

Appendix H – Inspection & Test Plans

APPROVED SUBDIVISION ESTATE NAME: **STAGE:**

DEVELOPER:

CONTRACTOR:

CONSULTANT COMPANY:

PROJECT MANAGER: **R.P.E.Q. No:**

SIGNATURE: **DATE:**

This section contains inspection and test plans which shall be used to control inspection and test activities and to verify that construction work conforms to specified requirements. Inspection and test plans relevant to this development are:

- | | | |
|------|----------------------------------------|--------------------------|
| 1.1 | Traffic Control | <input type="checkbox"/> |
| 1.2 | Side Track Construction | <input type="checkbox"/> |
| 1.3 | Clearing and Grubbing | <input type="checkbox"/> |
| 1.4 | Ground Surface Treatment (Standard) | <input type="checkbox"/> |
| 1.5 | Excavation - Road Widening | <input type="checkbox"/> |
| 1.6 | Excavation - Table Drains | <input type="checkbox"/> |
| 1.7 | Excavation - Structures | <input type="checkbox"/> |
| 1.8 | Road Embankment | <input type="checkbox"/> |
| 1.9 | Levee Embankment | <input type="checkbox"/> |
| 1.10 | Backfill to Structures | <input type="checkbox"/> |
| 1.11 | Turnouts/Private Entrances | <input type="checkbox"/> |
| 1.12 | Unbound Pavements | <input type="checkbox"/> |
| 1.13 | Remove and Demolish Culverts/End Walls | <input type="checkbox"/> |
| 1.14 | Concrete Culvert Components | <input type="checkbox"/> |
| 1.15 | Installation of Concrete Pipe Culverts | <input type="checkbox"/> |
| 1.16 | Installation of RCBC's | <input type="checkbox"/> |
| 1.17 | End Walls & Wing Walls & Aprons | <input type="checkbox"/> |
| 1.18 | Precast Concrete End Structures | <input type="checkbox"/> |
| 1.19 | Concrete Kerb | <input type="checkbox"/> |
| 1.20 | Concrete Margins, Batters & Aprons | <input type="checkbox"/> |
| 1.21 | Stockpile Site Construction | <input type="checkbox"/> |

- | | | |
|------|---------------------------------------------|--------------------------|
| 1.22 | Bitumen Surfacing | <input type="checkbox"/> |
| 2 | Excavations/Embankments & Allotment Filling | <input type="checkbox"/> |
| 3 | Road Pavements | <input type="checkbox"/> |
| 4 | Subsoil Drainage | <input type="checkbox"/> |
| 5 | Stormwater | <input type="checkbox"/> |
| 6 | Sewerage | <input type="checkbox"/> |
| 7 | Water | <input type="checkbox"/> |
| 8 | Bitumen Sealing | <input type="checkbox"/> |
| 9 | Miscellaneous | <input type="checkbox"/> |

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H 1.1 TRAFFIC CONTROL
(For Construction Works on Existing Roads)

Construction Activity		Specified Requirements	Acceptance Criteria	Inspection and Test Requirements			Record Identification	Sign & Date for Consultant
Item	Description			Type	Method	Frequency		
1.	Traffic control plan	MRS 11.02	Trafficable width – as per Job Drawings (Sidetrack or existing road). min 7.0m after hours min 5.0m work hours Min 2 traffic controllers if width <5m or cause interference to traffic	D	Review Document	Job		
2.	Erect signs/devices	Approved traffic control plan	M.U.T.C.D.	I	Visual	Job		
3.	Construct sidetracks incl. Loc'n of services, waterway crossings etc	MRS 11.02	Prevent disruption to traffic	I	Visual	Job		
4.	Remove sidetracks	SS – Restoration	Site restored adequately	I	Visual	Job		
5.	Remove signs/devices	SS	All signs removed	I	Visual	Job		
6.	Final inspection	N/A	All works complete All specified inspections and tests complete	I	Visual	Job		

LEGEND: T Test S Surveillance W Witness Point (Council Inspection) R Review MRS Main Roads Specification
 I Inspection H Hold Point D Documentation S Supplementary Specification (Provided by Consultant)

H 1.2 SIDE TRACK CONSTRUCTION

(Item 1220)

Construction Activity		Specified Requirements	Acceptance Criteria	Inspection and Test Requirements				Record Identification	Sign & Date (Inspectorate)
Item	Description			Type	Method	Frequency	Inspectorate		
1.	Plan/design side track	MRS 11.02 Clause 5	Job Drawings - 266317, 266319-323	D	Review document	Job	PM		
2.	Locate services, mark and protect or relocate	Prevent damage	All services protected	I	Visual	Job	JF		
3.	Clear and grub	MRS 11.02 Clause 5.2	All trees, shrubs, stumps, obstructions removed. Stump holes backfilled.	I	Visual	Job	JF		
4.	Form sidetrack	Align, form and construct sidetrack in accordance with Job Drawings		I	Visual	Job	JF		
5.	Construct waterway crossings	Clause 5.4	Prevent disruption to traffic. Minimise scour.	I	Visual	Job	JF		
6.	Erect signs	Traffic control plan	MUTCD	I	Visual	Job	JF		
7.	Final inspection	N/A	All work complete All specified inspections and tests complete	I	Visual	Job	AS		

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H 1.3 CLEARING AND GRUBBING
 (For Construction Works on Existing Roads)

Construction Activity		Specified Requirements	Acceptance Criteria	Inspection and Test Requirements			Record Identification	Sign & Date for Consultant
Item	Description			Type	Method	Frequency		
1.	Identify limits of clearing	(As per issued drawings and Prestart Meeting Minutes)	Extent of work to be marked. Services located. Trees to be preserved marked.	I	Visual	Job		
2.	Remove obstructions, clear and grub		All trees, shrubs, stumps, obstructions removed. Stump holes backfilled.	S	Visual	Job		
3.	Surface trimming	Trim and lightly roll to remove irregularity	Smooth surface for slashing/mowing	I	Visual	Job		
4.	Disposal	All material disposed of as per Prestart Meeting Minutes	All material disposed of as per Prestart Meeting Minutes	I	Visual	Job		

