Roads

Master Specification

RD-BP-C4 Application of Thin Asphalt Surfacings

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RD-BP-C4 Application of Thin Asphalt Surfacings

1 General

1.1 This Part specifies the requirements for the application of Thin Asphalt Surfacing, defined as one of the following:

a) Thin Open Graded Hot mix (e.g. Novachip or similar).

b) Thin Dense Graded Warm Mix (e.g. Maxi Skid Resistant Asphalt or similar).

c) Thin Open Graded Cold mix (e.g. Koltec or similar).

1.2 It does not cover Cape Seals (refer RD-BP-C7 “Application of Cape Seals”) or Slurry Surfacing (refer RD-BP-C6 “Application of Slurry Surfacing”).

1.3 The types of pavement treatment that are to be used at each site are specified in Contract Documents “Pavement Work”.

1.4 The following documents are referenced in this Part:

a) APRG Report Number 18.

b) AS 2734.

c) AS 2150.

d) PC-SM1 “Provision for Traffic”.

e) RD-PV-S1 “Supply of Pavement Materials”.

f) RD-BP-S1 “Supply of Bituminous Materials”.

g) RD-BP-C6 “Application of Slurry Surfacing”.

h) RD-BP-C7 “Application of Cape Seals”.

2 Quality Requirements

2.1 The Contractor shall prepare and implement a Quality Plan that includes detailed procedures for:

a) provision for traffic (if not covered in the Traffic Management Plan);

b) cleaning and preparing the existing surface;

c) tack coating;

d) method of ensuring existing cracks are sealed;

e) placing the mix;

f) level control and compaction;

g) finished Thin Asphalt Surfacing properties; and

h) sampling and testing.

2.2 If not submitted beforehand, the procedures shall be submitted at least 28 days prior to the commencement of site work.

2.3 Provision of the procedures listed in this Clause shall constitute a **Hold Point**.

3 Materials

3.1 Aggregate shall comply with RD-PV-S1 “Supply of Pavement Materials”.

3.2 Binder, Flux and Cutter shall comply with RD-BP-S1 “Supply of Bituminous Materials”.

4 Constraints to Work

General

4.1 Open graded asphalt shall not be placed between April and October inclusive.

4.2 Modified binder Hot Mixes shall not be used when the time between batching and delivery into the paver hopper exceeds 3 hours, unless the Contractor can demonstrate that such a mix can be adequately compacted.

Temperature Restrictions for Hot Mix

4.3 Hot Mix shall only be placed at temperatures which conform to AS 2734, Clause 7.6 "Asphalt Temperatures".

4.4 The minimum mix temperature referred to in AS 2734, Table 7.1 shall be the temperature of the mix at the time that it is first placed on the surface.

4.5 Minimum temperatures for mixes containing C320 and C600 binder shall be 10°C higher than in AS 2734, Table 7.1, whereas for mixes incorporating modified binders the temperatures shall be 20°C higher. The range of mix temperatures shall be highlighted accordingly.

4.6 Temperatures for open graded mixes, including those with modified binders shall be as indicated in AS 2734.

4.7 Asphalt less than 100 mm thick shall not be placed when the pavement temperature (measured in the shade) falls below 10ºC.

Wearing Course Restrictions

4.8 The wearing course shall not be placed on a PMB seal until a minimum of one day trafficking has elapsed or until the aggregate is fully embedded into the binder.

4.9 Refer to PC-SM1 "Provision for Traffic" for other constraints relating to traffic control.

5 Design of Mix

Cold Mixes and Warm Mixes

5.1 The design of the mix shall be undertaken by the Contractor in accordance with this Specification and where appropriate, APRG Report No. 18 "Australian Provisional Guide - Selection and Design of Asphalt Mixes" (APRG18). At least 14 days before commencing production of the mix surfacing, the Contractor shall submit details of the design, including mix design parameters including:

a) Aggregate Grading; and

b) Binder Content (by mass of the total mix).

5.2 If the Contractor proposes to vary the proportions of the constituents in a nominated mix / rate or proposes to change the source of supply of any constituent, the Contractor shall submit a new design.

5.3 Submission of the details of the design, test results and any changes to the design shall constitute a **Hold Point**.

Hot Mixes

5.4 Hot mixes shall be design to meet the requirements of RD-BP-S2 “Supply of Asphalt”.

6 Manufacture of Mixes

6.1 The product shall be prepared in a manufacturing plant or blending plant of proven performance. Manufacturing variations shall not exceed the limits specified by the contractor in the detailed mix design.

6.2 Hot Mixes shall be stored in accordance with AS 2150, Section 7. Mixes shall be transported in a manner that does not result in the deterioration, contamination, or segregation of the mix.

7 Placement of Mix

General

7.1 The Contractor shall spread the mix so as to:

a) minimise segregation and loss of materials;

b) produce a homogeneous product; and

c) achieve the mix design's target relative compaction for dense graded mixes or air void content for open graded mixes.

