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Process Step	Reference documents	Criteria/Test Method/Spec	Record for conformity/Inspected by	Type of Record	Responsible Position	Acceptance/Comments ☐Completed ☐Not completed
1. Nominated mix design						
1. Constituent Materials	R116.2.3.3 (a)	• Aggregate of a different type or quality, even if from the same quarry face or from within the same quarry, will be regarded as from a different source • Added filler: type, grade and source • Binder: source, class or grade • RAP material to be comply with R116 Clause 2.2.1 (c) • granulated glass aggregate: source to be comply with R116 Clause 2.2.1 (d) • Additives: type, source, trade name and manufacturer's recommendations. • Bitumen emulsion tack coat: source, class of bitumen, any bitumen modification	NATA report	AP	Project Engineer (PE)	

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2. Mix Design	R116.2.3.3 (b)	For each nominated mix design: • Proportion of each constituent by percentage of mass of total mix. • Nominated values and allowable tolerances for each requirement specified in Clause 2.2, where applicable • Combined aggregate density, including calculations showing how this is determined • If using RAP material, the RAP Approval Level for which you are approved to use • Type and identification number of the asphalt manufacturing plant and mix identification. • Temperature at which the asphalt is manufactured	Mix design submission sheet	AP	PE	
3. Production Trial	R116.2.3.3 (c)	• Test results from the production trial in accordance with Clause 2.3.2	Conformity sheet for the nominated mix	IP	PE	

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4. Warm Mix Asphalt Additives	R116.2.3.3 (d)	• provide details of the additive(s) in your nominated mix design submission • any proposed amendments to the mix design procedure, operational processes and/or test methods as a result of the inclusion of a warm mix asphalt additive • classification of the warm mix asphalt additive	Additive data sheet	AP	PE	
5. Signed Statement	R116.2.3.3 (d)	A signed statement certifying that each nominated mix, the associated production trial mix, and all constituents meet the requirements of Clauses 2.1 and 2.2. The statement must include NATA endorsed test results for all specified tests. Attach a copy of your completed verification checklist.	Statement for test results of trial mix	AP	PE	

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6. Test Report Validity Periods	R116.2.3.4	• All asphalt and binder tests relating to the nominated mix design submission must not be older than one month prior to the date of submission to the principal. • For high RAP content asphalt mixes, wheel tracking and beam fatigue tests relating to the submission must not be older than three months prior to the date of submission to the principal. • All other tests relating to the submission must not be older than 6 months prior to the date of submission to the principal. • All phases of any particular test must be performed at the same laboratory	Report of conformity	AP	PE	

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7. Mix design approval	R116.2.3.5	Documents as detailed in R116 Clause 2.3.3 at least 7 working days before the nominated mix(es) is (are) proposed to be placed.	The PV will consider the submitted documents prior to authorizing the release of the Hold Point. This Hold Point release is valid for a maximum period of 24 months.	HP	PE/PV	
2. PRODUCTION OF ASPHALT						

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8. Method of Production and tolerances	R116.2.4.1 R116.2.4.2	(a) control the process and target the nominated mix design; (b) supply a homogeneous and consistent product at the nominated manufacturing temperature. You may vary the proportion of each constituent for the purpose of process control, provided that: (i) the asphalt produced remains uniform and of consistent quality, and subject to the production tolerances specified in Clause 2.4.2; (ii) the proportion of RAP does not exceed the RAP Approval Level in Table R116.4 for which you have been approved. The actual combined particle size distribution and actual binder content may vary from their nominated values within the limits shown in Table R116.8, provided that the actual values also remain within the limits of Tables R116.2 and R116.3 respectively.	Visual inspection	IP	PE	

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9. Asphalt Manufacturing Temperatures	R116.2.4.5	Control the temperatures of constituent materials in response to suitable thermometer elements placed in the flow of materials from the drier, and in the binder storage system or binder supply line. Thermometer must be readable and accurate to within ± 2°C. Measure and record the temperature of the asphalt when: (a) asphalt leaves the pugmill or mixing drum; or (b) asphalt is being discharged from the hot storage bin(s); or (c) in the delivery vehicles, prior to them leaving the plant. The temperature of asphalt must not at any time in the process exceed 175°C.	PE to check temperature using suitable thermometer elements	IP	PE	