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H 1.4 GROUND SURFACE TREATMENT (STANDARD)
 (For Construction Works on Existing Roads)

Construction Activity		Specified Requirements	Acceptance Criteria	Inspection and Test Requirements			Record Identification	Sign & Date for Consultant
Item	Description			Type	Method	Frequency		
1.	Identify and mark areas	SS, MRS 11.04 Areas below subgrade or ground surface to be compacted. Areas of embankment with reduced height. Areas of obvious vertical movement. Zone 0-300mm below natural surface to be treated.	All areas marked	I	Visual	Job		
2.	Filling holes	SS, MRS 11.04 Fill to level of surrounding ground surface	Compaction 95% RDD at 75-100% OMC	T, D	SS 10	2/1000m ²		
3.	Compaction below embankments and below allotment filling	SS Compact to specified standard in Table 3.1.14.	>95% RDD beneath allotment filling >95% RDD if ground >300mm below road subgrade >97% RDD if ground <300mm below road subgrade all at 80-100% DMC	T, D	SS 10	2/1000m ²		
4.	Minimise vertical movement below embankments/allotment filling	SS Compact to reduce vertical movement	Maximum deflection 2mm Measured from a 3m straight edge	W, T	Proof roll	Each area		
5.	Treat material in zone 0-300mm below natural surface	SS Treat all areas, if required, to achieve compaction at movement spec	Specified compaction and vertical movement	W, T	As above	2/1000m ²		
6.	Final inspection	N/A	All areas treated All specified inspections and tests complete	I	Visual	Each area		

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H 1.5 EXCAVATION – ROAD

(Item 4210)

Construction Activity		Specified Requirements	Acceptance Criteria	Inspection and Test Requirements				Record Identification	Sign & Date (Inspectorate)
Item	Description			Type	Method	Frequency	Inspectorate		
1	Set out works	Drawings	-	I	Visual	Lot	JS		
2	Excavate and dispose material		Geometrics . horizontal + 250mm; - 50mm . vertical ± 25mm . crossfall ± 0.5% Compaction - 97% RDD Vertical movement not visible	T,D	Survey	60m	AS		
						20m 20m (3pts)			
				T,D	1/1000m ³	JS			
			Vertical movement not visible	W,T	Proof roll	Lot	JS		
3	Finish batters		Free of loose material and trimmed neatly	I	Visual	Lot	JS		

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H 1.6 EXCAVATION - TABLE DRAINS

(Item 4211)

Construction Activity		Specified Requirements	Acceptance Criteria	Inspection and Test Requirements				Record Identification	Sign & Date (Inspectorate)
Item	Description			Type	Method	Frequency	Inspectorate		
1.	Set out works	Drawings	-	I	Visual	Each drain	AS		
2.	Excavate and dispose material	MRS 11.04, Cl. 6	Geometrics . Horizontal 50mm (MRS 11.04, 3.2) . Vertical 40mm (MRS 11.04, 3.3.1) . Vertical movement <15mm (MRS 11.04, 3.3.2) . Grade - continuous	T,D	Survey	1/each drain	JS		
				T,D	Survey	1/each drain	JS		
				W,T	Survey	1/each drain	JS		
				I	Visual	1/each drain	JS/AS		
3.	Finish batters	MRS 11.04, Cl. 6	Free of loose material and trimmed neatly	I	Visual	Each drain	JS		
4.	Final inspection	N/A	All work complete All specified inspections and tests complete	I	Visual	Each drain	QR		

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H 1.7 EXCAVATION – STRUCTURES

Construction Activity		Specified Requirements	Acceptance Criteria	Inspection and Test Requirements				Record Identification	Sign & Date (Inspectorate)
Item	Description			Type	Method	Frequency	Inspectorate		
1.	Set out works	Drawings	-	I	Visual	Each structure	QR/AS		
2.	Excavate and dispose material	MRS 11.04, 6 Width of excavation to be minimum necessary for construction	Geometrics . Horizontal 50mm (MRS 11.04, 3.2) . Vertical 35mm (MRS 11.04, 3.3.1) Compaction > 95% RDD to 150mm	T,D	Survey	50m	JS		
				T,D	Survey	25m (5 pts)	JS		
				T,D	SS 10	2/250m ²	JS		
3.	Final inspection	N/A	All work complete All specified inspections and tests complete	I	Visual	Each structure	QR		

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H 1.8 ROAD EMBANKMENT

(Item 4310)

Construction Activity		Specified Requirements	Acceptance Criteria	Inspection and Test Requirements				Record Identification	Sign & Date (Inspectorate)
Item	Description			Type	Method	Frequency	Inspectorate		
1	Set out works	Drawings	-	I	Survey	Lot	JS		
2	Supply, place and compact material	Material Construction Use complete layer method for OTR - uncompacted layer thickness ≤ 300mm and ≥ 150mm	Rock, OTR or mixture free of organic matter Geometrics . Horizontal +250;-50 Vertical ± 25mm	I	Visual	Lot	JS		
				T	Survey	60m	JS		
				T,D	Survey	20m (3pts)	JS		
				I	Visual	Lot	JS		
			Free draining Compaction ≥95% RDD (For embankments <0.5m high, subgrade testing only ≥97% RDD)	T,D		2/1000m ³	JS		
				T,D	Visual	1 every 200m	JS		
3	Finishing batters		Free of loose material and neatly trimmed, continue in regular lines around curves. No projections >300mm or _ height of embankment (lesser)	I	Visual	Lot	JS		

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H 1.9 LEVEE EMBANKMENT

Construction Activity		Specified Requirements	Acceptance Criteria	Inspection and Test Requirements				Record Identification	Sign & Date (Inspectorate)
Item	Description			Type	Method	Frequency	Inspectorate		
1.	Set out works	Drawings	-	I	Visual	Each levee	AS		
2.	Supply, place and compact material	Material · MRS 11.04, 8.2 Construction · MRS 11.04, 8.3 Use completed layer method for OTR - uncompacted layer thickness 300mm and 150mm Top 600mm of embankment to be predominantly OTR	Rock, OTR or mixture free of organic matter Geometrics · Horizontal 50mm (MRS 11.04, 3.2) · Vertical 40mm OTR, 75mm rock (MRS 11.04, 3.3.1) Free draining Compaction 97% RDD at 75% - 100% OMC	I T,D T,D I T,D	Visual Survey Survey Visual SS 10	Each levee 1/each levee 1/each levee Each levee 2/job	JS JS JS JS QR		
3.	Finishing batters	MRS 11.04, 8.3	Free of loose material and neatly trimmed, continue in regular lines around curves. No projections > 300mm or □ height of embankment (lesser)	I	Visual	Each levee	JS		
4.	Final inspection	N/A	All work complete All specified inspections and tests complete	I	Visual	Each levee	QR		

