WAKA KOTAHI NZ TRANSPORT AGENCY / Stantec	Downer / tsl	INSPECTION AND TEST PLAN	Project Number -
		Project: NZTA 5363 CIP SH30 Te Ngae Road Corridor-Iles Rd to Coulter Rd	Date submitted:
		Construction Process: Traffic Signals	Prepared By: Downer New Zealand
Client: NZTA	Head Contractor Subcontractor	Specification: 900 - Traffic Signals	Approved By:

Item	Task/Activity/Description	Inspection/Test				Acceptance Criteria	Record documents	Responsibility	Comments	Checked by		
		Detail of Activity	Action (Hold, Monitor, Witness)	Minimum Test Frequency (Lot = 1 day's production or 2,500m2)	Inspection / Test method					Engineer	Contractor	Date
900	Setout, Materials and Preparation											
900.1	Method Statement Development / Job Safety & Environmental Analysis	Prepare shared services trench construction methodology and Job Safety & Environmental Analysis suitable for site (eg access, working areas, proximity to slopes, traffic and other site hazards, construction stages proposed)	H	NA	NA	Method Statement and JSEA Completed and signed by relevant authority.	MS & JSEA	Contractor	Method Statement and Job Safety & Environmental Analysis to be provided to Engineer for review prior to commencing excavation on site.			
900.2	Drawings and Specifications	Check drawings are for construction and latest revision. Check Specification is for construction and latest revision	H	NA	NA	Drawings and Specification are the latest revision.	IFC Drawings and Specification	Contractor	Up to date drawings and specification to be reviewed before construction.			
900.3	Power Connection	Ensure power supply is organised and connection is in place	H	once per set of traffic lights	NA	Complete NC1 form and ensure ducting for power is in place.	NC1 Form	WSP / Contractor				
900.4	Comms Connection	Ensure comms connection is organised and ducting is in place	H	once per set of traffic lights	NA	Liase with service provider and organise connection (UCG) Universal communications group.		Contractor	Order connection from Chorus			
900.5	Survey Set Out	GPS Setout of the shared services trench location as per the construction drawings.	W	All shared trenches.	Visual Inspection	N/A	Contractor's site diary and/or photos	Contractor	Setout location prior to commencing works.			
900.6	Sediment Controls are in place for the particular section	Check ESCP and ensure any controls needed are in place before excavation.	M	once per section	Visual Inspection	Erosion and Sediment controls are in place prior to starting works.	Contractor's site diary and/or photos	Contractor				
	Construction and Finshing											
900.7	Element Locations / Positioning / Types	Walk over with TTOC, WSP, TSL & Downer representatives to agree positions of intersection elements	H	Once per set of traffic lights/intersection	Visual Inspection	TTOC, WSP, TSL acceptance.	Written confirmation	Contractor				
900.8	CIS Production	Draft CIS to be produced, independently reviewed and approved.	H	Once per set of traffic lights/intersection	Document Review	Review completed and development approved.	InEight Documents	Contractor				
900.9	Software Testing	Software to be independently tested using traffic signal emulator software (SFT Testing)	H	Once per set of traffic lights/intersection	Document Review	Approval for release received.	SFT Test Result Summary Sheet	Contractor				
900.10		SFT files provided to create PROM, bench testing to be completed by TSL	H	Once per set of traffic lights/intersection	Document Review	Pass result for bench test on "Appendix H - Controller Bench Testing Form".	Appendix H NZTA P43	Contractor				
900.11	Pole - Installation	Ensure poles are plumbed vertical	W	Each pole	Location/Position Acceptance	Plumbed vertical Tolerance: +/- 10mm per 5.0m length	QC Sheets	Contractor				
900.12	Pole - Identification / Finishing	Pole Number Verification	W	Each pole	Visual Inspection	Ensure poles are numbered correctly and match the CIS sheets (pole numbers match program and diagram numbers).	QC Sheets	Contractor				
900.13	Pole - Footings	Footing Type	W	Each pole	Visual Inspection	TSL engineer confirmation that poles are founded securely and have adequatley sized footings for the site conditions.	QC Sheets	Contractor				
900.14		Soil Bearing Strength	H	One per pole cluster area (i.e. north-eastern corner, median etc.)	Scala Penetrometer	Average 3 blows / 100mm over 500mm or per comments	Scala Testing	Contractor	Scala results to meet or exceed per below: 0mm - 100mm - ≥ 3 blows per 100mm 100mm - 200mm - ≥ 2 blows per 100mm 200mm - 300mm - ≥ 2 blows per 100mm 300mm - 400mm - ≥ 1 blow per 100mm 400mm - 500mm - ≥ 1 blow per 100mm			
900.15		Concrete Foundation Dimensions	W	Each footing not within concrete or asphalt.	Visual Inspection	Where a pole is not surrounded by concrete, the pole must have 500mm^2 of concrete surrounding it with a depth of 150mm (20MPa as below).	QC Sheets	Contractor				
900.16		Footing Concrete Strength	M	Each footing requiring concrete	Visual Inspection/Concrete Dockets	Confirmation footing concrete strength (where required - i.e. delivery dockets) is min 20MPa at 28days, or as specified in foudation design.	QC Sheets/concrete dockets	Contractor				
900.17	Cabling	Continuous Lengths	M	All lengths	Visual Inspection	Cabling to be continuous lengths from controller to the pole, and from pole to pole (i.e. no joints between poles).	QC Sheets	Contractor				
900.18		Looper Feeder Cable Slack	M	All lengths	Visual Inspection	Following cable slacks to be provided: - 1.8m (minimum) at controller base - 0.5m (minimum) inside KSJB	QC Sheets	Contractor				

