

Inspection and test plan – PAVEMENT MARKINGS

Project No. CC0374 Project name Pakenham Rd Upgrade Date 24/09/2024 Approved by Reuben Samuel
 ITP no. 1630-P200-SYM-QAC-ITP-0070 Revision date _____ Plant and equipment used _____
 Lot no. _____ Location (chainages, detailed description or marked up plan) _____

Attach Dockets, Certificates and QA Documents to ITP

					Verification of acceptance by					Remarks/record (eg. Test frequency reports, certificates, checklist etc)
					Symal			Superintendent		
Item no.	Activity	Ref docs	Acceptance criteria	Freq	Key	Resp	Initial/ date	Key	Sign/ date	
1.0 Pre-start activities										
1.1	Safety – SWMS developed and reviewed	SWMS	Specific SWMS for work task has been developed and reviewed by all parties involved in the works.	Prior to works	R	SE				<input type="checkbox"/> SWMS approved and ready for task
1.2	Lot Map	Design Documents	Lot map and area has been established.	Each Lot	IP	SE				<input type="checkbox"/> Lot map
2.0 Materials										
2.1	Raised pavement markers	AS 1906, Part 3	<div>(i) Raised pavement markers shall comply with the relevant requirements of AS 1906, Part 3 as listed in Section 175.</div> <div>(ii) Temporary raised reflective pavement markers shall comply with the relevant requirements of AS 1906 as listed in Section 175 and shall be at least 100 mm in width and to a height of 50 mm with white reflective material on both sides and include protective covers for the reflective material.</div>	Prior to works	IP	SE				
2.2	Line marking and Road marking paint	AS 4049. AS/NZS 4049.3	All paints shall be approved under the Australian Paint Approval Scheme (APAS). Paint shall comply with the requirements of AS 4049.1 for solvent-borne painter AS/NZS 4049.3 for water-borne paint as listed in Section 175.	Prior to works	IP	SE				<div>Product Data sheet</div> <div><input type="checkbox"/></div>



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2.3	Adhesive	Section 853	<p>Hot melt bitumen adhesive shall comply with Section 853 - Hot Melt Bitumen Adhesive for Raised Pavement Marker Installation.</p> <p>Other types of adhesive materials shall only be used with the approval of the Superintendent.</p>	Prior to works	IP	SE				Hot Melt Bitumen Adhesive compliance certificate <input type="checkbox"/>
2.4	Glass Beads	AS/NZS 2009 Section 175.	<p>(i) Glass beads shall be used on all applications of material and for all pavement markings and shall conform to the requirements in AS/NZS 2009 and the Australian Paint Approval Scheme (APAS) Specification 0042 as listed in Section 175.</p> <p>(ii) Intermix glass beads for use in long life material applications shall conform to AS/NZS 2009 and the Australian Paint Approval Scheme (APAS) Specification 0042.</p> <p>(iii) The number of heavy metals in the beads shall not be greater than that specified in Specification 0042.</p> <p>(iv) Pristine glass beads (Type B-HR) Type B-HR glass beads shall comply with the properties of Type B (AS 2009:2006) drop-on glass beads, with an additional high performance retro reflectivity requirement, requiring the delivery of a minimum 450 mcd/lux.m², when tested in accordance with a modified Appendix M* of AS 2009:2006</p>	Prior to works	IP	SE				Australian Paint Approval Scheme (APAS) Certificate <input type="checkbox"/>
2.5	Thermoplastic pavement marking materials	721.A13	Thermoplastic pavement marking material used under this Contract shall comply with the requirements of clause 721.A13 and shall provide a functional service life of a least six years allowing for fair wear and tear.	Prior to works	IP	SE				Thermoplastic Certificate of material compliance <input type="checkbox"/>