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H 1.10 BACKFILL STRUCTURES

Construction Activity		Specified Requirements	Acceptance Criteria	Inspection and Test Requirements				Record Identification	Sign & Date (Inspectorate)
Item	Description			Type	Method	Frequency	Inspectorate		
1	Supply material	MRS 11.04, 13 Grading linear shrinkage	Table 5	T,D	-	1/250m ³	JS		
2	Place and compact	MRS 11.04, 13.3 DOT standard drawing	≥ 95% RDD	T,D	-	N/A	JS		
3	Trim surface	Finish to subgrade shape	Shape to match subgrade	I	Visual	Each structure	JS		
4	Final inspection	N/A	All work complete All specified inspections and tests complete	I	Visual	Each structure	AS		

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H 1.11 PRIVATE ENTRANCES

(Item 4520)

Construction Activity		Specified Requirements	Acceptance Criteria	Inspection and Test Requirements				Record Identification	Sign & Date (Inspectorate)
Item	Description			Type	Method	Frequency	Inspectorate		
1.	Supply materials	N/A	No damage. Correct number	1	Visual	Each Item	JS		
2.	Carry out local excavations and utilise/dispose of excavated material		Area adequate to permit placing of all components (precast and cast in-place)	I	Visual	Lot	JS		
3.	Construct Crossover	B.S.C. Drawing A3-006134	Construct in accordance with A3-006134 and/or job drawings	1	AS	Lot	JS		
4.	Final inspection	N/A	Inverts to be 25mm below design invert level of water table at inlet and outlet points All work complete. All specified inspections completed	I	Visual	Each lot	AS		

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H 1.12 UNBOUND PAVEMENT

(Item 5100)

Construction Activity		Specified Requirements	Acceptance Criteria	Inspection and Test Requirements				Record Identification	Sign & Date (Inspectorate)
Item	Description			Type	Method	Frequency	Inspectorate		
1	Assess material source	MRS 11.05;6.2	Capable to meet spec. Has been used and/or tested previously	I,D	Visual	Each source	AS		
2	Supply material (to stockpile or pavement)		Verify suppliers own quality records				AS		
3	Spreading, compacting and trimming		No Visible movement	W,T	Visual	Each lot	JS		
		. Proof roll to check vertical movement . Place and compact over full pavement formation if traffic is to traverse out of work hours . Compliance test on lot by lot basis Geometrics .Horizontal ± 50mm .Vertical ± 25mm .Width based on depth Check Standard Drawing Compaction .All Type > 100% .(Select Fill) ≥97%W,T	I	Visual	Daily	JS			
				T,D T,D	Survey Survey	60m 20m (3pts)	JS JS		
4	Final inspection	N/A	All work complete All specified inspections and tests complete	T,D		□200m c/c	JS		
				I	Visual	Lot	AS		

LEGEND: T Test S Surveillance W Witness Point R Review DWIS Director Works and Infrastructure Services JF Job Foreman MRS Main Roads Specification
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H 1.13 REMOVE & DEMOLISH CULVERTS/END WALLS

(Item 2320)

Construction Activity		Specified Requirements	Acceptance Criteria	Inspection and Test Requirements				Record Identification	Sign & Date (Inspectorate)
Item	Description			Type	Method	Frequency	Inspectorate		
1	Identify components to be removed and demolished or re-used	MRS 11.03, 8	All identified	I	Visual	Each structure	AS		
2	Stack components to be re-used	MRS 11.03, 8	Adequate protection against damage identified	I	Visual	Each structure	JS		
3	Remove and demolish unwanted components - dispose	MRS 11.03, 8	All removed and properly disposed of	I	Visual	Each structure	JS		
4	Finish/backfill excavations	MRS 11.03, 8	Surface filled adequately	I	Visual	Each structure	JS		
5	Final inspection	N/A	All work complete All specified inspections completed	I	Visual	Each structure	AS		

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H 1.14 CONCRETE CULVERT COMPONENTS

(Items 2430, 2460, 2470)

Construction Activity		Specified Requirements	Acceptance Criteria	Inspection and Test Requirements				Record Identification	Sign & Date (Inspectorate)
Item	Description			Type	Method	Frequency	Inspectorate		
1.	Supply construction materials	MRS 11.03, 4	All meet specified requirements	I	Visual	Each item	JF/AS		
2.	Carry out local excavations and utilise/dispose of excavated material	MRS 11.03,12	Area adequate to permit cast-in-place components	I	Visual	Each item	JF		
3.	Fabricate and place steel reinforcement	MRS 11.03, 12	No. of bars, size spacing, shape	I,H	Visual	Each item	QR/AS		
4.	Place concrete	MRS 11.03, 12	-	I	Visual	Each pour	JF		
5.	Supply and place dowel bars	MRS 11.03, 12	Location, projection	I	Visual	Each item	JF		
6.	Finish and cure concrete	MRS 11.03, 12	-	I	Visual	Each item	JF		
7.	Final inspection	N/A	All work complete. All specified inspections and tests complete	I	Visual	Each culvert	QR/AS		

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H 1.15 INSTALLATION OF CONCRETE UNITS

(Item 2510, 2520)