7.2 Spreading methods shall follow the guide for good practice as set out in AS 2150, Section 12 "Spreading". The paver shall be a self-propelled paving machine with automatic level control. Hand placement of mix shall only be used for minor correction of existing surface and in areas where placement with a paver is impracticable.

Preparation of the Surface

7.3 Prior to the application of the surfacing, the Contractor shall clean the existing surface by a method which ensures that the surface is clean and free of loose stones, dirt and foreign materials. The method of cleaning shall ensure that damage to surfaces is prevented and that proper adhesion of the product can be achieved.

Protection of Road Fixtures

7.4 The Contractor shall prevent primer, binder, aggregate or other material used on the work from entering or adhering to gratings, hydrants or valve boxes, inspection pit covers, kerbs and other road fixtures.

Layer Thickness

7.5 Where the surfacing is to be placed to a nominal thickness, the thickness shall be determined from the spread rate using an agreed density for the surfacing.

8 Sampling and Testing

General

8.1 The Contractor shall conduct sampling and testing of the mix during manufacture. The size of lots shall be in accordance with Table RD-BP-C4 8-1.

Table RD-BP-C4 8-1 Lot Size

Daily Production Quantity (Tonnes)	Maximum Lot Size (Tonnes)
0-100	50
101-300	100
301-600	150
>600	200

8.2 Sampling shall be undertaken on a random basis. Testing shall be undertaken for the properties listed in Clause 13 "Verification Requirements".

9 Properties of Finished Surfacing

General

9.1 The intent of the work is to produce a thin, durable surfacing layer that has sufficient bond strength, impermeability, rideability and skid resistance. The work shall comply with the requirements specified in:

a) Clause 13 "Verification Requirements" at Practical Completion; and

b) Clause 9.3 "Surface Characteristics" for a period of 12 months after the date of practical completion.

9.2 Any measurement required for compliance with this clause shall be taken in the middle of the left hand side wheel path as best can be judged on site.

Surface Characteristics

9.3 The finished surface shall be free of the following defects:

a) segregated on “bony” areas

b) soft areas

c) “fatty” areas

d) ravelling and loss of material

e) surface cracking

f) shoving; and

g) ruts.

9.4 The existence of any defects shall be determined by visual inspection.

10 Records of Work

10.1 The Contractor shall complete Daily Record Sheets, or an approved equivalent, which shall then be certified correct by the Contractor and forwarded at the completion of a day’s work. Details of all materials applied shall be recorded immediately after each application.

11 Test Procedures

11.1 In addition to the test procedures specified in RD-BP-S1 "Supply of Bituminous Materials", the Contractor shall use the following test procedures (refer https://www.dpti.sa.gov.au/contractor_documents) to verify conformance with the Specification:

Table RD-BP-C4 11-1 Test Procedures

Test	Test Procedure
Aggregate Grading	AS 1141.11
Binder Content:	
Pressure Filtration Method	TP 470
Ignition Oven Method	AST 04:1999
Moisture Content:	
Oven Drying Method	AS 1289.2.1.1
Microwave Method	AS 1289.2.1.4
Determination of average texture depth of a pavement surface using the sand patch method	TP 346
Calculation of voids	AS 2891.8

12 Hold Points

12.1 The following is a summary of Hold Points referenced in this Part:

Document Ref.	Hold Point	Response Time
2.3	Submission of Procedures (if not in Post Tender Submission)	7 days
5.3	Submission of mix details, test results and any changes to the mix design	7 days

13 Verification Requirements and Records

13.1 The Contractor shall supply written verification that the following requirements have been complied with and supply the verification with the lot package.

Table RD-BP-C4 13-1 Verification Requirements

Document Ref.	Subject	Property	Test Procedure	Test Frequency	Acceptance Limits
4.1	Supply of surfacing	Variation of actual combined aggregate grading from the nominated aggregate grading	AS 1141.11	One per lot	As specified in AS 2150, Table 7.
		Variation of actual binder content from the nominated binder content	TP 470	One per lot	As specified in AS 2150, Table 7.
		Air Voids	AS 2891.8	One per lot	All tests between 18% and 25% (TOGAS only)
7.5	Placement of surfacing to nominal thickness	Average Layer Thickness	ASTM D3549	Lot < 100 tonne: 4 per lot Lot 100 – 300 tonne: 6 per lot Lot >300 tonne: 6 plus one for each additional 100 tonne	±-10% nominal thickness
7.5		Minimum Layer Thickness	ASTM D3549	As above	Nominal thickness minus 5 mm
8.	Surface Finish	Longitudinal Evenness	Deviation under a 1.2 m straight edge	6 random measurements per lot and specific measurements at joints	Max of 5 mm deviation
8.		Transverse Evenness	Deviation under a 1.2 m straight edge	6 random measurements in left hand wheel paths per lot	Max of 5 mm deviation, excluding designed points of crossfall change