

Inspection and Test Plan

SECTION 1 – GENERAL DETAILS							
Project Name:	Infrastructure Alliance			Inspection Key <i>Use in sections 3, 4 and 5.</i>		Responsibilities <i>Use in sections 3, 4 and 5.</i>	
Project Number:	092			A Action	Role Key	Name	Signature/ Initial
Customer:	Hamilton City Council			B Report by Breach	FP Foreperson		
Contract Number:	550580			C Check	SV Supervisor	Conrad Ferreira	
Area/ Sub-System:		Lot ID Number:		D Dimension Inspection	MM Maintenance manager	Darrin Williams	
ITP Number:		Version:		E Examine	QE Quality engineer	Gurjiwan Brar	
ITP Description:	Concrete Footpath Renewals			H Hold Point	OM Operations manager	Wayne Bowden	
Discipline:				I Inspection	RM Renewals manager		
Specification:	Refer to RITS and SWMS			M Monitor on Random Basis	AM Alliance manager		
Drawings:	Refer to relative RITS and SWMS			O Operation	PM Project manager		
Prepared By: <i>(Name)</i>		Date:		R Review	PE Project engineer		
Quality Specified:				S Subcontractor			
				V Visual Verification			
				W Witness Point			
SECTION 2 – SIGNATURES – CLOSE-OUT & APPROVAL							
ITP Close-Out by Downer	Name:		Signature:		Date:		
Downer Approval	Name:		Signature:		Date:		
Customer Approval	Name:		Signature:		Date:		

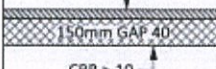



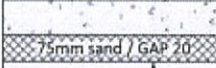
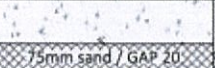
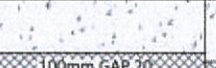
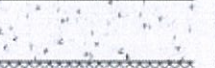
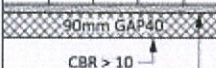
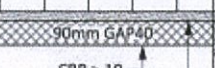

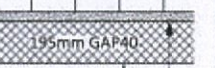
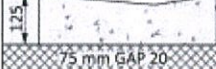

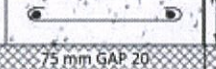
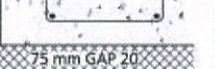
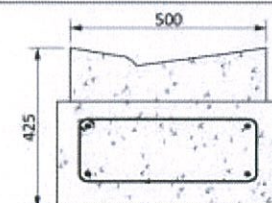
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SECTION 3 - Notifications									
Item No.	Activity/ Task Description	Inspection Point: Quality Control Activity.	Acceptance Criteria	Verifying Document	Frequency	Inspection /Test Key	Role key	Authoriser signature & Date	
3.1	Site inspection	Site walk over with supervisor and foreperson	Visual inspection	ITP	Once	V	SV FP		
3.2	Service location and permits issued	All services located and marked. Permits issued	Permits issued and received by qualified staff only	Relative permits	As permits expire	V	FP		
3.3	Work pack checklist	Check the work pack checklist	Copy of work pack with all documents	Work pack	Once	V	FP		
SECTION 4 - Construction									
4.1	Environmental controls	Apply environmental controls to site.	Consider drainage, noise, dust, weather.	Work pack	Once	V	FP		
4.2	Saw Cutting	Cut the existing footpath to the full depth of concrete	Cut in straight line and regular shape	Refer to DN-GD-GP145	Once	V	FP		
4.3	Excavation	Dig out the existing footpath to the required width and make good basecourse. Add 100-200mm either side for boxing.	Visual subgrade inspection	Refer to RITS 3.3.5	Once	V	FP		
4.4	Preparing subgrade(If inspection fails)	Subgrade further compacted or excavate the unstable material and replace	Visual inspection	Refer to DN-ZH-FM028.2	Once	V	SV FP		
4.5	Timber Edging	Pegs spaced and timber edging as required.	Visual inspection	RITS Drawing 3.6.1	As required	V	SV QE		
4.6	Base preparation	Use Gap 20 or Sand when preparing the base for concrete Footpaths	Clegg Hammer value shall not be less than 12 after 4 blows	RITS D3.3.5	Every 10m	H	SV QE		
4.6	Concrete Surfacing(Footpaths)	Concrete must be placed on well compacted pavement	Concrete layer shall not be less than 100mm. will change on crossings.	Refer to RITS D3.3.5	Once	V	FP		

