

Appendix A – Inspection and Test Requirements

Elements of Work	Consulting Engineer's Responsibility	Council's Responsibility
Clearing and Grubbing		
Location	HOLD POINT upon completion of survey, inspect defined limits of clearing	WITNESS POINT Joint inspection of defined limits and tree removal if considered warranted.
Allotment Filling		
Quality of Material	Examine and assess all test results.	Visit site for random audit inspections if considered warranted.
	Examine and assess all test results.	Visit site for random audit inspections if considered warranted.
		Visit site for random audit inspections if considered warranted.
Subgrade		
Compaction	Routinely visit site. HOLD POINT Attend Ensure Earthworks are being carried out in accordance with condition of approval	Visit site for random audit inspections.
CBR Tests (if ordered)	Examine and assess all test results	Assess all test results.
Horizontal and vertical alignments	Routinely visit site. Examine and assess all test results and cross-section geometry	Visit site for random audit inspections. Assess all test results and cross-section geometry.
Profile	Routinely visit site. HOLD POINT Attend at completion	Visit site for random audit inspections. HOLD POINT joint inspections at completion
Embankments	Routinely visit site. HOLD POINT Attend at completion	Visit site for random audit inspections. HOLD POINT joint inspections at completion
Subgrade Replacement		
Material Quality	HOLD POINT Make sufficient routine visits to assess quality of materials. HOLD POINT Examine and assess all test results.	WITNESS POINT Visit site for random audit inspections if considered warranted.

<p>Compaction for:</p> <p>a) For on site Material; and</p> <p>b) For graded Material</p>	<p>HOLD POINT Make sufficient routine visits to assess that operations will achieve a sound compacted layer.</p> <p>HOLD POINT Examine and assess all test results.</p>	<p>WITNESS POINT Visit site for random audit inspections if considered warranted.</p>
<p>Profile and Depth</p>	<p>HOLD POINT Examine and assess all test results.</p>	<p>WITNESS POINT Visit site for random audit inspections if considered warranted.</p>
<p>Sub-Base Layer</p>		
<p>Material Quality</p>	<p>Routinely visit site.</p> <p>Examine and assess all test results.</p>	<p>WITNESS POINT Visit site for random inspections if considered warranted.</p>
<p>Compaction</p>	<p>Routinely visit site.</p> <p>HOLD POINT attend during proof rolling.</p> <p>Examine and assess all test results.</p>	<p>WITNESS POINT Visit site for random inspections if considered warranted.</p>
<p>Profile and Depth</p>	<p>Routinely visit site.</p> <p>HOLD POINT Attend at completion of final preparation.</p> <p>Examine and assess all test results and cross section geometry.</p>	<p>HOLD POINT Joint inspection on completion of final preparation.</p>
<p>Base Layer</p>		
<p>Material Quality</p>	<p>Routinely visit site.</p>	<p>Visit site for random audit inspections.</p>
<p>Compaction</p>	<p>Routinely visit site.</p> <p>HOLD POINT Attend during proof rolling.</p> <p>Examine and assess all test results and cross section geometry.</p>	<p>Visit site for random audit inspections.</p>
<p>Horizontal and Vertical alignment</p>	<p>Routinely Visit Site</p>	<p>Visit site for random audit inspections.</p>
<p>a) With no Kerb & channelling</p>	<p>Examine and assess all test results and cross section geometry.</p>	

