

Roads

Master Specification

RD-BP-C3 Construction of Asphalt Pavement

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RD-BP-C3 Construction of Asphalt Pavement

1 General

- 1.1 This Part specifies the requirements for the construction of asphalt pavements.
- 1.2 In the event of any inconsistency, ambiguity or discrepancy between any of the Contract Documents, the order of precedence shall be as follows:
- this Part;
 - AS 2150 "Hot Mix Asphalt-A Guide to Good Practice"; and
 - Austrorads Guide to Pavement Technology Part 4B "Asphalt".

Definitions

- 1.3 The following definitions apply to terms used in this Part:

Table RD-BP-C3 1-1 Definitions

Term	Definition
Additive	An organic, chemical, or emulsion product used to assist in the compaction of asphalt.
Coarse Asphalt Mix (AC)	Asphalt of a coarse nature suitable for Medium, Heavy and Very Heavy Duty applications unless used in Fine Asphalt Mix applications or expressly noted otherwise.
Fine Asphalt Mix (FineAC)	Asphalt of a fine nature suitable for Light to Medium Duty applications and suitable for Department patch maintenance, bikeways, footpaths, car parks and Local Government residential streets.
Hot Mix Asphalt (HMA)	Asphalt Mix manufactured and compacted at standard temperatures. It may also mean Hot Mix Asphalt manufactured at standard temperatures but with the addition of an "Additive" to assist in meeting compaction requirements and required to be registered as a different mix.
Special Process	The Contractor's documented and demonstrated techniques to achieve the requirements of this Part.
Warm Mix Asphalt (WMA)	Hot Mix Asphalt manufactured and compacted at lower temperatures with the addition of an "Additive" or by using the foaming technique.

- 1.4 The asphalt shall be placed in the configuration specified in the Drawings.

2 Quality Requirements

- 2.1 The Contractor shall prepare and implement a Quality Plan that includes detailed procedures for:
- provision for traffic (if not covered in the Traffic Management Plan);
 - preparation of the surface;
 - setting out;
 - tack coating;
 - placing the mix;
 - placement of any mix less than 30 mm thick (vide Clause 4.1);
 - placement of any mix between 10 – 15°C or below 10°C (vide Clause 4 "Temperature Restrictions");
 - protection of Wearing Course not open to traffic (vide Clause 4 "Wearing Course Restrictions");
 - placement of crack sealing (including details of nominated product);
 - placement of Open Graded & Stone Mastic Asphalt mixes (vide Clause 4 "General");
 - level control and Compaction;

- l) finished asphalt pavement properties; and
 - m) sampling and testing.
- 2.2 If not provided previously, 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 Asphalt shall comply with RD-BP-S2 "Supply of Asphalt".
- 3.2 Sprayed bituminous surfacing shall comply with RD-BP-C5 "Application of Sprayed Bituminous Surfacing".

4 Constraints to the Placement of Asphalt

General

- 4.1 Where a layer of asphalt is laid less than 30 mm in thickness for any reason except Fine Dense Mixes as defined in Clause RD-BP-S2.4 "Fine Dense Mix Asphalt" is deemed to be a "special process".
- 4.2 Open Graded Asphalt (OG) and Stone Mastic Asphalt (SMA) shall meet the requirements of RD-BP-D4 "Surface Characteristics".
- 4.3 Unless specified otherwise in the Contract Documents or on the Drawings, waterproofing membranes shall be applied prior to placement of OG and SMA.
- 4.4 Modified binder 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

- 4.5 Asphalt mix shall only be placed at temperatures which conform to AS 2150-Clause 12.4 "Asphalt Temperatures". The minimum mix temperature referred to in AS 2150-Table 12 shall be the temperature of the mix at the time that it is first placed on the surface.
- 4.6 Minimum spreading temperatures for dense graded and Stone Mastic Asphalt mixes containing C320 binder shall be 10°C higher than in AS 2150-Table 12, whereas for mixes incorporating modified binders the temperatures shall be 20°C higher. The range of mix temperatures shall be highlighted accordingly.
- 4.7 Spreading temperatures for OG, including those with modified binders shall be as indicated in AS 2150 Clause 12.4 "Asphalt Temperature".
- 4.8 Asphalt conforming to the requirements of Clause RD-BP-S2.5 "Manufacture of Asphalt with Additive or Foaming Technique" may be compacted at lower temperatures to those required in this clause. The minimum compaction temperature at time of placement shall not be below 120°C.
- 4.9 Applicability of mix types for a range of pavement layer thickness and temperatures (measured in the shade) shall be as indicated in Table RD-BP-C3 4-1.