Construction Activity		Specified Requirements	Acceptance Criteria	Inspection and Test Requirements				Record Identification	Sign & Date (Inspectorate)
Item	Description			Type	Method	Frequency	Inspectorate		
1	Purchase and supply construction units	MRS 11.03,4	All meet specified requirements	I	Visual	Each Item	AS		
2	Set out works	Drawings		I	Visual	Each structure	JS		
3	Excavate and dispose of material	Width of excavation to be minimum necessary		I	Survey	Each structure	JS		
4	Place and compact bedding material			I	Visual	Each structure	JS		
5	Lay and joint units (if situ slab required, refer to I.T.P. 6.16)		Fit of pipes, fall	I	Visual	Each structure	JS		
6	Plug holes, seal joints, cut lug and grout lugs		All holes filled and joints sealed	I	Visual	Each structure	JS		
7	Set up formwork		Dimension, location, shape	I	Visual	Each structure	JS		
8	Place finish and cure concrete		.	I	Visual	Each structure	JS		
9	Supply, place and compact backfill		If not specified in drawings, a material suitable for this purpose	I	Visual	Each structure	JS		
10	Final Inspection	N/A	All work complete. All specified inspection and tests complete	I	Visual	Each structure	JS		

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H 1.16 INSTALLATION OF RCBC's

(Item 2540)

Construction Activity		Specified Requirements	Acceptance Criteria	Inspection and Test Requirements				Record Identification	Sign & Date (Inspectorate)
Item	Description			Type	Method	Frequency	Inspectorate		
1.	Supply of RCBC components	MRS 11.03, 4	Correct number, no damage	I	Visual	Each component	PM/AS		
2.	Place culvert units on base slab	MRS 11.03, 13.3	Properly seated on continuous mortar pads	I	Visual	Each culvert	JS		
3.	Seal joints	MRS 11.03, 13.3	All points properly sealed	I	Visual	Each culvert	JS		
4.	Cut-off and grout lifting lugs	MRS 11.03, 13.3	All lugs removed and sealed	I	Visual	Each culvert	JS		
5.	Field inspection	N/A	All work complete. All specified inspections and tests complete	I	Visual	Each culvert	QR/AS		

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H 1.17 END WALLS & WING WALLS & APRONS

(Items 2710, 2720S, 2750, 2760)

Construction Activity		Specified Requirements	Acceptance Criteria	Inspection and Test Requirements				Record Identification	Sign & Date (Inspectorate)
Item	Description			Type	Method	Frequency	Inspectorate		
1.	Supply construction materials	MRS 11.03, 4	All meet specified requirements	I	Visual	Each item	JS/AS		
2.	Carry out local excavation and utilise /dispose of excavated material	MRS 11.03, 15	Area adequate to permit cast in place components	I	Visual	Each item	JS		
3.	Set up formwork	MRS 11.03, 15 drawings	Dimension, location, shape	I	Visual	Each item	JS		
4.	Fabricate and place steel reinforcement	MRS 11.03, 15 drawings	No. of bars, size, spacing, shape	I	Visual	Each item	JS/AS		
5.	Place concrete	SS 7	-	I	Visual	Each item	JS		
6.	Finish and cure concrete	MRS 11.03, 15	-	I	Visual	Each item	JS		
7.	Final inspection	N/A	All work complete. All specified inspections and tests complete	I	Visual	Each item	QR		

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H 1.18 PRECAST CONCRETE STRUCTURES

(Optional)

Construction Activity		Specified Requirements	Acceptance Criteria	Inspection and Test Requirements				Record Identification	Sign & Date (Inspectorate)
Item	Description			Type	Method	Frequency	Inspectorate		
1	Supply of end structure components		Correct number, no damage	I	Visual	Each item	AS		
2	Carry out local excavation and utilise/dispose of excavated materials		Area adequate to permit construction	I	Visual	Each item	JS		
3	Place/compact bedding			I	Visual	Each item	JS		
4	Lay and joint components		Fit of components	I	Visual	Each item	JS		
5	Mortar to holes/recesses		All holes sealed	I	Visual	Each item	JS		
6	Final inspection		All work complete. All specified inspections and tests complete	I	Visual	Each item	JS		

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H 1.19 CONCRETE KERB

(Item 3110)

Construction Activity		Specified Requirements	Acceptance Criteria	Inspection and Test Requirements				Record Identification	Sign & Date (Inspectorate)
Item	Description			Type	Method	Frequency	Inspectorate		
1.	Supply of construction materials	MRS 11.03, 4	Correct quality, no damage	I	Visual	Each item	JS/AS		
2.	Set up formwork and construction and expansion joints	MRS 11.03, 17 Drawings	Expansion joints, 20m spacing. Construction joints as shown on drawing	I	Visual	Each item	JS		
3.	Fabricate and place steel reinforcement	MRS 11.03, 17	No. of bars, size, spacing, shape	I	Visual	Each item	JS		
4.	Place concrete	MRS 11.03, 17	-	I	Visual	Each item	JS		
5.	Install contraction joints	MRS 11.03, 17	Joints, 5m spacing 40mm deep x 6mm wide	I	Visual	Each item	JS		
6.	Finish and cure concrete	MRS 11.03, 17	-						
7.	Final inspection	N/A	All work complete. All specified inspections and tests complete	I	Visual	Each item	QR/AS		

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H 1.20 CONCRETE MARGINS, BATTERS AND APRONS

(Items 3550, 3560, 3570)

Construction Activity		Specified Requirements	Acceptance Criteria	Inspection and Test Requirements				Record Identification	Sign & Date (Inspectorate)
Item	Description			Type	Method	Frequency	Inspectorate		
1.	Supply of construction materials	MRS 11.03, 4	Correct quantity, no damage	I	Visual	Each item	JS/AS		
2.	Carry out local excavation	MRS 11.03, 35	Area adequate to permit construction	I	Visual	Each item	JS		
3.	Compact material below margins, batters and aprons	MRS 11.03, 35	OTR compacted to 97% RDD	T,D	SS 10	-	JS		
4.	Set up forms	MRS 11.03, 35	Dimensions, locations, shapes	I	Visual	Each item	JS		
5.	Place concrete	MRS 11.03, 35	-	I	Visual	Each item	JS		
6.	Final inspection	N/A	All work complete. All specified inspections and tests complete	I	Visual	Each item	QR/AS		

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H 1.21 STOCKPILE SITE CONSTRUCTION

(Items 5820S)