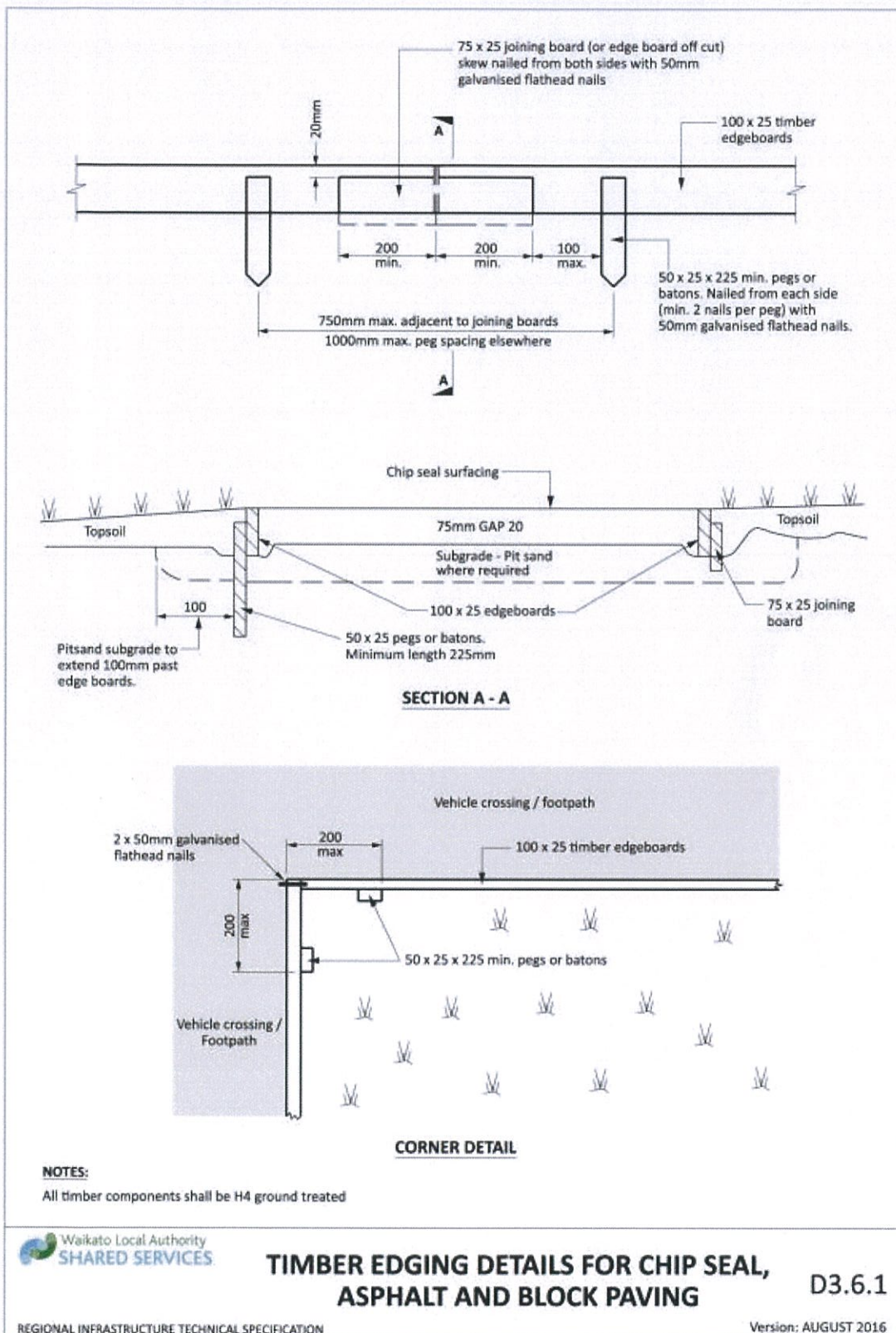
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4.7	Concrete Testing	QA results needs to be supplied by supplier	Minimum Strength of concrete needs to be more than 20MPa	Refer to RITS 3.4.5.2	Every 6 Months	V	FP		
4.8	Placing Concrete	Check the weather condition, Surface condition before placing concrete , Lightly damped the surface before placing concrete	Temperature shall not less than 5 degrees Celsius or concrete shall not place in frozen or wet conditions	Refer to RITS 3.4.5.3	Every Time	V	FP		
4.9	Curing Concrete	Curing period shall not be less than 36 hours	Visual inspection	Refer to RITS 3.4.5.9	Throughout the activity	V	SV FP		
4.10	Site reinstatement	Berms reinstated with top soil and grass seeded.	Minimum of 100mm of topsoil and grass seed applied.	Refer to RITS 2.2.4.6	As required	V	FP		
SECTION 5 – Post Construction Audit									
5.1	Post Completion Audit	Area measured? Water pooling? Any visual crack observed? Photos taken? As-built updated?	Refer to RITS	Post completion Report	After the completion of job	W	SV		