Table RD-BP-C3 4-1 Mix Types for Dense Graded Asphalt

Pavement Surface Temperature (°C)	Nominal Layer Thickness (mm)	
	≤ 40 mm	41 to 100 mm
0°C to <10°C	Special Process	HMA with Additive
10°C to 20°C	HMA with Additive (if <15°C) HMA or HMA with Additive (if ≥ 15°C)	HMA or HMA with Additive
> 20°C	HMA with Additive or HMA or WMA	HMA or HMA with Additive or WMA

Wearing Course Restrictions

- 4.10 The wearing course shall not be placed on a bituminous seals including a SAMI seal earlier than one day and no later than seven days of the seal being commenced.
- 4.11 The wearing course shall not be laid earlier than 2 weeks prior to the opening to traffic, unless the Contractor prepares and implements a procedure to protect the wearing course from any deleterious environmental effects.
- 4.12 Traffic shall not be permitted on any wearing course until it has cooled to a temperature below 65°C except for Stone Mastic Asphalt (SMA), Heavy Duty Dense Graded Asphalt (HD) and Very Heavy Duty Dense Graded Asphalt (VHD), which shall be not be trafficked until it has cooled to a temperature below 30°C. Water sprays shall not be used to cool the road surface until the surface temperature is below 70°C.
- 4.13 Placement of asphalt wearing course shall meet the requirements of RD-BP-D4 "Surface Characteristics".
- 4.14 Refer to Contract Documents or PC-SM1 "Provision for Traffic" for any additional constraints relating to traffic management.

5 Crack Sealing

General

- 5.1 Prior to the placement of asphalt for all pavement types, spray seals or wearing course any remaining cracks greater than 3 mm in width shall be sealed with an approved crack sealant.
- 5.2 Crack sealing treatment shall be undertaken in accordance with the requirements of RD-BP-S3 "Supply of Pavement Crack Sealant" and RD-BP-C8 "Application of Pavement Crack Sealant" and additional clauses below.
- 5.3 At least 14 days prior to the use of the product, the Contractor shall submit the manufacturer's instructions and product performance data.
- 5.4 Submission of the information shall constitute a **Hold Point**.

Material

- 5.5 The crack sealing compound shall be Class 170 bitumen to AS 2008 "Residual Bitumen for Pavements", modified with an appropriate polymer, designed to penetrate the crack, adhere to the crack surface and resist further crack activity.
- 5.6 The material shall remain stable on the pavement surface during periods of extreme temperature.
- 5.7 Gritting off of sealant or plugging excessively deep cracks prior to sealing shall be undertaken with SA 5-2, 5-2 mm Sealing Aggregate.

Crack Sealing Treatment

- 5.8 Prior to placement of sealant, all cracks shall be thoroughly cleaned of foreign material, without damage to the adjoining sound pavement, to provide a clean, dry surrounding. If the pavement is damp, warm / hot compressed air may be used in the drying of the surface of the crack.
- 5.9 Crack sealing shall not be undertaken unless the surfaces of the cracks are dry. Cracks shall be cleaned to a depth of between 10 - 15 mm. In excessively deep cracks, the crack may be plugged with SA 5-2, 5-2 mm Sealing Aggregate to within 10 - 15 mm of the pavement surface. All cracks shall be filled with sealant material to a level of not less than 10 mm below the pavement surface.
- 5.10 The level of sealant after gritting shall be flush with the adjoining road pavement. The width of the visible bond on the pavement surface shall be as narrow as is practical. Run out of the sealant over the asphalt surface beyond the crack length will not be permitted.

Gritting

- 5.11 The Contractor shall place 5-2 mm Grit on the surface of all sealed material while it is hot and prior to vehicular traffic. Grit shall be placed at the minimum application necessary to prevent pick-up of the sealant by traffic.
- 5.12 Following completion of the crack sealing treatment A **Hold Point** shall apply.

6 Pavement Surface Preparation

General

- 6.1 Pavement surface preparation shall be carried out in accordance AS2150 Clause 10 "Preparation of Surface to be paved" and additional clauses below.
- 6.2 A **Hold Point** shall apply prior to the placement of asphalt.

