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# HIGHWAY CONSTRUCTION SPECIFICATION FOR DEVELOPERS

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Communities Economy & Transport  
Transport Development Control

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# PREAMBLE

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## APPLICATION

This Specification shall apply to the construction of highway works for new developments in the county of East Sussex, including the Boroughs of Eastbourne and Hastings. It's scope includes new roads for adoption under Section 38 Agreements and improvements to the existing publicly maintainable highway under Section 278 Agreements and some S106 Agreements.

This Specification supersedes the ESCC Manual for Estate Roads, which has been rescinded.

For further guidance on highway design, reference should be made to the DTp document 'Manual for Streets' published in March 2007, the Highways Agency document 'Design Manual for Roads & Bridges' and also ESCC's 'Design Guidance for Developers' (currently being compiled).

## GENERAL SPECIFICATION

All highway works shall be in accordance with the 'Specification for Highway Works' (SHW), published by the Stationery Office as Volume 1 of the Manual of Contract Documents for Highway Works, as modified and extended by the following:

1. Appendix 0/1 - Additional, Substitute & Cancelled Clauses, Tables & Figures
  - (ii) Appendix 0/2 - Alterations to existing Clauses, Tables & Figures
  - (iii) Appendix 0/3.- The Numbered Appendices
  - (iv) Appendix 0/4.- The Drawings

In Appendix 0/1, an additional clause is indicated by the suffix 'AR', a substituted clause by the suffix 'SR' & a cancelled clause by the suffix 'CR' .

Insofar as any of the Numbered Appendices may conflict or be inconsistent with any provision of the SHW, the Numbered Appendices shall always prevail.

Where a Clause is altered, any original Table/Figure referred to in the Clause shall apply unless the Table/Figure is also altered. Where a Table/Figure is altered, any reference in a Clause to the original Table/Figure shall apply to the altered Table/Figure.

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# PREAMBLE

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## DEFINITIONS

In this Specification, the following words and expressions shall have the meanings hereby assigned to them, unless the context requires otherwise:

Overseeing Organisation: means East Sussex County Council, which may be shown abbreviated as ESCC.

Engineer: means the Director of Communities Economy & Transport of East Sussex County Council or his nominated representative.

Developer: means the person or firm so named as such in the corresponding legal agreement covering the works.

Contractor: or 'Developer's Contractor' means the contractor engaged by the Developer and acting on his behalf. Under the terms of the Agreement covering the works, responsibility for ensuring compliance with the Specification rests with the Developer.

## STANDARD DRAWINGS

All highway works shall be in accordance with the East Sussex County Council standard drawings as listed in Appendix 0/4 of this Specification. These drawings are provided at the back of this document.

Other Drawings brought into the Specification by reference are listed in Appendix 0/4 and relate to those contained in Volume 3 of the Manual of Contract Documents for Highway Works, published by the Stationery Office.

Safety Fences and Barriers shall be in accordance with Section 2 of 'Highway Construction Details' published by the Stationery Office as Volume 3 of the Highways Agency's Manual of Contract Documents for Highway Works.

Any works not covered by the ESCC Standard Drawings shall require the submission and approval of scheme specific drawings.

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# APPENDIX 0/1

## ADDITIONAL, SUBSTITUTE & CANCELLED CLAUSES, TABLES & FIGURES

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<b>List of Additional Clauses Tables &amp; Figures</b>		
<b>Clause No.</b>	<b>Title</b>	<b>Located on Page</b>
<b>Series 100</b>	<b>Preliminaries</b>	
170AR	General Environmental Requirements	9
172AR	As Built Drawings and CDM	9
173AR	The Use of Recycled Materials and the Disposal of Waste	9
175AR	Coordination of Works	10
<b>Series 500</b>	<b>Drainage &amp; Service Ducts</b>	
570AR	Works on Existing Drains, Sewers & Manholes	11
571AR	Gully Set in Verge	11
572AR	Small Headwall	12
573AR	Reinstatement of Drainage & Service Ducts in the Carriageway, Footway and Verge (Trench Reinstatement)	12
574AR	Disconnect and Fill Existing Manhole, Catchpit or Gully	13

<b>List of Additional Clauses Tables &amp; Figures (continued)</b>		
<b>Clause No.</b>	<b>Title</b>	<b>Located on Page</b>
<b>Series 2600</b>	<b>Miscellaneous</b>	
2670AR	Granite Setts	14

<b>List of Substituted Clauses Tables &amp; Figures</b>		
<b>Clause No.</b>	<b>Title</b>	<b>Located on Page</b>
	<b>None</b>	

<b>List of Cancelled Clauses Tables &amp; Figures</b>		
<b>Clause No.</b>	<b>Title</b>	<b>Located on Page</b>
	<b>None</b>	

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# APPENDIX 0/1

## ADDITIONAL, SUBSTITUTE & CANCELLED CLAUSES, TABLES & FIGURES

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### SERIES 100 : PRELIMINARIES

#### Additional Clauses Tables & Figures

Clause No.	Title & Written Text
170AR	<p><b>General Environmental Requirements</b></p> <p>Machinery with obvious defects, e.g. Plant which emits an unreasonable amount of noise or exhaust smoke, shall be withdrawn from service without delay.</p> <p>The Contractor shall take reasonable measures which shall include the provision and use of adequate screening in order to minimize the risk of disturbance.</p> <p>The Contractor shall take reasonable measures which shall include the provision and use of adequate water spraying equipment to minimise dust nuisance.</p> <p>The Contractor shall comply with any specific requirements in Appendix 1/9 – Control of Noise and Vibration.</p>
172AR	<p><b>As Built Drawings and CDM</b></p> <p>The Contractor is to develop the Health and Safety Plan for inclusion in the Health and Safety File in accordance with the Construction (Design and Management) Regulations 2007 and is to provide ESCC with all the relevant information necessary for inclusion in the Health and Safety File.</p> <p>Details of the requirements are given in Appendix 1/72 Health &amp; Safety File.</p>
173AR	<p><b>The Use of Recycled Materials and the Disposal of Waste</b></p> <p>1.) The Contractor shall endeavour to maximise the use of recycled and secondary materials used in the execution of the Works.</p> <p>However, with the future constraint on the availability of landfill sites in East Sussex, the Contractor shall meet the current minimum requirements for diverting waste from landfill arising from construction and demolition sites.</p> <p>2.) The Contractor shall dispose of all non recyclable waste arising from the works to a licensed waste disposal site.</p>

	<p>3. The Contractor shall comply in all respects with the provisions of The Control of Pollution Act 1974, The Control of Pollution (Amendment) Act 1989, The Environmental Protection Act 1990 and all other Acts, Regulations or Orders pertaining to the disposal of waste.</p> <p>4. The Contractor shall maintain detailed records of the use of recycled materials and the disposal of materials arising from the Works. Such records shall be in a format sufficient to determine whether or not the recycling targets agreed with the Engineer have been achieved.</p> <p>5. <i>Method Statement:</i> The Contractor shall supply a method statement stating how he will assist in achieving the targets for diverting waste from landfill, including aims and targets towards increased sustainability in construction activities, endeavouring to maximise the use of recycled and secondary materials in the execution of the Works.</p>
175AR	<p><b>Co-ordination of Works</b></p> <p>The Contractor shall ensure that he has booked roadspace under the Traffic Management Act 2004 and issued any necessary opening notices under the New Roads &amp; Street Works Act 1991 for any works taking place on the publicly maintainable highway. This requirement is in addition to the attainment of the necessary Section 38 or S278 Agreement.</p> <p>The ESCC Network Coordination Team should be contacted on 0845 60 80 193 at the soonest opportunity in this respect.</p>

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# APPENDIX 0/1

## ADDITIONAL, SUBSTITUTE & CANCELLED CLAUSES, TABLES & FIGURES

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### SERIES 500 : DRAINAGE & SERVICE DUCTS

#### Additional Clauses Tables & Figures

Clause No.	Title & Written Text
570AR	<p><b>Works on Existing Drains, Sewers and Manholes</b></p> <p>Where any Works are carried out in connection with existing drains, adequate precautions shall be taken to ensure that no earth, rubble or other foreign matter is introduced into the drains. In manholes, timber shall be placed across the benchings and any space between the boards shall be filled with sacking, which shall be kept in position until the connections, alterations or additions are completed. All material collected upon the boards and sacking shall be carefully removed and the board and sacking subsequently removed from the manholes.</p> <p>Where new connections are required to be made to existing highway drains or soakaways, the Developer shall prove by CCTV survey that the downstream run is clear and fit for the purpose and shall undertake such improvement as may be required to the satisfaction of the Director.</p>
571AR	<p><b>Gully Set in Verge</b></p> <p><i>1. New Gully in Verge :</i> Where a gully is to be set in the verge it shall be set out similar to the grip detail as shown in Drawing No. HWC9 ensuring that kerbs are laid (or the existing kerb line adjusted) to channel the surface water to the new gully. The area bounded by the new kerb and existing carriageway shall be filled with well compacted Type 1 sub-base to within 150mm of the adjoining surface level and finished with a 150mm thick ST2 concrete apron, floated smooth and levelled to ensure unimpeded flow of surface water to the new gully.</p> <p><i>2. New Gully in Verge to Replace Existing Gully in Carriageway or Kerbline (side inlet) :</i> Where an existing gully is to be replaced by a new gully set in the verge, the existing gully grating and framing is to be carefully taken up and set aside for re-use if in a serviceable condition.</p> <p>Where the existing gully chamber is no longer to be used, the existing chamber is to be filled to the underside of adjoining surfacing material with ST2 concrete, the concrete surface sealed with bitumen emulsion and the surface reinstated with bituminous material to match the adjoining surface. A new gully shall be constructed (using, where appropriate, the existing grating and frame, where serviceable) in a new location in the verge, to match</p>

	<p>the existing gully (or as otherwise instructed by the Engineer) and a connection made to the surface water drain. The kerbing and concrete apron shall be constructed as described in sub-clause 1 of this Clause.</p>
572AR	<p><b>Small Headwall</b></p> <p>1. <i>Scope/Construction :</i> Small headwalls are defined as those up to 2 sq m. Small headwalls shall be constructed in accordance with Drawing No. HWC/17 and the following sub-clauses.</p> <p>2. <i>Dimensions :</i> The dimensions of headwalls and aprons shall be approved by the Engineer.</p> <p>3. <i>Concrete Apron :</i> Headwalls shall incorporate a concrete cast in-situ apron as described below.</p> <p>4. <i>Concrete Block and In-Situ Concrete Construction :</i> Concrete blocks shall be a minimum strength of 7N/mm<sup>2</sup> and mortar shall comply with clause 2404 designation (i). In-situ concrete for walls, foundations and apron shall be grade ST4. Headwalls shall be a minimum 225mm thickness, bedded on a minimum 100mm thick concrete (cast in-situ) foundation slab, extended (for outlet headwalls) along the adjoining watercourse to form a complete apron. Pipes shall be built into headwalls ensuring no cavities between the headwall and the pipe.</p> <p>5. <i>Concrete Bag Construction :</i> Concrete bag headwalls shall be a minimum of 300mm thick, and bags bedded on a well compacted firm foundation constructed in accordance with Specification Clause 519.5. The concrete bags shall be made up in accordance with Specification Clause 519 and Drawing No. HWC/49 and tied securely when filled. Concrete bag headwalls shall be constructed on a concrete apron in compliance with sub-clause 4 of this Clause.</p>
573AR	<p><b>Reinstatement of Drainage and Service Ducts in the Carriageway, Footway and Verge (Trench Reinstatement)</b></p> <p>1. The initial excavation shall be such as to provide a clean vertical cut through the surfacing and binder course material. For deeper excavations where base material is used a minimum 75mm step should be made between binder course and base. All foundations and surfacing material shall be laid aside and kept separate from the soil. All reasonable precautions shall be taken to ensure that the foundations of adjacent pavements are not undermined.</p>

	<p>2. Where trenches are excavated in the existing carriageway and footways, the pavement construction shall be reinstated permanently in the manner shown on Drawings HWC/15 or HWC/16 as applicable. If the existing construction thickness is greater than that specified, the thickness of the reinstatement shall be increased to correspond with the existing construction.</p> <p>3. On verges, existing topsoil within 200mm of the surface shall be kept separate for subsequent re-use. Alternatively, imported topsoil may be used to a depth of 100mm or to match the existing depth of topsoil, whichever is less. Grassed areas shall be reinstated using the original turf or an equivalent seed depending on site conditions. In either case, a reasonable growth shall be established within the following 12 months.</p>
574AR	<p><b>Disconnect and Fill Existing Manhole, Catchpit or Gully</b></p> <p>The Contractor shall remove the existing cover or grating and take down to formation level. Seal all inlet and outlet pipes, remove all liquids and organic materials from inside the chamber or gully, dispose of all materials to a licensed waste disposal site (or if agreed by the Engineer, on the site in an approved manner), fill up to existing ground level, (with the specified material) deposited and well compacted in layers.</p>

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# APPENDIX 0/1

## ADDITIONAL, SUBSTITUTE & CANCELLED CLAUSES, TABLES & FIGURES

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### SERIES 2600 : MISCELLANEOUS

#### Additional Clauses Tables & Figures

Clause No.	Title & Written Text
2670AR	<b>Granite Setts</b>  Granite setts shall be obtained from an approved quarry. They shall be in accordance with BS 435, squarely hammer dressed and shall not be crooked, feather edged or tapered, nor shall they show drill holes and shall be all equal to a sample to be approved by the Director.

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## APPENDIX 0/2

### ALTERATIONS TO EXISTING CLAUSES, TABLES & FIGURES

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List of Existing Clauses, Tables & Figures to be Altered	
Clause No.	Title
507.16	Bedding Mortar
507.19	Chambers
706.7	Excavation, Trimming & Reinstatement of Existing Surfaces
709.4	Cold Milling (Planing) of Bituminous Bound Flexible Pavement
803.1	Granular Sub-base Material Type 1
901.2(i)	Aggregates for Bituminous Materials
901.21	Bituminous Base & Surface Materials
911.1	Rolled Asphalt Surface Course (Design Mix)
911.3	Coarse Aggregate
921.2	Surface Texture of Bituminous Surface Course on High Speed Roads
924.8	High Friction Surfacing – Mean Summer Scrim Count
2412.5	Re-pointing

Altered Clauses, Tables & Figures	
Clause No.	Alterations to be Made
507.16	<b>Bedding Mortars</b>  Cement mortars and proprietary quick setting mortars shall also comply with the requirements of Appendix 5/1.
507.19	<b>Chamber Cover Levels</b>  Levels given for chamber covers will be a guide only. The covers shall be set to the same level and fall as the adjacent ground or paved area.

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# APPENDIX 0/2

## ALTERATIONS TO EXISTING CLAUSES, TABLES & FIGURES

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<b>Altered Clauses, Tables &amp; Figures</b>	
<b>Clause No.</b>	<b>Title</b>
706.7	<p><b>Edge Sealing</b></p> <p>Edges of existing material to be coated with an appropriate hot bituminous binder shall include kerb faces and ironwork in addition to existing concrete and bituminous surfaces. The hot bituminous binder used for coating all vertical surfaces shall be 50 pen bitumen.</p> <p>When instructed by the Director, the Contractor shall overband the interface between the reinstatement edge and existing surface with hot screeded 50 pen bitumen. The overbanding shall not exceed 3mm thickness or 40mm width.</p>
709.4	<p><b>Cold-Milling (Planing)</b></p> <p>Where planing is required adjacent to gully gratings, drainage type kerbing etc, measures shall be taken to prevent material from entering the drainage system.</p>
803.1	<p><b>Aggregates</b></p> <p>Crushed rock shall not include the use of gypsiferous limestone or flint.</p>
901.21	<p><b>Coated Chippings</b></p> <p>Coated chippings shall not be applied to the surface course within 225mm of the kerb face.</p>
911.1	<p><b>Design Mixes</b></p> <p>The design mix notified to the Overseeing Organisation by the Contractor shall be for design mixes completed no more than six months prior to the date of their intended use.</p>
911.3	<p><b>Coarse Aggregate for High Stone Content Asphalt Surface Courses</b></p> <p>The minimum polished stone value for the coarse aggregate of high stone content rolled asphalt surface courses (55%/14mm size and 55%/10mm size) shall be as described in Appendix 7/1.</p>
921.2	<p><b>Texture Depth</b></p> <p>Individual measurements shall be not less than 1.1mm nor more than 2.5mm.</p>

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# APPENDIX 0/2

## ALTERATIONS TO EXISTING CLAUSES, TABLES & FIGURES

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Altered Clauses, Tables & Figures	
Clause No.	Title
924.8	<p><b>Mean Summer Scrim Count</b></p> <p>High friction surfacing systems shall have a Mean Summer Scrim Count (MSSC) of 0.55 sustained over the guarantee period of the product.</p>
2412.5	<p><b>Re-pointing</b></p> <p>(a) Where directed by the Engineer, defective pointing and open joints shall be re-pointed;</p> <p>(b) Joints shall be cut out to a depth of 20mm for their full width. Open joints deeper than 20mm deep shall be raked out to remove all loose material;</p> <p>(c) All dust and debris shall be removed from the prepared joints prior to re-pointing, and the joints fully fitted with mortar as described in Specification Clause 2402, Table 24/1, designation (iii);</p> <p>(d) Pointing shall be finished with weather struck finish, unless directed otherwise;</p> <p>(e) Colour of the pointing shall match the existing pointing on the structure.</p>

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## **APPENDIX 0/3**

### **LIST OF NUMBERED APPENDICES REFERRED TO IN THE SPECIFICATION**

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This appendix is comprised of two lists, A and B, of Numbered Appendices as follows:

#### **List A**

Is a complete list of Numbered Appendices referred to in the Specification for Highway Works with those not adopted marked 'Not Used'.

