HIGGINS

Project	**SH 2- RS 258- RP 10970 - 11390 & 11750- 12500 - Gun Shop Hill**	**ITP No.:**	
Client	**Waka Kotahi NZTA**	**Revision :**	0
Description of Work	Pavement Rehabilitation, 150mm thickness TNZ M/4 AP40 aggregate overlay material, modified with 1.5% cement to 200mm depth.		
Prepared By	Liju Mathew **Approved By** Ruan Potgieter	**Date:**	17/07/2023
Current Version:	BOPE Sharepoint Frosts		

INSPECTION AND TEST PLAN (ITP)

Operation or Task Category	Task Description	Controlling Documents	Acceptance Criteria	Inspection or Test			Verifying Document	Inspection / Test Authority				Hold Point	Witness Point	Quality Controller Sign Off	Date	Engineer Sign-off	Date	Compliance Manager Sign off	Date
				Method	Frequency	Responsible Person		S, C, E or Sp											
	(e.g. procurement, temp works, construction activities)	*(e.g. list specifications & clause, drawing)*	*(e.g. slump value, cylinder strength, etc.)*	*(e.g. visual inspection, slump test)*			*(e.g. test result, pour record, material approval)*	Conduct	Witness	Produce Record	Approval	Y/N	Y/N	Name / Signature	Date All Records verified complete	Name / Signature	Date All Records verified complete	Name / Signature	Date All Records verified complete
1. Procurement																			
Pre-construction tasks. e.g. approval of materials	Design																		
	Geometric Design	Austroads Guide to Road Design Part 3: Geometric Design, TNZ State Highway Geometric Design Manual	Principal Approval	Contractor and Principal peer review	per design revision			C or S		C	E	Y							
	Pavement Treatment Design	Austroads Guide to Pavement Technology, New Zealand Guide to Pavement Evaluation and Treatment Design:2018 (Version 1.2)	Principal Approval	Contractor and Principal peer review	per design		Approvals Register - SH30 Frosts - Pavement Rehabilitation Design Report	C or S		C	E	Y							
	Materials: GAP 65 Pre-treatment Material																		
	Aggregate Sampling	NZS 4407:2015, WSP Rotorua Sampling Guide					Sampling Worksheet	C or S			S								
	Source Property Test	CBR - BOPE NOC Contract Documents Maintenance Specification Section 2.5.3	Soaked CBR ≥ 40	Soaked CBR test (NZS:4407:2015:3.15)		Supervisor	Test Report	Sp or C or S		Sp or S	E	Y							
	Production Property Test	Sand Equivalent - BOPE NOC Contract Documents Maintenance Specification Section 2.5.3	Sand Equivalent >35, OR <35 but well graded with no more than 10% by mass passing through a 0.425mm sieve	Sand Equivalent Test (NZS:4407:2015, 3.6)		Supervisor	Test Report	Sp or C or S		Sp or S	E	Y							
	Materials: M/4 AP40 Basecourse Material																		
	Aggregate Sampling	NZS 4407:2015, WSP Rotorua Sampling Guide					Sampling Worksheet												
	Source Property Test	Crushing Resistance (3.3.1) - TNZ M/4: 2006, NZS 4407: 1991 Test 3.10 (The Crushing Resistance Test)	less than 10% fines passing 2.36mm sieve size under a load of 130kN	Cursching Resistance Test (NZS 4407:1991, Test 3.10)	One test for every 10,000m³ of source material	Quality Controller	Test Report	Sp or C or S		Sp or S	E	Y							
