

Inspection Test Plan – Wire Rope Safety Barrier

COMPANY				PROJECT					
ITP NO		58519-QUA-ITP-00-00032		LOT NO					
DESCRIPTION									
PM	PROJECT MANAGER	QR	QUALITY REPRESENTATIVE	SUB	SUBCONTRACTOR	H	HOLD POINT	PC	PRINCIPAL CONTRACTOR
PE	PROJECT ENGINEER	SUR	SURVEYOR	NA	NOMINATED AUTHORITY	W	WITNESS POINT	SE	SITE ENGINEER
SUP	SUPERVISOR	ER	ENVIRONMENTAL REPRESENTATIVE	IR	INDEPENDENT REVIEWER	R	REVIEW POINT	GE	GEOTECHNICAL ENGINEER

The content of this ITP is to be read in conjunction with the relevant IFC Drawings, RMS Roads Specifications, RMS Roads Standard Details & the PSDR.

SEQUENCE OF ACTIVITIES		SPECIFICATION / REFERENCE DOCUMENT	ACCEPTANCE CRITERIA	TEST REQUIREMENT & FREQUENCY	RESPONSIBLE PERSON / METHOD	VERIFICATION					RECORDS	COMMENTS
						SE/SUP PE	SUB	NA	PC	IR		
1.0 Preliminary												
1.1	Authorised documentation for commencement of Work is in place	Construction Work pack	Construction Work pack approved	REVIEW POINT Each Lot	SE Document Review						Construction Work pack No	
1.2	Occupational Health & Safety, Environmental Control	Site Induction Record, Environmental Management Plan, Quality Management Plan, SWMS, JSA	All personal working on the lot are site inducted as per the induction requirements in the Construction Health & Safety Management Plan &/or construction procedure. All environmental controls in place & operational & all work methods are approved.	REVIEW POINT Each Lot	SE Document Review							
1.3	Define Work Lot	Construction Quality Management Plan	Survey boundaries clearly define the Wire Rope Safety Barrier Construction works. Work Lot open in QAntrol	REVIEW POINT Each Lot	SE Review						Lot Diagram Lot Number	
1.4	WRU Excavation & Penetration Permit	SWMS /R132D Planning 4.1	Excavation & Penetration Permit issued prior to commencement of any excavation	REVIEW POINT Each Lot	SE Review						WRU Excavation & Penetration Permit No:	
1.5	Material Compliance	RMS132 4.4	The installation of the WRSB shall not proceed until the signed statement & certificates of compliance have been accepted by the Nominated Authority.	HOLD POINT WITNESS POINT REVIEW POINT	NA IR SE						HOLD POINT NO.: Certificates of Compliance including	

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			<p>WRSB details, certificates & test reports to be Submitted to the Nominated Authority at least 14 days prior to installation</p> <ul style="list-style-type: none"> WRSB manufactured in accordance with Specification for a minimum 20- year design life, Posts hot dipped galvanized in accordance with AS/NZS 4680 or AS 1397 Green Posts Powder coated as per (Dulux Anotec Heritage Green or approved equivalent) White Post to provide a grainy, low gloss appearance Hot-dipped galvanised coating on bolts, nuts & washers as per AS 1214 	Each Lot	Review Notification						<p>Test Reports</p> <p>58519-QUA-LIS-00-00021 Incoming Materials Inspection Checklist</p>	
1.6	Material Handling & Storage	QMP 13.1.3	<p>WRSB to be handled & stored to avoid damage, particularly to threaded components.</p> <p>Care in avoiding damage to galvanised & powder coating systems.</p>	REVIEW POINT Each Lot	SE Inspection							
1.7	Post Foundations & Anchor Blocks	Manufactures specification	Where no geotechnical investigation is undertaken the proprietary WRSB supplier's nominated default anchor & post footing shall be used in accordance with manufacturers specifications	<p>HOLD POINT</p> <p>WITNESS POINT</p> <p>REVIEW POINT</p> <p>Each Lot</p>	<p>NA</p> <p>IR</p> <p>SE</p> <p>Review</p> <p>Notification</p>						<p>HOLD POINT NO.:</p> <p>.....</p> <p>Compliance test certificates</p>	
1.8	Alternative Anchor or Post foundation	Manufactures specification	<ul style="list-style-type: none"> Confirm with the supplier the geotechnical information required, but shall include as a minimum soil bearing pressure, soil type & average allowable soil stress. Submit the results of the geotechnical investigation to the supplier A written statement from the supplier that the anchor block size & post foundation size are appropriate for the existing natural or constructed ground conditions. Anchor blocks & post foundations shall not be constructed until the design & manufacturer's acceptance has been reviewed by the Nominated Authority. 	<p>HOLD POINT</p> <p>WITNESS POINT</p> <p>REVIEW POINT</p> <p>Each Lot</p>	<p>NA</p> <p>IR</p> <p>SE</p> <p>Review</p> <p>Notification</p> <p>Document</p>						<p>HOLD POINT NO.:</p> <p>.....</p> <p>Geotechnical Information</p> <p>Written Statement from the Supplier for Anchor Blocks & Post Foundation suitability</p>	