b) With Kerb & Channelling profile	Examine and assess all test results and cross section geometry.	
Profile	Routinely visit site	Visit site for random audit inspections
	HOLD POINT Attend at completion of final preparation.	HOLD POINT Joint inspection on completion of final preparation.
Surfacing		
Material Quality		WITNESS POINT Visit site for random inspections if considered warranted.
Compaction & Thickness		WITNESS POINT Visit site for random inspections if considered warranted.
Horizontal & Vertical alignments		WITNESS POINT Visit site for random inspections if considered warranted.
Profile	HOLD POINT Undertake a Pre-seal Inspection.	HOLD POINT Undertake a Pre-seal Inspection.
Sub-Soil Drains		
Pipe	Routine inspection of Contractor's Performance and progress of works.	Visit site for random audit inspections if considered warranted.
Filler Material	Routine inspection of Contractor's Performance and progress of works.	Visit site for random audit inspections if considered warranted.
Cleaning Joints and Markers	Routine inspection of Contractor's Performance and progress of works.	Visit site for random audit inspections if considered warranted.
Geofabric	Routine inspection of Contractor's Performance and progress of works.	Visit site for random audit inspections if considered warranted.
Kerb & Channel		
Material Quality	HOLD POINT Inspect foundations prior to kerb placement.	HOLD POINT Visit site for Inspection
Horizontal & Vertical Alignments	Inspect Completed Kerb Water Test where appropriate	HOLD POINT Visit site for Inspection
Road Crossing Conduits		
Location	Routine inspections of Contractor's Performance and Progress of Works	Visit site for random audit inspections if considered warranted.
Markers	Ensure Council Approval of all building/structures	Visit site for random audit inspections if considered warranted.
Building/Structures		
All	Ensure Council Approval of all building/structures	

Stormwater Drainage		
Location of Structures	HOLD POINT Sufficient visits to assess compliance and to view progress and works.	
SL & IL at Structures	HOLD POINT Sufficient visits to assess compliance and to view progress and works.	
Material Quality (Bedding, concrete, Pipes)	HOLD POINT Sufficient visits to assess compliance and to view progress and works. HOLD POINT Visual inspection prior to placement of structure/s after bedding sand.	WITNESS POINT Visit site for inspection prior to laying of pipe and bedding.
Manholes	HOLD POINT Sufficient visits to assess compliance and to view progress and works.	
Drain Lines	HOLD POINT Sufficient visits to assess compliance and to view progress and works.	
Backfilling	HOLD POINT Sufficient visits to assess compliance and to view progress and works.	HOLD POINT Visit site for inspection prior to backfilling
“Cast Insitu” reinforced concrete work	HOLD POINT Inspect reinforcement and formwork prior to concrete pour.	HOLD POINT Inspect reinforcement and formwork prior to concrete pour.
Landscaping		
Grass Establishment	Routine inspections of Contractor’s performance.	Visit site for check at defects liability inspection.
Tree Planting	Routine inspections of Contractor’s performance. Confirm all affected areas are topsoiled, grassed and maintained.	
Irrigation a) Pipelines b) Pressure testing pipelines c) Performance Testing	WITNESS POINT Witness and approve pressure and performance test.	
Soil & Water Quality		
All	HOLD POINT Examine and approve contractors ESCP for compliance with ESCS. ESC Measures for works area are in place prior to works commencing on this section or stage.	WITNESS POINT Visit site for inspection if considered warranted.

	Randomly audit and inspect ESC measures for compliance with Contractor's ESCP.	
Sewerage Reticulation		
Location MH's & HC's	Routine inspections.	
IL at MH & HC's	Routine inspections and review of field information.	
Backfilling	Routine inspections of Contractor's performance.	WITNESS POINT Visual inspection after excavation prior to bedding.
SP Boundary Set Out	Routine inspections of Contractor's performance. Review of field measurements.	
Material Quality (Bedding, concrete pipes)	Assess all test results.	
Manholes, maintenance shafts & benching	Routine inspections.	
Hydrostatic testing of manholes	HOLD POINT Witness hydrostatic testing of manholes.	WITNESS POINT Witness hydrostatic testing of manholes.
Pipelines	HOLD POINT Witness pressure test of lines	HOLD POINT Visual inspection after excavation prior to bedding.
Thrust/anchor blocks	HOLD POINT Visual site inspection of anchor/thrust blocks prior to concrete pour	WITNESS POINT Visual site inspection of anchor/thrust blocks prior to backfill.
Trunk infrastructure	HOLD POINT Pre-connection visual inspection of trunk lines.	HOLD POINT Pre-connection visual inspection of trunk lines.
Pump Stations & Valve Chambers		
Excavation	Routine inspections of Contractor's performance.	
Foundation inspection	WITNESS POINT Confirm water table level and founding condition. WITNESS POINT Inspection foundation prior to placing formwork/reinforcement.	WITNESS POINT Inspection foundation prior to placing formwork/reinforcement.
Base slab reinforcement, formwork and water stop.	HOLD POINT Inspect reinforcement prior to placing formwork/reinforcement	Visual inspection of reinforcement, water stop and formwork prior to concrete base pour.
Reinforcement and formwork	HOLD POINT Inspect reinforcement and formwork prior to concrete pour.	Visual inspections of reinforcement and formwork prior to concrete pour. WITNESS POINT Visual inspection of concrete prior to stripping of framework.