		Weathering Quality Index (3.3.2) - TNZ M/4: 2006, NZS 4407: 1991, Test 3.11 (Weathering Quality Index Test)	AA, AB, AC, BA, BB or CA	Weathering Quality Index Test (NZS 4407: 1991, Test 3.11)	One test for every 10,000m³ of source material	Quality Controller	Test Report	Sp or C or S		Sp or S	E	Y							
		California Bearing Ratio (3.3.3) - TNZ M/4: 2006, NZS 4402: 1986 Test 4.1.3, NZS 4407: 1991 Test 3.15 (California Bearing Ratio Test)	Soaked CBR ≥ 80%	California Bearing Ratio Test (NZS 4407: 1991, Test 3.15) after being compacted according to Vibrating Hammer Compaction Test at OWC (NZS 4402: 1986, Test 4.1.3)	One test for every 10,000m³ of source material	Quality Controller	Test Report	Sp or C or S		Sp or S	E	Y							
	Production Property Test	Sand Equivalent (4.2.1.1) - TNZ M/4: 2006, NZS 4407: 1991 Test 3.6 or Clay Index (4.2.1.2) - TNZ M/4: 2006, NZS 4407: 1991, Test 3.5 or Plasticity Index (4.2.1.3) - TNZ M/4: 2006, NZS 4407: 1991 Test 3.4	Sand Equivalent ≥40; or Clay Index ≤3; or Plasticity Index ≤5	Sand Equivalent Test (NZS:4407:2015, 3.6); or Clay Index Test (NZS:4407: 1991, 3.5); or Plasticity Index Test (NZS 4407:1991, 3.4)	2 Samples required as per Table 1, Production Property Test Sampling (4.1) - TNZ M/4: 2006	Quality Controller	Test Report	Sp or C or S		Sp or S	E	Y							
		Broken Face Content (4.2.2) - TNZ M/4: 2006, NZS:4407: 1991 Test 3.14	Broken Face Content ≥70% between 37.5mm and 4.75mm sieve and ≥2 broken faces	Broken Face Test (NZS:4407: 1991, Test 3.4)	2 Samples required as per Table 1, Production Property Test Sampling (4.1) - TNZ M/4: 2006	Quality Controller	Test Report	Sp or C or S		Sp or S	E	Y							
		Particle Size Distribution (4.2.3) - TNZ M/4: 2006, NZS 4407: 1991 Test 3.8.1 (Wet Sieving Test)	Particle size distribution as per Table 2 and Table 3, 4.2.3 Particle Size Distribution	Wet Sieving Test (NZS 4407: 1991, Test 3.8.1)	2 Samples required as per Table 1, Production Property Test Sampling (4.1) - TNZ M/4: 2006	Quality Controller	Test Report	Sp or C or S		Sp or S	E	Y							
	Materials: Cement																		
	Stabilising Agent Selection	Cement (4.1.2) - TNZ B/5: 2008	GP	Visual inspection of supplier docket	per truck load	Quality Controller	Supplier Docket Supplier Cert	Sp or S		Sp or S	C	Y							
	Materials: Water																		
	Water draw for stabilising	Water (5.0.0) - TNZ B/5: 2008	Free from impurities justified by use of municipal water supply	Visual inspection of hydrant use form	per truck load	Quality Controller	Hydrant use form	Sp or S		Sp or S	C	Y							
	Materials: Geotextile																		
	Geotextile (Strength Class C) A29 or greater	TNZ F7 Specification	Details on Docket	Visual inspection	Per Delivery	Quality Controller	MDS	Sp or S		Sp or S	C	Y							
	Materials: Geogrid																		
	Geogrid Triaxial Tx160 or similar equivalent	As per NZTA list of approved materials/suppliers	Details on Docket	Visual inspection	Per Delivery	Quality Controller	MDS	Sp or S		Sp or S	C	Y							
2. Pre-Implementation																			
	Production Testing of stabilised material - OMC/MDD	TNZ B/5 section 7.5 & 7.7.1	To obtain OMC & MDD	NZS 4402, test 4.1.3, New Zealand vibrating hammer compaction test.	Once on commencement and then each stablilised layer at one test per 5000m2	Quality Controller	Test report	C	C	C			Y						