#### **List B**

Is a list of Numbered Appendices devised solely for this Specification.

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## APPENDIX 0/3

### LIST OF NUMBERED APPENDICES REFERRED TO IN THE SPECIFICATION

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List A: List of Numbered Appendices Referred to in the Specification for Highway Works

Volume Number	Appendix Number	Title
		<b>INTRODUCTION</b>
1	0/1	Additional, Substitute and Cancelled Clauses, Tables and Figures Included in the Contract
1	0/2	Minor Alterations to Existing Clauses, Tables and Figures Included in the Contract
1	0/3	List of Numbered Appendices Referred to in the Specification
1	0/4	List of Drawings
Not Used	0/5	Special National Alterations of the Overseeing Department of Scotland/Wales/Northern Ireland
		<b>PRELIMINARIES</b>
Not Used	1/1	Temporary Accommodation and Equipment for ESCC
Not Used	1/2	Vehicles for ESCC
Not Used	1/3	Communication System for ESCC
Not Used	1/4	Working and Fabrication Drawings
1	1/5	Testing to be Carried out by the Contractor
1	1/6	Supply and Delivery of Samples to ESCC
1	1/7	Site Extent and Limitations on Use
Not Used	1/8	Operatives for ESCC
1	1/9	Control of Noise and Vibration
Not Used	1/10	Structures to be Designed by the Contractor
Not Used	1/11	Structural Elements and Other Features to be Designed by the Contractor
1	1/12	Setting Out and Existing Ground Levels
1	1/13	Programme for Works on Existing Highway
Not Used	1/14	Payment Applications
Not Used	1/15	Accommodation Works
1	1/16	Privately and Publicly Owned Services and Supplies
1	1/17	Traffic Safety and Management
1	1/18	Temporary Diversions for Traffic
1	1/19	Routeing of Vehicles
Not Used	1/20	Recovery Vehicles for Breakdowns
1	1/21	Information Boards
Not Used	1/22	Progress Photographs
1	1/23	Risks to Health and Safety from Materials and Substances

# APPENDIX 0/3

## LIST OF NUMBERED APPENDICES REFERRED TO IN THE SPECIFICATION

List A: List of Numbered Appendices Referred to in the Specification for Highway Works

Volume Number	Appendix Number	Title
		<b>PRELIMINARIES (Continued)</b>
Not Used	1/25	Temporary Closed Circuit Television (CCTV) System for the Monitoring of Traffic
Not Used	1/26	Temporary Automatic Speed Camera System for the Enforcement of Mandatory Speed Limits at Road Works (TASCAR)
Not Used	1/27	Temporary Automatic Speed Camera System for the Enforcement of Mandatory Speed Limits at Road Works (TASCAR) – Particular Requirements
		<b>SITE CLEARANCE</b>
Not Used	2/1	List of Buildings etc. to be Demolished
Not Used	2/2	Filling of Trenches and Pipes
1	2/3	Retention of Material Arising from Site Clearance
1	2/4	Explosives and Blasting
Not Used	2/5	Hazardous Materials
		<b>FENCING AND ENVIRONMENTAL BARRIERS</b>
1	3/1	Fencing, Gates and Stiles
		<b>SAFETY FENCES, SAFETY BARRIERS AND PEDESTRIAN GUARDRAILS</b>
1	4/1	Safety Fences and Safety Barriers
1	4/2	Pedestrian Guardrails
		<b>DRAINAGE AND SERVICE DUCTS</b>
1	5/1	Drainage Requirements
1	5/2	Service Duct Requirements
1	5/3	Surface Water Channels and Drainage Channel Blocks
1	5/4	Fin Drains and Narrow Filter Drains
1	5/5	Combined Drainage and Kerb Systems
1	5/6	Linear Drainage Channel Systems
1	5/7	Thermoplastic Structural Wall, Pipes and Fittings
		<b>EARTHWORKS</b>
1	6/1	Requirements for Acceptability and Testing etc. of Earthworks Materials
Not Used	6/2	Requirements for Dealing with Class U2 Unacceptable Material

# APPENDIX 0/3

## LIST OF NUMBERED APPENDICES REFERRED TO IN THE SPECIFICATION

List A: List of Numbered Appendices Referred to in the Specification for Highway Works

Volume Number	Appendix Number	Title
		<b>EARTHWORKS (Continued)</b>
Not Used	6/3	Requirements for Excavation, Deposition and Compaction (other than Dynamic Compaction)
Not Used	6/4	Requirements for Class 3 Material
1	6/5	Geotextiles
Not Used	6/6	Fill to Structures and Fill Above Structural Foundation
Not Used	6/7	Sub-formation, Capping, Preparation and Surface Treatment of Formation
1	6/8	Topsoiling, Grass Seeding and Turfing
Not Used	6/9	Earthwork Environmental Bunds, Landscape Areas and Strengthened Embankments
1	6/10	Gabions
Not Used	6/11	Swallow Holes, Other Naturally Occurring Cavities and Disused Mine Workings
Not Used	6/12	Instrumentation and Monitoring
Not Used	6/13	Ground Improvement
		<b>ROAD PAVEMENTS – GENERAL</b>
1	7/1	Permitted Pavement Options
Not Used	7/2	Excavation and Reinstatement of Existing Surfaces
Not Used	7/3	Surface Dressing
Not Used	7/4	Bituminous Sprays
Not Used	7/5	In-Situ Recycling: The Repave Process
1	7/6	Breaking Up or Perforation of Existing Pavement
Not Used	7/7	Slurry Surfacing inc. Microsurfacing (Sheets 1, 2 and 3)
Not Used	7/8	Not Used
Not Used	7/9	Cold Milling (Paving) of Bituminous Bound Flexible Pavements
Not Used	7/10	Worksheet Pro-forma for Results of Testing for Constituent Materials in Recycled Coarse Aggregate and Recycled Concrete Aggregate
1	7/11	Overband and Inlaid Crack Sealing Systems
Not Used	7/12	Arrester Beds
Not Used	7/13	Saw-Cut Crack and Seal Bituminous Overlays on Existing Jointed Concrete Pavements
Not Used	7/14	Preparation of Jointed Concrete Pavements Prior to Overlaying and Saw-Cut and Seal of the Bituminous Overlay (11/03)
Not Used	7/15	Saw-Cut, Crack and Seal Existing Jointed Reinforced Concrete Pavements (11/03)

# APPENDIX 0/3

## LIST OF NUMBERED APPENDICES REFERRED TO IN THE SPECIFICATION

List A: List of Numbered Appendices Referred to in the Specification for Highway Works

Volume Number	Appendix Number	Title
		<b>ROAD PAVEMENTS – GENERAL (Continued)</b>
Not Used	7/16	Cracking and Seating of Existing Jointed Unreinforced Concrete Pavements and CBM Bases
Not Used	7/17	Cracking Plant and Equipment Progress Record
Not Used	7/18	Site Specific Details and Requirements for Cold Recycled Bitumen Bound Material
Not Used	7/19	Site Specific Details and Requirements for Recycled Cement Bound Material
Not Used	7/20	Site Specific Details and Requirements for Inducing Cracks
Not Used	7/21	Surface Dressing – Recipe Specification (Sheets 1, 2 and Binder Data Sheet)
Not Used	7/22	Repairs to Potholes (11/03)
		<b>ROAD PAVEMENTS – CONCRETE AND CEMENT BOUND MATERIALS</b>
Not Used	10/1	Plant and Equipment for the Construction of Exposed Aggregate Concrete Surface
		<b>KERBS, FOOTWAYS AND PAVED AREAS</b>
1	11/1	Kerbs, Footways and Paved Areas
Not Used	11/2	Access Steps
		<b>TRAFFIC SIGNS</b>
1	12/1	Traffic Signs: General
1	12/2	Traffic Signs: Marker Posts
1	12/3	Traffic Signs: Road Markings and Studs
1	12/4	Traffic Signs: Cones, Cylinders, FTD's and Other Traffic Delineators
1	12/5	Traffic Signs: Traffic Signals
Not Used	12/6	Traffic Signs: Special Sign Requirements on Gantries
		<b>ROAD LIGHTING COLUMNS AND BRACKETS</b>
1	13/1	Information to be Provided by the Engineer when Specifying Lighting Columns and Brackets
1	13/2	Column and Bracket Data Sheets 1 & 2
1	13/3	Instructions for Completion of Column and Bracket Data Sheet
Not Used	13/4	Information to be Provided when Specifying CCTV Masts

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## APPENDIX 0/3

### LIST OF NUMBERED APPENDICES REFERRED TO IN THE SPECIFICATION

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List A: List of Numbered Appendices Referred to in the Specification for Highway Works

Volume Number	Appendix Number	Title
		<b>ROAD LIGHTING COLUMNS AND BRACKETS (Continued)</b>
Not Used	13/5	(Specification for Highway Works) Typical CCTV Mast Data Sheet
Not Used	13/6	Instructions for Completion of CCTV Mast Sheets
Not Used	13/7	Information to be provided when Specifying Cantilever Masts
Not Used	13/8	(Specification for Highway works) Typical Cantilever Masts Data Sheets 1 and 2
Not Used	13/9	Instructions for Completion of Cantilever Masts Data Sheets
		<b>ELECTRICAL WORK FOR ROAD LIGHTING AND TRAFFIC SIGNS</b>
1	14/1	Site Records
1	14/2	Location of Lighting Units and Feeding Pillars
1	14/3	Temporary Lighting
1	14/4	Electrical Equipment for Road Lighting
1	14/5	Electrical Equipment for Traffic Signs
		<b>MOTORWAY COMMUNICATIONS</b>
Not Used	15/1	Motorway Communications
Not Used	15/2	Cable Duct Requirements
		<b>PILING AND EMBEDDED RETAINING WALLS</b>
Not Used	16/1	General Requirements for Piling and Embedded Retaining Walls
Not Used	16/2	Pre-cast Reinforced and Pre-stressed Concrete Piles and Pre-cast Reinforced Concrete Segmental Piles
Not Used	16/3	Bored Cast-in-place Piles
Not Used	16/4	Bored Piles Constructed Using Continuous Flight Augers and Concrete or Grout Injection Through Hollow Auger Stems
Not Used	16/5	Driven Cast-in-place Piles
Not Used	16/6	Steel Bearing Piles
Not Used	16/7	Reduction of Friction on Piles
Not Used	16/8	Non-destructive Methods for Testing Piles
Not Used	16/9	Static Load Testing of Piles
Not Used	16/10	Diaphragm Walls
Not Used	16/11	Hard/Hard Secant Pile Walls

# APPENDIX 0/3

## LIST OF NUMBERED APPENDICES REFERRED TO IN THE SPECIFICATION

List A: List of Numbered Appendices Referred to in the Specification for Highway Works

Volume Number	Appendix Number	Title
		<b>PILING AND EMBEDDED RETAINING WALLS (Continued)</b>
Not Used	16/12	Hard/Soft Secant Pile Walls
Not Used	16/13	Contiguous Bored Pile Walls
Not Used	16/14	King Post Walls
Not Used	16/15	Steel Sheet Piles
Not Used	16/16	Integrity Testing of Walls Elements
Not Used	16/17	Instrumentation for Piles and Embedded Walls
Not Used	16/18	Support Fluids
		<b>STRUCTURAL CONCRETE</b>
Not Used	17/1	Concrete – Classification of Mixes
Not Used	17/2	Concrete – Impregnation Schedule
Not Used	17/3	Concrete – Surface Finishes
Not Used	17/4	Concrete – General
Not Used	17/5	Buried Concrete
Not Used	17/6	Grouting and Duct Systems for Post-tensioned Tendons
		<b>STRUCTURAL STEELWORK</b>
Not Used	18/1	Requirements for Structural Steelwork
		<b>PROTECTION OF STEELWORK AGAINST CORROSION</b>
Not Used	19/1	(Specification for Highway Works) Form HA/P1 (New Works) Paint System Sheet Requirements for Other Work
Not Used	19/2	Requirements for Other Work
Not Used	19/3	(Specification for Highway Works) Form HA/P2 Paint Data Sheet
Not Used	19/4	(Specification for Highway Works) Form HA/P3 Paint Sample Despatch List: Sheets 1 and 2
Not Used	19/5	General Requirements
		<b>WATERPROOFING FOR STRUCTURES</b>
Not Used	20/1	Waterproofing for Concrete Structures
		<b>BRIDGE BEARINGS</b>
Not Used	21/1	Bridge Bearing Schedule

# APPENDIX 0/3

## LIST OF NUMBERED APPENDICES REFERRED TO IN THE SPECIFICATION

List A: List of Numbered Appendices Referred to in the Specification for Highway Works

Volume Number	Appendix Number	Title
		<b>PARAPETS</b>
Not Used	22/1	Parapet Schedule
		<b>BRIDGE EXPANSION JOINTS AND SEALING OF GAPS</b>
Not Used	23/1	Bridge Deck Expansion Joint Schedule
Not Used	23/2	Sealing of Gaps Schedule
		<b>BRICKWORK, BLOCKWORK AND STONEMWORK</b>
Not Used	24/1	Brickwork, Blockwork and Stonework
		<b>SPECIAL STRUCTURES</b>
Not Used	25/1	Requirements for Corrugated Steel Buried Structures
Not Used	25/2	Requirements for Reinforced Earth and Anchored Earth Structures
Not Used	25/3	Requirements for Pocket Type Reinforced Brickwork Retaining Wall Structures
Not Used	25/4	Environmental Barriers
Not Used	25/5	Requirements for Buried Rigid Pipes for Drainage Structures
		<b>MISCELLANEOUS</b>
Not Used	26/1	Ancillary Concrete
Not Used	26/2	Bedding Mortar
Not Used	26/3	Cored Thermoplastic Node Markers
		<b>LANDSCAPE AND ECOLOGY</b>
1	30/1	General, Sheets 1, 2 and 3
1	30/2	Weed Control
Not Used	30/3	Control of Rabbits and Deer
Not Used	30/4	Ground Preparation
1	30/5	Grass Seeding, Wildflower Seeding and Turfing
Not Used	30/6	Planting, Sheets 1 and 2
1	30/7	Grass, Bulbs and Wildflower Maintenance
Not Used	30/8	Watering
Not Used	30/9	Establishment Maintenance for Planting
Not Used	30/10	Maintenance of Established Trees and Shrubs
Not Used	30/11	Management of Waterbodies
Not Used	30/12	Special Ecological Measures

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## APPENDIX 0/3

### LIST OF NUMBERED APPENDICES REFERRED TO IN THE SPECIFICATION

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List A: List of Numbered Appendices Referred to in the Specification for Highway Works

Volume Number	Appendix Number	Title
		<b>MAINTENANCE PAINTING OF STEELWORK</b>
Not Used	50/1	(Specification for Highway Works) Form HA/P1 (Maintenance) Paint System Sheet
Not Used	50/2	Requirements for Other Work
Not Used	50/3	(Specification for Highway Works) Form HA/P2 Paint Data Sheet
Not Used	50/4	(Specification for Highway Works) Form HA/P3 Paint Sample Despatch List; Sheets 1 and 2
Not Used	50/5	General Requirements

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# APPENDIX 0/3

## LIST OF NUMBERED APPENDICES REFERRED TO IN THE SPECIFICATION

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List B: List of Numbered Appendices devised specifically for this Specification