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10. Sampling, Testing During Production and transport of asphalt	R116.2.4.7 R116.2.5	Verify conformity with the Specification by sampling and testing, and maintain records of your process control during asphalt production. The frequency of sampling and testing must be in accordance with Annexure R116/L. Take asphalt samples in accordance with AS/NZS 2891.1.1 Transport of asphalt must be in accordance with AS 2150.	Visual inspection	IP	PE	
3. PLACING ASPHALT						
11. Provision for Traffic	R116.3.1.1	Provide for traffic in accordance with the requirements of Specification TfNSW G10 when carrying out asphalt paving.	Visual inspection	IP	PE	

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12. Surface Preparation, Protection of Road and Services Fixtures	R116.3.1.2 R116.3.1.3	Prepare the surface to be paved in accordance with AS 2150, including removal of raised extruded thermoplastic road markings and raised pavement markers. Implement measures to prevent asphalt or other material used on the work from entering or adhering to grates, hydrants or valve boxes, service covers, bridge joints and other road fixtures. Immediately after the asphalt has been placed, clean and remove all waste asphalt adhering to road and services fixtures	Visual inspection	IP	PE	

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13. Tackcoat for existing surface, application rate and reduced application	R116.3.2.1 R116.3.2.2 R116.3.2.3	The existing surface must be clean, dry and free from loose material, prior to application of the tackcoat. Apply the tackcoat evenly at a rate of between 0.15 and 0.30 litres of residual bitumen per square metre, ensuring that it is effectively bonded to the surface. For joints and chases, double the application rate. Nominate in writing to the principal your proposed tackcoat application rate prior to applying the tackcoat. Determine the required volume by multiplying the nominated application rate of residual bitumen by the specified area of the surface to be tackcoated, including the faces of joints, kerbs and other structures. You may propose in writing to the principal a reduced application rate for the tackcoat, for reasons arising from the existing underlying surface material. Support your proposal by examples of previous cases where this has been done,	Visual inspection	IP	PE	

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14. Temperature and Wind Velocity Measurement	R116.3.3.1	Measure and record the temperature of the surface to be paved, and wind velocity at the point of asphalt placing. Do not commence or continue placing asphalt containing binder complying with TfNSW 3253 if the temperature of the surface to be paved over, measured at existing surface level, is less than 8°C where the nominal size of asphalt is less than 20 mm, or less than 5°C where the nominal size of asphalt is 20 mm or greater, for a zero-wind speed. These minimum temperatures are increased by 5°C for asphalt containing binder complying with TfNSW 3252. These minimum temperatures are increased by a further 5°C for each 5 kph of wind speed above zero; however, the minimum temperatures must not exceed 30°C. Do not place tackcoat and/or asphalt when the surface is wet, and/or when wet weather appears imminent.	PE to check temperature with thermometer	IP	PE	

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15. Method of placement, equipment, and materials transfer	R116.3.4.1 R116.3.4.2 R116.3.4.4	Your method of placing and finishing the asphalt must: (a) produce a homogeneous product with a tightly bound surface; (b) achieve a uniform bond to the surface below; (c) achieve the finished pavement properties, specified in Clause 5, within the specified tolerances. Compact uniformly each layer of asphalt to achieve insitu air voids requirements before placing the next layer. Place the asphalt using a self-propelled paver with the ability to be operated with automatic grade control and automatic joint matching facility. Hand placement of asphalt is only permitted for minor corrections of the existing surface and in areas where placement with a paver is impractical. The MTV must be a self-propelled machine with independent controls and demonstrated capability to minimise temperature variation and material segregation. It must be equipped with:				

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		(a) a receiving hopper compatible with delivery vehicles; (b) conveying mechanisms capable of delivering asphalt to the paver at a minimum rate to suit the paving output; (c) sufficient power output from the motor to operate with full load on grades up to 6% and travel in tandem with the paver, either directly in front or in an offset position; (d) capacity to store and remix asphalt if the time between loading the delivery vehicles at the asphalt plant and unloading at the Site is equal to or greater than 1.5 hours, or when the temperature of the surface to be paved is below the minimum specified in Clause 3.3. If so specified in Annexure R116/A, place the asphalt by echelon paving using a minimum of two pavers operating continuously in tandem.				

