the least dimension near vertical
- there is no separate allowance to be made for whip-off in the design spread rate
- aggregate spread rate determines the inter-aggregate void space in the seal layer, and hence the amount of binder required. Failure to achieve, within practical limits, the design aggregate spread rate will result in the design binder application rate being incorrect
- a single layer of aggregate particles settles with, typically, 40 – 60% voids after orientation and packing of the aggregate by rolling and trafficking
- binder rise should be a minimum of about 35 – 40% up the height of the aggregate particle after initial rolling, increasing to between 50 – 60% (i.e., 1/2 - 2/3) about two years after construction
- aggregate particles may penetrate (embed) into the base
- reseals interlock with the existing surfacing
- binder may be absorbed into the base and, sometimes, by the aggregate
- the proportion of voids to be filled with binder may be varied to optimise requirements such as surface texture, maximum seal life, and for specific applications such as non-traffic areas. A minimum texture is generally required for skid resistance
- preliminary treatments such as primes and primerseals have been correctly designed and applied. If this has not been achieved, remedial work should be undertaken prior to, and well in advance of, the commencement of sealing
- all application rates determined by this method are expressed in L/m^2 of residual binder at the standard reference temperature of 15^0C.

Sprayed seals are a system, and sealing trials and subsequent work have shown that the design of the rates of application of binder and aggregate spread rates are both of major importance in achieving a satisfactory performance for the service conditions.

A general schematic of the process for determination of binder application rates for single/single seals is shown below.

Austroads 2006 Update of the Austroads Sprayed Seal Design Method - Figure 1.3



Calculation of design traffic

Accurate traffic volumes are an essential requirement for the determination of appropriate rates of application of binder. The traffic volume should be expressed in terms of the total number of vehicles, and the composition in terms of light and heavy vehicles (heavy vehicles are those over 3.5 tonne gross mass)

Design Traffic, when determined from AADT, must take into account the following:

- the number of carriageways (generally single or dual)
- the direction of traffic (one-way or two-way)
- number of lanes
- percentage of the total traffic travelling in each lane

Design Traffic should be the best estimate of traffic using each lane. For general references in the Austroads Guide the following descriptions apply:

- very low; ≤ 200 v/l/d
- low; 201 – 750 v/l/d
- medium; 751 – 2000 v/l/d
- high; >2000 v/l/d

Austroads 2006 Update of the Austroads Sprayed Seal Design Method - Table 1.1 Estimation of Design Traffic from AADT for single carriageways

Width of seal (m)	Estimated Design Traffic (v/l/d)	Comment	
3.7 - 5.6	AADT	Seal width is considered too narrow for 2 lanes	
6.2 - 7.4	½ × AADT	Traffic is considered to predominantly travel in distinct lanes on seals of this width, especially if the centre line and/or lanes are line marked	
Sealed shoulders, parking lanes, identified by edge line marking to be separate from the traffic lanes	adopt < 50	If not line marked, some of the traffic may wander onto the shoulder and < 50 v/l/d may not be appropriate. If in doubt, a traffic count should be conducted.	
Overtaking lanes (in one direction)			
left hand lane (3.7m)	60–80% of ½ × AADT	Determine % of HV for each lane as a proportion of the total traffic volume in that lane.	If in doubt, arrange a traffic count for each lane
right hand lane (3.7 m)	20–40% of ½ × AADT		
Single lane in opposite direction	½ × AADT	%HV same as in AADT	
On and off ramps on freeways or urban road systems	Traffic volumes (AADT) before and past the ramp, may provide a good indication of AADT on ramp. Otherwise, arrange a traffic count. Traffic volume on the road connected to the ramp may also provide additional useful information to determine AADT on the ramp.		
Service roads to major roads	For one-way traffic, the Design Traffic is equal to the AADT For two way traffic use ½ AADT	AADT refers to traffic using the service road only. If not available arrange a traffic count..	

