

<b>Client</b>	Transport for New South Wales	<b>INSPECTION AND TEST PLAN FOR: R106 Sprayed Bituminous Surfacing (with Cutback Bitumen)</b>	<b>Work Area:</b>
<b>Contract No.#</b>			
<b>Contract</b>			<b>Inspection and Test Plan Number / Lot No:</b>
<b>Workplace Name</b>	A183 - New Dubbo Bridge		ITC-16 R106 Sprayed Bituminous Surfacing (with Cutback Bitumen)

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Activity No.#	Description	Document Reference / Applicable Standard	Acceptance Criteria	Frequency/ Process Held	Inspection – Sign & Date				Verifying Records	
					S/C	ACPL	Client	Date		
1. Material Requirements										
1.1	Bituminous Materials	R106 CI 2.1	<p>Provide documentary evidence of the binder conformity for each delivery used in the work. Also sample at the point of delivery and provide a representative sample of the delivered binder to the Principal.</p> <p>Do not heat binder above 190oC or the manufacturer's written recommendations, whichever is the lesser.</p> <p>Implement procedures for storage and handling of binder that ensure prevention of segregation and contamination of the binder by flushing liquids or other materials.</p>	Once / Prior to supply of Bituminous Materials		S	S		Evidence of Conformity	
1.2	Aggregate Precoating Agent and Bitumen Adhesion Agent	R106 CI 2.2 TfNSW 3258 TfNSW 3259	<p>Aggregate precoating agents must conform to Specification TfNSW 3258.</p> <p>Bitumen adhesion agents must conform to Specification TfNSW 3259.</p>	Once / Prior to supply of aggregate precoating agent and bitumen adhesion agent		S	S		Certificate of Conformity	
1.3	Aggregate	R106 CI 2.4 TfNSW 3151	<p>Obtain test results for each Lot of aggregate, in accordance with TfNSW 3151, before aggregate from the Lot is incorporated in the Works.</p> <p>When requested, provide a sample to the Principal from the same Lot by riffing or quartering your own samples. The amount of material obtained for each sample must be in accordance with the nominal size of the aggregate as per AS 1141.3.</p>	Once / Prior to supply of aggregates		S	S		Test Results	
1.4	General Materials and Design of Bituminous Surfacing	R106 CI 3	Carry out the design of bituminous surfacing in accordance with TfNSW Form 395A or TfNSW Form 395K as appropriate and submit the design details including all results from texture testing for reseals and ball embedment tests for seals. Design application rates are the "nominated application rates" and materials used for the design are the "nominated materials".	Once / Prior to placement		S	S		TfNSW Form 395A/K	

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1.5	<b>Submission of Nominated Design</b>	R106 CI 3.3	<p>Submit to the Principal the nominated design together with certification for the nominated materials at least seven days prior to the commencement of sprayed bituminous surfacing works.</p> <p>Include the following details in the submission:</p> <p>(a) Each constituent material;            (b) Verification of conformity of the nominated materials;            (c) Endorsement.</p>	Once / Prior to placement		S	S		Design Certificate
1.6	<b>Sealing Operations using Proposed Design</b>	R106 CI 3.3.3	<p>Submit to the principal Documents referred to in Clause 1.2.4 (Project Quality Plan) and the proposed bituminous surfacing design together with certification for the nominated materials and design verification documentation at least seven days prior to the commencement of sprayed bituminous surfacing work.</p>	Once / 7 working days prior to commencement of sprayed bituminous surfacing work		H	H		Project Quality Plan Design Verification Documents
1.7	<b>Review of Nominated Application Rates</b>	R106 CI 3.4	<p>Submit to the principal the below prior to spray sealing works for each work location:</p> <p>Select the locations where each Lot of aggregate is to be incorporated in the Works.</p> <p>Review the bituminous surfacing design at each location based on the actual ALD test result for the actual aggregate to be used instead of the ALD value of the nominated aggregate and using the appropriate TfNSW 395 design form. The revised application rates are “target application rates”.</p>	Once / Prior to spray sealing works		H	H		Aggregate Lot Details Target Application Rates

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2. Process Control											
2.1	Application of Sprayed Bituminous Surfacing	R106 CI 4.2	Carry out sprayed bituminous surfacing so as to:  (a) provide a uniform application of binder with adequate adhesion to the underlying surface; (b) provide a uniform cover of aggregate particles (except for primes); and (c) achieve effective bond between binder and aggregate (except for primes).	Once / Prior to Application		S	S			Project Quality Plan	
2.2	Process Control Chart	R106 CI 4.3	Use process control charts, as shown in Annexure R106/E, for binder application rate for work where 10 or more sprayer runs greater than 1,000 litres are required. You may develop additional process control charts for the purpose of managing job specific risk(s) to quality. The process control charts must show the specified tolerances and plot the differences of individual results from the target value.  Take corrective action if any point is between 2% and 5% (inclusive) above or below the target over 5 successive runs.	Once / Prior to Lot Closure		S	S			Process Control Chart	
2.3	Work Records	R106 CI 4.4	Record the particulars of the work performed on TfNSW Form 500A or 500C (as appropriate).  Record details of primer, primerbinder, binder and aggregate applied immediately after every sprayer run. Each form must be signed by your representative as a true record of the work performed. Supply the principal with a copy of each completed form.	Once / Prior to Lot Closure		S	S			TfNSW Form 500A/C	

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3. Conditions for Commencement											
3.1	Preparation of Pavement Surface	R106 Cl 5.2	<p>Before the application of primer, primerbinder or binder, sweep the pavement surface using a rotary road broom or suction broom to provide a uniformly clean surface. If necessary, carry out additional sweeping by hand, using stiff bass or similar brooms. Sweeping must extend at least 300 mm beyond each edge of the area to be sprayed.</p> <p>Where sealing work is carried out on localised areas and/or half pavement widths, remove any remaining loose material from the pavement surface immediately adjacent to the swept areas.</p> <p>Remove adherent patches of foreign material from the surface of the pavement. Mask or remove raised pavement markers.</p> <p>Measure and record pavement temperatures at regular intervals during work.</p> <p>Place a spirit or mercury-in-glass thermometer or other suitable type of thermometer in direct contact with the pavement.</p> <p>Undertake the spraying of primers, primerbinders and binders only if the pavement temperature has been at or above 10°C for at least one hour before commencement of spraying and does not fall below the specified minimum pavement temperature for spraying during the period of spraying.</p> <p>Do not spray wet pavement or while rain appears imminent or during strong winds or dust storms.</p>	Once / Prior to application		S	S		Visual Inspection		

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4. Application of Sprayed Sealing, Binder and Aggregates																																																										
4.1	Application of Sprayed Bituminous Surfacing	R106 Cl 6	Apply primer, primerbinder and binder by using a sprayer. The sprayer must have a current Sprayer Certificate (TfNSW Form 354) issued or accepted by Transport for NSW.																																																							
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4.2	<b>Incorporation of Cutter Oil, Flux Oil and Bitumen Adhesion Agent</b>	R106 CI 6.7	<p>Determine and record the proportion of cutter oil required for each sprayer load, using TfNSW Form 382 for seals and reseals and TfNSW Form 395A for primes and primerseals.</p> <p>Where flux oil is to be included, add it to the bitumen in the sprayer and circulate the mixture at a rate of at least 700 litres per minute for fifteen minutes before spraying.</p> <p>Where bitumen adhesion agent is to be included, add it to the bitumen in the sprayer and circulate the mixture at a rate of at least 700 litres per minute for fifteen minutes before spraying.</p>	Once / Prior to incorporation of cutter oil, flux oil and adhesion agent		S	S		TfNSW Form 382  TfNSW Form 395A
4.3	<b>Application of Primer, Primerbinder and Binder</b>	R106 CI 7	<p>Limit the area to be sprayed with primerbinder or binder to the area that can be covered with aggregate at the target application rate within fifteen minutes of spraying bitumen or cutback bitumen.</p> <p>The class and grade of primer and primerbinder must be as specified in Annexure R106/A.</p> <p>Apply nominated and target application rates and quantities of primer and primerbinder to the whole material, including cutter oil, measured at 15°C.</p> <p>After application of a primer, a period of at least 48 hours, or such longer period as determined to be necessary for the primer to become completely dry, must elapse before the binder for a seal is applied. Keep all traffic off the primed surface.</p> <p>Where bitumen adhesion agent and/or cutter oil have been added to the binder, adjust the application rate of the total binder at 15°C, using TfNSW Form 500A,</p> <p>The class of bitumen or grade of cutback bitumen must be as specified in Annexure R106/A.</p> <p>Base nominated and target application rates and quantities of binder on the volumes of bitumen measured at a temperature of 15°C and do not include any bitumen adhesion agent and/or cutter oil. If flux oil has been added to the bitumen, include the quantity of flux oil as part of the binder.</p> <p>Where bitumen adhesion agent and/or cutter oil have been added to the binder, adjust the application rate of the total binder at 15°C to allow for the quantities of bitumen adhesion agent and/or cutter oil in the mixture.</p> <p>Determine the hot application rate of total binder, including bitumen adhesion agent and/or cutter oil, using TfNSW Form 382.</p> <p>Where refinery cutback bitumen is used as the binder, increase the target application rate of binder to allow for the cutter oil in the mixture in accordance with Table R106.4.</p>	Once / Prior to application of primer, primerbinder and binder		S	S		TfNSW Form 500A / TfNSW Form 382

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4.4	Application and Incorporation of Aggregate	R106 CI 8	<p>Use only precoated aggregate for seals and primerseals.</p> <p>Apply the aggregate of the specified nominal size and at the target aggregate application rate.</p> <p>The method to determine the actual aggregate spread rate must conform to Test Method TfNSW T274 or a method approved by the Principal and detailed in the PROJECT QUALITY PLAN.</p> <p>Report the aggregate spread rate as actual rate using TfNSW Form 500C.</p> <p>After the aggregate has been applied to each section of the work, carry out initial rolling with two or more dual axle smooth pneumatic tyred multi-wheel rollers of mass greater than 7 tonnes without ballast and minimum tyre pressure of 550 kPa. Continue initial rolling until the aggregate is firmly embedded in the primerbinder or binder.</p> <p>Roll the cover aggregate with pneumatic tyred multi-wheel rollers at not less than eight passes within one hour of spraying at every point on the surface.</p>	Once / Prior to incorporation of aggregate		S	S		TfNSW Form 500C  Project Quality Plan								
4.5	Sweeping and Loose Aggregate Removal (10mm and 14mm Seals / Reseals Only)	R106 CI 9	<p>After final sweeping and prior to the work being opened to traffic at the pre-existing signposted speed, the number of loose aggregate particles (per m2) not including aggregate particles from any scatter coat, determined in accordance with Test Method TfNSW T277 must not exceed the values shown in Table R106.5:</p> <table><tr><th colspan="2">Table R106.5 – Maximum Allowable Loose Aggregate Particles</th></tr><tr><td>Urban areas</td><td>20 particles/m²</td></tr><tr><td>Other medium to high traffic (&gt;250 v/l/d)</td><td>30 particles/m²</td></tr><tr><td>Low traffic (≤ 250 v/l/d)</td><td>40 particles/m²</td></tr></table> <p>Areas where speed limits exceed 60 km/h and that are opened to traffic prior to final sweeping must have temporary speed zone 'loose stones' and 'slippery' warning signs and temporary 60 km/h speed zoning in place until the maximum allowable loose aggregate requirement is met.</p> <p>Notify the principle of the time and location prior to commencement of final sweeping and loose aggregate measurements prior to opening to traffic.</p>	Table R106.5 – Maximum Allowable Loose Aggregate Particles		Urban areas	20 particles/m²	Other medium to high traffic (>250 v/l/d)	30 particles/m²	Low traffic (≤ 250 v/l/d)	40 particles/m²	Once / Prior to Lot Closure		W	W		Visual Inspection
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REVIEW BY PROJECT MANAGER									
Any non-conformances?		<input type="checkbox"/> YES	<input type="checkbox"/> NO	Nos:		Closed Out		<input type="checkbox"/> YES	<input type="checkbox"/> NO
All work has been satisfactorily completed.			<input type="checkbox"/> YES		<input type="checkbox"/> NO				
Name				Signature			Date		