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16. Paving and compaction temperature	R116.3.5.1	Commencement of paving using the nominated mix(es), including trial section (refer Clause 3.8). If not previously submitted, details of the following: (a) minimum temperature at which asphalt will be delivered to the paver; (b) minimum temperature at which initial compaction of the asphalt can still commence; (c) method of temperature measurement	The PV will consider the submitted documents prior to authorising the release of the Hold Point	HP	PV/PE	
17. Course and layer thickness	R116.3.6.1 R116.3.6.2	The nominated thickness of a layer of asphalt must be between 3.0 to 5.0 times the nominal mix size. The specified course thickness is detailed in Annexure R116/A, or shown on the Drawings	Survey to submit report to PE	AP	PE	

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18. Nonconforming Layer Thicknesses	R116.3.6.3	Placing of asphalt in layer thicknesses that does not conform to specified layer thicknesses. Details of the following: (a) nominated layer thicknesses which does not conform to specified thicknesses; (b) work methods capable of producing a dense homogeneous layer at these thicknesses; (c) areas affected, and evidence that these areas are the absolute minimum necessary.	PV will consider the submitted documents prior to authorizing the release of the Hold Point	HP	PV/PE	

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19. JOINTS, temporary ramp and tie ins to existing pavement	R116.3.7.1 R116.3.7.3 R116.3.7.4	Longitudinal joints must be: (a) offset by 150 mm from the joint in the underlying layers; (b) located within 150 mm of the line of change in crossfall; (c) coincident with final traffic markings, unless otherwise approved by the Principal. Transverse joints must be: (i) located at a minimum of 25 m apart; (ii) offset by a minimum of 1 m from the joint in the underlying layer; (iii) formed at the commencement of each paving run; (iv) formed when a delay in paving causes asphalt temperature to fall below the initial compaction temperature nominated in Clause 3.5. Construct temporary ramps at joints for safe trafficking of the work either by placement of asphalt complying with this Specification, or by cold milling the existing or new asphalt layer to form the ramp, as appropriate for the application. Construct permanent tie-ins to existing pavement by placement	Visual inspection	IP	PE	

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		of asphalt complying with this Specification				
20. Trial section and commencement of paving at locations other than trials section	R116.3.8.2 R116.3.8.3 R116.3.8.6	Design the trial to implement all the procedures described in your PROJECT QUALITY PLAN and demonstrate conformity with the Specification in respect of: (a) homogeneity. (b) insitu air voids. (c) course thickness. (d) course position. (e) surface shape. (f) joint quality. (g) ride quality, where specified Verification checklist and all relevant test results from the trial section demonstrating conformity to the specified requirements, at least 3 working days prior	Submit report to PV	HP	PE	
5. Conformity						

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21. HOMOGENEITY	R116.5.1 R116.5.2	During the first 24 months after the Actual Completion Date: (a) the placed asphalt must not ravel, rut, shove, strip or bleed; and (b) the wearing course for the first 12 months must comply with the surface shape requirements specified in Table R116.12. Placed asphalt must be homogeneous in appearance, and must not exhibit segregation, cracking, ravelling, bony or fatty material, or have been damaged during construction.	Visual inspection	IP	PE	
22. Rectification and Replacement	R116.5.8.5	Nonconformity Report and details of your proposal to rectify or replace the Lot.	PV will consider the submitted documents prior to authorising the release of the Hold Point.	HP	PV/PE	

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<table>
<tr>
<td>23. In situ air voids and Course thickness tolerances</td>
<td>R116.5.3
R116.5.4</td>
<td>The characteristic values of insitu air voids for a Lot must be within the limits shown in Table R116.9.

For layer thickness between 30-50mm, air voids must be between 3% to 8%.