Austroads 2006 Update of the Austroads Sprayed Seal Design Method - Table 1.2 Estimation of Design Traffic from AADT for dual carriageways

Lane (assumed 3.7m wide)	Estimated Design Traffic (v/l/d)	Comments	
Multi lane, heavily trafficked	½ AADT divided by the number of lanes in the carriageway OR ½ AADT x % traffic in each lane	These roads are usually in urban areas or linking major centres. Traffic volume is often > 2000 v/l/d in all lanes but the % heavy vehicles may vary between lanes.	
2 lane carriageway			
left hand (outer) lane	60 to 80% of ½ AADT	60% for urban / 80% for rural	Each carriageway = ½ AADT
right hand (inner) lane	40 to 20% of ½ AADT	40% for urban / 20% for rural	
Sealed shoulders, Parking lanes identified by edge line marking to be separate from the traffic lanes	adopt < 50	On some busy roads, trucks may tend to travel partially on the shoulder, and this must be taken into account. A traffic count should be conducted, and/or traffic pattern determined.	
Where two lanes merge into one (at end of a duplicated section)	½ AADT	Merged traffic is ½ AADT, but design of binder application rates and layout of sprayer runs within the merge area require particular care.	
Off and on ramps	% of ½ x AADT	If actual traffic counts are not available for ramps, traffic on the side road, before and past the ramp, may provide an indication of the traffic volume using the ramp.	

Large heavy vehicles (LHV)

Large heavy vehicles include B-Doubles and other heavy truck/trailer combinations with seven or more axles. As an interim measure for the current seal design method, it has been agreed to determine a design traffic volume and proportion of heavy vehicles based on the following:

$$\text{Equivalent Heavy Vehicles (EHV)\%} = \text{HV\%} + \text{LHV\%} \times 3$$

where:

HV and LHV are as obtained from annual traffic count or on-site counts.

The value of EHV calculated by this procedure is used solely for the determination of adjustments to the basic voids factor for the effects of traffic (Table 2.2) and does not alter the design traffic volume.

Toolkit Tip 3

Have you obtained reliable traffic information?

Have you determined the vehicles per lane per day?

Have you determined the proportion of heavy vehicles?

Do you have a significant number of large heavy vehicles using the site, for example quarry access roads or industrial precincts?

DIER specification for sprayed bituminous surfacings

The DIER R51 specification for Sprayed Bituminous Surfacing sets out the requirements for prime and seals, primerseals and reseals. The specification covers:

- supply and quality of materials
- bituminous surfacing designs
- standards of workmanship including the Contract Management Plan
- records
- required evidence of compliance
- payment

The objectives of the specification are to:

- ensure that the surfacing is appropriately designed and constructed in order to produce a serviceable product compatible with the underlying surface and the expected future traffic
- avoid the unnecessary specification of work practices. The Contractor is required to propose defined work practices for the project in the Contract Management Plan consistent with recognised contemporary best practice, and to undertake the works accordingly
- ensure the safety of road users and construction personnel during the surfacing operations as well as to prevent damage to road infrastructure arising from the operations.

Work Specific Requirements

The required features and properties are to be defined in the Works Specification. These include

- Type of surfacing in the following treatment categories
  - prime and seal
  - primerseal
  - reseal

- Required features of the surfacing including
  - aggregate size
  - binder type
  - number of applications of binder and aggregate
  - special properties of the aggregate or binder, such as polished aggregate friction value (PAFV) and binder grade
  - geotextile reseal
  - nominal binder application rates for tender purposes

- Other client supplied information to be provided in the Works Specification including
  - location of the works sites, traffic AADT and commercial vehicles content (Annexure C)
  - site classification for traffic management (G2.6)
  - events consideration (G1.20) which may effect the or disrupt the sealing operations.

Aggregates

All aggregates shall be precoated and free from water and adhered dust. Aggregates shall be sourced from a quarry complying with Specification G6 Production of Rock Products. The aggregates shall comply with AS2758.2 with the following clarification:

DIER Specification R51 - Table R51.5.4 Aggregate Properties

Aggregate Properties	Rock Type	
	Igneous	Non Igneous
Durability Assessment	Wet, Wet/Dry	LA & Unsound Stone (AS2758.2 Clause 9.4)
Durability Limit	100kN, 35%	AS2758.2 Class A, Tables 5 & 6
Flakiness Index	35% maximum	35% maximum
PAFV	Minimum 48	Minimum 48
Particle size distribution	AS 2758.2 Tables 1, 2 & 3	AS 2758.2 Tables 1, 2 & 3
Resistance to Stripping	AS 2758.2 Clause 11	AS 2758.2 Clause 11

The specification in R51.5.5 requires the Contractor, at least ten (10) working days prior to the intended use of an aggregate i.e. with the seal design, supply to the Superintendent the following:

- An updated nomination of aggregates form (Annexure B)
- Test results for the specific material to be used
- A representative sample (2kg) of each nominated aggregate in a clearly labeled bag
- Identification of the particular sites where the aggregate is to be used.