Materials Testing	Assess all test results	WITNESS POINT Review materials testing.
Hydrostatic Testing	HOLD POINT hydrostatic testing	HOLD POINT hydrostatic testing.
Electrical and SCADA equipment	WITNESS POINT Review switchboard test certification, Inspect installation.	WITNESS POINT Review certification of switchboards prior to delivery to site. WITNESS POINT Review certification of telemetry (SCADA) prior to delivery to site.
Lifting Chain	WITNESS POINT Review certification of lifting chain.	WITNESS POINT Review certification of lifting chain.
Pump testing and Station Commissioning	HOLD POINT Witness pressure and draw down testing of pumps. HOLD POINT Inspection against commissioning checklist.	HOLD POINT Witness pressure and draw down testing of pumps. HOLD POINT Inspection against commissioning checklist.
Water Reticulation		
Location	Routine inspections of Contractor's performance. Review of field measurements.	
SP Boundary Set Out	Routine inspections of Contractor's performance. Review of field measurements	
Valves, hydrants, scours, bends	Routine inspections of Contractor's performance. Review of field measurements	
Depth	Routine inspections of Contractor's performance. Review of field measurements	
Material Quality (bedding, concrete, pipes) Pipelines	Assess all test results. HOLD POINT Visual inspection after excavation prior to bedding. HOLD POINT Witness pressure test of lines. HOLD POINT Witness chlorine swabbing of lines – pre-amalgamation DSC area. WITNESS POINT Disinfection/flush of pipeline.	HOLD POINT Visual inspection after excavation prior to bedding. HOLD POINT Witness pressure test of lines. WITNESS POINT Disinfection/flush of pipeline.
Thurst/anchor blocks	HOLD POINT Visual site inspection of anchor/thrust blocks prior to concrete pour.	HOLD POINT Visual site inspection of anchor/thrust blocks prior to concrete pour.

Backfilling	Routine inspections of Contractor's performance. HOLD POINT Visual site inspection prior to backfill.	Visual inspection of lines prior to backfill. WITNESS POINT Visual site inspection prior to backfill.
Prior to acceptance of works for "Defects Liability Period"	Forward As Constructed submission to Council with Registered Surveyor's and Consulting Engineer's certification attached.	Council to accept and conduct Audit checks of As Constructed Drawings and advise any requirements.
	Finalise all other Documentation in accordance with Construction Procedures.	Council Inspector to accompany Consulting Engineer and Contractor and to advise any requirements.
	Complete "Defects Liability" Inspection Checklist prior to joint inspection with Council.	When completed advise in writing of acceptance of works for commencement of "Defects Liability Period".
During "Defects Liability Period"	Consulting Engineer to confirm all minor omissions and defects have received suitable attention and to examine and approve site prior or asking for "Final Acceptance of works" Inspection.	Council to advise Consulting Engineer of any defects.
Prior to Final Acceptance of works	Consulting Engineer to accompany Council Inspector and to note any requirements.	Council Inspector to accompany Consulting Engineer and Contractor and to advise any requirements.
		When completed advise in writing of final acceptance of works.