Overlay Placed to Specified Design Levels

- 6.3 This Sub-clause only applies where an asphalt overlay is to be placed to specified design levels on an existing pavement.
- 6.4 The existing pavement shall be surveyed. For each layer, the required thickness of asphalt shall be written on the existing surface at each point where there is a specified level.
- 6.5 Crack sealing shall be applied to an existing pavement in accordance RD-BP-C3 Clause 5 "Crack Sealing".
- 6.6 Where multiple layers are to be placed, the Contractor shall prepare a plan and cross sections showing the layer configurations and areas to be planed.
- 6.7 Submission of the survey data and overlay plan shall constitute a **Hold Point**.

Planing

- 6.8 Where the minimum layer thickness cannot be achieved within the specified tolerances, the existing surface shall be planed to achieve the required layer thickness.
- 6.9 Where an overlay has multiple layers, edge planing shall be undertaken for each layer so as to ensure that the minimum layer thickness is achieved and is keyed into the existing pavement.
- 6.10 All planing shall be carried out in accordance with RD-EW-C6 "Cold Planing".
- 6.11 Following completion of the preparation of the surface and prior to the application of the tack coat a **Hold Point** shall apply.

Tack Coating

- 6.12 A tack coat shall consist of CRS grade emulsion to AS 1160 "Bitumen Emulsions for Construction and Maintenance of Pavements", uniformly sprayed at ambient temperature (for 60% residual bitumen emulsions or in accordance with the manufacturer's specification for higher percentages of bitumen).
- 6.13 Tack coat shall be applied at the following locations:
- a) at vertical edges between old and new asphalt pavements;
 - b) on top of existing asphalt layers; and
 - c) on top of new asphalt not placed on the same day.
- 6.14 The tack coat for vertical edges above shall be applied at a rate sufficient to ensure bond at the joint between the old and new asphalt pavements.

- 6.15 The tack coat for the other locations above shall be applied at a rate between 0.2 l/m² and 0.4 l/m² of residual binder to ensure adequate bond between pavement layers and shall be uniformly applied to the surface prior to placement of asphalt.
- 6.16 Tack coat shall be applied with a tolerance of ± 0.05 litre/square metre of the specified application rate. The Contractor shall supply the actual spread rates, including litres used and area covered for each lot.
- 6.17 Asphalt shall not be placed until the tack coat is broken. Any construction traffic is to be minimised. The Contractor shall coordinate work so that no tack coated surface is opened to traffic.

7 Placement of Asphalt

General

- 7.1 The Contractor shall spread asphalt so as to:
 - a) minimise segregation and loss of materials;
 - b) produce a homogeneous product;
 - c) achieve the specified insitu air voids relative compaction for Dense Graded Asphalt, Stone Mastic Asphalt or Open Graded Asphalt before the asphalt has cooled; and
 - d) provide the specified thickness of asphalt.
- 7.2 Spreading methods shall follow the guide to good practice set out in AS 2150-Section 12 "Spreading". The paver shall be a self-propelled paving machine with automatic level control.
- 7.3 Hand placement of asphalt shall be used only for minor correction of the existing surface and in areas where placement with a paver is impracticable. Laying of mix shall be in the direction of traffic.
- 7.4 Other than in an emergency situation, if the Contractor proposes to source asphalt from another plant during a day's production, the Contractor shall provide 48 hours prior notice. A procedure to ensure traceability of the product during placement shall be provided prior to production of mix from an alternative plant.
- 7.5 If it becomes necessary to use more than one plant because of a plant breakdown, the Contractor shall provide immediate notification and details of the alternative mix.
- 7.6 Each course shall be compacted uniformly to the full depth and over the full width. Compaction methods shall be in accordance with AS 2150-Section 13 "Compaction". The Contractor shall ensure that compaction does not commence before any deficiencies in the spreading of the mix are corrected.
- 7.7 At the time of placing asphalt, the existing surface shall be dry.
- 7.8 A **Hold Point** applies between individual layers of asphalt.

Protection of Road Fixtures

- 7.9 The Contractor shall prevent tack coat, binder, aggregate, asphalt or other material used on the work from entering, adhering or obstructing gratings, hydrants, valve boxes, inspection pit covers, kerbs and other road fixtures.