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	(e.g. procurement, temp works, construction activities)	*(e.g. list specifications & clause, drawing)*	*(e.g. slump value, cylinder strength, etc.)*	*(e.g. visual inspection, slump test)*			*(e.g. test result, pour record, material approval)*	Conduct	Witness	Produce Record	Approval	Y/N	Y/N	Name / Signature	Date All Records verified complete	Name / Signature	Date All Records verified complete	Name / Signature	Date All Records verified complete
	Production Testing of stabilised material - Solid Density	TNZ B/5 section 7.7	For info. and use in MDD calculation	NZS 4407; test 3.7.1	Once on commencement and if any materials chage	Quality Controller	Test report	C	C	C			Y						
	Project survey setting out	Reference from Project Drawings		Survey/Mobile Roads, Marks with Dazzle	Chainages for every different pavement sections	Subcontractor/ Engineer	Construction drawings	C		C		Y							
	Records Management (i.e. it is known what documented records are to be kept)	ITP and QMP state what quality documentation is required	Filled in and Signed ITP	Visual inspection, recording and approval	As per hold points in collaboration with the programme	Quality Controller	ITP and all referenced documents	C		C	E	Y							
3. Construction - Pre-treatment Digouts																			
Construction phase - Digouts	Pre-treatment Repair Method Selection	Site specifics to be confirmed	Confirm scala acceptance criteria based on treatment type	Scala Penetrometer on Excavation Floor	As required	Quality Controller	Agreed treatment plan	S	C	S	E	Y							
	Excavation floor drainage	Higgins SOP 0128 - Digout Repair	4-8% toward edge of seal	Digital level	As required	Quality Controller	Dig out QA form	S	C	S	C		Y						
	Subgrade material hardness Check base of excavation	Higgins SOP 0128 - Digout Repair	Scala > 3 blows per 100mm	Scala Penetrometer test on base of digout	As required depending on size of digout	Quality Controller	Test report	S/C	C	S/C	E	Y							
	Geotextile (Strength Class C = A29) Layer beneath treatment layer	TNZ F7 Specification	Meet TNZ F7 Spec.	Visual inspection	Per Delivery	Quality Controller	Certificate of conformance	Sp or S		C	C		Y						
	Geogrid Triaxial Tx160 or similar equivalent	As per NZTA list of approved materials/suppliers	On the list of approved materials/suppliers	Visual inspection	Per Delivery	Quality Controller	Certificate of conformance	Sp or S		C	C		Y						
	Place and compact GAP65 in digout area	Higgins SOP 0128 - Digout Repair	Clegg > 45	Clegg Test	Min. 2 per digout	Quality Controller	Test report	S/C	C	S/C	E	Y							
4. Construction - Granular make up and In-situ Modification																			
Construction phase - Rehab	Place M/4 AP40 Basecourse Material	TNZ B/5 (section 7)	Evenly spread, no segregation, placed near optimium moisture content	Visual Inspection	On completion of placement	Quality Controller	Photographs and Daily Site Record	S or C		S or C	C		Y						
	Spreading of Cement	Spreading of Cement (7.3) - TNZ B/5: 2008	Within ± 0.5 kg/m² of the specified rate and within ± 2.5% of the specified rate	Mat test (1m² canvas) and Average Usage Test	per 400m² and upon emptying the spreader	Quality Controller	Mat Test Form and truck dockets	S or Sp		S	E	Y							
	Addition of Water	Addition of Water (7.5) - TNZ B/5: 2008	90-100% OWC	Nuclear Densometer Testing prior to Stabilisation	≥1 per 1000m² lot	Quality Controller	NDM Record	S		S	C		Y						
	Cut Depth	Control of cut depth (7.6.1) - TNZ B/5: 2008	-5mm and +15mm of design stab depth	Physical Measure and Visual Record	≥1 per 200m of cut length	Quality Controller	Photographs and Daily Site Record	S		S	C		Y						
	Longitudinal Joints	Overlap on longitudinal joints (7.6.2) - TNZ B/5: 2008	The greater of 100m or 50% of layer thickness	Visual Record	per sucessive cut	Quality Controller	Photographs, Daily Site Record and Stabilising Plan	S		S	C		Y						
	Continuity of Layer	Continuity of stabilised layer (7.6.3) - TNZ B/5: 2008	Longitudinal overlap 1m for cement, 5m for bituminous stabilising agents	Visual Record	per sucessive cut	Quality Controller	Photographs, Daily Site Record and Stabilising Plan	S		S	C		Y						
	Stabilised Material Particle Size	Particle size distribution of stabilised material (7.6.4) - TNZ B/5: 2008	No excessive breakdown of stabilised material	Visual Record	within 20m of each section and then regularly based on material variability	Quality Controller	Photographs	S or C		S or C	C		Y						
	Establish Compaction Methodology - type of plant, number and speed of passes	Higgins 'Interim Pavement Layer Compaction Guide' - Technical Note, Compaction (7.7) - TNZ B/5: 2008	To establish type of plant, number and speed of passes to achieve MDD	Plateau Density Testing	1 time, or additional tests when material changes visually	Supervisor	Test record	C		C	C		Y						
	Establish Compaction Target	Higgins 'Interim Pavement Layer Compaction Guide' - Technical Note, Compaction (7.7) - TNZ B/5: 2008, Acceptance criteria for stabilised pavement layer compaction (7.7.1) - TNZ B/5: 2008	To provide MDD for NDM testing	Plateau Density Testing	Minimum once per Lot. A lot shall not exceed 1000 m2.	Quality Controller	Test Record	C		C	E		Y						
	Degree of Compaction MDD to obtain target for NDM testing	Higgins 'Interim Pavement Layer Compaction Guide' - Technical Note, Compaction (7.7) - TNZ B/5: 2008, Acceptance criteria for stabilised pavement layer compaction (7.7.1) - TNZ B/5: 2008	To provide MDD for NDM testing	Laboratory MDD at OMC NZS 4402 test 4.1.3.	Minimum once per Lot. A lot shall not exceed 5000 m2.	Quality Controller	Test Record	C		C	C		Y						
			Formally agree with the Engineer the MDD target, based on review of the lab. MDD and the site plateau test	Plateau Density Testing Lab. MDD	At commencement of construction and whenever materials change	Quality Controller Engineer	Notice to Contractor/ Notice to Engineer	C		C	E	Y							
	Compaction Acceptance	Acceptance criteria for stabilised pavement layer compaction (7.7.1) and Table 5 - TNZ B/5: 2008, Acceptance criteria for pavement layer compaction (7.6) - TNZ B/2: 2005	Mean value ≥ 98% and Minimum Value ≥ 95%	Nuclear Densometer Testing	≥ 5 tests per 1000m² lot	Quality Controller	NDM Record	S or C		S or C	C	Y							