For layer thickness more than 50mm, air voids must be between 3% to 7%.
Table R116.10 – Allowable Tolerances for Course Thickness
<table>
<tr><th>Nominal Size of Asphalt (mm)</th><th>Tolerances (mm)</th></tr>
<tr><td>5</td><td>–0 / +5</td></tr>
<tr><td>7</td><td>–0 / +5</td></tr>
<tr><td>10</td><td>–0 / +6</td></tr>
<tr><td>14</td><td>–0 / +8</td></tr>
<tr><td>20</td><td>–0 / +10</td></tr>
<tr><td>28</td><td>–0 / +12</td></tr>
</table>
</td>
<td>NATA report</td>
<td>HP</td>
<td>PE/PV</td>
<td></td>
</tr>
<tr>
<td>24. Progression to higher RAP level</td>
<td>Annex. B2.3</td>
<td>(a) Proposed corrective action to achieve conformity.
(b) Test results for insitu air voids and all properties specified in Clause 2.2 of the nonconforming Lot</td>
<td>PV will consider the submitted documents prior to authorising the release of the Hold Point, and will advise whether the nonconforming Lot can be accepted.</td>
<td>HP</td>
<td>PE/PV</td>
<td></td>
</tr>
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25. Finished Surface Levels Specified	R116.5.4.2 R116.5.5.1	The actual surface levels of the placed asphalt course as determined by survey must not deviate from the design levels by more than the tolerances shown in Table R116.11. **Table R116.11 – Course Surface Level Tolerances** **Course** / **Tolerances** (mm): Wearing course –0 / +10; Top Intermediate course –5 / +10; Other Intermediate Courses –10 / +10; Corrective course –15 / +10 **Note**: Minus (–) is below design level and plus (+) is above design level.	Survey report	IP	PE	
26. Surface shape	R116.5.6	The surface of the course including longitudinal and transverse joints must not pond water. The surface shape of the course within and across traffic lanes must not deviate from the bottom of the straightedge (refer Clause 4.5) laid in any direction by more than the tolerances shown in Table R116.12 **Table R116.12 – Maximum Deviation From Straightedge (mm)** **Course** / **Through Carriageway < 70 kph Traffic Speed, Ramps and Roundabouts** / **Through Carriageway ≥ 70 kph Traffic Speed**: **Immediately after placing**; Corrective course 15 / 10; Intermediate course 10 / 5; Wearing course 5 / 3; **Prior to placing overlying layer** (1); Corrective course 18 / 13; Intermediate course 13 / 8; **12 months after placing**; Wearing course 8 / 6 **Notes** (1) If longer than 1 month after placing.	Survey report	IP	PE	

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27. Ride quality	R116.5.7	The surface of the wearing course must have a smooth longitudinal profile. When: (a) construction of the underlying pavement forms part of the Contract; or (b) the course comprises more than one layer of asphalt, including any corrective course, placed over a pavement constructed by others; or (c) the aim of the asphalt paving work is to improve the ride quality; the ride quality of each Lot must not exceed an IRI_S of 1.56 m/km. Where a single layer of asphalt is placed over pavement constructed by others, the ride quality of each Lot must not exceed the IRI_{Sa} values determined as follows (refer Clause 4.6): $IRI_{Sa} = 0.2 + (0.6 \times IRI_{Sb})$, but not less than 1.56 m/km where: IRI_{Sa} is the IRI_S after placing the asphalt layer (m/km) IRI_{Sb} is the IRI_S before placing the asphalt layer (m/km)	Equation check	AP	PE	

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REVIEW BY PROJECT MANAGER

Have tests passed?	YES/NO	Test Report No: _____
Is all testing as per specified frequency?	YES/NO	
Are earthworks within location and level tolerances?	YES/NO	
Have all RMS Hold Points been released?	YES/NO	
Any nonconformances?	YES/NO	Sign: _____ For Closed Out:
	YES/NO	
All work has been satisfactorily completed.	YES/NO	

_____ Project Manager _____ Date

Prepared By: **Mohammed Almalome** **Approved By:** _____ **Date Approved** _____

HP: Hold Point
AP: Approval Point
IP: Inspection point
TP: Test Point