Joints

- 7.10 Joints shall be constructed in accordance with AS 2150-Clause 12.6 "Joints", Department Standard Drawings and the following additional requirements:
 - a) The mix shall be spread in a manner which ensures continuity of placing and the number and extent of joints is kept to a minimum.
 - b) Ensure that the density and surface finish at joints satisfies the requirements of this Specification, and the joints are well sealed.

- c) Joints between old and new pavements, and between sections of work which have not been placed on the same day shall have tack coat applied in accordance with Clause 6 "Tack Coating".
- d) Longitudinal joints in successive layers shall be staggered at least 150 mm. Transverse joints in successive layers shall be staggered at least 1.0 m. Permanent transverse joints at the starts and ends of runs shall be ramped at the maximum rate of 1 in 20 down to a final edge which shall not exceed 10 mm in height.
- e) All temporary joints which are to be opened to traffic shall be ramped at the maximum rate of 1 in 10 down to a final edge which shall not exceed 10 mm in height.
- f) Prior to subsequent laying of mix adjacent to a temporary joint, the temporary ramp shall be cut back and removed to expose a near vertical face of fresh dense asphalt prior to the subsequent laying of the adjacent run.
- g) In making the joint along any adjoining edge such as kerb, gutter or an adjoining pavement, and after the mix is placed by the finishing machine, sufficient hot material shall be carried back to fill any space left open. This joint shall be properly "set-up" with the back of a rake or lute at proper height and level to receive the maximum compression under rolling.
- h) The wearing course for all pavement types and pavement overlay shall be laid in such a manner that the longitudinal joints correspond as far as practicable with the lane lines and, in particular, avoid the wheel paths.
- i) Longitudinal surface joints shall not be in the wheel path.

8 Sampling and Testing

- 8.1 Sampling locations for density compliance assessment shall be undertaken on a stratified random basis in accordance with AS 1289.1.4.2 "Selection of Sampling or Test Sites - Stratified Random Number Method". Note sampling is applicable for standard road width and length of asphalt layers and not adhoc patches and the like.
- 8.2 The sampling frequency shall be in accordance with Table RD-BP-C3 8-1 and Table RD-BP-C3 8-2.

Table RD-BP-C3 8-1 Sampling and Testing Frequency for Coarse DG, OG & SMA

Lot Production Quantity (tonnes)	Minimum Number of Core Compaction Samples and Tests
51 – 150	4
151 – 300	6
> 300	6 plus 1 for each additional 100 tonne of delivered mix or part thereof.

Table RD-BP-C3 8-2 Sampling and Testing Frequency for Fine Dense Mixes

Lot Production Quantity (road length (m))	Minimum Number of Core Compaction Samples and Tests
0 – 50	0
51 – 400	4
> 400	4 plus 1 for each additional 150 m of road length or part thereof.

- 8.3 All cores taken for a pavement shall be reported for voids and thickness. No core shall be taken within 150 mm of a free edge, and no more than one core per lot shall be taken within 150 mm of a joint.
- 8.4 The Contractor shall provide results of all cores taken from the pavement, notwithstanding whether these cores are for the Contractor's own internal processes or otherwise. Tests for density, air voids and layer thickness shall be carried out on each core.
- 8.5 Coring is not required when asphalt is placed on concrete bridge decks.
- 8.6 Use of density gauges shall be used for compaction guidance only.

9 Properties of Finished Asphalt Pavement

General

- 9.1 Finished asphalt shall comply with the requirements specified in Clause 13 "Verification Requirements and Records".

Compaction Acceptance Criteria – Quality Standards

- 9.2 Statistical analysis using an unknown variability scheme shall be used to determine acceptance of the compaction of asphalt layers.
- 9.3 Compliance will be based on the analysis of a random set of tests taken from each lot of the works. Compliance shall be determined indirectly in terms of percentage defective compared to the desired quality of the lot (10% defective) at either the low or high limit value.
- 9.4 A 90% probability assurance is required that accepted lots comply with the desired quality at either the low or high limit value. The acceptability characteristic k , quantified in Table RD-BP-C3 9-1 "k Value" is used to provide this statistical assurance. A lot shall not exceed a day's work. Compliance will apply to the whole of the lot of the works from which the set of tests is taken.