Toolkit Tip 4

Have you defined the work specific requirements?

Do you require all the information required in R51.5.5 including samples?

Have you read the DIER R51 spec and completed the Annexure C forms?

Have you provided the client provided information?

Do you require aggregate with PAFV minimum 48?

DIER Specification R51.12 identifies the following hold points in the specification.

Ref	***Description of Hold Point***	**Nominated Work not to proceed**	**Evidence of Compliance**	**Time for Release of Hold Point**
R51.4	Submission of Contract Management Plan	All work	Contract Management Plan	As nominated in the Conditions of Contract Annexure part A or 10 days prior to surfacing operations where the surfacing is a sub element of a contract.
R51.5.3	Evidence of Compliance of bituminous materials	All works	Test results	5 days
R51.5.5	Nomination of Aggregates	Delivery of aggregate to site	Test results for the specific material to be used and updated form **Annexure B**	5 days
R51.6.3	Seal design	Delivery of aggregate to site and Placement of surfacing	Fully documented seal design	5 days
R51.7.2	Surface Preparation	Placement of surfacing	Acceptance of Surface Preparation Works	2 days
R51.8.2	Records	Placement of surfacing	Report	5 days
R51.10	Completed Works Report R51.8.4 & Progress Payment Claim	Progress Payment	Completed Works Report & Progress Payment Claim	28 days

The Contractor is required to submit some of the required information at least ten (10) working days prior to the intended date of the commencement of sealing.

Toolkit Tip 5

Do you require all the hold points as specified in R51.12?

Are all the hold points relevant to your project?

DIER Specification R51 Annexure C – Project Specific Details – Sheet 1 Seal Information

SITE	ROAD			LOCATION								SURFACE TREATMENT					
No	Category	No.	Name	Start		End		Width	Lgth	Area	Cwy	Old	New	AC	Agg	Binder	Asphalt
				Lk	Ch	Lk	Ch					Surf	Surf	Depth	Size	Modifier	Category

DIER Specification R51 Annexure C – Project Specific Details – Sheet 2 Traffic Data and Nominated Binder Information

SITE	ROAD			Count Site No.	Count Site Description	Count Site Link Reference	AADT	AADT year	%HV	%LHV	Cwy	Traffic Category*	NOMINATED BINDER	
No	Category	No.	Name										APPLICATION RATE FOR	Critical
													TENDER (L/m^2 @ 15 °C)	Site*

DIER Specification R51 Annexure B – Nomination of Aggregate Form

Nomination of Aggregate Form

Contract No :	Contractor:	Sealing Contractor
Aggregate Source:		
Quarry Name:	Location:	Rock Type:

PROPERTIES OF STONE –Assigned Values

Property	Last five test results	Assigned Value	**Test report Dates**	
			1st Test report	Last test report
Wet strength KN				
WDSV %				
PAFV				
Flakiness Index; 14mm				
10mm				
7mm				
ALD mm; 14mm				
10mm				
7mm				

GRADING- Latest Test Result

a) Nominal Size 14mm

Tested by:	Report Date:	Report No:	Grading % passing sieve (mm)								
			19	13.2	9.5	6.7	4.75	3.35	2.36	1.7	0.600

b) Nominal Size (mm) – (10mm)

c) Nominal Size (mm) – (7mm)

RESISTANCE TO STRIPPING

Tested by:	Report Date:	Report No:	Name of Additive	% of additive required

BULK DENSITY of Aggregate t/m^3:

Signed:	Date:

Toolkit Tip 6

Have you specified what you want?

Have you clarified what information you do and do not require?

The adoption or referencing of specifications without due consideration to the detail of the requirements undermines the purpose and value of them.

You may discover that you are paying for something you don't really need and consuming valuable resources in the mean time.