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1.9	Delineators	R132/A 1.21 4.1 R0710-18	The delineators that are to be attached to the WRSB posts (either using 50mm x 100mm post caps or fastening directly to the front top of the posts above the wire ropes shall consist of Class 1A retro- reflective material as defined in AS/NZS 1906.2.	REVIEW POINT Each Lot	SE Document Review						Compliance Certificates	
2.0 Anchor Blocks & Post Installation												
2.1.	Safety Barrier Inspection	QMP 13.6	Inspect material to ensure specification compliance	REVIEW POINT Each Lot	SE Inspection						58519-QUA-LIS-00-00021 Incoming Materials Inspection Checklist	
2.2.	Set Out	RMS132 4.1.2	The WRSB shall not be installed until the set-out alignment of the posts has been reviewed & accepted by the Nominated Authority. Allow the Nominated Authority a minimum of one working day to inspect the pegged alignment & a further minimum period of five working days to provide its acceptance including details of any required changes in alignment, length or number of installations or terminals.	HOLD POINT WITNESS POINT REVIEW POINT Each Lot	NA IR SE Inspection Notification						HOLD POINT NO.: SUR Signature 	
2.3.	Anchor Block Foundation Excavation	Manufacturers specifications	Anchor blocks & post foundation shall not be cast until inspected by the Nominated Authority. <ul style="list-style-type: none">Anchor block holes to be of correct dimension, shape, level & alignmentOver-excavation of the anchor block excavation shall not be reformed with form work or soil, but shall be cleaned out & filled with concrete forming the concrete anchor blockTo be free of loose material, debris & water prior to the placement of concrete.	HOLD POINT WITNESS POINT REVIEW POINT Each Lot	NA IR SE Inspection Notification						HOLD POINT NO.: 	
2.4.	Post Holes Excavation	Manufacturers specification	<ul style="list-style-type: none">Holes to be free of loose material, debris & water prior to the placement of concrete.Excavation of the hole to the correct dimension, shape, level & alignment specified by the proprietary system.Posts shall be spaced in accordance with the manufacturer's specification unless otherwise required by the design requirements of the manufacture	REVIEW POINT Each Lot	SE Inspection							