Volume Number	Appendix Number	Title
1	1/72	Health and Safety File
	1/73	Coordination with Nominated Sub-Contractors
	1/74	Keeping Highways Clean
	1/75	Parking for Site Staff
	1/76	Design CBR Values
	1/77	Extraordinary Maintenance
	5/70	Sustainable Urban Drainage Systems
	5/71	Walls adjoining the Highway - Drainage
	5/72	Setting of Gully Pots
	5/73	Streams, Watercourses & Ditches
	6/14	Site Investigation Surveys and Soils Reports
	11/70	Tactile Paving
	11/71	Block Paving
	11/72	Porous Paving
	12/70	Street Nameplates
	14/70	Street Lighting
	30/70	Retention of Existing Trees

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# APPENDIX 0/4

## LIST OF DRAWINGS INCLUDED IN THIS SPECIFICATION

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Site Specific Drawings to be provided by the Developer

Drawing Number	Title	Issue Date
	<p>TO BE SUPPLIED BY THE DEVELOPER AS PART OF HIS TECHNICAL SUBMISSION</p>	

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# APPENDIX 0/4

## LIST OF DRAWINGS INCLUDED IN THIS SPECIFICATION

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Standard Drawings included in this Specification

Drawing Number	Title
HWC 1	Fences Type 3 and 4
HWC 2	Pedestrian Guardrail Type PG100
HWC 3	Pedestrian Guardrail Type PG110 and PG110A
HWC 4	Pedestrian Guardrail Type PG120 and PG120A
HWC 5	Soakaway Type A
HWC 6	Cast Iron Gully Chute
HWC 7	Gully Type AH
HWC 8	Gully Type WM4
HWC 9	Insitu Concrete Drainage Grip to Verge
HWC 10	Quickbuild Manhole and Catchpit Type RM53
HWC 11	Gully Grating and Surround Type WM1
HWC 12	Drawpit Type A1, A2, AH1 and AH2
HWC 13	Drawpit Types 1 and 2
HWC 14	Service Ducts Types A, B, C, D & E
HWC 15	Trench Reinstatement Type A, B, C and D
HWC 16	Reinstatement of Footways and Paved Areas
HWC 17	Small Headwall
HWC 18	Kerbing Type HB2 and HB3; Dropped Kerbing Type BN1; Dropper Kerbing Type DL1 and DR1
HWC 19	Kerbing Type S1, S2, S3, S4-L, S4-R, S5-L and S5-R
HWC 20	Footway Edging Type ER15, ER20, EF20, EBN20 and EBN15
HWC 21	Transition Kerb Type TK4-L & R, TK5-L & R, TK6-L & R, TK7-L & R, TL and TR
HWC 22	Kerbing Type SP; Dropped Kerbing Type BN1; Dropper Kerbing Type DL2/DR2
HWC 23	Kerbing Type HB1; Dropped Kerbing Type BN2; Dropper Kerbing Type DL3/DR3
HWC 24	Quadrant Type QHB1
HWC 25	Quadrant Type QHB2 and QHB3
HWC 26	Channel Type CS1 and Kerb Type CS2
HWC 27	Drainage Channel CS
HWC 28	Patching Details
HWC 29	Conservation Edgings and Setts
HWC 30	Conservation Kerbs
HWC 31	Conservation Quadrant
HWC 32	Footway Construction Type F9, F10, F11, F16, F17 and F18; Blockwork Edging ER1 and ER2
HWC 33	Flag Construction Footway Types F5, F6 and F12

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# APPENDIX 0/4

## LIST OF DRAWINGS INCLUDED IN THIS SPECIFICATION

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Standard Drawings included in this Specification

Drawing Number		Title
HWC	34	Footway Construction Type F22 and F23; Tactile Paving Layout Type A and B
HWC	35	Footway Construction Type F24
HWC	36	Footway Construction Type F25
HWC	37	Not Used
HWC	38	Not Used
HWC	39	Edging Type TE1
HWC	40	Eastbourne Patented Bollard and Traditional Verge Post
HWC	41	Pedestrian Refuge Island Type PRI-1, PRI-2 and PRI-3
HWC	42	Pedestrian Refuge Island Type PRI-4, PRI-5 and PRI-6
HWC	43	Pedestrian Traffic Island Type TR1a, TR1B and TR1c
HWC	44	Pedestrian Refuge Island Type PRI-7 & PRI-8
HWC	45	Not Used
HWC	46	Not Used
HWC	47	Not Used
HWC	48	Not Used
HWC	49	Concrete Bagwork
HWC	50	Martlett Sign
HWC	51	Insitu Speed Cushion Details
HWC	52	Cobble Detail
BOL	031	East Sussex Bollard

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## APPENDIX 0/4

### LIST OF DRAWINGS INCLUDED IN THIS SPECIFICATION

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Drawings brought into this Specification by Reference

HCD published by HMSO as Volume 3 of the Manual of Contract Documents for Highway Works contains the following drawings brought wholly into this specification by reference.

Drawing Number	Title	Date	Notes
F1A	Surface Water Drains – Trench and Bedding Details	Dec 91	Included for reference in Contract Documents
F2C	Filter Drains – Trench and Bedding Details	Nov 03	Included for reference in Contract Documents
F3D	Type 1 Chamber (Brick or Insitu Concrete Manhole)	Nov 03	
F11D	Type 7 Chamber (1050 Catchpit)	Nov 03	
F25B	Type 9 Chamber (Brick or Insitu Concrete Shallow Inspection Chamber)	Nov 03	
F27B	Type 11 Chamber (Precast Concrete Deep Inspection Chamber)	Nov 03	

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**APPENDIX 1/5**

**TESTING TO BE CARRIED OUT BY THE CONTRACTOR**

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1. Unless otherwise stated, all sampling and testing in this Appendix shall be undertaken by the Contractor's independent laboratory. If additional sampling and testing is required by the Director in excess of that stated in this Appendix or elsewhere in the Specification due to non-compliance with the Specification, then the full cost of the additional sampling and testing shall be borne by the Contractor.
2. All test results undertaken during the course of the Works shall be submitted to the Director in a timely manner and no later than four weeks after completion of the Works, unless the specified test duration dictates otherwise.
3. Tests comparable to those specified in this Appendix will be necessary for any equivalent work, goods or material proposed by the Contractor (see sub-Clause 105.4).
4. (N) indicates that a UKAS accredited laboratory test report or certificate is required.
5. Unless otherwise shown in this Appendix, test certificates for work, goods or material as scheduled under any one Clause are required for all such work, goods or material in the Works.
6. Reference to the test standards and the types of tests specified in this Appendix may change due to the continuing introduction of European Standards. This shall be considered normal practice and shall not warrant any increase in submitted sampling/test rates.
7. The Contractor shall supply to the Director information regarding samples taken and test certificates on a regular basis and within a reasonable timescale. Results of any performance testing required, such as surface macrotecture, shall normally be supplied within 24 hours of the test being carried out.
8. Bulk samples relating to bituminous compliance samples shall be retained until the test result indicates that the material complies with the specification. Where compliance failures are indicated, the bulk samples shall be retained for a minimum period of one month after issue of the test report or until the non-compliance has been satisfactorily resolved.
9. All test failures or observed anomalies shall be notified to the Director immediately in order that timely action to resolve the problem can be implemented.
10. When a Frequency of Testing is stated as daily or at any other time, interval testing is only required when the material is being used.
11. Method Statement  
The Contractor shall supply a method statement stating how testing will be managed and how trends and non-compliance will be dealt with.

NUMBERED APPENDICES

**APPENDIX 1/5**

**TESTING TO BE CARRIED OUT BY THE CONTRACTOR (continued)**

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
<b>Series 300</b>					
306	Permanent fencing				Quality management schemes applies.
	Concrete Components	Cover to reinforcement	1 per consignment (max 1 per 100 components) (BS 1722)		Tests/samples should not normally be required.
308	Gates and stiles				Quality management schemes applies.
	Reinforced concrete Posts	Cover to reinforcement	1 per consignment (max 1 per 100 components) (BS 3470)		Tests/samples should not normally be required.
308 & 311	Preservation of timber	Full sapwood penetration	As required in sub-Clause 311.2(v)	Required for each batch	Quality management schemes applies. (Tests/samples should not normally be required).
<b>Series 500</b>					
501	Pipes for drainage and service ducts				Product certification scheme applies.
	Vitrified clay				
	Concrete-PC/SRC not exceeding 900mm dia.			Only required for pipes which are not kitemarked	
	Concrete-Pre-stressed not exceeding 900mm dia.				
	Iron-cast				
	Iron-ductile			Only required for pipes which are not kitemarked	
	PCV-U				
	GRP				
	Plastics, see Table 5/1				
	Corrugated steel	Manufacturer's tests		Required (AASHTO)	
	Corrugated steel bitumen protection not exceeding 900mm dia.				
Other materials			Required	BBA certification (or equivalent) applies.	
503	Pipe bedding	Grading and fines content	1 per source or as directed by the Director	Required	
		Water-soluble sulphate (WS) content (N)	5 per source		

**APPENDIX 1/5**

**TESTING TO BE CARRIED OUT BY THE CONTRACTOR (continued)**

Clause	Works, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
507	Chambers				Product certification scheme applies.
	Pre-cast concrete				
	Corrugated galvanised Steel	Manufacturer's tests		Required	
	Manhole steps			Only required for pipes which are not quality marked by a UKAS accredited body	
	Steel fitments				
	Covers, grates and Frames			Only required for pipes which are not quality marked by a UKAS accredited body	Product certification scheme applies.
	Cover bolts				Quality management scheme applies
508	Gullies and pipe junctions				Product certification scheme applies.
	Pre-cast concrete				
	Clay				
	Cast iron and steel				
509	Watertightness of joints	Air test	All pipelines with watertight joints (As required in Appendix 5/1 for partly watertight joints)	Required	
513	Pre-cast hollow concrete blocks	Manufacturer's tests		Required	
514	Fin drains	Manufacturer's tests		Required	BBA certification (or equivalent) applies.
515	Narrow filter drains				
	Geotextiles, pipes and Fittings	Manufacturer's tests		Required	BBA certification (or equivalent) applies.
516	Combined drainage and kerb systems	Load test		Required	Certification that the systems comply with Clause 516 is required.
517	Linear drainage systems	Load test		Required	Certification that the systems comply with Clause 517 is required.
518	Thermoplastic structured wall, pipes and fittings	(Manufacturer's tests)		Required	BBA certification (or equivalent) applies.

NUMBERED APPENDICES

**APPENDIX 1/5**

**TESTING TO BE CARRIED OUT BY THE CONTRACTOR (continued)**

Clause	Works, Goods or Material		Test	Frequency of Testing	Test Certificate	Comments	
<b>Series 600</b>							
601, 631 to 637, 640	Acceptable material				Required	Where used, Recycled Aggregate shall be in accordance with 601.12 and 601.18.	
	Class	General Description				The test frequency can be relaxed by the Director if consistency can be demonstrated.	
	1	General granular fill		Grading/uniformity coefficient	Source approval and twice a week or as directed by the Director		
				mc/MCV (N)	One per day as per source		
				SMC of chalk (N)	Source approval		
		1C only	Resistance to fragmentation (N)	Source approval and monthly			
	2	General cohesive fill		Grading	Twice a week or as directed by the Director		The test frequency can be relaxed by the Director if consistency can be Demonstrated.
				mc/MCV/PL Undrained shear strength (N)	2 per 1000 m <sup>3</sup> up to max of 5 per day		Required parameters are stated in Appendix 6/1 where appropriate.
				SMC of chalk (N)	Twice a week		
				Bulk density (pfa) (N)	2 per 1000 m <sup>3</sup> up to max of 5 per day		
	3	General chalk fill		mc (N)	2 per 1000 m <sup>3</sup> up to max of 5 per day		
				SMC (N)	Daily or as required by the Director		
	4	Landscape fill		Grading (mc/MCV) (N)	Daily or as required by the Director		
	5	Topsoil		Grading	Daily or as required by the Director		Full compliance with BS 3882 per source.
	6	Selected granular fill		Grading/uniformity coefficient	1 per 400 tonnes or as required by the Director		Unless approval shows source to be non plastic. Specification parameters stated in Appendix 6/1, excluding 6F4 and 6F5. Excluding 6F4 and 6F5.
				PI/LL (N)	Daily or as required by the Director		
				Resistance to fragmentation (N)	Weekly for on site material or as required by the Director		
				omc/mc,mc or MCV (N)	1 per 400 tonnes or as required by the Director		

NUMBERED APPENDICES

**APPENDIX 1/5**

**TESTING TO BE CARRIED OUT BY THE CONTRACTOR (continued)**

Clause	Works, Goods or Material		Test	Frequency of Testing	Test Certificate	Comments		
601, 631 to 637, 640 (Cont)	Class	General Description			Required	At least 5 tests per source for sulphur compounds over the course of the contract in accordance with TRL Report 447, tests 1-5.		
	6 (Cont)	Selected granular fill	Organic matter/water soluble sulphage (WS) (N)	Weekly or as directed by the Director				
			Oxidisable sulphides (OS) content and total potential sulphage (TPS) content (N)	Weekly or as directed by the Director				
			pH/chloride ion content (N)	Weekly or as directed by the Director				
			Resistivity (N)	As required by the Director				
			Undrained and drained shear parameters (N)	As required by the Director				
		6F4 & 6F5	Selected granular fill	Size designation and overall grading category			1 per week or as directed by the Director	Results of routine control tests from the factory production control system operated by the producer to be provided.
		Maximum fines and oversize categories		1 per week or as directed by the Director				
		Volume stability of blast furnace slag		Source approval and 6 monthly				
		Volume stability of steel (BOF and EAF) slag		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)	
		SMC of chalk (N)	Twice a week or as required by the Director					
		PI/LL(N)	Daily or as required by the Director					
		Organic matter/water soluble (WS) sulphate content (N)	Twice a week or daily where sulphates are expected or as required by the Director					
		Oxidisable sulphides (OS) content and total potential sulphate (TPS) content (N)	Twice a week or daily where sulphides are expected or as required by the Director					
		PH/chloride ion content (N)	Weekly or as required by the Director					
		Resistivity (N)	As required by the Director					

NUMBERED APPENDICES

**APPENDIX 1/5**

**TESTING TO BE CARRIED OUT BY THE CONTRACTOR (continued)**

Clause	Works, Goods or Material		Test	Frequency of Testing	Test Certificate	Comments
601, 631 to 637, 640 (Cont)	Class	General Description			Required	Specification parameters stated in Appendix 6/1.
	7 (Cont)		Undrained and drained shear parameters (N)	As required by the Director		
			Permeability (N)			
	8	Miscellaneous fill	mc/MCV (N)	Daily or as required by the Director		
	9	Stabilised materials	Pulverisation	1 per lane width per 200m length or as required by the Director		
			mc/MCV (N)			
			Bearing ratio (N)			
		Pulverised fuel ash	Chemical analysis	1 per consignment or as required by the Director		
	Furnace bottom ash	Grading	1 per 300 tonnes or as required by the Director			
	Fill adjacent to cementitious material or metallic items	Water-soluble sulphate (WS) content, oxidisable sulphides (OS) content and total potential sulphate (TPS) content (N)	1 per 400 tonnes or per location if less than 400 tonnes or as required by the Director	At least 5 tests per source for sulphur compounds over the course of the contract in accordance with TRL Report 447, tests -5.		
602	Earthworks material beneath surface of a road or paved central reserve		Frost heave (N)		Required	
	(i) Off site source			1 every four months		
	(ii) On site source			As required		
609 621	Geotextiles		Tensile load	1 per grade per source	Required	Quality scheme applies. Any specific requirements are given in Appendix 6/5 or 6/9 as appropriate.
			Permeability			
			Pore size			
612	Compaction of fills				Required	
	Method compaction		mc (N)	1 per location per day		
	End product compaction		Optimum mc (2.5 kg rammer/vibrating hammer method) (N)	Each class or sub class of material		
			Field dry density (N)	1 per 400 tonnes or as required by the Director		
614	Cement stabilisation to form capping		Rate of spread of cement	1 per 500 square metres of cement spread	Required	

**APPENDIX 1/5**

**TESTING TO BE CARRIED OUT BY THE CONTRACTOR (continued)**

Clause	Works, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
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 or as required by the Director	Required	
	Drainage layers	Grading	1 per 400 tonnes or as required by the Director		
	Reinforcing elements	Coeff. of friction	Each type of element with each type of fill		
		Anchor elements			
624	Ground anchorages	Proof loading	As required in Appendix 6/10	Required	
626	Gabions			Required	Details of source and test certification for properties stated in Appendix 6/10.
	Fill	Grading	1 per 400 tonnes or as required by the Director		
		10% fines values (N)			
	Geomesh	(As appropriate to properties stated in Appendix 6/10)	1 per 400 square metres		
	PVC coated wire			Required (ASTM G23)	Certification.
642	Earthworks materials for corrugated steel buried structures	Constrained soil modulus (M)	3 on each side of each structure	Required	
<b>Series 700</b>					
710	Constituent materials in recycled aggregate	Quality control	Checks are to be carried out by the Contractor in accordance with the procedure set down in 'Quality Control – Production of Recycled Aggregates' and with those in this Clause	Required	The quality control procedure should be in accordance with the 'Quality Control – Production of Recycled Aggregates' published by Waste and Resources Action Programmes available from WRAP website, <a href="http://www.wrap.org.uk">http://www.wrap.org.uk</a> .  The results of all quality control checks shall be delivered promptly to the Director on request.
711	Overbanding and inlaid crack sealing systems			Required	BBA certification (or equivalent) applies.