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Final Testing, Inspection and Acceptance	Control Testing (if required)	Control testing during and after construction (7.7.2) - TNZ B/5: 2008	Nil	Vibrating Hammer Compaction Test at OWC (NZS 4402: 1986, Test 4.1.3)	when agreed with the Engineer	Quality Controller	Test Report	S or C		S or C	E								
	Surface Smoothness	Surface shape (7.8) - TNZ B/5: 2008	± 10mm deviation along a 3m straight edge No water ponding	3m Straight Edge	during construction and prior to seal	Supervisor	Photographs	S		S	E	Y							
	Surface Shape	Surface shape (7.8) - TNZ B/5: 2008	Between -5mm and +15mm	String lines or Survey Asbuilt	during construction and prior to seal	Supervisor	String Sheet/Survey Asbuilts	S		S	E	Y							
	Cross Fall	Crossfall (7.9) - TNZ B/5: 2008	0.5% ≤ X ≤ -0.5%	3m straight edge or Survey Asbuilt	during construction and prior to seal	Supervisor	Cross Fall Records/Survey Asbuilts	S	C	S	E	Y							
	Surface Finish	Surface finish (7.10) - TNZ B/5: 2008	Tightly bound matrix post sweep	Visual inpsection	prior to seal	Supervisor	Pre-seal inspection sheet	C	C and E	C or S	E	Y							
	Degree of Saturation, DOS	Pre-sealing requirements (7.12) - TNZ B/5: 2008, Pre-sealing requirements (9) - TNZ B/2 Notes: 2005	≤80%, however 65% is ideal	Nuclear Densometer Testing	≥5 tests per 1000m² lot	Quality Controller	NDM Record	C	E	S	E	Y							
	Roughness (NAASRA)	NZTA Maintainence specification section 6.1.2	For chipseal or non structural AC surfacing; No 100m moving average shall exceed 2.9 lane IRI.qc m/km 75 NAASRA counts/km	NZTA Maintainence specification section 6.1.2	Average of three replica runs for each lane reported at 20m intervals.	Quality Controller	Test Records	C	E	S	E	Y							
5. Chip Sealing																			
5.1. Procurement	**Chipseal Resurfacing**																		
Pre-construction tasks. e.g. approval of materials	Binder - Penetration Grade	TNZ M/1	Table 1	Property Test	Annual	Bitumen Supplier/ Surfacing Project Manager	IANZ Report's	C		C	N		Y						
	Binder - Polymer Modified Emulsion	Higgins Internal Specification	% PMB Required, PH, Residue by Evaporation, Viscosity	Property Test	1/100,000 litres supplied			C		C	N		Y						
	Source Property -Coarse Aggregate - Crushing Resistance	TNZ M6, RNZ 9805:2009	<10% fines under 230kN minimum	Sample Test - Crushing Resistance NZS 4407 Test 3.10	1 test per 10,000m³ or 1 test per annum if less than 10,000m³ produced per annum	Surfacing Project Manager		C		C	N	Y							
	Source Property -Coarse Aggregate - Weathering Resistance		AA or BA	Weathering Quality Index NZS 4407 Test 3.10				C		C	N	Y							
	Source Property - Skid Resistance	NZTA T/10	Meet Skid performance Requirement	Aggregate Perfomance Method TNZ T/10 section 12.3	Each Site			C		C	N	Y							
Initial production testing and design approval	Production Property - Cleaness Value	NZTA P/17, M/6	G2 - 89 min, G3 - 87 min, G4 - 85 min	Sample Test - Cleaness Value NZS 4407 Test 3.9	Per Stockpile <100m3 - 1 Sample 100-500m3 - 2 Samples >500m3 - 3 Samples			C		C	N	Y							
	Production Property - Particle Size/Shape		As per Table 3 NZTA M/6	Sample Test - Particle Size/Shape NZS 4407 Test 3.13				C		C	N	Y							
	Production Property - Broken Faces		Min. 98%	Sample Test - Broken Faces NZS 4407 Test 3.14				C		C	N	Y							
	Chipseal Designs	EBOP NOC Design Report, Chipsealing in NZ, NZTA P/17	Client Approval	Review	Annual		EBOP NOC Design Report Acceptance	C		C	N	Y							
5.2. Construction	**Chipseal Resurfacing**																		
	Ensure limits of site are marked	EBOP NOC Design Report	Visual Inspection	Visual	Prior to start sealing each site	Surfacing Supervisor	Chip Sealing Quality and Site Record	C		C	C		Y						
	Sweep surface clean of deleterious material	P/17	Visual Inspection	Visual	Each site, prior to start of sealing	Surfacing Supervisor	Chip Sealing Quality and Site Record	C		C	C		Y						
	Record ATP's on site	N/A	Visual Inspection	Visual	Each site, prior to start of sealing	Surfacing Supervisor	Chip Sealing Quality and Site Record	C		C	C		Y						
	Confirm correct treatment(s) and chip	EBOP NOC Design Report	Details/chip correct	Visual	Each Site	Surfacing Supervisor	Chip Sealing Quality and Site Record	C		C	C	Y							
	Cutback Bitumen Blend	RNZ 9803_0513	+/- 2PPH Cutter, +ve for Adhesion agent presence	Sample and test	1 Sample per Per Sprayer load, tested at frequency of 1 per 100,000l sprayed	Surfacing Project Manager, Surfacing Supervisor	IANZ Report's	C		C	C		Y						
	Bitumen Application Rate	E/2 Certificate, Seal Design / Spray Instruction	Current E/2 Certificate +/- 4% per Spray Run	Test, Review	Per Sprayer, Per Site	Surfacing Supervisor	E/2 Certificate. Spray Sheets	C		C	C		Y						
	Chip Application Rates	Chipsealing in NewZealand	As per Chipping Guide	Visual	Each Site		Chip application check sheet. Chip Sealing Quality and Site Record	C		C	C		Y						
	Rolling	Chipsealing in NewZealand	Mimimum as per CS in NZ - Bit volume / 3600	Visual	Each Site		Chip Sealing Quality and Site Record	C		C	C		Y						
	Cleanup	Chipsealing in NewZealand	Site including adjacent surfaces free of loose chip	Visual	Each Site		Chip Sealing Quality and Site Record	C		C	C		Y						
	Post Sweeping	Chipsealing in NewZealand	Site including adjacent surfaces free of loose chip	Visual	Each Site		Site Record	C		C	C		Y						
	Linemarking and RRPM Reinstated	MOTSAM	Matches previous linemarking - within 48hours of sealing	Visual	Each Site		Site Record	C		C	C		Y						
5.3. Post Construction	**Chipseal Resurfacing**																		

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Final Testing, Inspection and Acceptance	Post Construction Walkover		Formal Agreement	Visual Inspection	Post seal sweep	Quality Controller, Supervisor and Engineer	Meeting Minutes	C	C, S and E	C	E	Y							
	Resurfacing Construction Completion report	NOC; MS 6.1.3	Comply with Requirement of NOC MS 6.1.3	Record	Within 2 months of completing the annual resurfacing programme	Surfacing Manager	Construction Completion Report	C		C	C	Y							
	Chipseal Post-Verification Testing and Report	NOC; MS 6.1.3	Comply with Requirement of NOC MS 6.1.3	Record	Each Site	Surfacing Manager	Chipseal Post-Verification Testing and Report	C		C	C	Y							
6. Close Out																			
Final Closeout and Handover	Pavement Rehabilitation Construction Completion Report	Pavement Rehabilitation Construction Completion Report (6.1.2) - BOPE 2_14-001_601 Maintenance Specification	Engineer Approval	Visual Inspection	≤2 months of 1st Coat Seal	Quality Controller/ Contract Manager	Signed Report	C	C, S and E	C	E	Y							

S – Subcontractor C – Contractor E – Engineer/Principal Representative Sp – Supplier

Quality Control Records Compiled by:

Name: _____

Role: _____

Signature: _____

Date: _____

Reviewed / Approved by:

Name: _____

Role: _____

Signature: _____

Date _____