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2.5.	Anchor Block Pour	Tfns3204	<ul style="list-style-type: none"> N32 Strength Grade Concrete to be used. All anchor frames, posts, sockets & reinforcing rings shall be positioned to the line & levels as specified in the drawings & shall be secured against displacement during placing of the concrete No construction joints shall be provided within the anchor block. 	REVIEW POINT Each Lot	SE Inspection						58519-QUA-LIS-00-0009 Concrete Checklist 58519-QUA-LIS-00-0010 Concrete Pour Record	
2.6.	Post Foundation Pour	Tfns3204	<ul style="list-style-type: none"> N25 Strength Grade Concrete to be used. The finished surface of all anchor blocks & footings shall be shaped such that water cannot pool on the surface. 	REVIEW POINT Each Lot	SE Inspection						58519-QUA-LIS-00-0009 Concrete Checklist 58519-QUA-LIS-00-0010 Concrete Pour Record	
2.7.	Location of Posts Adjacent to Batter Hinge Points $\geq 1\text{m}$	Manufacturers specification	<ul style="list-style-type: none"> WRSB posts constructed with the manufacturer's default post footing design shall be located at the greater of a minimum 1 m offset from the batter hinge point & the manufacturer's specification, subject to dynamic deflection requirements being met The batter hinge points as 	REVIEW POINT Each Lot	SE Inspection						Survey Certificate	
2.8.	Location of Posts Adjacent to Batter Hinge Points $< 1\text{m}$	Manufacturers specification	<p>If minimum offset to the Batter Hinge Point is reduced, the depth of the footing to be adjusted shall be in accordance with the manufacturer's specification.</p> <p>Side Load Testing at 45 degrees to the WRSB in all directions at locations nominated by the Nominated Authority.</p>	HOLD POINT WITNESS POINT REVIEW POINT Each Lot	NA IR SE Review Notification						HOLD POINT NO.: Written statement from Manufacturer	
2.9.	Concrete maintenance strips	Tfns3204	<p>Concrete maintenance strips parallel to the WRSB shall meet the following requirements:</p> <ul style="list-style-type: none"> Where the maintenance strip is adjacent to kerb or pavement, separation from the kerb or pavement by the use of a cork expansion joint (or approved alternative) shall be used Extends a minimum of 300 mm clear on both sides with min 2% cross fall Bedding to be 75mm thick of class 3 crushed rock Concrete shall be 75mm thick & 20MPa 	REVIEW POINT Each Lot	SE Inspection							

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			Strength <ul style="list-style-type: none"> Edges of infill boarded up prior to pour Dummy joints at least 20 mm deep & 5 mm wide shall be formed at 2 m intervals across the full width of the concrete maintenance strip Surface Expansion joints shall be placed at intervals not exceeding 12 m. finished with a wooden float to produce a lightly textured finish 									
2.10.	Concrete Testing – 28day Compressive Strength.	TfnsW3204 QMP	Supplied concrete to comply with AS 1379, including sampling & testing in accordance with Clause 6.2 of AS1379, & VR Specification. Frequency: One per 6cu.m (or part thereof), per day, per concrete grade.	REVIEW POINT Each Lot	SE Document Review						NATA Test Report: Concrete Compressive Strength Test	
3.0 Wire Rope Installation												
3.1	Loading Test of Post Foundation	Manufacturers specification	<ul style="list-style-type: none"> Side Lode testing at locations nominated by Nominated Authority prior to the installation of Wire Rope. Side load testing of posts shall be carried out by applying a force of 10 kN (approximately 1 tonne) to the post 600 mm above ground level at an angle of 45 degrees to the WRSB. The top of the footing shall not move more than 3 mm Foundations satisfy the specification requirements & will not crack, lift or displace during impact. 	HOLD POINT WITNESS POINT REVIEW POINT Each Lot	NA IR SE Inspection Notification						HOLD POINT NO.: Diagram	
3.2	Install Wire Rope	Manufactures specification	Vertical alignment of the wire rope shall be smooth, uniform & generally consistent with the vertical alignment of the edge of the traffic lanes. Wire Rope installed to the correct line, level & height.	REVIEW POINT Each Lot	SE Inspection							
3.3	Tensioning of the Wire Rope.	Manufactures specification	Each wire rope shall be tensioned in accordance with the relationship between rope tension & ambient temperature, applicable to the proprietary WRSB system as per the manufacturer's specification The tension shall be measured using a	HOLD POINT WITNESS POINT REVIEW POINT Each Lot	NA IR SE Document						HOLD POINT NO.: Current calibration certificate of tension meter	