NUMBERED APPENDICES

**APPENDIX 1/5**

**TESTING TO BE CARRIED OUT BY THE CONTRACTOR (continued)**

Clause	Works, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments			
<b>Series 800</b>								
801, 803, 804, 805	Unbound, hydraulically bound and other sub-base material (other than slag) adjacent to cement bound materials, concrete pavements, structures or products	Water-soluble sulphate (WS) content (N)	1 per 400 tonnes or per location if less than 400 tonnes	Required	Frequency of testing may be increased on instruction by the Director.			
		Oxidisable sulphides (OS) content and total potential sulphate (TPS) content (N)	1 per 400 tonnes or per location if less than 400 tonnes					
	Sub-base mixtures beneath surface of a road or paved central reserve. * See Note N2.	Frost heave (N)	1 per source		Frequency of testing may be increased on instruction by the Director.			
		Grading and fines content	1 per week or as required by the Director			Frequency of testing will depend on source variability and size of scheme.  Results of routine control tests from the factory production control system operated by the producer to be provided.  Supplier declare value grading range and tolerances to be supplied to Director before start of Works  Where recycled coarse aggregate is used in unbound mixtures, it shall have been tested in accordance with Clause 710 and shall comply with the requirements in Table 8/3.  Crushed gravels shall only be used on written approval from the Director.  The Director may request trafficking or other performance trials for any proposed source.		
							Plastic index (N)	
							Resistance to fragmentation (N)	6 monthly or as required by the Director
							Resistance to wear-micro-Deval test	
		Resistance to freezing and thawing (magnesium sulphate soundness (N)	1 per source			Only where specifically required by the Director. Where required by the Director.		

NUMBERED APPENDICES

**APPENDIX 1/5**

**TESTING TO BE CARRIED OUT BY THE CONTRACTOR (continued)**

Clause	Works, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments	
801, 803, 804, 805 (Cont)		Water absorption (N)	As required by the Director	Required		
		Volume stability of blast furnace slag	6 months or as required by the Director			
		Volume stability of steel (BOF and EAF) slags	6 monthly or as required by the Director			
		CBR (N)	1 per source and then monthly or as required by the Director			
		OMC/mc (N)	As required by the Director	Required	Declared values from the factory production control system operated by the producer to be provided.	
		Density (N)				
		Water absorption (N)				
809	Slag bound mixtures			Required		
	Aggregates	Grading and fines content	1 per week or as required by the Director		Results of routine control tests from the factory production control system operated by the producer to be provided.	
		Resistance to freezing and thawing (magnesium sulphate soundness) (N)	1 per source			Where required by the Director.
		Water absorption (N)	As required by the Director			
<b>Series 900</b>						
901, 925, 937, 938, 943, App 7/1	Aggregates for asphalt concrete materials			Required	National quality management sector scheme applies. The Director shall retain the right to inspect, audit, approve or prohibit supplies from any source independent of information provided by the Contractor.	
	Resistance to fragmentation (hardness)	Resistance to fragmentation (N)	Monthly or as required by the Director			
	Resistance to freezing and thawing (durability)	Soundness (N)	1 per source			Where required by the Director.
		Water absorption (N)	As required			
	Cleanness	Sieve test (mass passing 0.063mm sieve) (N)	Monthly			Washing and sieving method to be used.
	Shape	Flakiness index (N)	Monthly			
	Blastfurnace slag	Bulk density (N)	1 per 500 tonnes or as required by the Director Once every 4 months			(BS EN 1097-3).
Soundness (N)						

**APPENDIX 1/5**

**TESTING TO BE CARRIED OUT BY THE CONTRACTOR (continued)**

Clause	Works, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments	
901, 925, 937, 938, 943, App 7/ (Cont)		Dicalcium silicate disintegration (N)	1 per 500 tonnes or as required by the Director	Required	(These are for air-cooled Blastfurnace slag).	
		Iron disintegration (N)				
	Steel slag	Bulk density	1 per 500 tonnes			
		Volume stability (N)				
	Coarse aggregate for surface courses	Resistance to polishing (PSV (N))	Minimum of 3 tests per source undertaken within previous six months of intended surfacing works and tested by at least two independent laboratories			The Director shall retain the right to carry out independent testing of any proposed source and to categorise aggregate sources based on historical and/or in-service performance.
		Resistance to surface abrasion (AAV) (N)				
	Binders for bituminous materials	Penetration (N)	1 per 750 tonnes or as required by the Director		Required	National quality management sector schemes apply. Modified binders should have a BBA HAPAS Roads and Bridges certificate. In the event that no such Certificates have been issued, then in the interim only modified binders undergoing BBA assessment should be considered for approval by the Director.
		Softening point (N)	1 per 750 tonnes			
		(Other BS EN tests)	As required			
	903 to 912, 914, 916, 925, 926, 930, 932 to 938, 942, 943, 946 to 948	Bituminous mixtures	Grading (N)		See Note N1	
Binder content (N)			BBA HAPAS Certificate required for Permanent Cold Lay Surfacing materials used for patching and reinstatement. See Note N1.	Plant 'Q' value for each proposed source of bituminous supply shall be supplied to the Director on a weekly basis.  The Director shall retain the right to inspect, audit, approve or prohibit supplies from any source independent of information provided by the Contractor.		

NUMBERED APPENDICES

**APPENDIX 1/5**

**TESTING TO BE CARRIED OUT BY THE CONTRACTOR (continued)**

Clause	Works, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments	
929	Base and binder course macadams	In situ air void content (N)	Schemes greater than 4500 square metres per lane or as required by the Director	Required	A Nuclear Density Gauge can be used as an alternative method with the permission of the Director and satisfactory correlation with Core densities.	
		Refusal air void content (N) (PRD Test)	As required by the Director Test frequencies as stated in this appendix (Note N1)			
		Binder volume (N)				
		Grading (N)				
		Binder content (N)				
911	Rolled asphalt surface course (design mix)	Stability value (N)	1 per source	Required	National quality Management sector schemes apply.  Contractor to submit full details of design mix proposals to Director before start of works.	
		Flow value (N)				
		Density (N)				
915 925	Coated chippings	Grading (N)	1 per stockpile or as required by the Director	Required		
		Binder content (N)				
		Flakiness index (N)	1 per source			
		Resistance to polishing (PSV) (N)	Minimum of 3 tests per source undertaken within previous six months of intended surfacing works and tested by at least two independent laboratories	Required (BS EN 1097-8)		
		Resistance to surface abrasion (AAV) (N)		Required		
		Hot sand test (N)	1 per source or as required by the Director	Required		Not required for coated chippings for surface dressing to Clause 919.
		Rate of spread (N)	Every 500 metres initially required where minimum texture depth is specified in Appendix 7/1	Required		Frequency can be reduced to daily after 3 satisfactory results, but not less than 1 test per lane per site.

**APPENDIX 1/5**

**TESTING TO BE CARRIED OUT BY THE CONTRACTOR (continued)**

Clause	Works, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
921	Surface macrotexture	BS EN 13036-1 Volumetric Patch Technique (N)	As specified in Clause 921,922 and 942 (13) or as required by the Director	Required BS EN 13036-1	The precise location of the tests shall be clearly identified on the report so that in-service performance tests can be conducted at a later date.
924	High friction surface	Quality control checks	As required in sub-clause 924.5	Required	BBA HAPAS Roads and Bridges Certification (or equivalent) applies.
		System coverage	As required in sub-clause 924.6		
	Aggregate	Resistance to polishing (PSV) (N)	1 per source and as required for coated chippings in sub-Clause 915.3	Required	The Director shall retain the right to carry out independent testing of any proposed source and to categorise aggregate sources based on historic and/or in-service performance.
937	Stone mastic asphalt (SMA) binder course and regulating course			Required	National quality management sector- schemes apply.
		Binder drainage tests	In accordance with DD 232		
942	Thin surface course systems			Required	National quality management sector scheme applies. BBA certification (or equivalent) applies.
		Binder drainage test	In accordance with DD 232		
943	Rolled asphalt surface course (performance- related design mix)			Required	National quality management sector scheme applies.
		Grading (N)	Appendix 1/5, Note N1		
		Binder content (N)			
		Density (N)	As required		
		Wheel-tracking rate (N)			
		Wheel-tracking rut depth (N)			
		Air voids content			
944	Performance-specified base	As required of Specification	Appendix 1/5, Note N1 and as required of Specification	Required	National quality management sector scheme applies.
948	Cold recycled bitumen bound material	Dynamic Plate test (Elastic Modulus) and Stiffness Value	See App 7/18		

**APPENDIX 1/5**

**TESTING TO BE CARRIED OUT BY THE CONTRACTOR (continued)**

Clause	Works, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
948 (Cont)	Cold in-situ recycling			Required	
	Cement	TRL 386	As recommended in TRL 386 or as required by the Director		Sampling and testing regime to be agreed with Director before start of works.  Determination of as-installed performance using Dynamic (light) plate loading within 24 hours of installation may be required by Director.
	Foamed bitumen	TRL 386			

**Series 1000**

1001 1030 1035 1044	Cement			Required	Quality management and product certification schemes apply.
	Portland cement CEM I			Required (BS 6610)	Tests and test certificate are required.
	Portland blasturnace Cement				
	Blastfurnace cement CEM 111/A				
	Portland pfa cement CEM 11/B-V				
	Pozzolanic cement CEM 1V/A				
	Portland cement with microsilica				
	Pulverised-fuel ash				
	Ground granulated blast furnace slag				Tests and test certificates are required. Product certification schemes apply to pfa and slag.
	Admixtures				
Aggregates	Resistance to freezing and thawing – magnesium sulphate soundness (N)		1 per source	Required	Results of routine control tests from the factory production control system operated by the producer to be provided.
	Water absorption (N)		(As required)		
	Flakiness index (N)		Monthly		
	Shell content (N)		1 per source		
	Resistance to fragmentation (N)		6 monthly		
	Resistance to polishing (PSV) (N)		1 per source		
	Resistance to abrasion (AAV) (N)		1 per source		
	Grading and fines content (N)		1 per week per source		Washing and sieving method to be used for CBM aggregate.

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**APPENDIX 1/5**

**TESTING TO BE CARRIED OUT BY THE CONTRACTOR (continued)**

Clause	Works, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
1001 1030 1035 1044 (Cont)		Chloride content (N)	Weekly or otherwise agreed (1 per source for CBM Aggregate)		At least 5 per source for sulphur compounds.
		Total sulphur (TS) and acid-soluble sulphate (AS) content (N)	Every 6 months		
1036 to 1040	Cement bound material	Laboratory wet density (N)	1 per cube or as required by Director	Required	
		In situ wet density (N)	As required in Clause 1040		
		Cube strength (N)	As required in Clause 1040		
	CBM 1 and 1A  CBM 2 and 2A	Immersed cube strength (N)	5 per mix or as required by Director		
1043	Foamed concrete	Cube strength (N)	2 cubes per 12m <sup>2</sup> or as required by Director	Required	
<b>Series 1100</b>					
1101 1101NI	Precast concrete kerbs, channels, edgings and quadrants	Transverse strength	Minimum of 3 per 1000 units of each product (BS 7263-1 or as required by Director)	Required	
1104	Precast concrete flags	Transverse strength	Minimum of 3 per 1000 units or as required by Director of each product (BS 7263-1)	Required	Appropriate tests/samples should be scheduled where not included under other Clauses.
	Bedding	Granular material Mortar			
1107	Concrete block paving	Compressive strength	16 per 5000 blocks (BS 6717) or as required by Director	Required	Washing and sieving method to be used.  Materials other than those specified in BS 7533 : Part 3, Clause 4.3.1 shall only be used for category IV applications, including crushed glass unless otherwise permitted by Director.
		Laying course sand for concrete pavers	Grading (N)		
		Jointing course sand	Grading (N)		Washing and sieving method to be used.

NUMBERED APPENDICES

**APPENDIX 1/5**

**TESTING TO BE CARRIED OUT BY THE CONTRACTOR (continued)**

Clause	Works, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
1108	Clay pavers	Transverse breaking load	Minimum of 10 per 10000 pavers (BS 6677: Part 1) or as required by Director	Required	
		Skid resistance	Minimum of 5 per 10000 pavers (BS 6677: Part 1) or as required by Director		
	Laying course sand for Concrete pavers	Grading (N)	As stated in BS 7533 : Part 3 or as required by Director		Washing and sieving method to be used.  Materials other than those specified in BS 7533 : Part 3, Clause 4.3.1 shall only be used for category IV applications, including crushed glass unless otherwise permitted by Director.
	Jointing course sand	Grading (N)	As stated in BS 7533 : Part 3 or as required by Director		Washing and sieving method to be used.
<b>Series 1200</b>					
1202	Permanent traffic signs			Required (where considered appropriate)	Quality management scheme applies.  Certification that the traffic signs capable of passing the tests in BS 873 : Part 1 is required.
1207	Anchorage in drilled holes to support of traffic signs	Loading test on site	As required by Director		
1210	Holding down bolts and anchorages to bases of permanent bollards			Required where considered appropriate by Director	Certification that the holding down bolts and anchorages are capable of complying with the performance requirements of BS 873 : Part 3 is required.
1212	Road markings				National quality management sector scheme applies. Procedures are given in BS EN 1824.
		Tests specified in BS EN 1824	1 per source	Required	
<b>Series 2400</b>					
2401	Masonry cement			Required (BS 5224)	Quality management scheme applies.
		Chloride content			Tests to be carried out by the manufacturer and results included in the test certificate.

NUMBERED APPENDICES

**APPENDIX 1/5**

**TESTING TO BE CARRIED OUT BY THE CONTRACTOR (continued)**

Clause	Works, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments	
2402	Sand	Grading (N)		Required per consignment (BS 1199 and 1200)		
		Chloride content	Monthly		Tests to be carried out by the manufacturer and results included in the test certificate.	
2404	Mortar admixtures			Required (BS 4887) (BS 5075)		
2405	Lime			Required (BS 890)		
2406	Bricks			Required per source		
		Clay	Soluble salt content Efflorescence Compressive strength Water absorption Initial rate of suction) (BS 3921)		Test to be carried out by the manufacturer and results included on the test certificate.	
		Calcium silicate		Required (BS 187)		
		Concrete		Required (BS 6073 : Part 1)		
2407	Blocks					
		Clay	Soluble salt content Efflorescence Compressive strength Water absorption Initial rate of suction) 9BS 3921)			
		Concrete		Required (BS 6073 : Part 1)		
<b>Series 2600</b>						
2601	Bedding mortar materials			Required for each batch	Certification in accordance with Clause 2601 is required.	
		Bedding mortar	Flow cone tests	Each batch		Laboratory tests.
			Flow between glass plates			
			Compressive strength			
			Expansion tests			
			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 172 : Part 16)	Certification by powder manufacturer and coating applicator is required.	

**APPENDIX 1/5**

**TESTING TO BE CARRIED OUT BY THE CONTRACTOR (continued)**

Clause	Works, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
<b>Series 3000</b>					
3001	General				Inspection Reports as required in 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**

**N1**

Records of all site deliveries shall include Scheme, tonnages, load locations, delivery and rolling temperatures, location of test samples, compacted density, texture depth, chipping rate of spread etc. and shall be supplied to ESCC on a daily basis. The turnaround for test analysis certificates to BS 598 : Part 102 Binder content and grading of mineral aggregate shall be no greater than four weeks from date of laying. Test results for material laid on critical sites or where compliance problems are suspected may be required at shorter intervals by the Director. All non-compliances **MUST** be immediately notified (**within 24 hours of detection**) to the Director.

**Sampling and Testing Frequencies**

Bituminous materials delivered to site shall be sampled and tested for binder content and aggregate grading in accordance with BS 598 : Part 102 at the tonnage frequencies stated below.

The sampling/testing to BS 598 : Part 102 shall be phased throughout the calendar year to allow ESCC to assess overall quality of supply.

All supply plants shall have an equal chance of being sampled and tested at some stage and the number of samples taken for each plant shall be pro-rata and reflect the likely total annual delivery tonnage to East Sussex during a calendar year.

**Carriageway Materials**

Base (Roadbase)

Dense Macadam	1 per 100 tonne
Heavy Duty Macadam and performance mixtures	1 per 100 tonne
Hot Rolled Asphalt	1 per 75 tonne

(For single schemes over 200 tonnes per day at least 3 samples per material per day are required)

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### Binder Course

Dense Macadam	1 per 100 tonne or part thereof
Heavy Duty Macadam & Performance Mixtures	1 per 100 tonne or part thereof
Hot Rolled Asphalt	1 per 75 tonne or part thereof
Other Bituminous Materials	1 per 100 tonne or part thereof

(For single schemes over 200 tonnes per day at least 3 samples per material per day are required)

### Surface Course

Close Graded and Dense Macadam	1 per 100 tonne or part thereof
Hot Rolled Asphalt	1 per 75 tonne or part thereof
Proprietary Materials	1 per 100 tonne or part thereof

(For single schemes over 200 tonnes per day at least 3 samples per material per day are required.)

### **Footway Materials**

#### Binder course and Surface course

All Materials	1 per 75 tonne or part thereof
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The frequency of sampling/testing may be reduced with the Director's permission if plant quality for any one material type is consistently high and there is little risk of failure.

Bituminous loads which are found to be under or over the specified temperature or otherwise visually defective when delivered to site shall not be laid without the permission of the Director or his/her site representative.

If the material needs to be laid for access or safety reasons, then the location and extent of the affected load shall be clearly marked and the Director informed immediately.

### **N2**

#### Type 1 Sub-Base (Recycled Materials)

ESCC actively encourages the use of recycled materials where appropriate. However, the Contractor shall demonstrate comparable performance with historical Type 1 specifications (prior to January 2004). Trafficking trials may be required for flexible road construction on A class roads.

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**APPENDIX 1/6**  
**SUPPLY AND DELIVERY OF SAMPLES TO ESCC**

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Samples of goods and materials (including source samples) may be required during the course of the Works – these shall be supplied and delivered by the Contractor as required by the Director

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**APPENDIX 1/7**

**SITE EXTENT AND LIMITATIONS OF USE**

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**Site Extent**

1. The extent of the site of operations shall be that marked on the highway by the Director or that shown on any plans that the Director may approve.
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 Director.
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 Director.

**Limitations on Use**

1. The Contractor shall obtain the written approval of the Director to the siting of all offices and accommodation, huts, plant, equipment, materials and stockpiles within the highway. Also, confine the use of land to purposes approved by the Director.
2. Where the Contractor has obtained written approval from the Director for the siting of any accommodation, huts, plants, equipment, materials and stockpiles, the Contractor shall take all due care to avoid damage to turfed and grass seeded verges, and shall include in his rates for reinstatement of all damaged areas including re-forming the surface with at least 100mm of approved topsoil, trimming and sowing with grass seed.
3. The Contractor shall protect all drains, sewers, services and the Highway from the adverse effects of moving plant and bringing in materials. Any damage shall be made good to the satisfaction of the Director at the Contractor's expense.
4. The Contractor shall not be permitted to burn any material on site unless agreed by the Director and Environmental Health Department.
5. Upon completion of the works, or before then if so instructed by the Director :
  - i) Remove all temporary works, surplus materials and the like;
  - ii) Grade or shape the areas to its original contours;
  - iii) Restore the area to a condition similar to that existing at the commencement of the Works and to the satisfaction of the Director;
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 or on site. The standard of construction shall be suitable in all respects for the class or classes of traffic using the access.

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**APPENDIX 1/9**  
**CONTROL OF NOISE AND VIBRATION**

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**1. Normal Working Hours**

- 1.1 For works on the existing highway, the normal working hours shall be from 08.00 hours to 18.00 hours Monday to Fridays, and 08.00 hours to 13.00 hours on Saturdays. No work shall be carried out on Sundays or Public Holidays, unless agreed with the Director and Environmental Health Department. Working hours on development sites shall be in accordance with those stipulated by the Planning Authority.
- 1.2 Should the Contractor need to undertake work on the existing highway outside of the normal working hours, then this shall only be with the written consent of the Director.

**2. Noise**

- 2.1 The Contractor shall limit the emission of noise from the Site so that at any point 1 metre from a window of a habitable room in any dwelling in the vicinity, the noise level (measured in accordance with Appendix B of BS 5228:1984), due to activities on or in connection with the Site shall not exceed the values listed below on the days and during the times stated.
- 2.2 Exceptionally the Contractor may be given permission to carry out the works which exceed the noise levels in the Schedule, provided that 56 days' notice of the date and timing of these works is given to the Director and the Contractor demonstrates that he intends to take all reasonable measures to mitigate the noise nuisance. After consultations with the Local Authority and any other interested bodies, a decision will be given within 42 days of receipt of the notice.

<b>Period</b>	<b>Hours</b>	<b>Ambient Noise Level Leq Measured at Control Station db[A]</b>	<b>Period of House Over which Leq Is applicable</b>	<b>Maximum Sound Level measured at Control Station db[A]</b>
Mondays to Fridays	0700 - 0800	55	12	85
	0800 – 1800	70	any 1 hour	70
	1800 - 1900	55		
Saturday	0800 – 1300	70	6	85
	1300 - 2100	55	any 1 hour	70
Sunday	0700 – 0900	47	any 1 hour	55
	0900 – 1700	55	any 1 hour	70
	1700 - 2100	47	any 1 hour	55
Nights	2100 – 0730	47	Any 1 hour	55
All unattended plant		47	Any 1 hour	55

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**APPENDIX 1/9**

**CONTROL OF NOISE AND VIBRATION (Continued)**

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Notes : (i) Noise levels relate to free field conditions. Where noise control stations are located 1m from facades of buildings, the permitted noise levels can be increased by 3 db[A].

2.3 Where practicable, the noise levels shall be measured 1m from the facade of any noise sensitive building or in any other position, which adequately represents noise levels affecting that property. Measurement shall be by means of a Type 1 precision sound level meter with printout facilities in accordance with BS 5969 being operated on the 'fast response' setting. Although the noise levels are the maximum allowed, the Contractor shall endeavour to achieve noise levels within the agreed limits by providing and using items of plant and equipment which have been specifically designed or modified to reduce the noise of normal operation.

**3. Plant, Machinery and Equipment**

3.1 All compressors shall be 'noise reduced' models fitted with properly lined and sealed acoustic covers, which shall be kept close when the machines are in use and all ancillary pneumatic percussive tools shall be fitted with mufflers or silencers of the type recommended by the manufacturer.

3.2 All vehicles and mechanical plant used for the purpose of the Works shall be fitted with effective exhaust silencers and shall be maintained in good and efficient working order so that extraneous noise shall be reduced to a minimum.

3.3 Machines in intermittent use shall be shut down in the intervening periods between work or throttled down to a minimum.

3.4 The date of commencement of the works shall be notified in writing to the Environmental Health Department of the Local Authority at least 7 days prior to the commencement of operations, together with the name, address and telephone number of an employee who will be available to respond outside of normal working hours to complaints arising from any alleged excessive noise.

3.5 The date of commencement of works shall be notified in writing to occupiers of nearby properties. The notification to include any exceptional out-of-hours working agreed with the Local Authority, and the name and telephone number of an employee who will be available to respond to complaints arising from any alleged excessive noise.

3.6 Before the Contractor starts any operation he shall provide the following information to the Environmental Health Department of the Local Authority :

- (a) A method statement and programme giving the type of plant and the numbers of each type to be used for the operation;
- (b) Documentation from manufacturer's literature establishing the sound power level of the plant.

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**APPENDIX 1/9**

**CONTROL OF NOISE AND VIBRATION (Continued)**

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- 3.7 The name and address of any persons other than the Contractor who it is intended will carry out works on the site shall be notified to the Environmental Health Department of the Local Authority before commencement of any works.
- 3.8 Vibrations of properties in the vicinity of the Site shall be monitored, as requested by the Director on Site, and measures taken to eliminate or reduce vibration caused by the Works immediately on instruction by the Director.
- 3.9 Ancillary equipment (for example traffic signals) used outside permitted working hours shall be powered by mains electricity.
- 3.10 The Contractor shall ensure that all sub-contractors engaged on the Site shall comply with all noise and vibration control requirements of the Contract, and the requirements of BS 5228, Noise Criteria on Construction and Demolition Sites.
- 3.11 Machinery with obvious defects, e.g. plant which emits an unreasonable amount of noise or exhaust smoke, shall be withdrawn from service without delay.
- 3.12 The Contractor shall take reasonable measures which shall include the provision and use of adequate screening in order to minimise the risk of disturbance.
- 3.13 Compliance with Specification Clause 109 shall not relieve the Contractor of any of his other obligations and liabilities under the Contract, the Control of Pollution Act 1974 or the Environmental Protection Act 1990.
- 3.14 If a complaint is received regarding excessive noise levels emanating from the works which upon subsequent investigation is found to be justified, the Local Authority may initiate the normal statutory control measures contained in the Control of Pollution Act 1974 and Environmental Protection Act 1990.

**4. Emergency Personnel**

- 4.1 Before commencement of the works, the Contractor shall notify the Environmental Health Officer of the relevant Local Authority in writing of:
- (a) the date of commencement, at least 7 days prior to the date;
  - (b) the name and address and telephone number of a person who may be contacted at all times outside normal working hours by ESCC or Police in an emergency affecting the Works and who will be competent and have authority to take any necessary action to deal with the emergency.

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**APPENDIX 1/12**

**SETTING OUT AND EXISTING GROUND LEVELS**

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1. The Contractor shall, in accordance with the approved drawings, set out, mark and maintain until they are no longer required, all reference lines, templates, bench marks and markers, permanent or temporary, necessary for the setting out and checking of the Works. The Contractor shall keep updated schedules and drawings of such information which he shall supply to the Director as the setting out proceeds.
2. The position and level of contract bench marks shall be agreed on Site. The levels and co-ordinates of all permanent ground markers will be supplied to the successful Contractor and ESCC and shall be agreed in accordance with Clause 112.

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**APPENDIX 1/13**  
**PROGRAMME FOR WORKS ON EXISTING HIGHWAY**

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**Works Programmes to be provided by the Contractor**

1. The Contractor shall provide a Works programme to ESCC, in a format to be agreed with the Director in accordance with the pre-commencement matters contained in the Legal Agreement or otherwise at least one month prior to the proposed commencement of Works.

**Traffic Sensitive Routes**

2. In the programming and execution of the Works, the Contractor shall comply with the requirements detailed in the document 'Traffic Sensitive Routes in East Sussex' which is available from East Sussex County Council.

**Special Programming Requirements for Road Markings and Road Studs**

3. A photographic record of all road markings must be made before any removal is commenced.
4. "Road Markings Removed" and "Give Way Markings Removed" signs shall be erected when road markings have been obliterated by any works. The signs shall be maintained in position until the road markings or road studs are reinstated.
5. Road markings shall be reinstated when disturbed by any Works in accordance with the following timescales:
  - (a) Junctions with 'Stop' within 24 hours;
  - (b) On the principal road network within 48 hours;
  - (c) All other road markings within 7 days.
6. Road studs shall be reinstated within 21 days.

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**APPENDIX 1/16 : PRIVATELY & PUBLICLY OWNED SERVICES & SUPPLIES**

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1. Details of preliminary arrangements that have been made with Statutory Undertakers and others for the alterations of services affected by the Works, shall be provided by the Developer to the Director as part of his technical submission.
2. The Contractor shall make arrangements with the Statutory Undertakers and others concerned, for the co-ordination of his work with theirs and include this within his programme.
3. Private services to individual properties will not generally be listed or shown. The Contractor shall make arrangements with the Statutory Undertakers and others concerned for the phasing of all necessary disconnections and diversions of private services affected by the Works.
4. Disconnected apparatus can be removed by the Contractor only with the prior approval of the Authority concerned.
5. The names, addresses and telephone numbers of the authorities serving in the locality are given in the following table :

<b>TELEPHONES</b>			
BT National Notice Handling Centre PP404B Telecom House Trinity Street Hanley Stoke on Trent ST4 5ND Tel: 0800 800 865 Fax : 01782 204 846 email : stoke.incoming.notices@bt.com	BT Telecom House PPK 7 125/135 Preston Road Brighton East Sussex BN1 6BG	BT PP100B Tunbridge Wells ATE South 17 St Johns Road Tunbridge Wells Kent TN4 9TN Tel : 01892 702 256 Fax : 01892 547 800	
<b>ELECTRICITY</b>			
EDF Powercare PO Box 15 East Grinstead West Sussex RH19 3WE Tel : 01342 413 396	National Grid plc PO Box 7324 Coleshill Birmingham B46 1AR Tel : 0121 730 4073 Fax : 0121 730 4005	EDF Power Connect Bircholt Road Maidstone Kent ME15 9XH Tel : 01622 352 331	
<b>GAS</b>			
Transco South East Ltd			

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Front Desk, 2 Leasons Hill St Mary Cray Orpington, Kent BR5 2TN Tel : 01689 881 300			
<b>SOUTH EAST WATER</b>	<b>SOUTHERN WATER SERVICES LTD</b>		
Distribution Depot Standard Hill Ninfield Nr Battle East Sussex TN33 9NJ Tel: 01424 89 3461	Southern House Otterbourne Hampshire SO21 5XJ Tel: 01962 716 671 Fax : 01962 715 246		
<b>ENVIRONMENT AGENCY</b>			
Mr A Hopkins Area Planning Liaison Mgr Environment Agency Sussex Area Office Saxon House Little High Street Worthing West Sussex BN11 1DN Tel : 01903 215 835			
<b>NETWORK RAIL</b>			
Network Rail Infrastructure Services CP2 2H Suite 2, Floor 2 General Offices Waterloo Station London SE1 8SW Tel : 020 7902 3460			
<b>AMBULANCE SERVICE</b>	<b>SUSSEX POLICE</b>	<b>SUSSEX POLICE</b>	
Sussex Ambulance Service Ambulance HQ 40/42 Friars Walk Lewes East Sussex BN27 2XW Tel: 01273 489 444	The Chief Constable Sussex Police Bexhill Police Station Terminus Road Bexhill East Sussex TN39 3NR	Road Patrol Department HQ Bolnore Road Haywards Heath West Sussex RH16 4BA	
<b>EAST SUSSEX FIRE BRIGADE</b>			

NUMBERED APPENDICES

<p>Hove &amp; Lewes District Council Area</p> <p>ADO John Ticehurst The Fire Station English Close Hove BN3 7EE Tel : 01273 730 254</p>	<p>Brighton Area</p> <p>ADO Colin Findlay The Fire Station Preston Circus Brighton BN1 4NZ Tel : 01273 685152</p>	<p>Eastbourne &amp; Wealdon District Areas</p> <p>ADO Keith Ring The Fire Station Bell Farm Road Uckfield TN22 1BA Tel : 01825 745 902</p>	<p>Hastings &amp; Rother District Areas</p> <p>ADOP Tony Colwell The Fire Station Bohemia Road Hastings TN34 1EX Tel: 01424 440 136</p>
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<b>COMMUNICATIONS COMPANIES</b>			
<p>BDTV Broadcast Digital Television (UK) Ltd</p> <p>Mr A Baldock Operations Manager South East Black Horse House Bentalls Basildon SS14 3BX Tel : 01268 450 450 Fax : 01268 450 455</p>	<p>NTL Communications Services Ltd</p> <p>Ms A Hewitt Plant Enquiries Co-Ordinator Marlborough Road Churchill Ind Est Lancing West Sussex BN15 8UJ</p>		

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**APPENDIX 1/17**

**TRAFFIC SAFETY & MANAGEMENT - WORKS ON EXISTING HIGHWAY**

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**1. General Requirements**

1. The Contractor must comply with the requirements of the Traffic Management Act 2004 (TMA). In this respect, he must book roadspace through ESCC's Network Coordination Team, who may require upto 3 months notice for planned works on the highway. In addition, the Contractor's attention is drawn to the fact that authorisation procedures for each temporary traffic signal installation or temporary road closure can take up to eight weeks to complete, particularly if Highway Agency approval is required.
2. The Contractor shall submit detailed proposals of the Traffic Management Systems he intends to use, including his programme (as described in Appendix 1/13), schedule of temporary signing and Works Health & Safety File to the Director at least 8 weeks before the Contractor proposes to implement each system.
3. The Contractor shall not commence any Traffic Management Operations (including the alteration to an approved existing traffic management system) until he has obtained written approval from the Director.
4. Supervisors and Operatives for highway works must be accredited in accordance with the requirements of the New Roads & Street Works Act 1991.
5. The Contractor is required to provide proof of Public Liability Insurance to the value of £10 million pounds.
6. The Contractor must provide Notice of Completion for the whole and parts of works and must notify any changes to his programme to ESCC to avoid potential fines under the TMA.
7. The Contractor shall arrange his work in such a manner that there is minimum restriction to the traffic flows.

**2. Phasing of the Works**

Refer to any constraints in Appendix 1/13.

**3. Timing of Operation**

No restriction of the carriageway will be permitted outside the Normal Working Hours without the prior consent of the Director.

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**APPENDIX 1/17 (continued)**

**TRAFFIC SAFETY & MANAGEMENT - WORKS ON EXISTING HIGHWAY**

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**6. Notice Requirements**

The minimum notice required by ESCC for him to arrange traffic orders and authorisation for temporary traffic signals is as follows:

Making or amending orders	=	8 weeks
Authorising of non-prescribed signs	=	8 weeks
Authorising temporary traffic signals	=	8 weeks

**7. Temporary Safety Personnel**

At the discretion of the Director, the Contractor is to appoint a senior responsible person as the Traffic Safety and Control Officer throughout the period of works.

Where so appointed, the Contractor shall, not less than 5 working days before the Date of Commencement of the Works, provide ESCC and the Police with the names of his Traffic Safety and Control Officer and his nominated deputies and with the telephone numbers or details of other means by which they or one of them can be contacted at any time.

The Traffic Safety and Control Officer shall carry, at all times whilst on Site, a means of communication for use during emergencies.

Prior to the Date of Commencement of any Works that requires Traffic Management, the Contractor shall arrange a meeting with the Police and the Director to discuss all matters relating to Traffic Management and emergency procedures. Thereafter, the Contractor shall arrange similar meetings throughout the Contract Period, as determined at the initial meeting, with the Police and Director to review Traffic Management Operation and emergency procedures.

**8. Alternate One-Way Working**

Only one section of alternate one-way working shall be permitted to operate per site. This shall include the use of temporary signals at junctions not being operated by permanent signal control. Alternate one-way working during peak hours shall only be permitted when full depth carriageway construction up to and including base is being carried out unless agreed with the Director.

The Contractor shall submit, in writing, details of each section of alternate one-way working, listing the dates and times that alternate one-way working will be required. Each submission shall cover a minimum two week period and shall be submitted to the Director not less than 10 working days prior to the start of each two week period.

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**APPENDIX 1/17 (continued)**  
**TRAFFIC SAFETY & MANAGEMENT - WORKS ON EXISTING HIGHWAY**

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Peak hour traffic flows are as follows :

07.30 – 09.30 hours )	Mondays to Fridays
16.30 – 18.30 hours )	
08.30 – 10.30 hours )	Saturdays
16.30 – 18.30 hours )	

The Contractor shall notify the residents of all properties affected by alternate one-way working not less than 7 working days prior to installation.

The Contractor shall consult with/notify the users of all other accesses of his intent to carry out the Works affecting their respective accesses, not less than 7 working days prior to carrying out the proposed works.

No section of alternate one-way working shall exceed 300m between the respective “When Red Light Shows Stop Here” boards. This length shall also include any area of surfacing within that same section for which the Contractor is waiting for surfacing to cool prior to it being trafficked.

Where necessary, the Contractor shall define the separation of opposing traffic lanes by a white broken warning line.

**9. Vehicular and Pedestrian Access**

Vehicular and pedestrian access to premises and Public Rights of Way abutting the Works or served from the Works shall be maintained at all times.

Facilities for pedestrians shall be provided and maintained at all times as the site dictates.

**10. Driver Information Signs**

Driver Information Signs at Roadworks are as detailed in the following table. Legends used shall be as listed below or any subsequently approved by the Highways Agency.

<b>Work Suspended</b> Unsuitable weather	Concrete Setting
<b>Road Repairs</b> Materials Hardening	Lane Closed to Protect Workforce
Lane Closed for Safety	<b>Further Works Ahead</b> Lane remains closed for safety purposes

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**APPENDIX 1/17 (continued)**

**TRAFFIC SAFETY & MANAGEMENT - WORKS ON EXISTING HIGHWAY**

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Variations in text size for Driver Information Signs to suit locations shall only be with the approval of the Director.

The Contractor shall contact those Public Transport Services affected by any Traffic Management Operation at least 10 working days before the Commencement of the Works advising them of the programme. The Contractor shall also provide, as necessary, temporary bus stop facilities such as agreed with Public Transport Services representatives and the Director.

**11. Use of Site**

Within the Site the Contractor shall take preventative measures to prevent nuisance and danger from dust, smoke etc. Such measures may include damping down by spraying with water from a mobile bowser.

**12. Details of Events having a Bearing on the Works**

The Contractor shall investigate the possibility of and take account of any local events that may have subsequently been organised to take place during the construction period in his programming of the Works.

**13. Use of the Works by the Public**

Public and private rights of way shall be assumed to exist and shall be maintained or replaced by temporary diversions as approved from time to time by ESCC. The Contractor's attention is drawn to the requirements of Specification Clause 117 and this Appendix on Traffic Safety and Management in implementing any temporary diversions of traffic.

**14. Other Highways and Private Rights of Way**

Temporary diversions shall be provided by the Contractor to all premises or property whenever an existing access, because of the Contractor's works, whether permanent or temporary, is not usable by the type of traffic normally using the access. The Contractor shall agree construction details and extent of the temporary diversions, including width, with the Director.

**15. Maintenance Requirements**

**Ramps**

There shall be no difference of level at joints within or between traffic lanes. Any difference of level shall be eliminated by temporary ramping.

Temporary ramping to joints and ironwork in the carriageway shall be at a gradient of 1 in 40 or flatter, relative to the plane of the road surface.

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**APPENDIX 1/17 (continued)**

**TRAFFIC SAFETY & MANAGEMENT - WORKS ON EXISTING HIGHWAY**

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**Highways**

The Contractor shall sweep and remove debris from trafficked carriageway surfaces within the Traffic Management System.

The Contractor is required to liaise with the Director and provide facilities such that the routine maintenance of any trafficked carriageway within the Traffic Management System is carried out. Routine maintenance includes Winter Service (gritting and snow clearing), grass cutting, gully cleaning and safety fence repairs etc. The Traffic Management System includes a diversion route or any route used as a temporary diversion.

The Contractor may be required to carry out patching, surface restoration or other maintenance works to the highway resulting from deterioration attributable to traffic management.

No maintenance or other work shall be undertaken on the trafficked carriageway within the Traffic Management System without the approval of the Director.

**16. Obstructions**

The Contractor shall be responsible for clearing parked vehicles and other obstructions to the carriageway and shall :

- (a) provide and distribute information leaflets approved by the Director, where appropriate;
- (b) take measures approved by the Police and the Director to restrict vehicle obstruction;
- (c) consult with the Police, residents and others concerned to remove the obstructions;
- (d) make multiple visits to the site, if necessary, to complete the works.

**17. High Friction and Coloured Surfacing**

For High Friction and coloured surfaces, without prejudice to the generality of the requirements of Specification Clause 117, the Contractor shall comply with the following :

- (a) Immediately before dressing, "Loose Chippings" signs shall be erected and maintained until loose and surplus chippings have been removed. Signs shall be located in advance of the confines of each site with repeater signs placed at 250m intervals along the entire length of the site.

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**APPENDIX 1/17 (continued)**

**TRAFFIC SAFETY & MANAGEMENT - WORKS ON EXISTING HIGHWAY**

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- (b) Immediately before dressing, “Road Markings Removed”, “Stop Markings Removed” and “Give Way Markings Removed” signs shall be erected where road markings will be obliterated by the surface dressing. The signs shall be maintained in position until the road markings and road studs are reinstated.
- (c) The ESCC Checklist for High Friction Surfacing must be completed for all High Friction Surfacing sites and returned to the Director on completion.

**18. Road Closures & Diversions**

For signing road closures and diversions without prejudice to the generality of Specification Clause 117, the Contractor shall comply with the following :

- (a) The Contractor shall provide, erect, maintain and remove all signs, road danger lamps, barriers and cones in accordance with the drawing and schedule provided by the Director in respect of each Road Closure and Diversion.
- (b) Signs shall be free standing or fixed to street furniture where appropriate. Road danger lamps shall be erected where signs may form an obstruction to highway users.
- (c) The Contractor shall replace any sign, lights, cones, barriers or notices missing from the Highway Closure for whatever reason.
- (d) All signs, lights, barriers and cones shall be kept clean, legible and clearly visible at all times.
- (e) Where instructed by the Director, the Contractor shall erect and remove Advance Road Closure Roadside Notices at the locations and on the dates specified. Notices shall be fixed to suitable designed boards and erected on posts or on existing street furniture, where available.

**19. Temporary Road Signs**

All temporary road signs placed on the highway shall be erected in accordance with Chapter 8 of the Traffic Signs Manual. They must be sandbagged to prevent blow over and shall be accompanied by a 750mm road cone on the traffic side.

The Contractor must ensure that footways are not obstructed by the placement of temporary signs.

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**APPENDIX 1/19**

**ROUTING OF VEHICLES**

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**1. Permitted Access Route**

Insofar as it is practicable, the access route to any Works shall be via the main road network with all vehicles of the Contractor, his sub-contractors and suppliers travelling in the direction of normal traffic flow when entering or leaving the Working Areas.

2. A maximum of one Works access shall be permitted into the Site at any one time unless otherwise agreed by the Director.

**3. Movement of Machinery and Plant**

- 3.1 Labour, plant and materials shall be kept within the confines of the Working Area and shall not use areas of carriageway within the Works that are open to the public, except in the following circumstances :

- (i) Labour and plant required for traffic management purposes;
- (ii) Labour, plant and materials being moved to and from the Works Area by suitable vehicles.

- 3.2 No item of plant or vehicle used by the Contractor or his sub-contractors in carrying out the Works shall be operated on carriageway lanes open to the public in such a manner that it would disrupt the normal flow of traffic.

- 3.3 Track operated vehicles and plant will only be permitted to work or run on the sections of the carriageway which are to be reconstructed or overlaid unless the surface over which movement is to take place is protected to the satisfaction of the Director.

- 3.4 The Contractor shall provide sleeper or other approved protection to all drains or ducts wherever he requires to move plant or vehicles across such drains or ducts, and shall reinstate at his own expense any such drain or duct which becomes damaged or disturbed.

- 3.5 The Contractor shall agree with the Director the timing of the movement of any exceptionally heavy or large item of plant onto the public highway.

**4. The Use of Permanent Works by Construction Traffic**

- 4.1 The finished pavement forming part of the Permanent Works shall only be used to carry constructional traffic when measures approved by the Director have been taken to protect the pavement from damage.

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**APPENDIX 1/21**  
**INFORMATION BOARDS FOR WORKS ON THE EXISTING HIGHWAY**

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**Courtesy/Information Boards**

1. For works on the existing highway, the Contractor shall supply and erect courtesy/information boards similar to that shown below. The signs shall have a yellow background and black writing and incorporate an appropriately agreed logo and wording, which shall include a 24 hr contact telephone number.



(Sign Ref. 7003.1)

2. The signs are to be erected on all entry routes to the Site.
3. Unless otherwise agreed with ESCC, the signs shall be Class 1 reflective with black machine printed lettering minimum 'X' height of 100mm and the signs shall be mounted in a trestle frame.

**No Parking Signs**

4. Number and location of signs to be erected as appropriate.
5. Overall maximum size 450 x 500mm.
6. 'X' height as appropriate.

**Temporary Signs**

7. The size of temporary signs is to be approximately 1m wide by 0.7m high to fit in a standard trestle frame.
8. Sign material shall be weather resistant plastic. The lettering for temporary signs shall be either black writing on a yellow background or white writing on a red background as instructed by ESCC.
9. If white dry wipe boards are to be used as temporary signs in emergency situations, the lettering shall be in black block capitals.

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**APPENDIX 1/23**

**RISKS TO HEALTH AND SAFETY FROM MATERIALS OR SUBSTANCES**

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**Substances Hazardous to Health**

1. In addition to complying with the Control of Substance Hazardous to Health (COSHH), Control of Asbestos at Work (CAW) and Control of Lead at Work (CLAW) Regulations, the Contractor shall take into consideration the guidance given in the following publication to prevent, control or monitor exposure of members of the public to particular substances hazardous to health used or generated in or about the Works :

*Department of Transport Manual of Contract Documents for Highway Works : Volume 6 (Departmental Standards and Advice Notes on Contract Documentation and Site Supervision) : Section 2, Part 1: SA8 'Use of Substances Hazardous to Health in Highway Construction'.*

2. The Advice Note, SA8, 'Use of Substances Hazardous to Health in Highway Construction', contains data sheets on the following substances hazardous to health :

**(a) Hazard Data Sheets : Low Risk Substances**

Bituminous Tapes  
Sand  
Natural Aggregates  
Pulverised Fuel Ash  
Blast Furnace Slag  
Treated Timber  
Dust from cutting of soft woods  
Dust from cutting of macadams/asphalts  
Water Based Admixtures

**(b) Hazard Data Sheets : Moderate Risk Substances**

Coated Roadstones (Macadam/HRA)  
Line Marking Paints  
Phenolic Undercoats/Finishes  
Alkyd Undercoat/Finishes  
Acrylated Rubber Primers/Undercoats/Finishes  
Chlorinated Rubber Primers/Undercoats/Finishes  
Vinyl Primers/Undercoat/Finishes  
Timber Primers/Finishes  
Varnishes for Wood  
Thermoplastic  
Bitumen Joint Sealing Compounds etc.  
Cement  
Cementitious Mortars and Grouts  
Concrete  
Bituminous Waterproof Adhesive Membrane  
Bitumen Cutback  
Coal Tar Creosote  
Dust from cutting of cement, concrete etc.

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**APPENDIX 1/23**

**RISKS TO HEALTH AND SAFETY FROM MATERIALS OR SUBSTANCES  
(continued)**

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Phenoxyalkanoic Acid Herbicides  
Glyphosate Herbicides  
Metallic Abrasive for Blasting  
Solvent Based Concrete Curing Agents

**(c) Hazard Data Sheets : High Risk Substances**

Polyurethane Bridge Deck Waterproofing Systems  
Polyurethane Primers/Undercoats/Finishes  
Polyurethane Sealants  
Epoxy Adhesives with Flammable Solvents  
Epoxy Adhesives with Non-Flammable Solvents  
Epoxy Adhesives with Water Base  
Epoxy Mortars  
Epoxy Based Primers/Undercoats/Finishes  
Polyureide Bridge Deck Waterproofing Membranes  
Bituminous Primers and Coatings  
Dust from cutting of hard woods  
Silicone Waterproofing Agent

**(d) Asbestos Data Sheets**

Asbestos Based Materials (friable)  
Asbestos - Cementitious

**(e) Lead Data Sheets**

Leaded Based Coatings  
Paints with Lead Pigments

3. A typical data sheet contains the following information :

Material Identification  
Physical and Chemical Properties  
Toxicology  
Emergency Procedures  
Precautions for Handling and Use – including protection of employees and protection of the public  
Other Considerations, etc:   Storage  
  Handling  
  Health Surveillance  
  Personal & Environmental Monitoring

4. The list of substances contained in Advice Note SA8 'Use of Substances Hazardous to Health in Highway Construction' is not exhaustive and the Contractor shall provide ESCC with similar information for other substances hazardous to health which have not been listed.

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**APPENDIX 1/72**  
**HEALTH AND SAFETY FILE**

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The Contractor is to prepare and supply all the relevant information relating the methods of construction used in the Permanent Works which will be included in the Health and Safety File in accordance with the Construction (Design and Management) Regulations 2007. The information is to be submitted to the Director after the end of the Maintenance Period. This information shall include one set of "As Built" drawings.

When required by the Director, the "As Built" drawings shall be manually amended copies of the Contract Drawings revised to accurately depict the 'as constructed' details on site.

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**APPENDIX 1/73**

**CO-ORDINATION WITH NOMINATED SUB-CONTRACTORS AND  
STATUTORY UNDERTAKERS' CONTRACTORS**

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Any work to be undertaken by Highway Lighting, Traffic Signal and Statutory Undertakers' Contractors, must be done in co-ordination with the main Contractor's work.

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**APPENDIX 1/74**  
**KEEPING HIGHWAYS CLEAN**

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1. It is an offence under the Highways Act 1980 to deposit mud, etc on the public highway and may result in a civil action.
2. Where required by the Director and prior to the commencement of works, the Developer shall provide within his site boundaries, vehicle and wheel cleaning apparatus to ensure that all public highways are kept clean.
3. The Developer shall ensure that the facilities are maintained in a good and usable condition and that it is used by all vehicles before they leave the Works.
4. To supplement the wheel washing facility, the Developer shall also provide road cleaning plant to maintain the cleanliness of the highways in the immediate vicinity of the works.

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**APPENDIX 1/75**  
**PARKING FOR SITE STAFF**

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1. Prior to the commencement of the Works, the Developer shall give consideration to the provision of parking facilities for all personal and trade vehicles used by his and any sub-contractors site personnel.
2. Where all such vehicles cannot be accommodated off the public highway, the Developer must provide a Parking Plan to be approved by ESCC to demonstrate that such vehicles can be accommodated safely and without putting other highway users at risk.
3. Any temporary measures required must be provided and removed by the Developer and any costs incurred by ESCC in securing such measures must be paid for by the Developer.

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**APPENDIX 1/76**  
**DESIGN CBR VALUES**

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**General**

1. The strength of soils is very dependent upon moisture content, condition and density. Soils can exhibit a rapid loss of strength as the moisture content increases.
2. The susceptibility of the sub grade to loss of strength depends on its Plasticity Index, the position of the ground water table and the anticipated moisture content of the sub-grade.
3. The design CBR value shall take account of the conditions during construction and in service and is NOT necessarily the CBR value determined during the site survey.
4. Plasticity Indices also give guidance on the frost susceptibility of the subgrade, which is a particular issue in much of the East Sussex weald.

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**APPENDIX 1/77**  
**EXTRAORDINARY MAINTENANCE**

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**General**

Certain items of highway apparatus are regarded by ESCC as requiring a higher than average level of maintenance. These include any adopted structures, traffic signals, ornamental street lights, certain surface water drainage features and other non-preferred materials.

Newly planted trees in the highway also attract commuted sum payments to ensure that they receive the necessary attention in their early life.

**Commuted Sums**

The Developer should be aware that ESCC will require commuted sums to be paid in order for the adoption of highway apparatus that requires extraordinary maintenance.

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**APPENDIX 2/3**

**RETENTION OF MATERIALS ARISING FROM HIGHWAY WORKS**

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**Existing Materials to be Taken Up or Down and Set Aside for Re-use or Removed to Store Off Site**

1. Existing materials to be taken up or down and set aside for re-use shall be as agreed with the Director.
2. The materials shall be carefully taken up, cleaned and stored safely ready for use.
3. If existing materials to be re-used are damaged by the Contractor, they shall be replaced at the Contractor's expense.

**Retention and Protection of Trees and Shrubs**

1. Any tree surgery or protection works to be carried out on trees and shrubs within the existing highway must be arranged and implemented by ESCC, on the Developer's behalf.
2. The Developer must give ESCC 8 weeks notice in order that such works can be organised and carried out in a timely fashion.
3. Unless otherwise directed by the Director, the cutting back of trees, hedges and shrubs shall only be undertaken outside of the bird nesting season (see also Appendix 30/1).

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**APPENDIX 2/4**  
**EXPLOSIVES AND BLASTING**

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Explosives shall not be used or stored on any part of the Works.

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**APPENDIX 3/1**  
**FENCING, GATES AND STILES**

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**Timber Post and Rail Fencing**

1. **Timber post and rail fencing shall comply with BS 1722-7: 1999 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 Director. Where concrete backfill is specified, a ST2 mix shall be used.
5. Stock fence shall be rectangular wire type reference 8/80/15 in accordance with BS 1722-2:2000 Table 6.
6. Barbed wire shall be 2.5mm diameter 4 point two ply.
7. Where stock fence is specified with timber post and rail, 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.
8. Rails, wire mesh, wire netting and barbed wire shall be fixed to the field side of the fence unless otherwise specified by the Director.

**Strained Wire Fencing**

1. Strained wire fencing shall comply with BS 1722-2:2000 and the requirements described in this clause.
2. 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 Director's instructions.
3. Timber posts and struts shall be of square sawn timber conforming to BS 1722-7:1999,6.1. The tops of timber posts shall be cut to a fall of 45°.
4. Straining posts and struts shall be concreted into the ground. Intermediate posts shall be secured with rammed backfill unless otherwise specified by the Director. Mix ST2 concrete shall be used in both instances.
5. Stock fence shall be rectangular wire type reference 8/80/15 in accordance with BS 1722-2: 2000 Table 6

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**APPENDIX 3/1**  
**FENCING, GATES AND STILES (continued)**

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6. 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.
7. Wires, wire mesh and wire netting shall be fixed to the field side of the fence unless otherwise specified by the Director.

**Post and Tubular Rail Fencing**

1. Post and tubular rail fencing shall comply generally with BS 1722-2000 and the requirements described in this clause.
2. 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.
3. Rails shall be of mild steel tubing of 42.9mm outside diameter and shall be hot dip galvanised to BS EN ISO 1461:1999. Rails shall be pre-bent to radius as necessary. Screw joints shall be at approximately 6 metre centres and the rails shall be fitted with screwed end caps.
4. Posts shall be provided at intervals of 3.0m measured centre to centre of posts.
5. Posts 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.
6. The fencing shall follow the general ground profile with small adjustments in height as necessary to obtain a flowing alignment.

**Use of Barbed Wire adjacent to the Highway**

1. Barbed wire may be erected adjacent to the highway but only so as not to constitute a nuisance as stated under Section 164 of the Highways Act 1980.
2. It is generally accepted that barbed wire should not be erected adjacent to the highway below a height of 2.4m above ground level.

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**APPENDIX 5/1**  
**DRAINAGE REQUIREMENTS**

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**Pipes for Drainage and Service Ducts**

1. The schedule of permitted pipe and bedding combinations shall be as shown on the relevant drawings.
2. Joints in surface water drains and foul sewers shall be watertight. Rigid joints shall not be used. Drains and sewers with watertight joints shall be tested in accordance with Specification Clause 509 when required by the Director.

**Chambers**

1. Chamber types shall be as detailed in the drawings.

**Chamber Covers, Gratings, Gully Gratings and Frames**

1. All ironwork shall be ductile iron kite marked or equivalent complying with BS EN 124 1994 and shall be marked with the manufacturer's name in full.
2. Type 'H' ironwork : when specified by the Director, type 'H' ironwork shall be suitable for high intensity locations subject to continuous impact from fast heavy vehicles.
3. Type 'N' ironwork : when specified by the Director, type 'N' ironwork shall be suitable for normal intensity locations (general use) not subject to high intensity criteria.

**Works on Existing Drains, Sewers and Manholes**

1. The Contractor shall take all precautions and shall provide for dealing with the flow in existing sewers and drains in such a manner that in no case shall any surface water or sewage matter overflow or otherwise be poured on to the site of the Works in such a way to affect the stability of the formation or to cause flooding of any part of the site.
2. The Contractor shall ensure that surface water is prevented from entering foul water sewers and that foul sewage is not allowed to leak or overflow into surface water drains or sewers or elsewhere.
3. Where works are carried out to repair existing surface water drains (up to 5 metres in length), the Contractor shall provide for concrete bed and surround (Type Z).

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**APPENDIX 5/1**  
**DRAINAGE REQUIREMENTS (continued)**

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**Works to Existing Covers or Gratings**

1. Existing covers or gratings, including frames, to be either raised or lowered, shall be carefully excavated for, taken up, cleaned, greased and set aside for re-use.
2. The construction below the frame shall, where necessary, be demolished to the required level where it shall be prepared to receive the new construction.
3. Brickwork shall be 225mm thick and shall comply with Series 2400 of the Specification and be built with Class 1 mortar in English Bond. The joints of the brickwork, where exposed, shall be flush pointed.
4. The maximum height of brickwork above any brick corbelling or cover slab with a clear opening of 600mm or less shall not be greater than 600mm – otherwise adjustment below the corbelling or slab will be necessary.
5. If the existing cover slab or chamber is affected, the Contractor shall, where applicable, undertake the following :
  - (i) take up the existing cover slab, clean and set aside for re-use;
  - (ii) where covers or gratings are to be raised, add approved tiles, further brickwork or chamber sections;
  - (iii) where covers or gratings are to be lowered, either demolish brickwork to the required level, demolish insitu concrete chambers to the required level, remove precast chamber sections or replace chamber sections with shorter sections and, where necessary, add approved tiles, further brickwork or chamber sections;
  - (iv) where pre-cast concrete taper sections are to be removed, larger cover slabs shall be required;
  - (v) all brick corbelling shall be reconstructed to the required level;
  - (vi) cover slabs shall be set on a 15mm bed of mortar as this Appendix.
6. The frames shall be re-set on a 15mm minimum bed of cement mortar, complying with this Appendix or a proprietary quick setting mortar approved by the Director to the required level.
7. On completion of the works, all chambers or gullies shall be cleaned and left free of any debris.

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**APPENDIX 5/1**  
**DRAINAGE REQUIREMENTS (continued)**

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**Mortars**

Cement mortars and proprietary quick setting mortars used for the raising or lowering of chamber cover frames and gully grating frames shall have the following properties:

1. Bedding mortars for raising and lowering of chamber cover frames and gully grating frames shall have the following properties :
  - (i) Unless specified otherwise, bedding mortar shall have a compressive strength of not less than 40N/mm<sup>2</sup> at 28 days when tested in accordance with :
    - (a) BS 1881: Part 116, for cementitious, using 70mm test cubes. The mortar to be tested shall be compacted into the mould in such a manner to give the best density achievable with the workability of the mix;
    - (b) BS 6319: Part 2, for resinous, using 40mm test cubes. The mortar to be tested shall be compacted into the mould in such a manner to give the best density achievable with the workability of the mix.
  - (ii) Initial testing shall be carried out, such as to be in keeping with earliest predicted trafficking. In no case shall trafficking take place until a compressive strength of more than 20N/mm<sup>2</sup> has been achieved;
  - (iii) Cubes to be tested at ages less than 24 hours shall be air cured at a temperature that reflects the conditions on site. Cubes to be tested at ages over 24 hours shall be cured in accordance with BS 1881: Part III.
2. For cementitious mortars the total acid-soluble sulphate content of the mix expressed as SO<sub>3</sub> shall not exceed 4% of the mass of the cement in the mix. The sulphate content shall be calculated as the total from the various constituents of the mix.
3. The Contractor shall supply the Director with written details, in advance of the works, of the bedding mortar proposed and a method statement clearly detailing constituents, mix proportions and working method. The method statement shall be accompanied by evidence in the form of compressive strength results, indicating that the proposed design will satisfy the requirements of the above specification. The Contractor shall also supply the Director with proposed secondary constituent materials in case of supply difficulties. Works shall not commence until the Director has given approval for the submitted design proposal.
4. The mortar shall not be used once it has started to set or more than 2 hours after initial mixing, whichever is the shortest time.

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**APPENDIX 5/1**  
**DRAINAGE REQUIREMENTS (continued)**

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5. Positioning and re-alignment of the ironwork must be completed before the initial set of the mortar (as stated in Clause 4) has taken place.
6. For cementitious bedding mortars the water/cement ratio shall not exceed 0.4. The Contractor shall be required to advise the Director as to the means of controlling water content in the method statement referred to in Clause 3.
7. Mortar used for minor repairs to chamber brickwork and for brickwork when adjusting the levels of the chamber shall comply with the above requirements.
8. All surfaces to be joined with the above mortar shall be free from loose dirt, dust and rust. In the case of cementitious mortars, the surfaces to be joined shall be dampened with water before the placing of the mortar.

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## **APPENDIX 5/2**

### **SERVICE DUCT REQUIREMENTS**

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#### **General**

1. All ducts shall be laid in accordance with and in the locations shown on the scheme drawings.
2. Draw ropes shall be placed in all ducts and shall be pigmented, stranded, polypropylene or equivalent rot-proof material, with a minimum breaking strain of 5kN breaking load, in accordance with Specification Clause 501.8. A second draw rope shall be placed in all traffic signal ducts. Draw ropes shall be securely tied to marker blocks or duct location posts, and shall be maintained in position until completion of the appropriate section of cable laying.
3. 150mm wide self-coloured yellow PVC or polythene warning tapes shall be laid on a 50mm thick bed of sand above the duct. This tape shall be at least 0.1mm thick with the words 'CAUTION ELECTRIC CABLE BELOW' printed on it so as to occupy not less than 75% of the area of the tape.
4. The street lighting cable ducts shall be laid so that :
  - (a) They are a minimum of 150mm from the edge of the excavation;
  - (b) They are a minimum of 75mm from adjacent street lighting cable ducts;
  - (c) They are a minimum of 150mm from other types of ducts;
  - (d) The top of the highest duct is a minimum of 700mm beneath the surface of the carriageway;
  - (e) The top of the highest duct is a minimum of 550mm beneath the surface of the footway or verge.

#### **Street Lighting Ducts**

5. Ducting for street lighting cables shall be high density polythene twin-walled self-coloured orange. They shall have a smooth internal bore and the words 'STREET LIGHTING' stamped along the length of the duct at not more than 500mm centres.

#### **Traffic Signal Ducts**

6. Ducting for traffic signal cables shall be high density polythene twin-walled self-coloured orange. They shall have a smooth internal bore and the words 'TRAFFIC SIGNALS' stamped along the lengths of the duct at not more than 500mm centres.

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**APPENDIX 5/70**

**SUSTAINABLE URBAN DRAINAGE SYSTEMS (SUDS)**

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1. SUDS must be designed in accordance with CIRIA Publication 697, 'The SUDS Manual (2007).'

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**APPENDIX 5/71**

**WALLS ADJOINING THE HIGHWAY - DRAINAGE**

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1. Walls adjoining the highway shall be constructed with a drain laid behind the base to collect groundwater and connected to a suitable outfall. This arrangement is required to prevent groundwater discharging onto the highway.
2. Weep holes are not normally accepted, although a few 'tell tale' holes can be provided as indicators for operation of the drain.

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**APPENDIX 5/72**  
**SETTING OF GULLY POTS**

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1. Pre-cast concrete gully pots shall be set on a 150mm thick bed of concrete mix ST4 and surrounded with 150mm of similar.
2. The level of the top of the pot shall be such that 2 courses of brickwork are required to set the grating and frame to the correct level. This shall be increased to 4 courses where the connection is positioned under the carriageway.

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**APPENDIX 5/73**  
**STREAMS WATERCOURSES AND DITCHES**

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**General**

1. Excavation carried out for the digging of new open ditches, and in the diversion or enlargement of streams and watercourses, shall be performed to the satisfaction of the Director, including any trimming, grading and temporary enabling works.
2. In all cases, the landowners consent shall be obtained before commencing any excavation works.
3. Arrangements for the placement or disposal of arisings must be agreed with the landowner and Director prior to commencing works.
4. Any new outfalls discharging into a ditch or watercourse will require the consent of the Landowner and may also require consent from the Environment Agency. This should be established at the design stage. ESCC will require documentation confirming any consents granted.

**Ordinary Watercourses**

1. For works on ordinary watercourses, prior consent must also be obtained from the Local Drainage Authority. This is usually the District or Borough Council.

**Main Rivers**

1. For works on main rivers, prior consent must also be obtained from the regional Environment Agency office.

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**APPENDIX 6/14**  
**SITE INVESTIGATION SURVEYS AND SOILS REPORTS**

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**General**

Unless otherwise instructed, for S38 development sites, the Developer will be expected to provide a copy of his site investigation survey and interpretative soils report for consideration by the Director.