Construction Activity		Specified Requirements	Acceptance Criteria	Inspection and Test Requirements				Record Identification	Sign & Date (Inspectorate)
Item	Description			Type	Method	Frequency	Inspectorate		
1.	Set out area	MRS 11.22, 7.1.1 . 1m from any property boundary . 3m from any road, railway, structure or watercourse . Clear of any proposed works	Area adequately located	I	Visual	Once per site	AS		
2.	Clear, grub, compact and trim	MRS 11.22, 7.2 . Clear, grub, compact and trim over full area (ref MRS 11.04) . install drains . access tracks	Area adequately cleared, grubbed compacted and trimmed	I	Visual	Once per site	JS		
3.	Construct pavement	MRS 11.22, 7.2 SS 30 . Unbound pavement type 2.4	Compaction 97% RDD Minimum compacted thickness, 100mm	T,D	SS 10	2/1000m ²	JS		
4.	Bitumen seal	MRS 11.22, 72	-	-	-	-	JS		
5.	Final inspection	N/a	All work completed. All specified inspections and tests complete	I	Visual	Each site	AS		

LEGEND: T Test S Surveillance W Witness Point R Review DWIS Director Works and Infrastructure Services JF Job Foreman MRS Main Roads Specification
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H 1.22 BITUMEN SURFACE

(Items 5620, 5630, 5670, 5680, 5690)

Construction Activity		Specified Requirements	Acceptance Criteria	Inspection and Test Requirements				Record Identification	Sign & Date (Inspectorate)
Item	Description			Type	Method	Frequency	Inspectorate		
1	Supply materials		Approved supply	I		Per load	AS		
2	Setting up		Area marked out, surface clean and services protected	I	Visual	Each area	JS		
3	Spray bitumen		Spray rates	S	Visual	During operation	AS		
4	Spread aggregate	MRS 11.11, 10 & 11 Roll @ 4800m ² /day	Spread rate, cover of surface rolling	S	Visual	During operation	AS		
5	Final inspection	N/A	All work complete. All specified inspection and tests complete	I	Visual	Each lot	AS		

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H 2 EXCAVATIONS/EMBANKMENTS & ALLOTMENT FILLING

Construction Activity		Specified Requirements	Acceptance Criteria	Inspection and Test Requirements			Record Identification	Sign & Date for Consultant
Item	Description			Type	Method	Min. Frequency		
1.	SET OUT WORKS	Drawings		I	Visual	Lot		
2.	EXCAVATION WORKS	MRS 11.04	Geometrics to Table 3.4.C horizontal +250mm, -50mm vertical see table crossfall see table Compaction to Table 3.4.B Vertical movement not visible	T D W W T D W H	Survey Stinging at Subgrade 3m straight Edge Table 3.4.D Proof roll at subgrade	As directed in SS 20m 40m (2 pts) Subgrade to pavements : 1/500m ² all roads (& allotments as per SS)		
3.	SUPPLY, PLACE AND COMPACT MATERIAL FOR ROAD EMBANKMENTS	MRS 11.04 Material Construction Use compacted layer method for other than rock (OTR)	Rock, OTR or mixture free of Organic material Geometrics to Table 3.4.C horizontal +250mm, -50mm vertical see table crossfall see table Compaction to Table 3.4.B Vertical movement not visible	I T D W W T D W H	Visual Survey Stringing at subgrade 3m straight edge Table 3.4.D Proof roll at subgrade	Lot As directed in SS 20m 40m (2 pts) 2/1000m ³ per lot all roads		

H 2 EXCAVATIONS/EMBANKMENTS & ALLOTMENT FILLING (CONT)

Construction Activity		Specified Requirements	Acceptance Criteria	Inspection and Test Requirements			Record Identification	Sign & Date for Consultant
Item	Description			Type	Method	Min. Frequency		
4.	SUPPLY, PLACE AND COMPACT MATERIAL FOR ALLOTMENTS	MRS 11.04 Material Quality Construction Use compacted layer method for other than rock (OTR)	Rock, OTR or mixture free of organic material Geometrics to Table 3.4.C horizontal +250mm, -50mm vertical see table crossfall see table free draining surface Compaction to Table 3.4.B Vertical movement not visible	I T D I T D W	Visual . Survey Visual . Table 3.4.D Proof roll at finished level	Lot . As directed in SS Total Area 2/1000m ³ per lot or 1/200mm or 1 per allotment (greater of above) allotments as per SS		
5.	SUPPLY, PLACE AND COMPACT MATERIAL FOR SPOIL AREAS	MRS 11.04 Material Quality Construction Use compacted layer method for other than rock (OTR) MRS 11.04 MRS 11.05 Material Quality	Rock, OTR or mixture free of organic material Compaction to Table 3.4.B (90% min RDD)	I T D	Visual Table 3.4.C	Lot 2/1000m ³ per lot		

H 2 EXCAVATIONS/EMBANKMENTS & ALLOTMENT FILLING (CONT)

Construction Activity		Specified Requirements	Acceptance Criteria	Inspection and Test Requirements			Record Identification	Sign & Date for Consultant
Item	Description			Type	Method	Min. Frequency		
6.	SUPPLY, PLACE AND COMPACT SUBGRADE REPLACEMENT MATERIAL	Construction Use compacted layer method for other than rock (OTR)	Type 2.5 material and free of Organics Geometrics to Table 3.4.C horizontal +250mm, -50mm vertical see table crossfall see table Compaction to Table 3.4.B Vertical movement not visible	I.T D T D W W T D W	Visual and . Table 3.4.D Survey Stringing at subgrade 3m straight edge Table 3.4.D Proof roll at subgrade	Lot As directed in SS 20m 40m(2pts) 2/1000m3 per lot all roads		
7.	FINISH BATTERS TO ALL EARTHWORKS	MRS 11.04	Free of loose material and neatly trimmed, continue in regular lines around curves. No projections >300mm or 1/3 of ht (lesser)	I	Visual	All batters		

LEGEND: T Test S Surveillance W Witness Point R Review DWIS Director Works and Infrastructure Services JF Job Foreman MRS Main Roads Specification
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H 3 ROAD PAVEMENTS