COMMENTS

	Pedestrian Footpath (Single Residential Dwelling)	Residential Strength Vehicle Crossing (Multi Dwellings 2-6)	Commercial Strength Vehicle Crossing (Multi Dwellings 7+)	Industrial Strength Vehicle Crossings
Asphalt Surfacing	25mm Mix 10 Asphalt  150mm GAP 40 CBR > 10 Pavement Depth = 175mm	25mm Mix 10 Asphalt  175mm GAP 40 CBR > 10 Pavement Depth = 200mm	25mm Mix 10 Asphalt  225mm GAP 40 CBR > 10 Pavement Depth = 250mm	50mm Mix 20 Asphalt  250mm GAP 40 CBR > 10 Pavement Depth = 300mm
Concrete Surfacing	100mm Concrete  75mm sand / GAP 20 CBR > 10 Pavement Depth = 175mm	125mm Concrete  75mm sand / GAP 20 CBR > 10 Pavement Depth = 200mm	150mm Concrete  100mm GAP 20 CBR > 10 Pavement Depth = 250mm	175mm Concrete  125mm GAP 20 CBR > 10 Pavement Depth = 300mm
Interlocking Block Paving	50/60mm Paving Block  90mm GAP 40 CBR > 10 25mm Bedding Sand Pavement Depth = 175mm	80mm Paving Block  90mm GAP 40 CBR > 10 25mm Bedding Sand Pavement Depth = 195mm	80mm Paving Block  145mm GAP 40 CBR > 10 25mm Bedding Sand Pavement Depth = 250mm	80mm Paving Block  195mm GAP 40 CBR > 10 25mm Bedding Sand Pavement Depth = 300mm
Depressed Kerb and Channel Crossing	Pedestrian crossing (No Lip)  75mm GAP 20 CBR > 10 Pavement Depth = 200mm	Residential dwelling vehicle crossing (1-6 Dwellings)  75mm GAP 20 CBR > 10 Pavement Depth = 200mm	 75mm GAP 20 CBR > 10 Pavement Depth = 300mm	 75mm GAP 20 CBR > 10 Pavement Depth = 350mm
<p>NOTES:</p> <ol style="list-style-type: none"> Concrete - 28 Day in place minimum strength of 20MPa. Basecourse depth can be amended by using steel mesh reinforcing in concrete vehicle crossings (specific design required). Depth of sand / GAP material to be increased where the CBR is not achievable. <div style="text-align: center;">  <p>MACHINE EXTRUDED CROSSING Pavement Depth = 425mm CBR > 10</p> </div>				
<p>Waikato Local Authority SHARED SERVICES</p> <p>CROSS SECTION DETAILS FOR FOOTPATH, VEHICLE CROSSINGS AND DEPRESSED KERB AND CHANNEL</p> <p>REGIONAL INFRASTRUCTURE TECHNICAL SPECIFICATION</p>				<p>D3.3.5</p> <p>Version: AUGUST 2016</p>

Drawing 3-17: Cross section details for footpath, vehicle crossings and depressed kerb and channel



Drawing 3-24: Timber edging details for chip seal, asphalt and block paving

Wherever necessary, formwork shall be used to support and confine the concrete and shape it to the required dimensions. Joints and linings shall be sufficiently tight to prevent loss of water from the concrete.

All timber for formwork shall be of an approved quality and type. For kerbs and channels formwork shall be ex 40mm material provided that 15mm timber or other suitable material may be used on short radius curves.

Formwork shall be of a sufficient depth to fully support all vertical faces. Where it supports exposed surfaces, formwork shall be long lengths dressed smooth on one face and both edges.

Timber strips for chamfers shall be machined all round to be true to shape and form and they shall be kept in good order. Alternatively the chamfer or bullnose may be formed with a specific floating tool or dressed fillets.

Steel forms shall be of approved design and shall be maintained in good condition. The joints between lengths shall be secured accurately during concreting to maintain a good line in the finished work.

Forms shall be designed to be easily removable without damaging the green concrete and shall be kept thoroughly clean and oil or wax dressed to prevent adhesion of concrete or rust staining. Forms for curved kerbs shall be brought to a true curve by springing the timber evenly.

The shape, strength, rigidity, mortar tightness and surface smoothness of re-used forms shall be maintained at all times. Warped or bulged timber is not permitted. Timber which has been used shall have the surfaces which are to be in contact with the concrete thoroughly cleaned and treated before being used again.

3.4.5.2 Concrete Mix and Proportions

Concrete mixes shall be proportioned to be workable, capable of being thoroughly consolidated by the means of compaction available and to provide the specified strength of concrete. The concrete may be either ordinary grade, high grade or special grade as defined in NZS 3109.

The concrete used shall be either mixed on the site or supplied ready-mixed. In every case, the concrete production shall be in accordance with NZS 3104 : Specification for Concrete Production.

The strength of concrete as defined in NZS 3109 shall be 28-day cured in-place minimum strength 20 MPa for all the above works.