Relative Compaction

- 9.5 The relative compaction of a core shall be the bulk density expressed as a percentage of mean maximum density and reported in in-situ air voids terms using AS 2891.8. The mean maximum density value shall be the arithmetic mean of the test results for that mix within a lot, provided that they meet all of the following criteria:
- a) the binder content of the samples tested are within $\pm 0.3\%$ of the job mix binder content; and
 - b) there has been no change in mix components or proportions.
- 9.6 A low and high characteristic value of air voids content (L_{vc} and H_{vc}) of a lot shall be calculated from the formula, $\bar{x} - ks$ in the case of the low value and $\bar{x} + ks$ in the case of the high value. \bar{x} and s are the mean and standard deviations respectively of the individual air voids test values of the lot and k is a constant depending on the number of test values in the lot as shown in Table RD-BP-C3 9-1.

Table RD-BP-C3 9-1 k Value

Number of Tests	k	Number of Tests	k
4	0.62	13	0.877
5	0.68	14	0.890
6	0.72	15	0.901
7	0.76	16	0.910
8	0.78	17	0.919
9	0.81	18	0.928
10	0.83	19	0.937
11	0.85	20	0.946
12	0.86	21	0.952

- 9.7 Compaction air voids data shall be calculated and reported to two decimal places and rounded to one for the first decimal point as described in AS 2706 – Clause 3.2 "Rounding to One Unit in The Last Place Retained".

Compaction Criteria

- 9.8 Compaction shall comply with Table RD-BP-C3 9-2. The target insitu air voids is the mean of the limits provided.

Table RD-BP-C3 9-2 Compaction Criteria

Asphalt Mixes	Characteristic Air Voids (%) – Min	Characteristic Air Voids (%) – Max
AC10	4.0	8.0
AC14	2.5	7.0
AC14 High Binder	1.0	5.0
Stone Mastic Asphalt	1.0	5.0
Open Graded Asphalt	18.0	25.0
FineAC7	2.0	6.0
FineAC10	2.5	7.0

Tolerances on Asphalt Layers

- 9.9 If the asphalt is to be placed to specified design levels, the finished level of asphalt layers shall be as specified in Contract Documents “Pavement Work” or on the Drawings.
- 9.10 Where asphalt is to be placed adjacent to kerb and gutter, the wearing course shall be constructed within a tolerance of +5 mm, -0 mm. At joints between the surface of new and existing pavements, the levels shall be flush. If tolerances of base courses and intermediate courses are not specified in Contract Documents “Pavement Work” or on the Drawings, the tolerance is +/-10 mm.
- 9.11 Tolerances on the specified lateral position of asphalt treatments shall be ± 50 mm.
- 9.12 The thickness of Dense Graded Mix, Stone Mastic and Open Graded Asphalt Wearing Course laid on asphalt base shall be determined from the specified spread rate using an assumed density of 2,400 kg/cubic metre, 2,400 kg/cubic metre and 1,900 kg/cubic metre respectively.

Surface Irregularity and Finish

- 9.13 The surface irregularities of asphalt courses, as measured by deviation from a 3 m straight edge, shall not exceed:

Table RD-BP-C3 9-3 Surface Irregularity – General

Asphalt Layer	Deviation
Wearing Course	5 mm
Correction (Levelling) and Intermediate Courses	10 mm
Base Courses	15 mm
Base Courses (where no Correction and Intermediate Courses)	10 mm

- 9.14 The surface irregularities of asphalt courses at longitudinal and transverse joints, as measured by deviation from a 1.2 m straight edge placed centrally and at right angles over the joint, shall not exceed:

Table RD-BP-C3 9-4 Surface Irregularity – Joints

Asphalt Layer	Deviation
Wearing Course	3 mm
Correction and Intermediate Courses	5 mm

- 9.15 The surface of finished asphalt courses shall be free of segregated or “bony” areas, soft and “fatty” areas, ravelling and loose material, surface cracking, shoving and ruts.

Major Project Requirements

- 9.16 Where a project is estimated to contain more than 50,000 ton of asphalt (“Major Project”), the Contractor shall:
- use a material transfer device to place asphalt for all layers of asphalt pavement except localised areas within the acceptance of the Principal to increase the quality and consistence of asphalt placement and properties;

- b) supply and place wearing course mixes to meet surfacing characteristics in accordance with RD-BP-D4 "Surfacing Characteristics"; and
- c) use asphalt complying with Table RD-BP-C3 9-5 on any bridge decks.