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			<p>tension meter supported with a current calibration certificate.</p> <p>Prior to commissioning the WRSB system, the tension in each wire rope shall be checked, & re-tensioned if required, to ensure compliance with the ambient temperature/rope tension relationship.</p> <p>Prepare & submit a tensioning report for review by the Nominated Authority within seven days of the tensioning works being carried out.</p>		<p>Review</p> <p>Notification</p>						Tensioning report	
3.4	Installation of Delineators	<p>R132/A</p> <p>1.21</p> <p>4.1</p> <p>R0710-18</p>	<ul style="list-style-type: none"> Attach delineators to the WRSB posts by either using 50mm x 100mm post caps with delineators attached, or fastening delineators directly to the front top of the posts above the wire ropes Install delineators at approximately 12.5 to 15m spacing. Delineators are not to be installed on flared sections of WRSB Red delineators on the left side of one-way & two-way roadways; White delineators on the right side of two-way roadways; and Yellow delineators on the right side of one-way roadways Delineators not required where WRSB offset is greater than 4 m from the traffic lane. 	<p>REVIEW POINT</p> <p>Each Lot</p>	<p>SE</p> <p>Inspection</p>							
4.0 Completion												
4.1	Construction Tolerances –	Manufactures specification	<p>a) vertical tolerance on the height of the WRSB shall be ± 20 mm from the design line</p> <p>b) longitudinal line tolerance for the WRSB system shall be ± 20 mm in plan view</p> <p>c) tolerance on post spacing shall be ± 25 mm.</p> <p>WRSB height shall be measured from the road pavement when it is located within 1.5 m of the edge of pavement.</p> <p>For distances beyond 1.5 m, the WRSB</p>	<p>REVIEW POINT</p> <p>Each Lot</p>	<p>SUR</p> <p>Inspection</p>						<p>SUR Signature</p> <p>.....</p> <p>Survey Conformance Report</p>	

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			height shall be measured from the ground surface at its location.									
4.2	Safety Barrier Compliance Audit	QMP	<p>After Completion, arrange for a safety barrier compliance audit on all WRSB installations.</p> <p>The audit shall be undertaken, & a report prepared by the Australian Licensed Supplier of the safety barrier system.</p> <p>Certificate of Compliance for each length of WRSB, signed by the Contractor's Representative & the Licensed Supplier, to be provided certifying that the product systems (including terminals) have been installed in accordance with the manufacturer's Installation Manual & Specification Section 711.</p> <p>Complete & submit to the Nominated Authority a signed copy of the manufacturer's Installation Checklist/ Inspection & Test Plan as per the manufacturer's Product & Installation Manual.</p>	<p>HOLD POINT</p> <p>WITNESS POINT</p> <p>REVIEW POINT</p> <p>Each Lot</p>	<p>NA</p> <p>IR</p> <p>SE</p> <p>Inspection</p> <p>Document</p> <p>Review</p> <p>Notification</p>						<p>HOLD POINT NO.:</p> <p>.....</p> <p>Compliance Audit & Certificate of Compliance</p> <p>Manufacturer's Installation Checklist/ Inspection & Test Plan</p>	
4.3	Reinstated Works		<p>Integrate the WRSB with existing roadside barriers & remove redundant assets (e.g. guide posts, sections of conflicting existing roadside barriers.</p> <p>All existing signs & markings, median crossings & existing vegetation removed due to WRSB installation shall be reinstated.</p>	<p>REVIEW POINT</p> <p>Each Lot</p>	<p>SE</p> <p>Inspection</p>							
5.0 Work Lot Close out												
5.1	Test Reports	RMS Roads Specifications	All Test reports received & Reviewed	<p>REVIEW POINT</p> <p>Each Lot</p>	<p>PE</p> <p>Document</p> <p>Review</p>						NATA Endorsed Test Reports	
5.2	Product Non-Conformance	QMP	All Product Non-Conformance(s) recorded & closed (if applicable)	<p>REVIEW POINT</p> <p>Each Lot</p>	<p>PE</p> <p>Document</p> <p>Review</p>						<p>NCR No:</p> <p>.....</p> <p>NCR reports</p>	
5.3	Quality Representative to check the above criteria & records to confirm	QMP Lot Records	All above criteria met & records identified attached.	<p>REVIEW POINT</p> <p>Each Lot</p>	<p>QR</p> <p>Document</p> <p>Review</p>						Completed Checklist (if applicable) & reports & other compliance records attached.	



ITP COMPLETION

COMPANY	PROJECT REPRESENTATIVE	NAME		SIGNATURE		DATE	
COMPANY	QUALITY REPRESENTATIVE	NAME		SIGNATURE		DATE	

Fig #1

Table 711.042

Portland Cement Concrete Strength Grade	Geopolymer Binder Concrete Strength Grade	Minimum Compressive Strength at 28 days (MPa)
N20	20	20
N25	25	25
N32	32	32