3.4.5.3 Placing Concrete

The Contractor shall give due notice to Council of the time it is intended to place any concrete and no concrete shall be placed until approval has been obtained from Council.

Concrete shall not be placed on frozen ground nor shall it be placed in unfavourable conditions, which may be detrimental to the quality and finish of the concrete. Unfavourable conditions shall be deemed to include low temperatures (below 5°C with temperature descending, or below 2°C with temperature ascending), excessively hot, dry conditions, excessively wet conditions, or any conditions making it impractical to work and finish the concrete adequately.

3.4.5.6 Machine Laid Kerb and Channel

Contractors who intend to construct the kerbs and channels by using an extrusion machine will be required to use ready mixed concrete from a certified plant. The concrete provided shall be designed so that after placement it will accurately retain its shape and present a good surface. Certification of the concrete supplied is required. No subsequent cement washing will be permitted. The machine shall be capable of providing well compacted concrete with the absence of trapped air.

The machine shall not be used to pour curves with radii less than 5m. For these curves the Contractor shall use formwork as specified.

A properly shaped screed shall be used in forming cut downs.

3.4.5.7 Finished Work

Methods shall be used that will provide a smooth, clean and even surface on the exposed faces of all concrete work. These methods shall also put the required finish directly on the structural concrete without the use of mortar renderings, provided that, if specific prior approval of Council is obtained, the channel may be finished with a layer of separately applied mortar. In such a case, the mortar shall consist of not more than 2 parts of approved sand to 1 of cement. It shall be nominally 6mm in thickness and shall be placed before the initial set of the concrete and within 2 hours of placing the concrete.

Alternatively, a mortar layer to the above consistency may be applied in conjunction with the laying of the kerb and channel if the kerb and channel is laid by machine and the machine is designed for such use.

The top and face of the kerb and the channel surface shall be floated over with a steel tool before the mortar has finally set. No depressions which may hold water will be permitted.

The surface finishes of all kerb and channel, whether machine laid or hand laid, shall be uniform in colour, texture and shape.

3.4.5.8 Contraction/Expansion Joints

Contraction/Expansion joints shall be formed or cut along the kerb at a maximum spacing of 3.0m. The slot shall penetrate the concrete by not less than 50mm and the mortar dressed over the cut face. The contractor shall ensure that cold joints are accurately marked so that the subsequent saw cut is in the cold joint. Should cracking occur adjacent to the saw cut a minimum section of 1.5 metres of kerb and channel shall be removed and re-cast.

3.4.5.9 Backfilling against Concrete Work

Backfilling against the kerb and channel or any other concrete structure shall take place as soon as practicable after the concrete has reached sufficient strength, with particular emphasis at curves, corners, intersections and pedestrian kerb crossings but not prior to 36 hours after pouring.

Care shall be taken to ensure that no damage is done to the path, crossing, kerb and channel or other concrete structure when placing and compacting the backfill.

2.2.4.3 End Product Specification

Where an end product specification is required, the desired compaction criteria of the placed and compacted fill are specified and the earthworks contractor is free to choose whatever method of compaction they wish to achieve the targets specified.

2.2.4.4 Frequency of Tests

During the earthworks, soil tests need to be undertaken on the placed fill to ensure the necessary degree of compaction is being achieved. The methods of testing and frequency of tests shall be specified and included in the Fill Design Report.

2.2.4.5 Cuttings and Embankments

For cuttings and embankments formed as part of the earthworks, details of analytical methods used to determine slope stability are to be included. As part of this, the engineering properties and relevant ground investigation information is required.

As these earthwork features can affect the groundwater and surface run off, or need drainage measures to ensure stability, details of the drainage must be included.

If embankments form part of the proposed site works, settlement calculations must be included and justified from ground investigation data.

Details of any special measures to analyse slope or control settlements shall be included.

2.2.4.6 Topsoil

Top soiled surfaces shall be between 150–300mm consolidated depth, and shall consist of the outermost layer of natural soil with the highest concentration of organic matter and microorganisms, and generally be free of vegetation, large clumps, excessive and large stones, and be suitable for easy spreading in an even layer.

This topsoiling should endeavour to mimic the pre-existing conditions.

2.3 CONSTRUCTION AND FINAL DOCUMENTATION

2.3.1 Construction

During construction, site inspection and or testing shall be undertaken by a suitability qualified geo-professional with the requirements outlined in the geotechnical assessment report.

If any archaeological site or waahi tapu is discovered or disturbed during the works, Iwi and the Council shall be notified immediately

2.3.2 Dust Management

Reference should be made to MfE's Good Practice Guide for Assessing and Managing Dust.

During dry weather, where there is more than 400 m² of bare soil exposed on a development, one or more of the measures below is to be employed to reduce wind erosion and the amount of airborne dust emanating from the site: