

NEC4

Term Maintenance Contract

Scope S2200 Client's service specification and drawings

**Appendices to the Specification
DN581359**

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Appendix 0/1 - Contract-Specific Additional, Substitute and Cancelled Clauses, Tables and Figures Included in this Contract

1. Refer to Series 000 – Introduction

Appendix 0/2 - Contract-Specific Minor Alterations to Existing Clauses, Tables and Figures Included in this Contract

1. PART A: VOLUME 1 SPECIFICATION

Clause No. (etc.)	Alterations to be made
None	

2. PART B: VOLUME 2 NOTES FOR GUIDANCE ON THE SPECIFICATION FOR HIGHWAY WORKS

Clause No. (etc.)	Alterations to be made
None	

Appendix 0/3 - List of Numbered Appendices Referred to in the Specification and Included in this Contract

1. Appendix 0/3 is comprised of two lists, A and B, of Numbered Appendices as follows: -
2. List 'A' is a complete list of the Numbered Appendices referred to in the Specification for Highway Works with those not adopted marked 'Not Used'. Those identified by the letters T or C shall be completed by the Tenderer or Contractor respectively.
3. List 'A': List of Numbered Appendices Referred to in the Specification for Highway Works and included in this contract.

Page No.	Completed By	Appx No.	Title
		0/1	INTRODUCTION
		0/2	Contract-Specific Additional, Substitute and Cancelled Clauses, Tables and Figures Included in this contract
		0/3	Contract-Specific Minor Alterations to Existing Clauses, Tables and Figures Included in this contract
		0/4	List of Numbered Appendices Referred to in the Specification and Included in this contract
		0/5	List of Drawings included in this contract Not used
			PRELIMINARIES
		1/1	Not used
		1/2	Not used
		1/3	Not used
		1/4	Not Used
		1/5	Testing to be Carried Out by the Contractor Supply and Delivery of Samples to the Service Manager
		1/6	Site Extent and Limitations of Use
		1/7	Not used
		1/8	Control of Noise and Vibration
		1/9	Not used
		1/10	Not used
		1/11	Not used
		1/12	Programme of Works
		1/13	Not used
		1/14	Not used
		1/15	Not used
		1/16	Traffic Safety and Management
		1/17	Not used
		1/18	Not used
		1/19	Not used
		1/20	Not used
		1/21	Not used
		1/22	Not used
		1/23	

4. List 'A': List of Numbered Appendices Referred to in the Specification for Highway Works and included in this Contract (Continued).

Page No.	Completed By	Appx No.	Title
		1/24	Quality Management Systems
		1/25	Not used
		1/26	Not used
		1/27	Not used

			SITE CLEARANCE
		2/1	Not used
		2/2	Not used
		2/3	Not used
		2/4	Not used
		2/5	Not used
			FENCING AND ENVIRONMENTAL BARRIERS Fencing, Gates and Stiles
		3/1	
			SAFETY FENCES, SAFETY BARRIERS AND PEDESTRIAN GUARDRAILS
		4/1	Not used
		4/2	Not used
			DRAINAGE AND SERVICE DUCTS Not used
		5/1	Not used
		5/2	Not used
		5/3	Not used
		5/4	Not used
		5/5	Not used
		5/6	Not used
		5/7	
			EARTHWORKS Not used
		6/1	used
		6/2	Not used
		6/3	Not used
		6/4	Not used
		6/5	Not used
		6/6	Not used
		6/7	Not used
		6/8	Not used
		6/9	Not used
		6/10	Not used
		6/11	Not used
		6/12	Not used
		6/13	Not used

5. List 'A': List of Numbered Appendices Referred to in the Specification for Highway Works and included in this Contract (Continued).

Page No.	Completed By	Appx No.	Title
		7/1	ROAD PAVEMENTS – GENERAL Permitted Pavement Options Sheets 1, 2 & 3 (Renamed: Requirements for Pavements and Pavement Construction Materials)
		7/2	Excavation, Trimming and Reinstatement of Existing Surfaces (Renamed: Excavation, Trimming and Reinstatement of Existing Surfaces including Adjusting the Levels of Ironwork).
		7/3	Not used
		7/4	Bituminous sprays
		7/5	Not used

	T	7/6	Not used
		7/7	Slurry Surfacing Incorporating Microsurfacing (Renamed: Slurry Surfacing)
		7/8	Not used
		7/9	Not used
		7/10	Not used
		7/11	Not used
		7/12	Not used
		7/13	Not used
		7/14	Not used
		7/15	Not used
		7/16	Not used
		7/17	Not used
		7/18	Site Specific Details and Requirements for Cold Recycled Bitumen Bound Material
		7/19	Not used
		7/20	Not used
	T	7/21	Surface Dressing – Recipe Specification
		7/22	Refer to Clause 7307AR: Safety Defect Repair Service: Temporary Repairs to Potholes
		10/1	ROAD PAVEMENTS – CONCRETE AND CEMENT BOUND MATERIALS Not used
		11/1	KERBS, FOOTWAYS AND PAVED AREAS Kerbs, Footways and Paved Areas
		11/2	Not used
		12/1	TRAFFIC SIGNS
		12/2	Traffic signs: General Not used
		12/3	used
		12/4	Not used
		12/5	Not used
		12/6	Not used

6. List 'A': List of Numbered Appendices Referred to in the Specification for Highway Works and included in this Contract (Continued).

Page No.	Completed By	Appx No.	Title
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			ROAD LIGHTING, COLUMNS AND BRACKETS
		13/1	Not used
		13/2	Not used
		13/3	Not used
		13/4	Not used
		13/5	Not used
		13/6	Not used
			ELECTRICAL WORK FOR ROAD LIGHTING AND TRAFFIC SIGNS
			Not used
		14/1	Not used
		14/2	Not used
		14/3	Not used
		14/4	Not used
		14/5	
			MOTORWAY COMMUNICATIONS
			Not used
		15/1	Not used
		15/2	
			PILING AND EMBEDDED RETAINING WALLS
			Not used
		16/1	Not used
		16/2	Not used
		16/3	Not used
		16/4	Not used
		16/5	Not used
		16/6	Not used
		16/7	Not used
		16/8	Not used
		16/9	Not used
		16/10	Not used
		16/11	Not used
		16/12	Not used
		16/13	Not used
		16/14	Not used
		16/15	Not used
		16/16	Not used
		16/17	Not used
		16/18	
			STRUCTURAL CONCRETE
			Not used
		17/1	Not used
		17/2	

7. List 'A': List of Numbered Appendices Referred to in the Specification for Highway Works and included in this Contract (Continued).

Page No.	Completed By	Appx No.	Title
		17/3	Not used
		17/4	Concrete - General
		17/5	Not used
		17/6	Not used
			STRUCTURAL STEELWORK
		18/1	Not used
			PROTECTION OF STEELWORK AGAINST CORROSION
			Not used
		19/1	Not used
		19/2	Not used
		19/3	Not used
		19/4	Not used
		19/5	
			WATERPROOFING FOR STRUCTURES
			Not used
		20/1	
			BRIDGE BEARINGS
			Bridge Bearing Schedule
		21/1	
			PARAPETS Not used
		22/1	
			BRIDGE EXPANSION JOINTS AND SEALING OF GAPS
			Not used
		23/1	Not used
		23/2	
			BRICKWORK, BLOCKWORK AND STONework
			Not used
		24/1	
			SPECIAL STRUCTURES
			Not used
		25/1	Not used
		25/2	Not used
		25/3	Not used
		25/4	Not used
		25/5	
			MISCELLANEOUS
			Not used
		26/1	Not used
		26/2	Not used
		26/3	

8. List 'A': List of Numbered Appendices Referred to in the Specification for Highway Works and included in this Contract (Continued).

Page No.	Completed By	Appx No.	Title
	C	30/1	LANDSCAPE AND ECOLOGY General, sheets 1, 2 & 3 (Renamed: General)
		30/2	Not used
		30/3	Not used
		30/4	Not used
		30/5	Not used
		30/6	Planting, sheets 1 & 2 (Renamed: Planting)
		30/7	Not used
		30/8	Not used
		30/9	Not used
		30/10	Not used
		30/11	Not used
		30/12	Not used

9. List 'B': Contract-specific Numbered Appendices devised for this Contract.

Page No.	Completed By	Appx No.	Title
		78/1	WINTER SERVICE Winter Service 2022/2023
		78/2	Not used
		78/3	<i>Client's</i> Winter Fleet
		78/4	Fleet Allocations at Depots for the Winter of 2022/2023
		78/5	Not used
		78/6	Not used
		78/7	Provision of Winter Weather Forecasts
		78/8	Maintenance of the <i>Client's</i> Winter Fleet – Supplementary Requirements

Appendix 1/5 - Testing to be Carried out by the *Contractor*

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
Series 300 - Fencing					
306	Permanent fencing				Quality management scheme applies
	Concrete components	Cover to reinforcement	1 per consignment (maximum 1 per 100 components) (BS 1722)		
308	Gates and stiles				Quality management scheme applies
	Reinforced concrete posts	Cover to reinforcement	1 per consignment (maximum 1 per 100 components) (BS 3470)		
308 & 311	Preservation of timber	Full sapwood penetration	As required in sub-Clause 311.2(v)	Required for each batch	Quality management scheme applies

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
Series 400 – Road Restraint Systems (Vehicle and Pedestrian)					
402	Welding	Welding procedures (Manufacturer's tests)	(Every seven years)	Required	Requirements here are applicable only to legacy systems not falling under the Construction Products Regulations (CPR) Quality management scheme applies
		Welder qualification (Manufacturer's tests)	As required in Sub-Clause 402.7(iii)		
		Production testing (Manufacturer's tests)	As required in Sub-Clause 402.7(iv)		
	Welded Joints	Destructive testing	Sub-Clause 402.7(v) and 402.7(vi)		
403	Anchorage and attachment systems for use in drilled holes	Ultimate tensile load (Manufacturer's tests)		Required	To provide well attested and documented evidence
404	Anchorage in drilled holes	Loading test on Site	As required in contract specific Appendix 4/1	Required	
	Post Foundations			Required	
406	Vehicle parapets			Required	Quality management scheme applies.- applicable only to legacy systems not falling under the CPR
407	Anchorage and attachment systems for use in drilled holes	Ultimate tensile load (Manufacturer's tests)		Required	To provide well attested and documented evidence for legacy systems not falling under the CPR.
409	Vehicle parapet components			Required	.
	General				In accordance with manufacturers installation manual
	Legacy Systems	Static Destructive Testing			Acceptance criteria in BS 6779-1 clause 9.4.3.2.6.3
410	Anchorage in drilled holes	On-site tensile load test	As required in contract specific Appendix 4/1	Required	†

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
Series 400 – Road Restraint Systems (Vehicle and Pedestrian) Continued					
411	Pedestrian Parapets and Guardrails		Manufacturer's tests: yield/proof strength of material, ultimate strength and the extension at break		N

Clause	Work, Goods or Material		Test	Frequency of Testing	Test Certificate	Comments		
Series 500 – Drainage and Service Ducts								
501	Pipes for drainage and service ducts					Production certification scheme or equivalent applies for products not falling under the Construction Products Regulations (CPR)		
	Vitrified clay							
	Concrete-PC/SRC	Not exceeding 900 mm dia						
	Concrete-Prestressed							
	Iron-cast							
	Iron – ductile							
	PVC-U							
	GRP							
	Plastics see Table 5/1							
	Corrugated Steel		(Manufacturers tests)				Required (AASHTO)	
	Corrugated steel bitumen protection	Not exceeding 900 mm dia						
	Other materials				Required	Product acceptance scheme or equivalent applies		

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
Series 500 (continued) – Drainage and Service Ducts					
503	Pipe bedding	Grading and fines content	1 per two weeks (minimum of 3)	Required (BS EN 13242)	Results of routine control tests from the factory production control system operated by the producer to be provided – See Annex C of BS EN 13242
		Water-soluble sulphate (WS) content (N)	5 per source		
		Oxidisable sulfides (OS) content and total potential sulphate (TPS) content (N)	5 per source		
		Resistance to fragmentation (N)	1 per source		CE Mark Certificate to be provided. If not available, test certificates to be provided for resistance to freezing and thawing (magnesium sulfate soundness) as per frequency

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
Series 500 (continued) - Drainage and Service Ducts					
505	Filter medium backfill	Plastic index (N)	1 per source	Required (BSEN 13242)	Results of routine control tests from the factory production control system operated by the producer to be provided – See Annex C of BS EN 13242 and Annex D of BS EN 13285
		Resistance to fragmentation (N)	1 per source		
		Water-soluble sulphate (WS) content (N)	5 per source		
		Oxidisable sulphides (OS) content and total potential sulfate (TPS) content (N)	5 per source		
		Grading	1 per 250 tonnes		
		Permeability (N)	1 per source		
506	Sealing existing drains				
	Concrete				
	Grout				
507	Chambers				
	Precast concrete				Product certification scheme applies
	Corrugated galvanized steel	(Manufacturer's tests)		Required	Product certification scheme applies
	Manhole steps				
	Steel fitments				
	Covers, grates and frames				Product certification scheme applies
	Cover bolts				Quality Management scheme applies
508	Gullies and pipe junction				For products not falling under the (CPR) product certification scheme or equivalent applies
	Precast concrete				
	Clay				
	Cast iron and steel				

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
Series 500 (continued) - Drainage and Service Ducts					
509	Watertightness of joints	Air test	All pipelines with watertight joints	Required	
512	Backfill to pipe bays	Grading	1 per 50 tonnes (min of 3)	Required	CE Mark Certificate to be provided. If not available test certificates to be provided for resistance to freezing and thawing (magnesium sulfate soundness) as per frequency
		Water-soluble sulfate (WS) content (N)	5 per source		
		Oxidisable sulphides (OS) content and total potential sulphate (TPS) content (N)	5 per source		
513	Permeable backing to earth retaining structures	Plastic Index (N)	1 per source		
		Water-soluble sulfate (WS) content (N)	5 per source		
		Oxidisable sulphides (OS) content and potential sulfate (TPS) content (N)	5 per source		
		Resistance to fragmentation (N)	1 per source		
		Grading	1 per 200 tonnes (min of 3)		
		Permeability (N)	1 per source		
	Precast hollow concrete blocks	(Manufacturer's tests)		Required	
514	Fin Drains	(Manufacturer's tests)		Required	Product acceptance scheme or equivalent applies

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
Series 500 (continued) - Drainage and Service Ducts					
515	Narrow filter drains			Required	
		Geotextile, pipe and fittings	(Manufacturer's tests)	Required	
		Granular Fill	Plastic index (N)		
			Resistance to Fragmentation (N)		
			Water-soluble sulphate (WS) content (N)		
			Oxidisable sulphides (OS) content and total potential sulphate (TPS) content (N)		
			Grading		
			Permeability (N)		
516	Combined drainage and kerb systems	Load Test	A minimum of 1 test and not less than 1 test per 1000m for each type and source	Required	
517	Linear Drainage System	Load Test			
518	Thermoplastics structured wall pipes and fittings	(Manufacturer's tests)		Required	Product certification scheme applies

Clause	Work, Goods or Material		Test	Frequency of Testing	Test Certificate	Comments
Series 600 – Earthworks						
601, 631 to 637 640	Acceptable				Required	
	Class	General Description				
	1	Granular fill	Grading/uniformity coefficient	Before import then twice a week thereafter*		
			mc/MCV (N)	2 per 1000 m3 up to max of 5 per day		
			SMC of Chalk (N)	Twice a week		
			Drained shear parameters (N)	Before import then twice a week thereafter		
		1C only	Resistance to Fragmentation (N)	Weekly		For suite refer to Contract Specific Appendices 6/14 and 6/15
	2	General cohesive fill	Grading	Twice a week	Required	Cross-reference shall be made to any requirements in Contract Specific Appendix 6/1
			mc/MCV/PL Undrained Shear Strength (N)	2 per 1000 m3 up to max of 5 per day		
			Bulk density (pfa) (N)	2 per 1000 m3 up to max of 5 per day		
	3	General chalk fill	mc (N)	2 per 1000 m3 up to max of 5 per day		
			SMC (N)	Daily		
	4	Landscape fill	Grading/mc/MCV (N)	Daily		For suite refer to Contract Specific Appendices 6/14 and 6/15
	5	Topsoil	Grading	Daily		For suite refer to Contract Specific Appendices 6/14 and 6/15

Clause	Work, Goods or Material		Test	Frequency of Testing	Test Certificate	Comments
Series 600 (continued) - Earthworks						
	Class	General Description				
601, 631 to 637 640	6	Selected Granular Fill	Grading / uniformity coefficient	1 per 400 tonnes	Required	
			PI/LL (N)	Daily		
			Resistance to Fragmentation (N)	Weekly for on site material		LA category but not for 6F4 and 6F5
			omc/mc, mc or MCV (N)	1 per 400 tonnes		Not for class 6F4 and 6F5
			Organic matter / water soluble sulphate (WS) (N)	Weekly		At least 5 tests per source for sulphur compounds over the course of the contract in accordance with TRL Report 447, tests 1-5
			pH/chloride ion content (N)	Weekly		
			Oxidisable sulphide (OS) content and total potential sulphate (TPS) content (N)	Weekly		
			Resistivity (N)	1 per 1000 tonnes		Cross reference shall be in accordance with requirements in Contract Specific Appendix 6/1 For suite refer to Contract Specific Appendices 6/14 and 6/15
			Undrained and drained shear parameters (N)	1 per 400 tonnes		

Clause	Work, Goods or Material		Test	Frequency of Testing	Test Certificate	Comments
	Class	General Description				
601, 631 to 637 640	6F2, 6F4 and 6F5	Capping	Size designation and overall grading category	1 per week	Required	Results of routine control tests from the factory production control system operated by the producer to be provided for Class 6F5 – see Annex C of BS EN 13242 and Annex D of BS EN 13285
			Maximum fines and oversize category	1 per week		
			Volume stability of blast furnace slag	6 monthly		
			Volume stability of steel (BOF and EAF) slag	6 monthly		For suite refer to Contract Specific Appendices 6/14 and 6/15
			Other aggregate requirements	Annex C of BS EN 13242		
			Laboratory dry density and optimum water content			
			Water content			
	7	Selected cohesive fill	Grading/mc/MCV/bulk density (N)	1 per 400 tonnes	Required	Declared values from the factory production control system operated by the producer to be provided for Class 6F4 and Class 6F5-see Annex D of BS EN 13285
			SMC of chalk (N)	Twice a week		
			PI/LL (N)	Daily		
			Organic matter / water soluble sulphate (WS) (N)	Twice a week or daily when Sulphides are expected		At least 5 tests per source for sulphur compounds over the course of the contract in accordance with TRL. Report 447, tests 1-5
			Oxidisable sulphides (OS) content and total potential sulphate (TPS) content	Twice a week or daily when Sulphides are expected		At least 5 tests per source for sulphur compounds over the course of the contract
			pH/chloride ion content (N)	Weekly		
			Resistivity (N)	As required		
			Undrained and drained shear parameters (N)	As required		Cross reference is made to Contract Specific requirements in Contract Specific Appendix 6/1

			Permeability (N)	As required		
Clause	Work, Goods or Material		Test	Frequency of Testing	Test Certificate	Comments
Series 600 (continued) - Earthworks						
	Class	General Description				
601, 631 to 637 640	8	Miscellaneous fill	mc/MCV (N)	Daily	Required	Testing to be in accordance with Contract Specific Appendix 6/1
	9	Stabilised materials	Pulverisation	1 per lane width per 200 m length		
			mc/MCV (N)			
			Bearing ratio (N)			
	Pulverised fuel ash		Chemical analysis	1 per consignment		
	Furnace bottom ash		Grading	1 per 300 tonnes		
	Fill adjacent to cementitious material or metallic items		Water soluble sulfate (WS) content, oxidisable sulphides (OS) content and total potential sulfate (TPS) content (N)	1 per 400 tonnes or per location if less than 400 tonnes		At least 5 tests per source for sulfur compounds BS EN1744-1 clause 10, clause 11, clause 13
602	Earthworks material within 450mm of road surface beneath surface of a road or paved central reserve		Frost heave (N)		Required	
	(i) Imported onto site			1 every four months		
	(ii) On site source			As required		
609 621	Geotextiles, Geogrids and basal reinforcement		Tensile load	1 per 400 square metres	Required	Requirements shall be in accordance with Contract Specific Appendix 6/5 or 6/9 as appropriate
			Permeability	1 per 400 square metres		
			Pore size	1 per 400 square metres		
			Elongation	1 per 400 square metres		
			Tensile strength of seams and joints	1 per 400 square metres		
			Static puncture	1 per 400 square metres		

		Durability	1 per 400 square metres		
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Clause	Work, Goods or Material		Test	Frequency of Testing	Test Certificate	Comments
Series 600 (continued) - Earthworks						
612	Compaction of fills				Required	
		Method compaction	Field dry density (N)	As required		
		End product compaction	Optimum mc (2.5kg rammer/vibrating hammer method) (N)	Each class or sub-class of material		
			Field dry density (N)	1 per 400 tonnes		
614	Cement stabilisation to form capping		Rate of Spread of cement	1 per 500 square metres of cement spread	Required	
615,641, 643	Lime stabilisation to form capping		Rate of spread of lime	1 per 500 square metres of lime spread	Required	
			Available lime content	Each source of lime weekly during stabilisation operation		
622,638, 639	Earthworks for reinforced soil and anchored earth structures		Redox potential	5 locations within the affected area	Required	
		Drainage layers	Grading	1 per 400 tonnes		
			Chemical analysis			
		Reinforcing elements	Coeff. Of friction	Each type of element with each type of fill		
Anchor elements	Adhesion					
624	Ground anchorages		Proof loading	As required in contract specific Appendix 6/10	Required	

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
Series 600 (continued) - Earthworks					
626	Gabions			Required (ASTM G23)	
	Fill	Grading Los Angeles coefficient (N)	1 per 400 tonnes		
	Wire and mesh	[As appropriate to properties stated in Appendix 6/10]	1 per 400 square metres		
642	Earthworks materials for corrugated steel buried structures	Constrained soil modules (M*)	3 on each side of each structure	Required	
Series 700 – Road Pavements General					
710	Constituent materials in recycled aggregate and recycled concrete aggregate	Quality Control	As required by the 'Quality Protocol for the production of aggregates from inert waste'	Required	
711	Overband and inlaid crack sealing systems			Required	Product Acceptance Scheme or equivalent applies

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
Series 800 – Road Pavement – Unbound, Cement and Other Hydraulically Bound Materials					
801, 803, 804, 805, 806	General Requirements for unbound mixtures for adjacent to cement bound materials, concrete pavements, structures or products	Water soluble sulfate (WS) content (N)	1 per 400 tonnes or per location if less than 400 tonnes	Required	Quality Management scheme applies
		Oxidisable sulphides (OS) content and total potential sulfate (TPS) content (N)	1 per 400 tonnes or per location if less than 400 tonnes		
		Frost heave(N)	1 per source		
	Unbound mixtures beneath surface of a road or paved central reserve	Grading and fines content	1 per week		
		Plastic Index (N)			
		Resistance to fragmentation (N)	6 monthly		
		Resistance to wear-micro-Deval test			
		Resistance to freezing and thawing (magnesium sulfate soundness) (N)	1 per source		
		Water absorption (N)	As required		
		Volume stability of blast furnace slags	6 monthly		
		Volume stability of steel (BOF and EAF) slags	6 monthly		
		CBR (N)	1 per source and then monthly		
		OMC/mc (N)	As required		
		Density (N)	As required		
		Water Absorption (N)	As required		
821, 822, 823, 830, 831, 832, 834, 835, 840	Cement and other Hydraulically Bound Mixtures (HBM)	Tests for control and checking of HBM	Tests specified in Table 8/14 and Table 8/15	Required	
		Coefficient of linear expansion	As Required		
		Tests for laboratory mixture design	Tests specified in Clause 880		

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
Series 900 - Road Pavements – Bituminous Bound Materials					
901, 925, 937, 938, 943	Aggregates for bituminous materials			Required	
	Resistance to fragmentation (hardness)	Resistance to fragmentation (N)			
	Resistance to freezing and thawing (durability)	Soundness (N)			
		Water absorption (N)			
	Cleanness	Sieve test (mass passing 0.063 mm sieve) (N)			
	Shape	Flakiness index (N)			
	Blastfurnace slag	Bulk density (N)			
		Soundness (N)			
		Dicalcium silicate disintegration (N)			
		Iron disintegration (N)			
	Steel slag	Bulk density			
		Volume stability (N)			
	Coarse aggregate for surface courses	Resistance to polishing (PSV) (N)			
		resistance to surface abrasion (AAV) (N)			
	Binders for bituminous materials	Penetration (N)			
		Softening Point (N)			

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
Series 900 (continued) – Road Pavement – Bituminous Bound Materials					
903 to 907, 909 to 912, 914, 916, 925, 926, 929, 930, 937, 938, 941, 943, 946 to 948	Bituminous mixtures	Grading (N)	For Audit Test purpose only	Required	
		Binder content (N)			
929	Base and Binder course Asphalt Concrete (Design Mixtures)	Permanent Works – In situ air void content (N)	Every 500 sq m		
		Permanent Works Refusal air void content (N)			
		Permanent Works – Deformation resistance			
		Deformation resistance (design)	Every 500 sq m		
		Stiffness (design)			
		Richness modulus (design)			
		Duriez (design)			
		Deformation resistance (design)			
		Stiffness (design)			

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
Series 900 (continued) – Road Pavement – Bituminous Bound Materials					
911	Rolled asphalt Surface course (design mix)	Stability value (N)	1 per source		
		Flow value (N)			
		Density (N)			
915	Coated Chippings	Grading (N)			
		Binder content (N)			
		Flakiness index (N)			
		Resistance to Polishing (PSV) (N)			
		Resistance to surface abrasion (AAV) (N)			
		Hot sand test (N)			
		Rate of spread (N)			
921	Surface macrotexture	Volumetric Patch (N)	As required	Required	
924	High Friction Surfaces	Quality control checks	As required in sub-Clause 924.5	Required	Product Acceptance Scheme or equivalent applies
		System coverage	As required in sub-Clause 924.6		
	Aggregate	Resistance to polishing (PSV) (N)			
937	Stone mastic asphalt (SMA) binder course and regulating course	Permanent Works – In situ air void content (N)	As required		
		Permanent Works – Deformation resistance			
		Binder drainage test (design)	As required		
		Deformation resistance (design)			
942	This surface course systems	General properties		Required	Product Acceptance Scheme or equivalent applies
943	Hot rolled Asphalt surface course and binder course (performance related design mixtures)	Permanent Works – In situ air void content (N)	As Required		
		Permanent Works – Deformation resistance			
		Deformation resistance (design)	As required		

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
Series 900 (continued) Road Pavements – Bituminous Bound Materials					
918	Slurry Surfacing incorporating microsurfacing				
		Binder	Product Identification		
			Vialit cohesion		
			Rate of spread		
			Penetration at 25°C and 5°C (N)		
		Aggregates	Flakiness index (N)		
			Resistance to polishing (AAV) (N)		
			Resistance to surface abrasion (AAV) (N)		
			Grading (N)		
		System			
920	Bond coats, tack coats and other bituminous sprays				
		Binder	Product identification		
			Violet Cohesion		
			Accuracy of spread		
			Rate of spread		
			Penetration at 25°C and 5°C		
919, 922	Surface Dressing				
		Binder	Product identification		
			Vialit cohesion (N)		
			Accuracy of spread		
			Rate of spread		
			Penetration at 25°C and 5°C (N)		
		Chippings	Resistance to (PSV) polishing (N)		
			Resistance to abrasion (AAV) (N)		
			Grading (N)		
			Binder content (N)		
			Flakiness index (N)		

Clause	Works, Goods or Materials	Test	Frequency of Testing	Test Certificate	Comments
Series 900 (Continued) – Road Pavements – Bituminous Bound Materials					
919, 920 (cont)	Chippings (Cont)	Accuracy of spread (N)			
		Rate of spread			Frequency to be reduced to daily after 3 satisfactory results, but not less than 1 test per lane per site
	Rollers	Spray bars working	Before work starts and daily during works		
950	Depressions				Product Acceptance Scheme or equivalent applies

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
Series 1000 – Road Pavements – Concrete Materials					
1001, 1030, 1044	Cement				
	Portland cement CEM1				
	Portland blastfurnace cement				
	Blastfurnace cement CEM III/A				
	Portland pfa cement CEM II/B-V				
	Pozzolanic cement CEM IV/A				
	Portland cement with microsilica				Product Acceptance Scheme applies for microsilica
	Pulverised fuel ash				
	Ground granulated blast furnace slag				
	Admixtures				
	Mixing Water	Sulfate content (N)			
	Aggregates	Resistance to freezing and thawing – magnesium sulfate soundness (N)			
		Water absorption (N)			
		Flakiness index (N)			
		Shell content (N)			
		Resistance to fragmentation (N)			
		Resistance to polishing (PSV) (N)			
		Resistance to abrasion (AAV) (N)			
		Grading and fines content (N)			
		Chloride content (N)			
		Total sulfur (TS) and acid – soluble sulfate (AS) content (N)			

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments	
Series 1000 (Continued) – Road Pavements – Concrete Materials						
1001, 1030, 1044 (cont)		Flint coarse aggregate containing white flints	Water absorption (N)			
		Sand (ie fine aggregate)	Acid-soluble material (N)			
		Blastfurnace slag	Bulk Density (N)			
			Dicalcium silicate disintegration (N)			
			Iron disintegration (N)			
			Total sulphur (TS) and acid-soluble sulfate (AS) content (N)			
		Pulverised – fuel ash				
1002, 1003, 1004, 1044	Pavement concrete	Air content test (N)	As required in Table 10/10	Required	Product certification scheme or equivalent applies	
		Density (N)	As required in Table 10/10			
		Strength (N)	As required in Table 10/10			
1005	Consistency (Workability)	Degree of Compactability (Compaction Index) (N)	As required in Table 10/10	Required		
		Vebe (N)				
		Slump (N)				
1011, 1012	Dowel bars Tie Bars			Required (BS 4449)	Product certification scheme applies	
		Dowel bars and supporting cradles	Load test			1 per arrangement
		Sheathed dowel bars	Bond stress	4 bars		See also sub clauses 1011.5-7
		Cranked tie bars (coated)	Bend test	4 bars		
			Salt fog cabinet	4 bars		
1015	Joint filler board	Weathering test	3 per source		Normally undertaken by manufacturer	
		Compression and recovery	4 per source			
		Extrusion	1 per source			
		Cork filler board	Immersion in water			2 per source
			Immersion in acid			2 per source

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
Series 1000 (Continued) – Road Pavements – Concrete Materials					
1016, 1017	Applied Sealants		1 per 1000m or 1 per day		
		Resilience	1 per 1000m or 1 per day		
	Compression Seals	Compression Set	1 per type of seal*		
		Immersion in oil	1 per type of seal*		
	Self expanding Cork seal	Test specified in Clause 1017	1 per type of seal*		
1026, 1044	Surface macrotexture	BS EN 13036-1 Volumetric Patch Technique (N)	1 per day (set of 10)*	Required	
1027	Aluminised curing compound	Efficiency index	1 per source*	Required	
1030	Wet lean concrete	Density	As required in Table 10/9	Required	
		Cube strength (N)			
1043	Foamed Concrete	Cube Strength (N)	2 cubes per 12 m³	Required	

Clause	Work, Goods or Material		Test	Frequency of Testing	Test Certificate	Comments
Series 1100 – Kerbs, Footways and Paved Areas						
1101	Precast concrete kerbs, channels, edgings and quadrants		Bending strength	Minimum of 8 per 1000 units of each product (BS EN 1340)		
1102	In situ asphalt kerbs		Grading	1 test per 500 metres laid	Required	
			Binder content			
1104	Precast concrete flags		Bending strength	Minimum of 8 per 1000 m ² of each product (BS EN 1339:2003)	Required	
			Water absorption			
	Bedding	Granular material				
		Mortar				
1107	Concrete block paving		Compressive strength	Minimum of 8 per 1000 m ² of each product (BS EN 1338:2003)		
1108	Clay Pavers		Bending strength	Minimum of 8 per 1000 m ² of each product (BS EN 1344)		
			Skid resistance	Minimum of 8 per 1000 m ² of each product (BS EN 1344)		

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
Series 1200 – Traffic Signs					
1202	Permanent traffic signs			Required	
1207	Anchorage in drilled holes to supports of traffic signs	Loading test on site (N)	10% of anchorages (unless otherwise stated)	Required	
1210	Holding down bolts and anchorages to base of permanent bollards			Required	
1212	Thermoplastic road marking materials	Tests specified in BS EN 1824			Quality management and product certification schemes apply
	Pavement marking paints			Required (BS EN 1871 - 2000)	Quality management and product certification schemes apply
1214	Permanent traffic cones and cylinders			Required	Certification that permanent traffic cones and cylinders have been tested and comply with BS EN 13422 is required
	Flat traffic delineators	Tests specified in Clause 1214	As required	Required	
	Other traffic delineators	Tests specified in contract specific Appendix 12/4		Required	Certification that the delineators have been tested and comply with Clause 1214 is required
	Temporary cones, cylinders, FTDs and other delineators			Required	Certification that at least 1 in 500 of any batch of cones, cylinders, FTDs and other delineators to be used in the Temporary Works have passed the tests in Clause 1214 as appropriate is required.

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
Series 1200 – Traffic Signs (continued)					
1217	Traffic signals				Statutory type approval of equipment applies
	Cables				Product certification scheme or equivalent applies
	Controllers (other equipment)	Tests specified in Appendix 12/5	Each controller before delivery to Site and again after installation		
	Cabling	Tests a, b, c, e,f, g, h, j as defined in sub-Clause 1424.2	Each traffic signal installation	Required	Certificate that the installation complies with BS 7671 (the IEE Wiring Regulations) is required
1218	Detector Loops				
	Cable			Required	Certification that completed cables comply with Contract Specific Appendix 12/5
	Epoxy resin			Required	Certification that the epoxy resin complies with Contract Specific Appendix 12/5
	Feeder Cable			Required	Certification that completed cables comply with Contract Specific Appendix 12/5
	Joints	Pull test (4 kgf)	Each crimp		
	Installation	Series Resistance	Each loop	Required	Certification in accordance with Contract Specific Appendix 12/5
		Insulation resistance			
		Inductance			

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
Series 1300 – Road Lighting Column brackets, CCTV Masts and Cantilever Masts					
1305	Anchorage for use in drilled holes	Tensile Load			
1306	Anchorage in drilled holes to columns with flange plates	Loading test on site			
1313	GFRP Laminates	Loss on ignition	1 per 50 production columns		See sub-Clauses 13134.10-17
		Colour fastness	1 per batch		
		Electric strength			
		Water absorption			
		Impact Strength			
1314	Brackets for laminated GFRP lighting columns Polyurethane foam			Required	
		Bulk Density	1 Per batch		
		Surface hardness			
		Apparent bulk density	2 per batch		
		Impact Strength			
		Flexural Stress			
Series1400 – Electrical Work For Road Lighting and Traffic Signs					
1421	Cable				Product certification scheme applies
1424	Lighting Units	Tests specified in Clause 1424	Each unit	Required	Product certification scheme or equivalent applies Certification that the installation complies with BS 7671 (the IEE Wiring Regulations) is required.
	Networks	Tests specified in Clause 1424	Each network	Required	Certification that the installation complies with BS 7671 (the IEE Wiring Regulations) is required.

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
Series 1600 - Piling and Embedded Retaining Walls					
1601	Soil Samples In situ soil tests			Required	As Contract Specific Appendix 16/8 & 16/9
1602 to 1606 1610 to 1615	Concrete Grout Reinforcement Prestressing Steelwork Welding Protection against corrosion			Required	As Contract Specific Appendix 16/8 & 16/9
1606	Coatings for protection against corrosion				As Contract Specific Appendix 16/8 & 16/9
1607	Reduction of friction on piles				As Contract Specific Appendix 16/8 & 16/9
1608	Integrity Testing				As Contract Specific Appendix 16/8 & 16/9
1609	Static load testing of piles				As Contract Specific Appendix 16/8 & 16/9
1616	Dynamic Testing				As Contract Specific Appendix 16/8 & 16/9
1612	Self hardening slurry mixes				As Contract Specific Appendix 16/8 & 16/9
1617	Instrumentation				As Contract Specific Appendix 16/8 & 16/9
1618	Support fluids				As Contract Specific Appendix 16/8 & 16/9

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
Series 1700 – Concrete – Classification of Mixes					
1707	Hardened Concrete – Identity testing	Cube strength (N) as described in Contract Specific Appendix 17/4	Prestressed concrete – two cubes from 12 m³ or two batches whichever represents the lesser volume	Required	Contractor to cast and test sufficient additional cubes to demonstrate cube strength before transfer see Clause 1724
			Reinforced Concrete: two cubes from 24m³ or 4 batches whichever represents the lesser volume		
			Mass concrete: two cubes from 50m³ or 50 batches whichever represents the lesser volume		
			Additional cubes for special purposes		
		Density	As required		
	Fresh concrete – Identity Testing	Consistency (slump or flow) (N)	Each batch	Required	
		Air Content	Each Batch		
		Density	As required see Contract Specific Appendix 17/1		
		Water / cement ration			
1710	Concrete packing Mortar Packing Epoxy resin bonding agent				Contractor to make available records of tests by the manufacturer. See sub-Clause 1710.8
	Precast concrete not conforming to any Product Standard or to BE EN 13369	Cube strength (Manufacturers tests)			

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
Series 1700 (Cont)					
1712	Reinforcement				Product certification scheme or equivalent applies
	Steel bars			Required (BS 4449)	
	Steel wire			Required (BS 4482)	
	Steel fabric			Required (BS 4483)	
	Stainless steel				
1713	Fabricated Reinforcement			Required (BS 8666)	Certification that fabricated reinforcement complies with the routine inspection/ testing requirements of BS 8666 is required if the fabrication is not covered by a product certification scheme or equivalent.
1716	Reinforcement jointing systems	Permanent elongation characteristic strength (Manufacturer's tests)		Require for each type of connection	Product acceptance scheme or equivalent applies
1717	Reinforcement – Welding	Welding Procedure Approval (BS EN ISO 17660))	As required in BS EN ISO 17660		Tests to be carried out by an independent testing body
		Welding approval (BS EN ISO 17660)			
1718	Prestressing tendons				Product certification scheme or equivalent applies
	Steel wire and strand			Required (BS 5896)	
	Steel Bar			Required (BS 4486)	
	Prestressing steel (all types)	Proof Load Breaking Load Elongation Ductility Relaxation Modulus of elasticity	As Required		

Clause	Work, Goods or Material		Test	Frequency of Testing	Test Certificate	Comments
Series 1700 (Cont)						
1718 (cont)		Other than lowest strength wire or strand to BS 5896	0.1% proof load	Each reel		
1724	Post tensioning anchorages		Tests in accordance with BS EN 13391 (Manufacturers tests)		Required (BS EN 13391)	Product certification scheme or equivalent applies
1726	Stainless steel bar				Required (BS 6744)	Product certification scheme or equivalent applies.
1727	Inspection and testing of structures and components					Refer to Appendix 17/4

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
Series 1800 – Requirements for Structural Steel Work					
1805	1805.2 Metallic products			Required according to BS EN 1090-2:2008+A1:2011, Table 1	Intercrystalline Corrosion Test Required
	1805.3.4 Special properties of constituent products	Testing to identify internal discontinuities or cracks in zones to be welded as specified in Appendix 18/1	As required in Appendix 18/1		
1806	1806.4.4 Check of capability of cutting processes that are likely to produce local hardness	Testing in accordance with BS EN ISO 6507	As required		
	0806.5.4 d) Check of the hardness and geometry of hollow section components subject to bending by cold forming	Check of the hardness, testing in accordance with BS EN ISO 6507	As required		
1807	1807.4.1.2 Qualification of welding procedures (Processes 111, 114, 12, 13 and 14)	Tests specified in BS EN ISO 15614-1 or BS EN ISO 15613	Tests specified in BS EN ISO 15614-1 or BS EN ISO 15613		Results to be reported in accordance with BS EN ISO 15614-1 or BS EN ISO 15613
	1807.4.1.2(3 Qualifications for welding procedures for joints with restricted access	Tests specified in BS EN ISO 15613	As required in BS EN ISO 15613		Results to be reported in accordance with BS EN ISO 15613
	1807.4.1.3 Qualification of welding procedures for other welding processes	Tests specified in the standards listed in BS EN 1090-2:2008+A1:2011 Table 13	As required in the standards listed in BS EN 1090-2:2008+A1:2011 Table 13		Results to be reported in accordance with the standards listed in BS EN 1090-2:2008+A1:2011 table 13 Note the requirement in BS EN 1090-2:2008+A1:2011, 7.5.12 relating to stud weld procedure testing

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
Series 1800 (cont)					
1807 (cont)	1807.4.1.4 Validity of welding procedure qualification	Additional tests specified in BS EN 1090-2:2008+A1:2011, 7.4.1.4 for a welding procedure qualified in accordance with BS EN ISO 15614-1, which is undertaken by a welding process that has not been used	As required in BS EN 1090-2:2008+A1:2011, 7.4.1.4		Results to be reported in accordance BS EN ISO 15614-1
	1807.4.2 Qualification of welders and welding operators	Tests specified in BS EN 287-1 (welders) or BS EN 1418 (welding operators)	As required in BS EN 287-1 or BS EN 1418 as appropriate	Required	Certificate to be in accordance with BS EN 287-1, Annex A or BS EN 1418, Annex C as appropriate
	1807.4.2 Qualification of welders of hollow section branch connection with angles less than 60°	Specific qualification test. Tests specified in BS EN 287-1	As required		
	1807.4.2 (1) Qualification of welders of joints with restricted access	Specific qualification test. Tests specified in BS EN 287-1	As required		
	1807.5.1.1 Verification that joint preparation in steel grades higher than S460 are free from cracks	Testing in accordance with BS EN 571-1 (penetrant) or BS EN 1290 (Magnetic Particle)	As required		
	1807.5.1.1 (1) Qualification of welding procedures where prefabrication primers are to be left on the fusion faces	Tests specified in BS EN ISO 15614-1 or BS EN ISO 15613 using such prefabrication primers	As required in BS EN ISO 15614-1 or BS EN ISO 15613		Results to be reported in accordance with BS EN ISO 15614-1 or BS EN ISO 15613
	1807.5.4(1) Welding of joints in hollow sections, full penetration butt welds with restricted access	Pre-production weld test conforming to BS EN ISO 15613	As required		

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
Series 1800 (cont)					
1807 (cont)	1807.5.6 (3) Verification of ground surface are free of cracks following removal of temporary welded attachments	Testing in accordance with BS EN 1290 (Magnetic Particle)	As required		
	1807.5.9.2 (1) Verification of the absence of surface cracking in continuity welds in permanent steel backing	Testing in accordance with BS EN 571-1 (Penetrant) or BS EN 1290 (Magnetic Particle)	As required		
	1807.5.18 Welding of bridge decks	Production tests in accordance with BS EN 1090-2:2008+A1:2011, 12.4.4c)	As required		
1808	1808.5.3 (1) k value check for the Torque method	Test in accordance with BS EN 1090- 2:2008+A1:2011, Annex H	Daily		
	1808.5.4 (2) k value check for the combined method	Test in accordance with BS EN 1090- 2:2008+A1:2011, Annex H	Daily		
	1808.5.5 (1) Preload check for HRC method	Test in accordance with BS EN 1090- 2:2008+A1:2011, Annex H	Each assembly lot		
	1808.9 Use of special fasteners and fastening methods	Procedure test for special fasteners and fastening methods as specified in Appendix 18/1	As required in Appendix 18/1		
1810	1810.1 (5) Slip resistant connections	Slip factor test in accordance with BS EN 1090- 2:2008+A1:2011, Annex G	As required in Appendix 18/1		
	1810.1 (10) Verification of the preparation carried out before overcoating galvanized components	Tests as specified in Appendix 18/1	As required in Appendix 18/1		

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
Series 1800 (cont)					
1812	1812.2.1 (1) Specific testing of constituent products not covered by standards.	Tests as specified in Appendix 18/1	As required in Appendix 18/1		
	1812.2.1 (2) Mechanical fasteners	Sample testing as specified in 1812.2.1 (2)	As required in 1812.2.1 (2)		Results to be reported in accordance with 1812.2.1 (2). Testing not required if mechanical fasteners supplied by a NHSS 3 registered organisation See 1800.5.2
	1812.2.1 (3) Mechanical fasteners	Suitability testing as specified in 1812.2.1 (3)	As required in 1812.2.1 (3)		Results to be reported in accordance with 1812.2.1 (3).
	1812.4.1 Inspection before and during welding	None destructive testing methods selected in accordance with BS EN 12062	As required in BS EN 1090-2:2008+A1:2011, 12.4.1		
	1812.4.2.2 Inspection after welding – Scope of inspection	Supplementary none destructive testing determined by the manufacturer, according to the nature of the work in normal production	As required in BS EN 1090-2:2008+A1:2011, 12.4.2.2		See 1812.4.2.2 (6)
	1812.4.2.2 Inspection after welding – Specific inspection of welds	Supplementary none destructive testing in accordance with 1812.4.2.2	As required by 1812.4.2.2 (1) to (5)		
	1812.4.3 (1) Welded shear studs	Production tests as specified in BS EN ISO 14555, 14.2	As required in 1812.4.3 (1)		Results to be documented in accordance with 1812.4.3 (4)
	1812.4.3 (2) Welded shear studs	Hammer test as specified in 1812.4.3 (2)	Every welded shear stud		
	1812.4.3 (3) Welded shear studs	Simplified production test as specified in BS EN ISO 14555, 14.3	As required in 1812.4.3 (3)		Results to be documented in accordance with 1812.4.3 (4)
	1812.4.4 (1) Production tests on welding	Production tests as specified in 1812.4.4 (1)	As required in 1812.4.4 (1)		Results to be reported in accordance with the relevant standard
	1812.4.4 (2) Production tests on welding using run-off coupon plates	Production tests on run-off coupon plates as specified in 1812.4.4 (2)	As required in 1812.4.4 (2)		

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
Series 1800 (cont)					
1812 (cont)	1812.7.4 Other acceptance tests	Test requirements for components erected to a specific load as specified in Appendix 18.1	As required in Appendix 18/1		
Series 1900 – Form HA/P1 (New Works) Paint System Sheet					
1903	Abrasives	Grading	Weekly or per Batch whichever is more frequent		
		Hardness			
1909	Galvanised Coatings	Tests specified in BS EN ISO 1461	Per consignment		
	Thermally sprayed aluminium metal coatings	Tests specified in BS EN ISO 2063	Per batch		
	Aluminium Coating Material			Required in accordance with BS EN ISO 14919	
	Sherardized Coatings	Tests specified in BS 4921		Per consignment	Engineer to select samples.
	Zinc electroplated coatings	Tests specified in BS 3382: Part 3		Per consignment	Engineer to select samples.
1910	Thermally sprayed aluminium metal coating	Pull off adhesion test in accordance with ASTM D4541-Type III	At the start of the works and Two panels per day or 100m ² whichever is more frequent		
	Thermally sprayed aluminium metal coating (excepted areas)	Grid Test specified in BS EN ISO 2063	One Test Per type of excepted surface		

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
Series 1900 (Continued)					
1911, Table 19/2B	Hot dip galvanised coating to fasteners	Tests specified in BS EN ISO 10684	As required		
1912 1912SE	Paints – ‘A’ and ‘B’ samples	Provision of samples for ‘A’ and ‘B’ sample tests			Samples selected in accordance with Clause 1912 and 1912SE
	Paints – ‘A’ and ‘B’ samples	Specific Gravity	As required by rate of ‘A’ and ‘B’ sampling		Seem NG 1912. 3; Appendix 19/4, Note 4; Appendix 19/4SE, Note 4; NG1912 3NI, 3 and Appendix 19/4NI
	Paints – ‘A’ and ‘B’ samples	Colour match	As required by rate of ‘A’ and ‘B’ sampling		See NG 1912, 3 and NG 1912NI, 3
1914	Coating system minimum film thicknesses	Minimum dry film thickness measurements. In accordance with BS EN ISO 2808, BS3900-C5	Required – representative testing		
	Coating system adhesion	Pull off adhesion test in accordance with ASTM D4541 – Type III	Required – representative testing		
	Coating system defects	Visual assessment supplemented by appropriate testing	Required		
	Coating system defects – pin – holing or porosity	Low of High voltage detectors in accordance with ASTM G62-07	Required- representative testing excluding corners, bolted joints or welds		
Series 2000					
2003	Permitted waterproofing systems	As required			Product Acceptance Scheme or equivalent
	Additional bituminous protection		1 per 15 tonnes*		
	Stability Value		1 per 15 tonnes*		
2004	Tar	Tests specified in BS 76	1 per source*		Sampling to comply with BS 76
	Cut back bitumen				

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
Series 2100 – Bridge Bearing Schedules					
2101	Bridge Bearings	Bearings (other than Elastomeric bearings)	Load testing – serviceability limit state	As required in contract specific Appendix 21/1	
			Load testing – ultimate limit state		
			Other tests specified in contract specific Appendix 21/1		
		Elastomeric bearings	Compressive test	As required in contract specific Appendix 21/1	
			Stiffness test		
			Shear stiffness test		
			Other tests specified in contract specific Appendix 21/1		
		Series 2400 – Brickwork, Blockwork and Stonework			
2401	Masonry cement				
2402	Sand				
2403	Water	Tests specified in BS EN 1008			
2404	Mortar admixtures				
2405	Lime				
2406/ 2417	Bricks				
		Clay			
		Calcium Silicate			
		Concrete			
2407	Blocks				
		Clay			
		Concrete			
2408	Reconstituted stone				

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
Series 2400 – Cont					
2410 2411	Stainless steel				
	Wire/fabric				
	Bars				
	Ready mixed mortars				
	Mortars		1 set of tests per mix		
Series 2500 – Environment Barriers					
2501	Materials for corrugated steel buried structures exceeding 900mm clear span or internal diameter				Type approval applies
	Steel components			Required as appropriate to the standard or specification listed in the type approval Certificate	
	Zinc coating				
	Protective coating				
	Paved invert system				
2502	Materials for reinforcing elements, prefabricated facing and capping units, and washers				Product Acceptance scheme or equivalent applies
	Carbon steel strip			Required (BS 1449: Part 1.1 or BS EN 10025-1 and BS EN 10025-2)	Silicon content and mechanical properties to be stated on the certificate

Clause	Work, Goods or Material		Test	Frequency of Testing	Test Certificate	Comments
Series 2500 Continued						
2502 cont		Stainless steel strip			Required (BS EN 10029, 10048, 10051, 10258 and 10259))	Mechanical properties to be stated on certificate
		Reinforcing bar for anchor elements			Required (BS 4449)	Tests scheduled under Clause 1717 and 1909 are required for welding and galvanizing of anchor elements
		Materials for fasteners				
		Stainless steel				
		Bolts, screws and nuts				
2503		Materials for pocket type reinforced brickwork retaining wall structure	(Soluble salt content Efflorescence Compressive strength Water absorption Initial rate of suction) (BS 3921/TRL Report 447) (N)	1 set of tests per type of brick*		Soluble salt content – sulfate shall be determined in accordance with test No 2 in TRL report 447 Random sampling to BS 392 to be employed
		Clay bricks				
2504	Environmental Barriers					Quality management scheme applies
	Timber					
	Concrete					
	steel					
	Brickwork					
	Other materials					
	Barriers		Sound absorption	As required in Appendix 25/4		
			Sound insulation			
Post foundations		Loading test on site	As required in Appendix 25/4			

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
Series 2500 Continued					
2505, 2506	Drainage structures / buried rigid pipes for drainage structures Pipes for drains and culverts having diameters or clear span exceeding 900mm				
	Vitrified clay				
	Concrete PC/SRC	(Manufacturer's test)			See sub – Clause 2506.28
	Iron				Pipes should be quality marked by a UKAS or equivalent accredited body
	Corrugated Steel	(Manufacturer's test)			Type Approval Certificate and product acceptance scheme or equivalent apply
Series 2600 - Miscellaneous					
2601	Bedding Materials			Required for each batch	Certification in accordance with Clause 2601 is required
	Bedding Mortar	Flow cone test	Each batch		Laboratory Tests
		Flow between glass plates			
		Compressive strength			
		Expansion test			
		Water absorption			
		Elastic stability	1 per source		
		Flow cone test Compressive strength	Each load		Site control tests
2604	Plastic coating to fencing posts, gates and ancillaries			Required (BS 1722: Part 16) applicator is required	Certification by powder manufacturer and coating
2607	Granolithic concrete				Testing to be in accordance with Clauses 1702, 1703, 1707 and 1710

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
Series 3000					
3001	General				Inspection Reports as required in Contract Specific Appendix 30/1
3005	Grass seeding, Wildflower seeding and turfing	Rate of spread of fertiliser	1 per 1000 square metres		
		Rate of spread of seeding	1 per 1000 square metres		
		Chemical analysis of fertiliser	1 per source		
		Grass seed germination and purity (Official Seed Testing Station tests)	1 per source and mix variety	Required prior to sowing	

Notes:

Unless otherwise stated above, all sampling and testing in this Appendix shall be by the Contractor.

Tests comparable to those specified in this Contract Specific Appendix will be necessary for any equivalent work, goods or materials proposed by the Contractor (See sub-Clause 105.4).

(11/03) (N) indicates that a UKAS or equivalent accredited laboratory sampling and test report or certificate is required.

Unless otherwise shown in this Appendix tests for work, goods or materials as scheduled under any One Clause are required for all such work, goods or materials in the Works.

Unless otherwise shown in this Appendix test certificates for work, goods or materials as scheduled under any one Clause are required for all such work, goods or materials in the Works.

Appendix 1/6 - Supply and Delivery of Samples to the *Service Manager*

1. Samples of goods and materials (including source samples) may be required during the course of this contract – these shall be supplied and delivered by the *Contractor* as required by the *Service Manager*.

Appendix 1/7 - Site Extent and Limitations of Use

1. The extent of the site of operations shall be that marked on the highway or shown on any plans.
2. The *Contractor* shall at all times confine his work and the operation of his plant within the limits of the site, except where permission to the contrary is given in writing by the *Service Manager*.
3. The *Contractor* shall not enter or allow any of his workmen to enter upon private land without obtaining the prior consent of the owner and the approval of the *Service Manager*.
4. If a licence for the temporary use of land as a working area has been obtained the *Contractor* may have use of it but such use shall be subject to the written consent of the *Service Manager*.
5. In occupying the working area, the *Contractor* shall: -
 - Confine the use of land to purposes approved by the *Service Manager*,
 - Provide and maintain all fencing of the land when or where necessary for the safety, security and convenience of the owner, the public or others and to keep out stock,
 - Not deposit rubbish or cause nuisance or permit nuisance to be caused and, except as required or permitted under this contract, or with the prior approval of the *Service Manager*, deposit or remove earth on or from the land,
 - Upon completion of the works, or before then if so instructed by the *Service Manager*: -
 - remove all temporary works, surplus materials and the like,
 - grade or shape the area to its original contours,
 - restore the area to a condition similar to that existing at the commencement of the works and to the satisfaction of the *Service Manager*, bear the full costs (including any incidental costs) in respect of the above requirements.
6. The *Contractor* shall provide and maintain reasonable access from the site on to adjoining land at all those locations where an existing access is affected by

the works or where a proposed access is indicated on the drawings. The standard of construction shall be suitable in all respects for the class or classes of traffic using the access.

7. The *Contractor* shall maintain the Site in a clean and tidy state. All materials and plant for the works shall be stored neatly. On completion of the works the *Contractor* shall remove all surplus materials and leave the Site in a clean and tidy condition.
8. The *Contractor* shall ensure that temporary facilities, parked vehicles and plant, stockpiled material and the like are not situated within the site areas as to adversely affect users of the Public Highway.
9. The *Contractor* shall not use any existing highway as a standing area for plant, vehicles, offices, sheds or for the storage of materials etc without written approval from the *Service Manager*.
10. The *Contractor* shall not obstruct any lane, road junction vehicular or pedestrian access which has not been closed to traffic.
11. The *Contractor* shall ensure that no steps, ladders or other plant are left accessible so as to permit unauthorised access to the works.
12. Throughout the execution of the works the *Contractor* shall keep all carriageway and footway surfaces, within Public Highways which are in the *Contractor's* use, free from mud or any other deposit which the *Service Manager* determines to be a potential hazard or nuisance. The *Contractor* shall provide and use suitable equipment including mechanical road sweepers solely for the purpose of highway cleansing throughout the duration of the works. The *Contractor* shall take all necessary steps to avoid creating a nuisance or a hazard due to dust.
13. All drains, sewers, outfalls, grips, ditches and watercourses shall be kept clear of any spoil, debris, other deposits or pollution arising directly or indirectly from the works.
14. The *Contractor* shall take all precautionary measures to ensure that any trees encountered during the works remain generally undisturbed and undamaged. When it is found essential to trim any branches or roots the *Contractor* shall inform the *Service Manager* who may arrange for the work to be carried out by a specialist. The *Contractor* shall be held fully responsible for any damage whatsoever to the trees caused by him.
15. The *Contractor* shall take all necessary precautions to avoid damaging the banks, walls and hedges of narrow lanes. The cost of repairing damage caused to banks and walls by the *Contractor's* plant and vehicles shall be the responsibility of the *Contractor*.

Appendix 1/9 - Control of Noise and Vibration

1. It is the responsibility of the *Contractor* to seek the formal consent of the appropriate Local Authority for any proposed site operations that may involve disturbance by noise and/or vibration.

Appendix 1/13 - Programme of Works

Programming requirements: General

1. General programming requirements are included elsewhere in the Service Information.

Working Hours

2. The *Contractor* shall where practicable undertake works during the permitted working hours which are Monday to Friday (excluding Public Holidays), 07.30 to 17.00.
3. Where the *Contractor* wishes to work on a site outside the permitted working hours for operational convenience, permission shall be obtained in writing from the *Service Manager*.
4. The *Service Manager* may instruct particular works to be undertaken outside of the permitted working hours, such as at night or on a Sunday. Working times may also be restricted to less than a full working day, for example from 09.30 to 16.00. The objective of the *Service Manager* will be to minimise disruption and disturbance to traffic flows, businesses and residents. Such instructions will generally cover the embargoes detailed in the Traffic Sensitive Routes document but may also include additional requirements.

Special Programming Requirements for Road Marking and Road Stud Works

5. Road markings shall be reinstated when disturbed by any works in accordance with the following timescales:-
 - On the principal road network within 48 hours,
 - Junctions and mini roundabouts on non-principal roads within 7 days,
 - All other road markings within 14 days.
6. Road studs shall be reinstated within 21 days.

Appendix 1/24 - Quality Management Systems

Quality Plan

1. The *Contractor* shall institute and operate a quality management system complying with BS EN ISO 9001:2008 and Clause 104. The quality management system shall be described in a Quality Plan that shall be submitted to the *Contract Manager* for acceptance within the period stated in the Contract Data.
2. The *Contractor* shall submit method statements. prior to commencement of any related work or activity and to a timetable included in the Quality Plan.
3. The Quality Plan shall include and conform with the requirements tabulated in Table 1/24 of this Contract Specific Appendix.

TABLE 1/24

ITEM	REQUIREMENTS	GUIDANCE NOTES
Contractor's Organisation and Management	<p>This section of the Quality Plan shall include:</p> <ol style="list-style-type: none"> 1. The organisation of the Contract, including the line of command and communication links between parties involved in the Contract on and off site. 2. Names, roles, responsibilities and authority of principals and key personnel. 	<ol style="list-style-type: none"> 1. An annotated chart is an effective means of illustrating the organisational relationship. 2. These will include the roles commonly attributed to the Contracts Manager, Site Agent, Management Representative for Quality, Contract Quantity Surveyor.
Identification of the parts of the Contractor's Quality Management System relevant to the Works	<p>Schedule of the parts of the Quality Management System which are relevant to the Works to be undertaken</p>	

Appendix 3/1 - Fences, Gates and Stiles

Timber Post and Rail Fencing

1. Timber post and rail fencing shall comply with BS 1722-7:2006 and the requirements described below.
2. Intermediate posts shall be provided at intervals of 1.8m measured centre to centre of posts.
3. The tops of posts shall be cut to a fall of 45°.
4. Posts shall be secured with rammed backfill unless otherwise specified by the Engineer. Where concrete backfill is specified mix ST2 shall be used.
5. Sheep netting shall be hexagonal wire type reference 100mm x 900mm x 14d in accordance with BS 1722-2:2006 Table 6.
6. Pig mesh shall be rectangular wire type reference 8/80/15 in accordance with BS 1722-2:2006 Table 6.
7. Barbed wire shall be 2.5mm diameter 4 point two ply.
8. Where pig mesh is specified the space between the top and second rail shall be increased from the standard 250mm to 275mm to enable the mesh to be fitted to the second rail. To compensate the clear space between the second and third rail shall be reduced from the standard 250mm to 225mm.
9. Rails, wire mesh, wire netting and barbed wire shall be fixed to the field side of the fence unless otherwise specified by the *Service Manager*.

Strained Wire Fencing

10. Strained wire fencing shall comply with BS 1722-2:2006 and the requirements described in this clause.
11. Intermediate posts shall be provided at intervals of 3m measured centre to centre of posts. The end post of each fence line shall be a straining post with one strut. Intermediate straining posts shall be placed in accordance with the *Service Manager's* instructions.
12. Timber posts and struts shall be of square sawn timber conforming to BS 1722-7:2006.6. The tops of timber posts shall be cut to a fall of 45°.

13. Straining posts and struts shall be concreted into the ground. Intermediate posts shall be secured with rammed backfill unless otherwise specified by the Engineer. Mix ST2 concrete shall be used in both instances.
14. Sheep netting shall be hexagonal wire type reference 100mm x 900mm x 14d in accordance with BS 1722-2:2006 Table 6.
15. Pig mesh shall be rectangular wire type reference 8/80/15 in accordance with BS 1722-2:2006 Table 6.
16. Line wire shall be zinc or zinc coated alloy with a nominal diameter of 4.0mm. Barbed wire shall be 2.5mm diameter 4 point two ply.
17. Wires, wire mesh and wire netting shall be fixed to the field side of the fence unless otherwise specified by the Engineer.

Tubular Steel Rail Fencing

18. Post and tubular rail fencing shall comply generally with BS 1722 2006 and the requirements described in this clause.
19. Concrete posts shall be 1.83m x 100mm x 150mm with half rounded heads and be finished fair face and smooth on all faces. A hole of 50mm diameter shall be formed through the 100mm elevation 150mm from the top of each post to accommodate single rail fences. For the two-rail version a second hole shall be formed 525mm below the first. Posts shall be provided at intervals of 3.0m measured centre to centre of posts unless otherwise specified by the *Service Manager*. They shall be set to a depth of 880mm below ground level. Holes shall be not less than 0.4m x 0.4m or 0.3m in diameter if excavated by auger and be filled at least two thirds with mix ST2 concrete and topped with backfill.
20. Tubular steel rails and posts shall be of mild steel tubing of 42.4 outside diameter and shall be hot dip galvanised to BS EN ISO 1461:2009. Rails shall be pre-bent to radius as necessary. Open-ended rails shall be fitted with screwed end caps.
21. The erection of proprietary tubular steel post and rail systems shall be in accordance with the manufacturer's instructions.

General

22. Fencing shall follow the general ground profile with small adjustments in height as necessary to obtain a flowing alignment.

Appendix 7/1 - Requirements for Pavements and Pavement Construction Materials

Schedule 1 – Permitted Pavement Options

Flexible Pavement Construction

1. This Appendix covers flexible pavement construction options.

Schedule 2 – General Requirements for Pavements

Surface Levels

2. In order to check compliance with Cl. 702.2, measurements of the surface levels of all courses shall be taken on a grid with longitudinal intervals of 10m and transverse intervals of 2m. (with a minimum of 3 transverse measurements), unless otherwise directed by the Service Manager.

Surface Regularity (Machine Laid Material)

3. The surface regularity of machine laid material when tested within one week of laying shall comply with the limits defined in BS 594987: 2015 and Cl. 702. The maximum permitted number of surface irregularities for all categories of road shall be as Table 7/2 – Category A Roads.
4. The surface regularity of regulating courses shall be as for binder courses. In addition the deviation of the surface of the regulating course under a 3m straight edge, placed at right angles to the centre line of the road, shall not exceed 6 mm.
5. The interval for measurement of longitudinal regularity (Cl. 702.7) shall be 10m, and for transverse regularity (Cl. 702.8) shall be 2m.

Surface Regularity (Hand Laid Material)

6. For hand laid material, the surface regularity, when measured within one week of laying, shall comply with the following:-
 - At any point, nominated by the *Service Manager*, the new finished level of the patch or reinstatement shall not show a deviation under a one metre straight edge (anywhere within the patch) of more than 5mm,
 - The tolerance allowed between the old road surface and the surface of the patch shall be 0 to + 5mm upon the patch when measured using a one metre straight edge,
 - The patch itself shall not cause surface water to puddle.

Deformation resistance for Binder Course and Base (Roadbase)

7. The mean values of 6 consecutive determinations of the wheel tracking test carried out in accordance with sub-Clause 952.4 shall not exceed the values stated in Tables NG 9/35 and NG 9/36. The deformation resistance of laid materials shall be assessed in accordance with sub-Clause 952.7.

Layer Thickness

8. No more than 4 in a set of 6 core mean thickness measurements (taken in accordance with Appendix 1/5) shall be less than the nominal layer thickness (as specified in the Task Order) and no core shall have a mean thickness measurement less than the appropriate "minimum thickness at any point" as specified in BS 59487: 2015.

Adhesion Between Layers

9. As required by the *Service Manager*, when lack of adhesion between layers is suspected, the initial adhesion between layers shall be tested after the material has cooled to ambient temperature. The adhesion should not readily allow the layers to be prised apart with a flat shovel. In the event that poor initial adhesion is found and at the *Service Manager's* discretion, examination of adhesion shall be made after 6 months by extracting at least five 150 mm diameter diamond cut cores at appropriate locations at least one metre apart. At this time, adhesion between the appropriate layers, sufficient to retain the integrity of at least three of the five cores, shall be present.

Surface Texture

10. Surface texture shall comply with Cl. 921.

Schedule 3 – See Combined Schedules 3 and 5

Schedule 4 – General Requirements for Construction Materials

‘Q’ Level

11. Materials shall be manufactured by Plants that are registered to the BS EN ISO 9002: 1994 Sector Scheme for the Production of Asphalt Mixes, and have a current level, as defined in the scheme, equal to or better than Q4.

Limestone Coarse Aggregate

12. Limestone coarse aggregate shall not be used in the manufacture of surface courses that are used as a permanent running surface for vehicles.

Igneous Aggregate

13. Where the aggregate used for machine and hot hand-lay materials is of an igneous type the bitumen binder shall contain an adhesion agent previously approved by the *Service Manager*.

Binder Course or Regulating Course used by Public Traffic

14. Where surfacing work is carried out on an existing length of carriageway and it is impracticable to do otherwise, the *Contractor* may permit public traffic to use the binder or regulating course as a temporary running surface, for a maximum period of 3 days. In exceptional circumstances and only where permitted by the *Service Manager*, the period may be extended, if the *Contractor* provides the following at its own expense:-
- an aggregate with a minimum PSV of 55,
 - surface dressing in accordance with Clause 919SR using 10 mm nominal size chippings with a minimum PSV of 55.
15. The *Contractor* shall provide at its own expense all white lines, signs etc required by the *Service Manager* in the interests of safety, and a bond coat to Clause 920, on the temporary surface, immediately prior to any overlay.
16. The construction and temporary surface shall be maintained in a sound and clean condition. Sweeping, cleaning and repairs shall be carried out by the *Contractor* at its own expense, to the satisfaction of the *Service Manager*, and if this proves impracticable, by removing the layer and replacing it in compliance with the Specification.

Hardness, Cleanness and Durability of Aggregate (Prior to Mixing)

10% fines Value (Soaked)	Clay and silt in > 75 µm component i.e. % passing 20 µm * BS 812 Pt 3	Soundness Value (%) BS 812 Pt 121
> 160 **	< 25	> 88

* Materials sampled from hot bins or the dryer on a batch mixer

** A lower minimum value may be allowed for some aggregates by agreement with the *Service Manager*.

Compacted Material; Maximum Permitted Air Void Content

	VA %
35% stone content Rolled Asphalt Surface Course	6
Close Graded Surface Course	10
Dense/Fine Graded Surface Course	10
HDM and DBM Binder Course	10
HDM and DBM Base (Roadbase) Course	10

Unbound Materials

17. Unbound materials up to 225 mm compacted thickness shall not be spread in more than one layer (see Clause 801.7).

Schedules 3 and 5 – Asphalt Concrete and Unbound Construction Materials

Specific Requirements for Construction Materials

Pavement Layer	Description	Cl.	Other Requirement	R	P
Sub-base	Type 1	803			
	Type 4 (planings)	807			
Roadbase (Base)	AC32 dense/HDM/HMB base	901 903 906 907 929	BS 594987	Y	
Binder Course	AC20 dense bin	906	BS 594987	Y	Y
		907			
	AC20 HDM bin 40/60 des	929	BS 594987		Y
		907		Y	Y
	HRA base and binder 60/20	905	BS 594987 Table 6B		Y
	SMA20 bin/base/reg	937	BS 594987 Table 6D	Y	Y
Surface Course	AC14 close surf 100/150	912	BS 594987	Y	Y
	AC10 close surf 100/150	912	BS 594987	Y	Y
	AC6 dense surf 100/150	909	BS 594987	Y	Y
	AC6 dense surf 160/220	909	BS 594987		Y
	AC4 Fine surf	914	BS 594987		
	HRA surface course type F 35/14 40/60	943	BS 594987		Y
	HRA surface course type C 35/14 40/60	943	BS 594987		Y
	HRA surface course 55/14 100/150	943	BS 594987		Y
	SMA surface course 40/60		See 7/1 21 - 29		Y
Coated Chippings	20 mm NS	915	BS 594987		Y
Surface Treatment	Coloured High Friction Surfaces	924	Hot or Cold applied Max AAV14 Colour: Red, Buff, Natural or Green		

R – Permitted for use as Regulating Materials

P – Permitted for use as Patching Materials

Polished Stone Value

18. The PSV requirement for surface courses and surface treatments shall be as specified for each individual scheme.

Aggregate Abrasion Value

19. All coarse aggregates used in surface courses and coated chippings shall be in accordance with Table 2.2 of HD 28/94.

Test Temperature

20. For assessment of wheel tracking rate and rut depth, the temperature of the material to be tested shall be 60 deg C, as Classification 2 of Table NG 9/29.

Stone Mastic Asphalt (SMA) Surface Course

21. When tested in accordance with BS812, the coarse aggregate shall additionally have the following properties:-
- Aggregate Abrasion Value: not more than 14,
 - 10% Fines Value: not less than 180kn when tested in a dry condition,
 - Flakiness Index for the coarse aggregate only: not more than 25 percent.
22. SMA manufactured with a stabilised or modified binder shall only be used by agreement with the Service Manager. If a stabilised binder is selected the stabilising additive shall be dry organic fibres containing a minimum of 70% cellulose manufactured for this purpose. The stabilising additive shall be at least 0.3 percent by mass of the total mixture.
23. The air void content of the Job Standard Mixture shall be between 2% to 4% over the range of target binder content plus/minus 0.3 percent.
24. Using the target aggregate grading compacted specimens shall be manufactured, in pairs, at the target binder content, the target binder content plus 0.3 percent and the target binder content minus 0.3 percent. The air void content of these specimens shall be measured by the procedure described in ASTM D3203 using:-
- The maximum density of the mixture obtained using the Theoretical Maximum Specific Gravity of the loose mixture, determined in accordance with ASTM D2041 and converted to relative density using the appropriate correction factor,
 - The initial bulk density of the specimen determined in accordance with BS598, Part 107, Clause 8, as the bulk density required by ASTM D3203.

25. The air void content of the compacted material shall be within the range of 2 percent to 6 percent for 14mm nominal size or 2 percent to 8 percent for 10mm and 6mm nominal size when determined in accordance with the method described below. In addition, the air void content shall not exceed 8 percent at any point in the works, (including the joints between adjacent laid material) based upon a core pair at positions selected by the *Service Manager*.
26. Compaction shall be measured either in areas of 1000 square metres or, the full area where there is less than 1000 square metres laid in any one day. Within each area three pairs of 150mm diameter cores shall be cut at positions determined by the *Service Manager*, after the material has cooled to ambient temperature. The cores shall be cut as described in BS 598; Part 100. The cores from each pair shall be adjacent and located on a line parallel to the direction of laying. All the core pairs shall be taken from the wheel-track zones of the finished pavement. For the purposes of this clause, the wheel-track zones shall be taken to be between 0.5m and 1.1m and between 2.55m and 3.15m from the centre of the nearside lane marking for each running lane.
27. Core holes in SMA wearing course shall be reinstated by the *Contractor* with compacted fresh material having previously cleaned out the core hole and painted the base and sides with hot bitumen. This operation shall be allowed for within rates for surfacing work.
28. One bulk sample of loose mixture shall be taken per 1000 square metres in accordance with BS 598: Part 100. The Theoretical Maximum Specific Gravity of the sample of the mixture shall be determined with ASTM D2041. The mean bulk density of the six cores shall be determined in accordance with BS 598: Part 107 Clause 8. These data shall be used to calculate the air void content of each 1000 square metre panel using the method described in ASTM D3203. For individual core pair assessment the value of the Theoretical Maximum Specific Gravity from the nearest 1000 square metre area and mean value of bulk density from the core pair shall be used in the calculation.
29. The *Contractor* shall guarantee the surfacing materials and workmanship for a period of not less than two years from the date of adoption or opening the surfacing to traffic, whichever is the later. This guarantee shall exclude defects arising from damage caused by settlement, subsidence or failure of the carriageway on which the material has been laid but shall include for fretting, stripping, loss of chippings and loss of texture to below 1mm for 14mm nominal size or 0.8mm for 10mm nominal size along the nearside wheel track when measured by the sand patch method described in BS 598: Part 105.

Appendix 7/2 - Excavation, Trimming and Reinstatement of Existing Surfaces Including Adjusting the Levels of Ironwork

Adjustment of Ironwork Levels

1. The adjustment of ironwork levels shall be undertaken prior to laying the surface course unless otherwise permitted by the *Service Manager*.
2. Fire hydrants shall be accessible to the Fire Brigade at all stages of the works. Upon completion of any adjustment to the levels of a fire hydrant the *Contractor* shall ensure that the:-
 - cover is visible and removable,
 - location indicator is visible and if not inform the fire brigade,
 - frame is centred over the hydrant and a standpipe and bar can be fitted,
 - depth of the pit from the top of the outlet to the carriageway surface does not exceed 300mm.

Appendix 7/4 - Bituminous Sprays

Bond Coats

1. A bond coat shall be 50 (40/60) or 85 (70/100) pen hot bitumen or bitumen emulsion complying with BS 434 Class K1–40, applied at a rate of 0.4 (\pm 0.1) litres/m².
2. The bond coat material shall not be allowed to collect in hollows and the emulsion shall be allowed to “break” before the overlying material is laid.

Appendix 7/7 - Slurry Surfacing

General Requirements

1. The following information (where appropriate) will be provided on the Works Order:-
 - Site location and Category of site (as defined in HD/36),
 - Existing surface description,
 - Aggregate polished stone value,
 - Colour of finished surface,
 - Thickness of surface and thickness tolerance,
 - Protection required for street furniture, kerbs, markings etc,
 - Restrictions in event of adverse weather conditions,
 - Finished texture for footways.

Aggregate Abrasion Value (AAV)

2. The AAV of the slurry coarse aggregate shall comply with Table 2 of HD 28/94.

Maximum Defects

3. The class of area defects will be as Table NG 9/2 in Volume 2 of the Manual of Contract Documents for Highway Works and the class of linear defects will be as Table NG 9/3.

Surface Profile / Surface Regularity

4. The finished surface regularity will be as defined in Tables NG 9/4 to NG 9/7 inclusive.

Information to be Provided by the Tenderer

5. The tenderer will provide the following information:-
 - Copy of BS EN ISO 9002; 1994 Certificate,
 - Copy of TAIT Certificate within the Sector Scheme for Slurry Surfacing,
 - Proposed source of coarse aggregate and fine aggregates,
 - Target grading, PSV and AAV of coarse and fine aggregates,
 - Proposed binder with data sheets and cohesivity data,
 - Proposals for aftercare and remedial measures,
 - Contingency plans in the event of plant failure,
 - Test method for binder content,
 - Test method for thickness of Slurry Surfacing,
 - Trafficability time,
 - Wheel tracking test results/other measurement of resistance to deformity,
 - Water sensitivity test results and permeability test results if appropriate,
 - Accelerated ageing test results,
 - Bond tests results,
 - Shaking abrasion tests results,
 - Slurry surfacing mix cohesion.
6. The successful *Contractor* will be required to provide site specific plans and data prior to commencement of the work.

Appendix 7/21

Not Used

Appendix 11/1 - Kerbs, Footways and Paved Areas

1. The dimensions and type designations of precast concrete kerbs, edgings and quadrants shall be as described in the following Table:-

Table 1: Precast concrete Kerb, Channel and edging detail

Description	BS EN 1340 Type	Foundation Width	Foundation Depth	Backing Depth	Backing Width
45° Splayed kerb (Full battered) 125mm x 225mm	SP	375mm	100mm	175mm	175mm
Half Battered kerb 125mm x 225mm	HB2	375mm	100mm	175mm	175mm
Half battered kerb (bridge deck) 125mm x 150mm	HB3	375mm	To bridge deck surface	100mm	175mm
Bullnosed (Dropped Kerb) 125mm x 150mm	BN	375mm	130mm	100mm	175mm
Dropper kerbs (Various)	DL1/DR1/ DL2/DR2	375mm	130mm	175mm to 100mm	175mm
Channel (square) 125mm x 255mm	CS1	375mm	130mm	125mm	125mm
Channel dished 125mm x 255mm	CD	405mm	130mm	75mm	75mm (each side)
Kerb and Channel (square)	SP/HB2 CS1	600mm	100mm (below kerb level)	175mm	175mm
Double kerb 125mm x 150mm x2 + 50mm gap	2 x HB2	450mm	100mm	75mm	75mm
Safety kerb 380mm x 415mm	Proprietary approved by Overseeing Org.	610mm	200mm	230mm	315mm
Footway Edging 50mm x 150mm	EF	250mm	100mm	125mm	100mm (each side)
Quadrant 305mm radius x 225mm	QSP or QHB	550mm	130mm	175mm	175mm

Quadrant 455mm radius x 225mm	QSP or QHB	700mm	130mm	175mm	175mm
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2. Additional concrete foundation and/or backing may be specified where appropriate.
3. Safety kerbs shall be of a design approved by the *Service Manager*. Dowel bars shall be used to reinforce the foundation and backing. They shall be 16mm diameter grade 250 steel, 300mm long, placed at 450mm centres and set 75mm from the back of the kerb, 150mm in the foundation and 150mm in the backing. Safety kerbs shall be bedded on a class 1 mortar bed. All joints between safety kerbs shall be filled and pointed with Class 1 mortar.
4. Double kerbs shall be placed back-to-back separated by a 50mm gap filled with Grade ST1 mix concrete trowelled to a dense smooth uniform surface.
5. Kerb face heights above the carriageway/channel surface shall be as follows:-

Table 2: Kerb Face Heights

Standard kerb line	115 mm
Kerb line with twisted channel (false fall)	115 mm to 145 mm
Dropped kerbs at vehicular accesses	25 mm
Dropped kerbs at pedestrian crossings	Flush
Dropped kerbs at cycleway crossings	Flush
Safety kerb	325 mm

6. Channels shall be flush with the carriageway surface.
7. Kerbs and Edging shall be flush with the footway/verge surface.
8. The levels of units of kerb, channel, edging and quadrant may deviate from the above design levels ± 6 mm. At signal-controlled crossings however, the levels of dropped kerbing and associated channel at pedestrian crossing points shall be flush (± 0 mm) with one another and adjacent surfaces. Longitudinal surface regularity shall not deviate more than 3 mm in 3 m when checked with a 3 m straight edge. Horizontal alignment shall comply with Clause 702.
9. For curves of radius 12m or less, kerbs of an appropriate radius shall be used.

Materials for flexible surfacing for footways

10. The materials for flexible surfacing of footways shall be as described in Appendix 7/1.

Pre-cast Concrete Paving Flags

11. Pre-cast concrete paving flags shall meet the requirements of National annex NA of BS EN 1339:2003. Breaking loads shall be Class 3 as described in Table NA.2. Location and use criteria shall comply with in Table NA.3.

Appendix 12/1 - Traffic Signs: General

Marking of Sign Plates

1. The backs of all new traffic signs shall be permanently marked with the Task Order Number, the name of the manufacturer and the month and year of manufacture. The markings shall be clearly visible upon inspection, but discreet.

Post Foundations

2. Post shall be installed centrally in holes of the dimensions given below and filled in compliance with Clause 2602 with mix ST2 concrete to within 150mm of the ground surface.

Post diameter (mm)	Excavation (mm)
60	500 x 500 x 600 deep
76	500 x 500 x 600 deep
89	500 x 500 x 750 deep
114	750 x 750 x 900 deep
139	900 x 900 x 1500 deep
168	1000 x 1000 x 2000 deep
193	1100 x 1100 x 2200 deep

Cast Iron Finger Arm Sign Components

3. Replacement cast iron finger arm sign components shall be manufactured of ductile iron and constructed to the same pattern as the existing.

Cast Iron Finger Arm Sign Re-painting

4. Unless otherwise instructed by the *Service Manager*, sign post installations shall be re-painted in the same coloured livery as the existing.
5. The type of treatment will depend upon the level of corrosion and be generally in accordance with Series 1800, Structural Steelwork.

In situ treatment

- Preparation, including abrading and wet cleaning to remove all loose paint, rust and foreign matter,
- 1 coat of primer,
- 2 coats of paint.

Workshop treatment

- Dismantle,
- Dry blast to remove all loose paint, rust and foreign matter,
- 1 coat of primer,
- 2 coats of paint,
- Re-erect on site.

6. Installations shall not be removed from site for more than two weeks.

Appendix 30/1 - Landscape and Ecology: General

Bird Nesting Season

1. The bird nesting season applicable to this Contract shall be 1st February to 31st August.

Pesticide Records

2. A record of all pesticides used shall be maintained by the *Contractor*. Inventory data shall be submitted to the *Service Manager* within one week of any request to do so. The *Contractor* shall submit all information to the *Service Manager* in a digital format approved by the *Service Manager*.

Appendix 30/6 - Planting

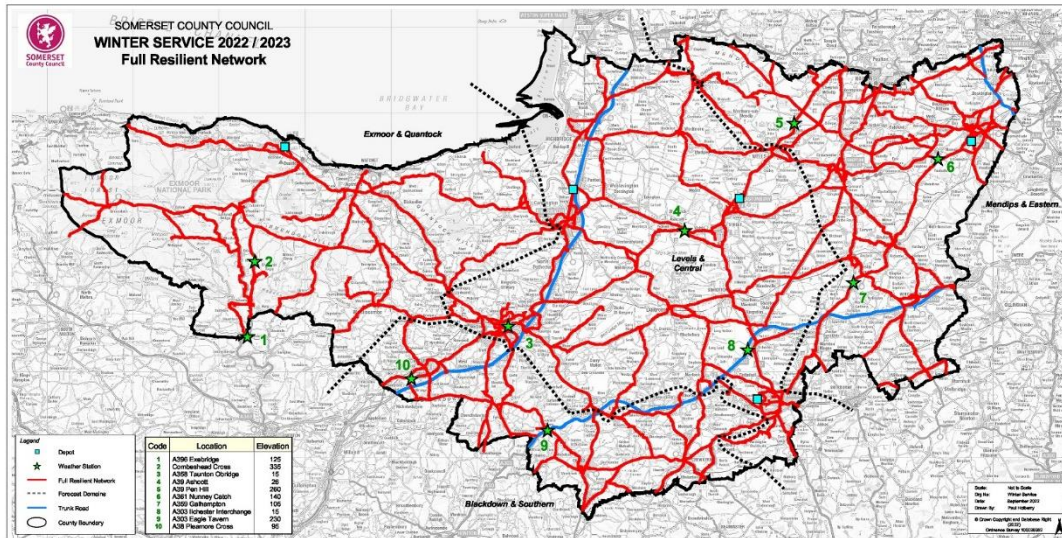
1. Hedge plants shall be set in a double row at 300mm centres in each row and staggered. Rows shall be 450mm apart.

Appendix 78/1 - Winter Service 2022/2023

Winter & Emergency Service 2022-23

Operations Directory

Section H



Map of County Salting Routes

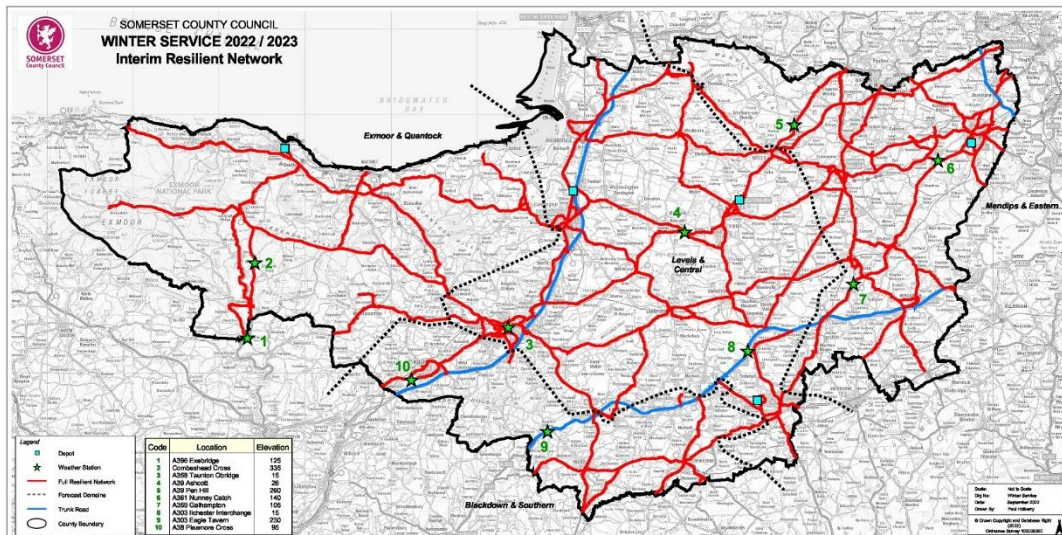
H - 1

06/09/2022

Winter & Emergency Service 2022-23

Operations Directory

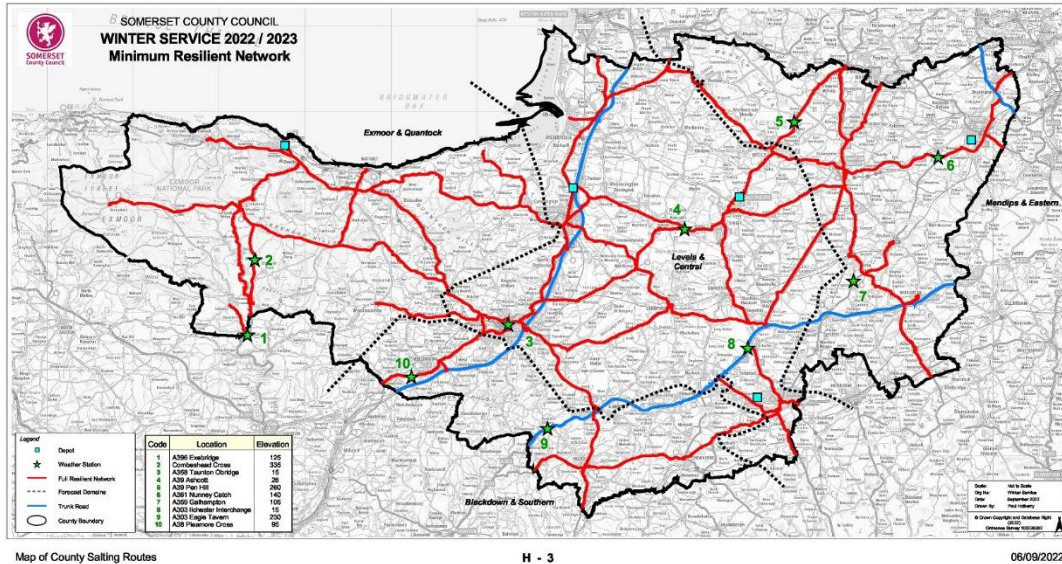
Section H



Map of County Salting Routes

H - 2

06/09/2022



Appendix 78/3 - Client's Winter Fleet as at 2022/2023

Refer to Scope S 1000.

Appendix 78/4 - Fleet Allocations at Depots as at 2022/2023

Refer to Scope S 1000.

Appendix 78/7 - Provision of Winter Weather Forecasts

Refer to Scope S 2200.

Appendix 78/8 - Maintenance of the Client's Winter Fleet – Supplementary Requirements

Annual service of snow ploughs

All snow ploughs are to be inspected and repaired annually by the *Contractor*. This work is to be carried out between April and September to ensure the equipment is serviceable for the Operational Winter Period. All servicing and repairs are to be carried out in accordance with the vehicle manufacturer's instructions.

The annual service is to include the following if not included in manufacturer's instructions: -

- Full inspection of the plough including structural integrity,
- Lubricate as required,
- Check operation of any electrical components and connections,
- Check operation of hydraulic system,
- Carry out any repairs required.

The host equipment is to be checked to ensure that any mounting brackets, hydraulic or electrical connections required to operate the plough are serviceable.

Annual Service for spreader

Spreader annual service in-line with manufactures recommendations unless directed otherwise by the *Service Manager*.

Annual service and maintenance to include:-

- Lubricate mechanical rotation pints that do not have a lubrication nipple,
- Check all electrical plug connections,
- Remove rust from damaged paintwork, prepare and paint,
- Inspect condition of Hydraulic hoses and replace, if necessary, replace all hoses every 6 years,
- Check tension of conveyor belt and check and adjust belt tracking,
- Lubricate all greasing points and bearings,
- Check and top up gearbox oil and inspect for leaks,
- Check condition of breather inside gearbox breather cap,
- Check for spinner wear and if necessary, replace the spinner,
- Replace hydraulic filter,
- Replace hydraulic oil every 3 years or 3000 hours of operation,
- Check condition and security of all catwalks and catwalk steps,
- Check condition of salt spill screens.

Thoroughly steam clean in preparation for a full annual wax oil.

All Vehicles

Tilt the cab and pressure clean vehicle underside of cab and chassis as directed by the vehicle manufacturer. Particular attention to areas exposed to the elements and where waxoyl has deteriorated in readiness for preparation and reapplication.

Care to be taken when conducting pressure cleaning not to damage electrics or engine components.

Econ demountable gritters: To be carried out with annual service

Pressure clean the demountable gritter thoroughly, inspect for defects or damage. Full inspection of structural integrity. Ensure hours meter is functioning correctly.

Remove starter motor, clean and grease armature shaft and bendix drive, refit starter, waxoyl the following:-

- Chassis frame, underside and cross members,
- Salt gate and spinner,
- Drive and idler roller bearing blocks,
- Electrical connections to starter motor.