Refer Also H2 EXCAVATIONS/EMBANKMENTS & ALLOTMENT FILLING

Construction Activity		Specified Requirements	Acceptance Criteria	Inspection and Test Requirements			Record Identification	Sign & Date for Consultant
Item	Description			Type	Method	Frequency		
1.	Subgrade Assessment	Sample and test at subgrade level as per Clause 3.3.2	Documented test results lodged with pavement design.	T,D	Table 3.4.D	As per Cl.3.3.2		
2.	Pavement Design	Consultant to lodge in accordance with Section 3.3 of Manual.	Council Approval	W H				
3.	Assess material source and material quality of subbase and base course layers.	MRS 11.05 Quarry source to be verified. Quarry production test results to be reviewed prior to delivery to site. Total Rd length for constr'n >1000m Sample from delivery stockpile Total Rd length for constr'n <1000m Quarry QA testing only.	Quarry to be approved by Council. (Rock quality testing may be required by Council.) Tests to satisfy grading, Soaked CBR and Atterberg limits All testing within specified limits	H T,D T,D	As per MRS 11.05 As per MRS 11.05 As per MRS 11.05	To be advised 2/1000m ³ or part thereof.		
4.	Spreading, compacting and trimming of subbase layer	MRS 11.05	Geometrics to tolerances in Table 3.4.C Crossfall Compaction to Table 3.4.B All mat'l min100% RDD No visible movement from proof roll	T,D W W T,D W	Survey String 3m straight edge Table 3.4.D Proof roll	Refer SS 20m 40m (2 pts) 1/100m or 1/200m ³ or 1/200mm layer/1000m ² (greater of) all roads		
5.	Spreading, compacting and trimming of base layer	MRS 11.05 (Preseal inspection)	Geometrics to tolerances in Table 3.4.C Crossfall Compaction to Table 3.4.B All mat'l min100% RDD No visible movement from proof roll Surface to be tight, free of loose mat'l, uniform texture and no laminations.	T,D W W T,D W W	Survey String 3m straight edge Table 3.4.D Proof roll Visual	Refer SS 20m 40m (2 pts) 1/100m or 1/200m ³ or 1/200mm layer/1000m ² (greater of) all roads all roads		

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H 4 SUBSOIL DRAINAGE

Construction Activity		Specified Requirements	Acceptance Criteria	Inspection and Test Requirements			Record Identification	Sign & Date for Consultant
Item	Description			Type	Method	Frequency		
1.	Select appropriate subsoil type to suit adjoining ground	Standard Drawing 50411 (ref ARRB <u>Subsurface drainage of road structures</u>)	Subsoil geotextile not to clog with fines. Fines not able to pass into pipe					
2.	Set out, excavate for and dispose of excavated mat'l	Standard Drawing 50411 and drawings	Correct horizontal and vertical position with respect to kerb					
3.	Install subsoil	Standard Drawing 50411 Manufacturers dir'ns for geocomposite fin drain	. Filter material meets grading 10 to 20mm screenings in Type1 sand in types 2 and 3 . pipe/drain bedded properly and evenly graded . Geotextile satisfies Table 1 . Outlets at max 200m and correct joining to outlet pits . Flushing points at max 60m ctrs, and with correct access fittings Subsoil drain is free draining	I T,D I D I I	Visual Table 3.4.4 Visual Mat'l test details Visual Visual	Stockpile Stockpile Each line Manufacturer to supply Each pit Each line		
4.	Flush and test subsoil	Flush all subsoil drains Flush from d/s FPt and work up stream checking outlet.		W	Visual	Each line		

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H 5 STORMWATER DRAINAGE

(Refer Miscellaneous)

Construction Activity		Specified Requirements	Acceptance Criteria	Inspection and Test Requirements			Record Identification	Sign & Date for Consultant
Item	Description			Type	Method	Frequency		
1.	EXCAVATION FOR DRAINAGE LINES /CULVERTS a. Set out works	Drawings		I	Visual	Each line or structure		
		Clause 3.5.4 and Standard Dwgs for trench widths	Geometrics Clause 3.5.12 . Horizontal . Vertical Sound Base to trench	I	Visual	Each line or structure		
				I	Visual	Each line or structure		
2.	PIPE BEDDING	Clause 3.5.5 and Standard Dwg 50510	Bedding material quality to Std Dwg 50510 Compaction adequate Clause 3.5.5.4	I	Visual	Each line or structure		
				I	Visual	Each line or structure		
3.	PIPE SUPPLY, LAYING AND JOINTING	Clause 3.5.6 to 3.5.13 Drawings	. Pipes in sound cond'n, free of any prod'n or delivery defects . Pipe class correct . Pipes layed to line and level Within tolerances in clause 3.5.12 . External bands in place RC fljt only . External jts of box culverts bandaged . Lifting holes RC units filled . Joint recesses of RC pipes mortared (NB All pipe jts to be Inspected and approved by Consultant prior to Backfilling)	I	Visual	All pipes		
				I	Visual	All pipes		
				T,D	Survey	All lines		
				I	Visual	All pipes		
				I	Visual	All pipes		
				I	Visual	All pipes		
				I	Visual	All pipes		

H 5 STORMWATER DRAINAGE (CONT)

(Refer Miscellaneous)

Construction Activity		Specified Requirements	Acceptance Criteria	Inspection and Test Requirements			Record Identification	Sign & Date for Consultant
Item	Description			Type	Method	Frequency		
5.	RESTORATION	Clause 3.5.15 Finish to subgrade level as applicable. Trim to match adjoining ground profiles. Top dressed and grassed (park/footpaths) Clause 3.8.3	Topsoil 100mm thick and 80% grass coverage	I	Visual	Lot		
6.	KERB AND CHANNEL	Clause 3.5.17 . Minimum pavement beneath 75mm Type 2.4 + S/grade Replacement as applic. . Concrete Grade Ordered . Alignment and level . Joints at prescribed intervals . Water test kerb less than 1% . Water test kerb less than 1%	Confirm depth of pavement Delivery docket req'd Check	I	Visual	Lot		
				I	Visual	All areas other than roads		
				W,D	Visual	40m intervals		
				D	Survey	Each delivery		
				S,D		SS for requirements		
				I		All		
				W,D	Visual	All		
				W,D	Visual	All		
7.	GULLIES, MANHOLES AND OTHER STRUCTURES	Clause 3.5.16 and Standard Drawings	Concrete to comply with minimum compressive strength requirements 25 Mpa Interior to be plastered and sealed Base to benched and rendered Smooth Side drain connections fitted with caps and frog-flaps	I, D, T	Visual, Test cylinders	1/15m ³		
				I	Visual	Each pit		
				I	Visual	Each pit		
				I	Visual	Each pit		