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900.19	Cable Termination Chart	Provide cable termination chart in controller cabinet.	H	Each controller cabinet	Inspection	Cable termination chart provided.	QC Sheets	Contractor				
900.20	Earth / Earth Loop Impedance Testing	Complete earth loop impedance testing per 3.15.2 of NZTA P43.	H	Once per set of traffic lights/intersection as specified in 3.15.2 of NZTA P43	Inspection	Submit results in a report.	QC Sheets	Contractor				
900.21	Loop Testing	500V test from the isolated conductors down to earth.	H	All loops	Electrical Testing	Result ≥ 10 megaohms. Q ≥ 15 when measured in the kerbside junction box (KJB). Submit results signed by technician who conducted the testing and in a report.	QC Sheets	Contractor				
900.22	Loop Feeder Cable Testing	500V test from isolated conductors down to earth.	H	All feeder cables	Electrical Testing	Result ≥ 10 megaohms. Resistance of feeder cable ≤ 10 megaohms when measured at the controller. Submit results signed by technician who conducted the testing and in a report.		Contractor				
900.23	Log Book	Log book detailing any attendance at site, reason for attending and brief description of work carried out.	H	Once per controller box	Visual Inspection	Log book provided/completed as required.		Contractor				
900.24	Site Acceptance Testing	Completion and sign off of TTOC-07 Site Acceptance Test (SAT) documentation.	H	Once per set of traffic lights/intersection	Inspection / Audit	All requirements satisfied and TTOC Traffic Signals Engineer signed acceptance of SAT document.	TTOC-07 SAT	Contractor				
900.25	Electrical certificate of compliance and record of inspection	Complete COC and ROI.	H	Once per set of traffic lights/intersection	Inspection / Audit	Submit COC and ROI.	COC & ROI	Contractor				
900.26	Commissioning	Submit completed and signed Appendix H forms 5 working days prior to commissioning.	H	Once per set of traffic lights/intersection	Document Submission	Submit Appendix H forms to TTOC.		Contractor				
900.27		Notify TTOC with 48hrs notice before commissioning lights.	H	Once per set of traffic lights/intersection	Inspection	TTOC Acceptance.	Written confirmation	Contractor				
	Close Out											
900.28	Collate above documentation	Document review	H	Each ITP	Review	All above documentation is shown as attached to this work pack.	Review	Contractor				
900.29	Controller cabinet documents	Controller Cabinet Information	H	At time of commissioning	Review	Laminated copies of below placed in document pocket inside controller cabinet, within two weeks of commissioning: - As-built plans, - Completed cable termination chart - Controller Information Sheet (CIS) - Log-book	Review	Contractor				
900.30	As-built drawings	Survey	H	At completion of construction	Asbuilts to be submitted at the completion of construction, information to be captured regularly.	Asbuilts reviewed and submitted showing final location of all poles, access chambers, KJB, loops, lantern displays and cabinets. Completion and sign off of TTOC-08 Site Asset Collection Sheet/Appendix K of NZTA P43 documentation.	In Eight record	Contractor				

Client Final Inspection - the signature below verifies that this ITP has been completed in accordance with NZTA Specifications and verifies lot compliance.

Contractor's Rep Name:_____ Signature:_____ Date: _____

BBO Engineers Rep Name:_____ Signature:_____ Date: _____

H	Hold Point	Work Shall not proceed past the HP until released by the Eng. Rep.
W	Witness Point	An Inspection which must be witnessed by the Eng. Rep.
M	Monitor Point	Intermittent monitoring of any stage of the work in progress by the Eng. Rep.