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2.6	Cold applied plastic Pavement markings	clause 721.A13	Cold-applied plastic pavement marking material used under this Contract shall be a Poly Methyl Methacrylate resin based pavement marking material conforming with the colour, luminance and bead content requirements of clause 721.A13 and shall provide a functional service life of at least six years allowing for fair wear and tear.	Prior to works	IP	SE				Certificate of material compliance □
2.7	Pliant polymer marking tape	N/A	Pliant polymer pavement marking tape intended for use under this Contract shall be approved by the Superintendent	Prior to works	IP	SE				PDS and Approval from Superintendent AP NO.....
3.0 Site Preparation										
3.1	Site preparation	N/A	Site preparation shall be the sole responsibility of the Contractor as part of the works, including: (a) the removal of existing unsound, obsolete or redundant pavement markings (b)the removal of any foreign materials and debris within reasonable limits.	During the works	IP	SE				



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3.2	Removal of redundant markings	N/A	<p>Where required the Contractor shall remove existing pavement markings to the standard approved by the Superintendent and appropriate to the marking being removed.</p> <p>Any pavement damage caused by the installation or removal of pavement markings included in the works shall be the Contractor's responsibility. Rectification of any pavement damage to line and level shall be completed on the same day in accordance with the Superintendent's requirements.</p> <p>On sections of road on which the Contractor has been directed to replace or remove raised pavement markers, the Contractor shall also repair damage to the pavement caused by the loss of pavement markers.</p>	Each lot	HP	PE		HP		
4.0 Application of pavement markers										
4.1	Placing of raised pavement markers	clause 721.A05(b).	<p>Markers shall be placed in accordance with the manufacturer's specification for pavement markers and the adhesives used shall be in accordance with clause 721.A05(b).</p> <p>Adhesive on the exposed surfaces of the marker shall be removed.</p> <p>Where a new or replacement marker is not positioned correctly it shall be removed and a new marker placed.</p> <p>Markers shall be protected from traffic after placing and any marker dislodged by traffic shall be removed and replaced with a new marker.</p> <p>On concrete and asphalt pavements, wherever possible, markers shall be placed clear of longitudinal or transverse joints and on all pavements, markers shall be placed clear of any surface cracks or positions from which markers have been removed and the surface is damaged.</p>	Each lot	IP	SE				



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4.2	Tolerances of pavement markings	Table 721.A101	The Contractor shall comply with the tolerances as shown in Table 721.A101 when installing pavement markings.	Each lot	IP	SE				Asbuilt
5.0 Acceptance of colour										
5.1	Colour of markings	AS 4049.4,	<p>White markings - the colour match test for white materials shall be based on luminance factor and conducted in accordance with AS 4049.4, using Field Method 2 of AS 4049.4 Appendix H4.3 as listed in Section 175. All markings shall have a colour difference detected as whiter than Natural Colour System (NCS) swatch S 2000 N, at all times during the Defects Liability Period.</p> <p>Yellow markings – the colour match test for non-white (yellow) materials shall be conducted in accordance with AS 4049.4 using Field Method 2 of AS 4049.4 Appendix H4.3, using the reference swatch sample NCS S 1070 Y20R. All yellow markings shall be an approximate match to Natural Colour System (NCS) swatch S 1070 Y20R, at all times during the Defects Liability Period.</p> <p>Measurements shall be forwarded to the Superintendent upon request no later than five days from when the measurements were taken.</p>	Each lot	IP	SE				
6.0 Position of markers										
6.1	Marker positions	clause 721.B05.	<p>All markings are to be set out in accordance with the dimensions and spacings as required by the appropriate standard in clause 721.A03.</p> <p>Painting/application of material shall not commence until the Superintendent has inspected the set out and given consent to proceed, unless an exemption has been granted in writing by the Superintendent.</p> <p>(a) New pavement markings shall be positioned in accordance with the following requirements:</p> <p>(i) set out by the Contractor in conformance with the appropriate standard required by clause 721.A03</p>	Each lot	HP	PE	HP			



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			<div><div>(ii)</div><div>applied within the tolerances listed in Table 721.A101.</div></div> <div><div>(b)</div><div>Temporary Reflective reflective markers for new works shall be placed at the following minimum spacings on all longitudinal lane lines, except that on any curve less than 500 m in radius the spacing shall not be more than 12 metre centres:</div><div><div>AADT ≥5,000 and M class Roads</div><div>12 metre centres</div></div><div><div>AADT ≥1,000 and <5,000</div><div>24 metre centres</div></div><div><div>AADT <1,000</div><div>48 metre centres</div></div></div> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>									
7.0 Records and reporting												
7.1	Required reports	clause 721.A1 2.	<div><div>(a)</div><div>Job Completion Report</div><div>For New Markings the Contractor shall complete and forward to the Superintendent a Job Completion Report (Pavement Markings).</div></div> <div><div>(b)</div><div>Retroreflectivity Report</div><div>The Contractor shall complete and forward to the Superintendent a Retroreflectivity Report in a form approved by the Superintendent showing the level of retroreflectivity determined for each test lot in accordance with the requirements of clause 721.A12.</div></div>	Each lot	IP	SE				<div>Job Completion Report<input type="checkbox"/></div> <div>Retro reflectivity Report<input type="checkbox"/></div>		



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8.0 Painted pavement markings										
8.1	General	N/A	Linemarking shall be applied by a self-propelled machine, and stencils shall be used with all roadmarking. All work must be undertaken by a contractor eligible for accreditation under the Painting Contractors Certification Programme (PCCP). This programme is administered by the CSIRO. Completed markings shall be uniform in appearance from all angles of observation, texture, width and thickness and the surface shall be free from streaks, overlaps, unbeaded areas, tyre marks, stencil breaks or other defects. Edges and cut offs should be neat and sharp, and there shall be no visible run off, overspray, dribbles, splash or spillage on to the surrounding area, or on to parked or passing vehicles. The Contractor shall be responsible for the cost of removal of paint from such vehicles. Glass beads shall be applied to the paint to produce a uniform coverage and be properly embedded and bonded over the whole painted surface. Glass beads shall be applied to all markings. The Contractor shall be responsible for any spillage on to the surrounding area, and cost of any remedial action required.	Each lot	IP	SE				
8.2	Minimum requirements	Table 721.D021	The minimum requirements of paint and glass beads shall be as shown in Table 721.D021. The Contractor shall allow for any extra material required when placing on coarse chip seals. This includes the retained quantity of glass beads, to counter the phenomenon of reduced retroreflectivity due to road surface texture and directional visibility limitations.	Each lot	IP	SE				
9.0 Long life pavement markings										
9.1	General	N/A	Long life pavement marking materials shall be prepared and used in accordance with the manufacturer's specification. All line marking shall be applied using a self-propelled ride on machine including Statcon marking unless	Each lot	IP	SE				



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			otherwise recommended by the marking manufacturer and approved by the Superintendent. Glass beads shall be applied to all long-life markings. Glass beads shall be sprinkled or sprayed on to the long-life material while it is in a fluid state immediately after it has been applied to the pavement to ensure that the beads are embedded by a nominal 60%. The surface beads shall be distributed to give a uniform coverage over the whole surface of the long-life material. Completed markings shall be uniform in appearance, texture, width and thickness and the surface shall be free from blisters, air bubbles, tears, lumps, streaks, overlaps, unbeaded areas, tyre marks or other defects. Edges and cut offs shall be neat and sharp, and there shall be no visible run off, overspray, dribbles, splash or spillage on to the surrounding area, or on to parked or passing vehicles. The Contractor shall be responsible for the removal of pavement marking material from such vehicles.							
9.2	Minimum requirements	Table 721.E021.	The minimum requirements of long-life materials and glass beads shall be as shown in Table 721.E021. The Contractor shall allow for any extra material required when placing on coarse chip seals. This includes the retained quantity of glass beads, to counter the phenomenon of reduced retroreflectivity due to road surface texture and directional visibility limitations.	Each lot	IP	SE				



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9.3	Additional requirements for profiled lines		<p>The Contractor shall provide measurements of rib height, length, width, and spacing of profiled lines at a minimum of 10 evenly spaced readings per kilometre or part thereof. For lengths of less than 500 metres, a minimum of 2 evenly spaced readings per 100 metres shall be provided.</p> <p>The Contractor shall carry out remedial work to rectify defective sections of profiled lines where they:</p> <p>(a) we're not installed to specified dimensions, or distorted in shape or lost shape, such that the height of individual extrusions is less than 8 mm above the top of adjacent road surface aggregate particles, over more than 10 per cent of the profiled edge lining job item; or</p> <p>(b) have shattered or no longer adhere to the road surface over more than 1 per cent of the profiled edge lines job item.</p> <p>(c) red or no longer adhere to the road surface over a continuous length exceeding 5 m.</p>	Each lot	IP	SE				
10.0 Completion										
10.1	Acceptance of Retro reflectivity (3-5 weeks after completion)	VR721.A13 VR721.A12 Table 721.A131	<p>Pavement Marking shall comply with specified requirements. Retro reflectivity testing to be conducted between 3-5 weeks of completion of the work lot. A retroreflective report to be submitted determining the retroreflective for each test lot. (Table 721.A131 see Page 8 Fig #3)</p> <p>Where removal of unsuitable pavement marking is required, the method of removal shall be subject to the approval of the Nominated Authority before removal works commence. Measurements shall be forwarded to the Superintendent no later than five days from when the measurements were taken.</p> <p>Has all of the above been completed? Yes <input type="checkbox"/> No <input type="checkbox"/></p>	Each lot & Each possession	IP	SE				
10.2	Acceptance of Retro reflectivity (5-6 months after completion)	VR721.A13 VR721.A12	Pavement Marking shall comply with specified requirements. Retro reflectivity testing to be	Each lot	IP	SE				Retro reflectivity Testing Report



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		Table 721.A131	<p>conducted between 5-6 months of completion of the work lot, this item is to be satisfied by opening 58519-QUA-ITP-00-00072 Permanent Line Marking Completion lot. A retroreflective report to be submitted determining the retroreflective for each test lot. (Table 721.A131 see Page 8 Fig #3)</p> <p>Where removal of unsuitable pavement marking is required, the method of removal shall be subject to the approval of the Nominated Authority before removal works commence.</p> <p>Measurements shall be forwarded to the Superintendent no later than five days from when the measurements were taken.</p> <p>Has all of the above been completed? Yes <input type="checkbox"/> No <input type="checkbox"/></p>	& Each possession						<p>Yes <input type="checkbox"/> No <input type="checkbox"/></p> <p>Permanent Line Marking Completion Yes <input type="checkbox"/> No <input type="checkbox"/></p>
11.0 Work lot close out										
11.1	Test & conformance reports	Vic roads specifications	The contractor has supplied the superintendent with all the required test and conformance reports as required.	Each lot	R	SE/SS				NATA ENDORSED TEST REPORTS
11.2	Product Non-conformance	CQMGP	All product non-conformances and records are closed (if applicable)	Each lot	R	SE/SS				NCR Reports

Works complete (signer SS) _____ **Date works complete** _____

Lot conforms (signer PE) _____ **Date lot closed** _____ **NCR/s no. raised** _____ **Date NCR closed for this lot** _____

Responsibility (Resp.) Key: **PM**-Project Manager, **PE**-Project Engineer, **SE**- Site Engineer, **CS**-Civil Superintendent, **SS**-Site Supervisor, **SV**-Surveyor, **CR**-Client Representative

Inspection Key: **W** – Witness, **H** – Hold Point, **S** - Surveillance