LEGEND: T Test S Surveillance W Witness Point (Council Inspection) R Review MRS Main Roads Specification
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H 6 SEWERAGE

Construction Activity		Specified Requirements	Acceptance Criteria	Inspection and Test Requirements			Record Identification	Sign & Date for Consultant
Item	Description			Type	Method	Frequency		
1.	EXCAVATION FOR SEWERAGE LINES a. Set out of works b. Excavate and dispose of material	Drawings Clause 3.7.16 & 3.7.17, and Standard Drawings for trench widths	Geometrics . Horizontal (compliance with alignment on drawings). . Vertical (compliance with design grade) Sound Base of trench.	I I I	Visual Visual Visual	Each line Each line Each line		
2.	PIPE BEDDING	Clause 3.7.18 & 3.7.19 and Standard Drawings	Bedding material to comply with 3.7.18 with type of construction to be as directed in accordance with 3.7.19 Adequate compaction	I I	Visual Visual	Each line Each line		
3.	NON-PRESSURE PIPES SUPPLY, LAYING AND JOINTING	Clause 3.7.20 and Drawings	. Pipes in sound condition, free of any defects. . Pipe class correct . Pipe laid within 150mm of line . Pipe laid at greater than minimum grades and must carry design flows. Pipes retain circular cross-section. Pipes resist infiltration. Pipes are laid straight and free of Debris	I I I W, T W, T, D W,T	Visual Visual Visual Ovality Test Clause 3.7.30.4 Pressure Test Clause 3.7.30 Mirror Test	Each line Each line Each line Each line Each line Each line		
4.	PRESSURE PIPES SUPPLY, LAYING AND JOINTING	Clause 3.7.21 and Drawings	Pipes in sound condition, free of any defects. Pipe class correct Pipe laid within 150mm of line Pipe laid with minimum cover Clause 3.7.6.6 Pipes and fittings carry design loads without loss	I I I W, T, D	Visual Visual Visual Pressure Test, Clause 3.7.32	Each line Each line Each line Each line		

H 6 SEWERAGE (CONT)

Construction Activity		Specified Requirements	Acceptance Criteria	Inspection and Test Requirements			Record Identification	Sign & Date for Consultant
Item	Description			Type	Method	Frequency		
5.	PRESSURE PIPE FITTINGS	Clause 3.7.7, 3.7.8, 3.7.9, 3.7.10, 3.7.11 & 3.7.12	Fittings in sound condition, free of any defects. Fittings installed in accordance with manufacturers requirements. Fittings installed in correct location, within 150mm of design. Thrust Blocks installed in all required locations	I I I I	Visual Visual Visual Visual	Each fitting Each fitting Each fitting Each fitting		
6.	BACKFILLING	Clause 3.7.22	Backfill material is suitable. Compaction is adequate: (a) Under roads min 100% RDD (b) Elsewhere min 95% RDD for cohesive material or 65% RDD for non-cohesive Material	I, T, D T, D T, D	Visual Table 3.7D Table 3.7D Table 3.7D	Lot 1/50m of line 1/100m of line		
7.	MANHOLE-CAST INSITU	Clause 3.7.24, 3.7.26 & 3.7.27 and Standard Drawings	Concrete to comply with minimum compressive strength requirements.32 Mpa. Interior to be plastered and sealed. Base to be benched and rendered smooth Concrete surround to placed and sealed 50mm proud of surrounding surface. Manhole sealed against infiltration	I, T W W W W, T, D	Visual, Test cylinders Visual Visual Visual Visual, Clause 3.7.31	1 test/five manholes Each manhole Each manhole Each manhole Table 3.7H		
8.	MANHOLE – PRECAST	Clause 3.7.25, 3.7.26 & 3.7.27 and Standard Drawings	All components to be placed and joined in accordance with manufacturers requirements. Base to be benched and rendered smooth Concrete surround to placed and sealed 50mm proud of surrounding surface. Manhole sealed against infiltration	I W W W, T, D	Visual Visual Visual Visual, Clause 3.7.31	Each manhole Each manhole Each manhole Table 3.7H		

H 6 SEWERAGE (CONT)

Construction Activity		Specified Requirements	Acceptance Criteria	Inspection and Test Requirements			Record Identification	Sign & Date for Consultant
Item	Description			Type	Method	Frequency		
9.	PUMP STATIONS	Clause 3.7.28 & 3.7.29 and Drawings	Concrete to comply with the minimum compressive strength requirements 40 Mpa. Interior of the well to be plastered and sealed. Base to be benched and rendered smooth. Pump rates to match design, functioning alarms, telemetry, switching.	I, T, D W, T, D W W, T, D	Visual, Test cylinders. Visual, Manufacturers tests. Commissioning test. Clause 3.9.10, 3.10.3 (Checklist)	Two tests/well Each well Each well Each well		

LEGEND: T Test S Surveillance W Witness Point (Council Inspection) R Review MRS Main Roads Specification
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H 7 WATER RETICULATION

Construction Activity		Specified Requirements	Acceptance Criteria	Inspection and Test Requirements			Record Identification	Sign & Date for Consultant
Item	Description			Type	Method	Frequency		
1.	EXCAVATION FOR DRAINAGE LINES /CULVERTS a. Set out works b. Excavate and dispose material	Drawings Clause 3.6.16 and 3.6.17 and Standard Dwgs for trench widths	Geometrics . Horizontal (must remain within service alloc'n) . Vertical min grade and cover Sound Base to trench	I I I	Visual Visual Visual	Each line Each line Each line		
2.	PIPE BEDDING	Clause 3.6.18, 3.6.19 and Standard Dwgs	Bedding material quality to Table 3.6B Compaction adequate	I I	Visual Visual	Each line Each line		
3.	PIPE SUPPLY, LAYING AND JOINTING	Clause 3.6.20 Drawings	. Pipes in sound cond'n, free of any prod'n or delivery defects . Pipe class correct . Pipes layed to line and level	I I I	Visual Visual Visual	Each line Each line Each line		
4.	BACKFILLING	Clause 3.6.21 and Standard Drawings. Backfill and compact in layers <200mm	Backfill material quality (a) Road crossings CBR 15 Type 2.5 Mat'l (b) Other areas Compaction adequate Table 3.6.C (a) Roads/footpaths min 100% RDD (b) Other areas min 95% RDD	T, D I T, D T, D	Table 3.4.D (Soaked CBR) Visual Table 3.4.D Table 3.4.D	1/Lot All 1/50m 1/100m		
5.	RESTORATION	Standard Drawings Finish to subgrade level as applicable (new roads) Finish to match exist road level as applicable. Trim to match adjoining ground profiles. Top dressed and grassed (park/footpaths) Clause 3.8.3	Topsoil 100mm thk and 80% grass coverage	I	Visual	All		