Table RD-BP-C3 9-5 The Pavement Structure of Asphalt Mixes and Waterproof Membranes for Concrete Bridge Deck

Pavement layer	Standards
Wearing Course ⁽¹⁾	AC10M15EL, OG14M15EL or SMA10M5EL
Waterproofing Membrane	SAMI – 10 mm S25E (1.8 l/m ²) or Sprayed Seal – 7 mm S20E (1.4 l/m ²)
Correction Course ⁽²⁾	AC10M15E or AC14M15E
Waterproofing Membrane	SAMI – 10 mm S25E (1.8 l/m ²)
Primer Binder	AMCO (0.5 l/m ²)
Concrete Deck	Concrete Deck

(1) Waterproof membrane only required beneath the "OG" Wearing Course mix.

(2) More than one layer may be required and also plane out in some areas to achieve the required surface profile to improve the rideability.

9.17 The Contractor shall use a hand-held gas flaming torch or equivalent technique to improve the asphalt joints if a parallel asphalt mat is not placed on the same day.

9.18 A **Hold Point** shall apply between individual layers of asphalt and also waterproof membrane.

10 Discarded Asphalt

10.1 All excess or discarded asphalt remains the property of the Contractor and shall be disposed of by the Contractor.

11 Test Procedures

11.1 The Contractor shall use the following test procedures (refer https://www.dit.sa.gov.au/contractor_documents) to verify conformance with the Specification:

Table RD-BP-C3 11-1 Test Procedures

Test	Test Procedure
Site Selection by Stratified Random Technique	AS 1289.1.4.2
Sampling of Asphalt	TP 425
Determination of the Maximum Density of Asphalt - Water Displacement Method	TP435
Bulk Density of Compacted Asphalt Specimens	
- Pre-saturation Method for Dense Graded	AS 2891.9.2 AS
- Mensuration Method for Open Graded	2891.9.3
Measurement of Thickness or Height of Compacted Asphalt	ASTM D3549
Voids - Calculation	AS 2891.8

12 Hold Points

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

Table RD-BP-C3 12-1 Hold Points

Document Ref.	Hold Point	Response Time
2.3	Submission of Procedures (if not in Post Tender Submission)	7 Working Days
5.4	Submission of crack sealing product	7 Working Days
5.12	Following completion of crack sealing treatment	TBA
6.2	Prior to the placement of asphalt.	2 hours

Document Ref.	Hold Point	Response Time
6.7	On submission of survey data and overlay plan prior to overlay work	2 Working Days
6.11	Following completion of the preparation of the surface and prior to the application of the tack coat	1 hour
7.8	Between individual layers of asphalt	6 hours
9.18	Between individual layers of asphalt and also waterproof membrane	6 hours

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-C3 13-1 Verification Requirements

Document Ref.	Subject	Property	Test Procedure	Test Frequency	Acceptance Limits
4.5	Temperature Restriction	The Placement of Asphalt	-	-	Refer Clause 9 and Report
4.13	Wearing Course	Surface Characteristics	Refer Part RD-BP-D4	Refer Part RD-BP-D4	Refer Part RD-BP-D4 or Contract Documents
5.2	Crack Sealing	Pavement Crack Treatment	Refer Part RD-BP-S3	Calculated for total volume of sealant	Refer Clause 5 and Report
6.15	Tack Coat	Application Rate	Calculated by dividing volume by area covered (calculations to be submitted)	Calculated for each application of tack coat	$\pm 0.05 \text{ l/m}^2$ of the specified application rate
8	Coring	Sampling & Testing	AS 1289.1.4.2	Refer Clause 8	Refer Clause 9 and Report
9	Compaction	In-situ Air Voids	AS 2891.8	Refer Clause 8	Refer Clause 9
9 ⁽¹⁾	Asphalt Laid to Design Levels or	Level of course	As specified in Part PC-SI2	As specified in Part PC-SI2	Unless detailed otherwise the following shall apply: Wearing Course: $\pm 5 \text{ mm}$ of nominal thickness Other layers: $\pm 10\%$ nominal thickness
	Asphalt Laid to Nominal Thickness or	Average Layer Thickness	ASTM D3549	Refer Clause 8	Wearing Course: $\pm 5 \text{ mm}$ of nominal thickness Other layers: $\pm 10\%$ nominal thickness
		Minimum Layer Thickness	ASTM D3549	Refer Clause 8	Nominal thickness minus 5 mm

(1) Asphalt placement method to be clarified with the Principal prior to placement, and verification to be provided by contractor in accordance with the method specified for determining layer thickness.