H 7 WATER RETICULATION (CONT)

Construction Activity		Specified Requirements	Acceptance Criteria	Inspection and Test Requirements			Record Identification	Sign & Date for Consultant
Item	Description			Type	Method	Frequency		
6.	FITTINGS	Clause 3.6.6, to 3.6.3.6.13 and Drawings	Fittings in sound condition, free of any defects. Fittings installed in accordance with manufacturers requirements. Fittings installed in the correct location, within 150mm of design. Thrust Blocks installed in all required locations.	I I I I	Visual Visual Visual Visual	Each fitting Each fitting Each fitting Each fitting		
7.	SURFACE LOCATION MARKERS	Clause 3.6.23 and Standard Drawings	Location markers are in place and comply with the drawings	W	Visual	Each valve & Hydrant		
8.	PRESSURE TESTING	Clause 3.6.28, 3.6.29	All mains shall carry the design pressure without loss	W, T, D	Pressure Test 1300 Kpa for 1 hour	Each line		
9.	STERILISATION OF MAINS	Clause 3.6.30, 3.6.31 & 3.6.32	All mains are to be sterilised before connection to Council's mains	W, T, D	Water samples to comply with Table 3.6E	Each line		

LEGEND: T Test S Surveillance W Witness Point (Council Inspection) R Review MRS Main Roads Specification
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H 8 BITUMEN SEALING

Construction Activity		Specified Requirements	Acceptance Criteria	Inspection and Test Requirements			Record Identification	Sign & Date for Consultant
Item	Description			Type	Method	Frequency		
1.	PRESEAL INSPECTION	Refer Road Pavements		H				
2.	SEAL DESIGN	Design bitumen seal to Austroads Procedure	Council approval of design	H				
3.	SETTING OUT	MRS 11.11 Sufficient marks for control		I	Visual	All		
4.	PRIMING	MRS 11.11 Apply asap after preseal and design approval Broom surface and lightly water Temperature and weather checks Application of prime coat. Traffic to be kept off where practical.	Surface cleaned and lightly watered. Temperature within limits Not Raining	S,D	Visual	All		
5.	BINDER APPLICATION	MRS 11.11 and SS for period between prime and seal (otherwise 5 days)	Temperature within limits Not Raining	S,D	Visual	All		
6.	AGGREGATE APPLICATIONS	MRS 11.11 and MRS 11.22 for material quality. SS for precoating details 16mm nominal size initial appliv'n 10mm nominal size	Aggregate meets quality requirements Applied not greater than 15mins after spraying seal Small gaps left after initial application. Roll 4 times.	T,D S,D	MRS 11.22 Visual	1/Lot All		
7.	REMOVAL OF EXCESS COVER AGGREGATE	MRS 11.11	Excess aggregate broomed off and removed	I	Visual	All		
8.	ASPHALT	MRS 11.30 & 11.33 & Clause 2.4.7	Asphalt thickness shall be in accordance with Clause 2.4.7 Asphalt material shall be comply with specification Asphalt density to comply with specification	I T, D T, D	Visual MRS 11.30 & 33 MRS 11.30 & 33	All 1/lot 1/lot		

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H 9 MISCELLANEOUS

(Dams, Table Drains, Culvert Inlet/Outlet Channels, Road Crossing Conduits)

Construction Activity		Specified Requirements	Acceptance Criteria	Inspection and Test Requirements			Record Identification	Sign & Date for Consultant
Item	Description			Type	Method	Frequency		
1.	FILLING EXISTING DAMS	Drawings Clause 3.4.5.1 Earthworks as per allotment fill MRS 11.04	Drained and cleaned Compaction as per allotment fill Table 3.4.B Geometrics as per allotment fill	I T,D I	Visual Table 3.4.D Visual	Each dam Refer SS Each dam		
2.	TABLE DRAIN CONST'N a. Set out works b. Excavate and dispose material c. Neatly trim batters	Drawings MRS 11.04 MRS 11.04	Geometrics Table 3.4.C . Horizontal ± 40 mm .Grade Continuous and free draining. Free of loose material, suitable for topdressing and grassing	I T,D I I	Visual Survey Visual Visual	Lot Refer SS Lot Lot		
3.	CULVERT INLET/OUTLET CHANNELS a. Set out works b. Excavate and dispose material c. Neatly trim batters	Drawings MRS 11.04 MRS 11.04	Geometrics Table 3.4.C . Horizontal ± 40 mm .Grade Continuous and free draining. Free of loose material, suitable for topdressing and grassing	I T,D I I	Visual Survey Visual Visual	Lot Refer SS Lot Lot		
4.	ROAD CROSSING CONDUITS	Clause 3.4.12 and Standard Drawings 50605 and 50606	. Correct conduit mat'l and dia. . Correct horizontal and vertical alignment before backfilling. . Conduits clean internally . Backfill mat'l suitable (sand or approved), CBR 15 plug . Backfill compacted to min density index 70 or 100% std . Kerb markers installed	I I W,D I T,D W,D	Visual Visual Rodding/mirror test Visual Visual Table 3.4.D Visual	All All 2 out of 10. All 1/50m/mat'l type All		

LEGEND: T Test S Surveillance W Witness Point (Council Inspection) R Review MRS Main Roads Specification
I Inspection H Hold Point D Documentation SS Supplementary Specification (Provided by Consultant)