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**APPENDIX 6/1**  
**REQUIREMENTS FOR ACCEPTABILITY OF EARTHWORKS MATERIAL**

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The following table 6/1 contains :

1. Acceptable limits for fill.

NUMBERED APPENDICES

**TABLE 6/1 : ACCEPTABLE EARTHWORKS MATERIALS : CLASSIFICATION AND COMPACTION REQUIREMENTS**

Class				General Material Description	Typical Use	Permitted Constituents (All subject to requirements of Clause 601 and Appendix 6/1)	Material Properties Required for Acceptability (In addition to requirements on use of fill materials in Clause 601 and testing in Clause 631)				Compaction Requirements in Clause 612	Class				
							Property (see exceptions in previous column)	Defined and tested in accordance with:	Acceptable Limits within:							
									Lower	Upper						
G E N E R A L  G R A N U L A R  F I L L	1	A	-	Imported Well graded granular material	General Fill	Any material, or combination of materials, other than material designated as Class 3 in the Contract. (Properties i, ii and iv in next column shall not apply to chalk).	(i) grading	BS 1377:Test 2	Tab 6/2	Tab 6/2	Tab 6/4 Method 2	1	A	-		
							(ii) uniformity coefficient	BS 892	10	-						
							(iii) mc	BS 1377:Test 2	OMC -2%	OMC +1.5%						
							(iv) MCV		8	-						
							(v) SMC of chalk	Clause 632 Clause 634	-	20%						

NUMBERED APPENDICES

**TABLE 6/1 : ACCEPTABLE EARTHWORKS MATERIALS : CLASSIFICATION AND COMPACTION REQUIREMENTS**

Class				General Material Description	Typical Use	Permitted Constituents (All subject to requirements of Clause 601 and Appendix 6/1)	Material Properties Required for Acceptability (In addition to requirements on use of fill materials in Clause 601 and testing in Clause 631)				Compaction Requirements in Clause 612	Class		
							Property (see exceptions in previous column)	Defined and tested in accordance with:	Acceptable Limits within:			5	A	-
									Lower	Upper				
TOPSOIL	5	A	-	Topsoil or turf existing on site	Topsoiling	Topsoil or turf designated as Class 5A in the Contract	(i) grading	Clause 618	-	Clause 618	-	5	A	-
	5	B	-	Imported topsoil	Topsoiling	Material complying with BS 3882 General Purpose Grade	-	-	-	-	-	5	B	-

NUMBERED APPENDICES

**TABLE 6/1 : ACCEPTABLE EARTHWORKS MATERIALS : CLASSIFICATION AND COMPACTION REQUIREMENTS**

Class				General Material Description	Typical Use	Permitted Constituents (All subject to requirements of Clause 601 and Appendix 6/1)	Material Properties Required for Acceptability (In addition to requirements on use of fill materials in Clause 601 and testing in Clause 631)				Compaction Requirements in Clause 612	Class				
							Property (see exceptions in previous column)	Defined and tested in accordance with:	Acceptable Limits within:							
									Lower	Upper						
S E L E C T E D  G R A N U L A R  F I L L	6	F	2	Imported Selected granular material (coarse grading)	Capping	Any material, or combination of materials, other than unburnt colliery spoil and argillaceous rock (Property i in next column shall not apply to chalk)	(i) grading	BS 1377: Part2	Tab 6/2	Tab 6/2	Tab 6/4 Method 6	6	F	2		
								(ii) optimum mc	BS 1377: Part4 (vibration hammer method)	-					-	
								iii) mc	BS 1377: Part2	Optimum mc-2%					Optimum mc +1%	
								iv) 10% fines value	Clause 635	50 kN					-	

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**APPENDIX 6/5**  
**GEOTEXTILES**

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Geotextile shall be to the approval of the Director and meet with the following properties

1. The fabric shall be either woven polypropelene or non-woven polyester with a minimum unit weight of 130g/m<sup>2</sup>.
2. The fabric shall have a minimum tear strength of 300N and minimum tensile strength (1m strip) of 8kN/m.
3. The fabric shall be provided in suitable widths for the purpose so that where the fabric is joined, transverse and longitudinal laps shall be not less than 600mm.
4. All geotextiles shall be marked in accordance with BS EN 30320 and stored in accordance with the manufacturer's instructions.
5. All geotextiles shall have a life expectancy of 6 months when exposed to ultra violet light and a minimum 25 years life expectancy when incorporated into the Works.

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**APPENDIX 6/8**  
**TOPSOILING**

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1. Topsoil shall be stripped, deposited and spread on the areas as detailed on the relevant Drawing.
2. Topsoil shall be kept separate from other classes of deposited materials.
3. Surplus topsoil is to be disposed of by the Contractor.
4. No work shall be carried out when rain is falling, when there has been heavy rain within the previous 24 hours or when, in the opinion of the Director, the subsoil is likely to be damaged.
5. All areas to be topsoiled shall receive Treatment in accordance with Specification Clause 618 unless instructed otherwise by the Director.
6. Topsoil shall be spread in layers not exceeding 150mm.
7. During fallow periods prior to seeding, the ground shall be kept substantially weed free.
8. Grassed and soiled areas damaged by the Contractor shall be reinstated at the Contractor's own expense with topsoil and grass-seeding complying with the following :
  - (a) where required, imported topsoil shall be Class 5B and comply to BS EN 3882 General Purpose Grade;
  - (b) depth of topsoil to be as existing. Topsoil shall be deposited in layers not exceeding 150mm uncompacted thickness;
  - (c) weed control, ground preparation and grass-seeding shall be in accordance with Appendices 30/2 and 30/5.

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**APPENDIX 6/10**

**GABIONS**

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**1. Rock for Gabion Infill**

- (a) Rock fill to gabions shall be clean regular rock passing a 250mm sieve but retained in a 125mm sieve.
- (b) All rock shall be obtained from sources approved by the Director and should ideally be of a dolomitic limestone or granite origin.
- (c) The rock supplied for incorporation in the works is to be sound material free from weathering, mechanical weakness and chemical decomposition. It is to be capable of withstanding extraction, loading, transport, unloading and placing in the works without measurable degradation that would make it unacceptable for use in the permanent works.
- (d) The rock shall be of an engineering quality, the minimum standard of which is set out by the following parameters :
  - (i) Aggregate Impact Value to BS 812, Part 112 : 1990 (1995), current edition. Maximum Acceptable Value : 25;
  - (ii) Magnesium Sulphate Soundness, using modified version of ASTM test as proposed by Hosking and Tubey in RRL Report LR293. Maximum Acceptable Value : 12%;
  - (iii) Water Absorption Test to BS 812, Part 2 : (1995), current edition. Maximum Acceptable Value : 2.5%;
  - (iv) Apparent Relative Density to BS 812, Part 2 : (1995), current edition. Minimum Acceptable Value : 2.6.
- (e) The Contractor is to include details of authenticated results for the above engineering tests on the rock that he proposes to study.

**2. Gabions**

- (a) Gabions are to be 2.0m x 1.0m x 1.0m or 2.0m x 1.0m x 0.5m units with 80mm nominal mesh of 3.8mm diameter PVC coated wire and divided by partition panels at 1m centres.
- (b) All wire and mesh shall be in accordance with BS 1052 galvanised with a zinc coating to BS 443. The wires shall be additionally coated with PVC sheathing of mean thickness 0.5mm. The PVC shall be capable of resisting the deleterious effects of exposure to ultra-violet light, immersion water, normally occurring pollutants and abrasion.

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**APPENDIX 6/10**

**GABIONS (continued)**

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**3. Gabion Construction**

- (a) The construction of gabions shall at all times be carried out in accordance with the manufacturer's instructions. All gabions shall be wired together. Horizontal bracing wires at 1/3 height increments are to be fixed and tightened by "Spanish" windlass to prevent bulging.
- (b) Particular care shall be taken throughout construction to ensure tightness of mesh, well packed filling with minimum voids and sufficient lacing.
- (c) The exposed faces of completed work shall present a neat face and line.
- (d) Filling shall be carried out by hand or by mechanical plant approved by the Director.
- (e) Gabions shall be overfilled by 25-50mm above their tops to allow for subsequent settlement.
- (f) The configuration and layout of the gabions shall be as directed by the Director.

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**APPENDIX 7/1**  
**REQUIREMENTS FOR PAVEMENTS AND PAVEMENT CONSTRUCTION**  
**MATERIALS**

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**Schedule 1 - Permitted Pavement Options**

1. **Flexible Pavement Construction** - this Appendix covers various flexible pavement constructions.

**Schedule 2 - General Requirements for Pavements**

2. **Surface Levels** - in order to check compliance with Specification Clause 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 Director.
3. **Surface Regularity (Machine Laid Material)** - the surface regularity of machine laid material when tested within one week of laying shall comply with the limits defined in BS 59487 and Specification Clause 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 6mm.
5. The interval for measurement of longitudinal regularity (Specification Clause 702.7) shall be 10m and for transverse regularity (Specification Clause 702.8) shall be 2m.
6. **Surface Regularity (Hand Laid Material)** - for hand laid material, the surface irregularity, when measured within one week of laying, shall comply with the following :
  - (a) At any point nominated by the Director, 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;
  - (b) 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;
  - (c) The patch itself shall not cause surface water to puddle.

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**APPENDIX 7/1**  
**REQUIREMENTS FOR PAVEMENTS AND PAVEMENT CONSTRUCTION**  
**MATERIALS (continued)**

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7. **Deformation resistance for Binder Course and Upper Base without Binder Course** – where specified in Appendix 7/1, 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 9/33 and NG 9/34. The deformation resistance of laid materials shall be assessed in accordance with sub-Clause 952.7.
8. **Layer Thickness** - no more than 4 in a set of 6 core mean thickness measurements shall be less than the nominal layer thickness and no core shall have a mean thickness measurement less than the appropriate "minimum thickness at any point" as specified in BS 594987.
9. **Adhesion Between Bituminous Layers** - as required by the Director, 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, or alternatively should remain intact and bonded after extraction of core samples 100 or 150mm diameter.

Where required, the Director may request a series of Torque Bond tests to check adhesion of suspect surface course with the underlying receiving course. The tests shall be carried out to the BBA Guidelines Document for the Assessment and Certification of Thin Surfacing Systems for Highway Works, Working Draft 4, 10/100, Appendix A3, Laboratory Method. The individual inter-layer bond strength shall be not less than 400 kPa.

In the event that poor initial adhesion is found and at the Director's discretion, examination of adhesion shall be made after 6 months by extracting at least five 150mm 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. Alternatively, the Torque Bond test shall be used to confirm adhesion of surface course layers.

10. **Surface Texture** – where stated in Appendix 7/1, the texture depth of the surfacing shall be in accordance with the requirements of Clause 921 (including minor additions).  
 In addition, the surfacing shall have retained surface texture when measured in the nearside wheel track as follows :

Minimum sand patch between	Minimum sand patch	Loss of texture
Texture depth new (mm)	Texture depth at 1 year (mm)	1 year - %
1.5	1.0	40% max
1.2	0.8	40% max

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**APPENDIX 7/1**

**REQUIREMENTS FOR PAVEMENTS AND PAVEMENT CONSTRUCTION MATERIALS (continued)**

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**Schedule 3** - See Combined Schedules 3 and 5

**Schedule 4 – General Requirements for Construction Materials**

11. **'Q' Level** – Bituminous 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 Q2. 'Q' values for all proposed sources of bituminous supply shall be submitted to ESCC on a weekly basis and before the start of any proposed works.

Plants with a current 'Q' level of 4 to 6 may only be allowed to supply materials to minor or non-critical works with the agreement of the Director, providing at least 2 of the previous consecutive four 'Q' values are at 'Q' level 2 or better. The plant must, however, demonstrate continuous improvement over time.

For the purpose of assessing supply, quality, intermediate 'Q' values, i.e. 1, 3 and 5, shall be recognised.

ESCC shall retain the right to periodically audit and inspect any plant including full access for obtaining samples of materials for the purpose of verification testing.

12. **Limestone Coarse Aggregate** - limestone coarse aggregate retained on the 2.00mm BS EN sieve size shall not be used in the manufacture of surface courses, including footway construction.
13. **Igneous Aggregate** - where the aggregate used for machine and hot hand lay materials is of an igneous type, the bitumen binder shall contain an adhesion agent approved by ESCC.
14. **PSV on Binder Course or Regulating Courses** – for regulating courses, the minimum PSV shall be 55. However, if the Contractor permits traffic to run on binder course or any regulating course at any time, then the Contractor shall either :
- (i) erect and maintain slippery road ahead signs (sign number 557, The Traffic Signs Regulations and General Directions 2002), the number of signs and their locations shall be agreed in advance with the Director;
  - (ii) ensure that the coarse aggregate of the binder course or regulating material to be trafficked has the same minimum PSV as the coarse aggregate of the proposed surface course;

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**APPENDIX 7/1**  
**REQUIREMENTS FOR PAVEMENTS AND PAVEMENT CONSTRUCTION**  
**MATERIALS (continued)**

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- (iii) on a temporary surface immediately prior to any overlay, the Contractor shall provide at his own expense all road markings, signs etc. required by the Director in the interests of safety, and a bond coat to Specification Clause 920;
- (iv) 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 his own expense, to the satisfaction of the Director.

**15. Permitted Air Void Content**

Where required by the Director, the Contractor shall extract core samples from the compacted course to check the compacted density and air voids achieved.

**Table 1 :**  
**Compacted Bituminous Material; Maximum Permitted Air Void Content**

<b>Material</b>	<b>Average Max Voids %</b>	<b>Single Core Max Voids %</b>	<b>Minimum Voids %</b>
Hot Rolled Asphalt Surface Course	5.0	7.0	
Stone Mastic Surface Course 14mm Size	6.0	8.0	2.0
Stone Mastic Surface Course 10 and 6mm Size	8.0	8.0	2.0
Proprietary Surface Course >30mm thick (Dense Mixtures)	7.0	8.0	
Proprietary Surface Course (Open Mixtures) (Unless agreed with the Director as not applicable due to nature of surfacing)	8.0	10.0	
Asphalt Concrete Surface Course	8.0	10.0	
Asphalt Concrete Binder Course /Upper Base	7.0	8.0	Specification Clause 929.1
Asphalt Concrete Base (Roadbase)	8.0	9.0	Specification Clause 929.1

- (i) The surface voids of surface course materials shall be filled, if necessary, with an inert filler to avoid surface voids being included in the air void calculation;

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**APPENDIX 7/1**

**REQUIREMENTS FOR PAVEMENTS AND PAVEMENT CONSTRUCTION MATERIALS (continued)**

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- (ii) The number of cores taken to determine void content shall be representative of the area under investigation, but should not normally be less than six. To avoid anomalies, it is advised that cores are drilled in pairs and the results averaged to obtain a single result;
  - (iii) Compaction shall be measured either in areas of 1000 sq.m, or the full area where there is less than 1000 sq.m. laid in any one day. Within each area three pairs of 150mm diameter cores shall be cut at positions decided upon by the Director, after the material has cooled to ambient temperature. The cores shall be cut as described in BS 598: Part 100. Unless instructed otherwise, 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 or other such offsets if the pavement has parking bays or other permanent features;
  - (iv) Core holes 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
  - (v) The full costs of any additional audit testing undertaken by the Director and found to fail the Specification shall be borne by the Contractor;
  - (vi) One bulk sample of loose material 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 BS EN 12697: Part 5 or ASTM D2041. The mean bulk density of the six cores shall be determined in accordance with BS EN 12697: Part 6. This 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;
  - (vi) The maximum density shall be determined in accordance with BS EN 12697: Part 5 or ASTM D2041;
  - (vii) The determination of % air voids shall be in accordance with BS EN 12697: Part 8.
1. **Unbound Materials** - unbound materials up to 225mm compacted thickness shall not be spread in more than one layer (see Specification Clause 801.7).

NUMBERED APPENDICES

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**APPENDIX 7/1**  
**REQUIREMENTS FOR PAVEMENTS AND PAVEMENT CONSTRUCTION**  
**MATERIALS (continued)**

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**Schedules 3 and 5 - Bituminous and Unbound Construction Materials**

**Table 2 : Specific Requirements for Construction Materials**

Pavement Layer	Description	Cl.	Other Requirement	R	P	X
Sub-base	Type 1 (Historical Grading and restricted materials)	803	Material shall be crushed rock, slag, crushed concrete or well burnt non-plastic shale. The range of grading shall be in accordance with table 3.			
Sub-base	Type 1	803	For materials other than the above, recycled materials and declared grading ranges other than specified in table 3, site performance tests may be required to demonstrate suitability.			
Asphaltic Protection Layer	HRA 0/2 F surf 40/60 des (red pigmented)	911	BS EN 13108 Part 4			
Base (roadbase)	AC 32 dense base 40/60	903	BS EN 13108-1:2006	Y		
	AC 32 dense base 100/150	903	BS EN 13108-1:2006	Y		
	AC 32 HDM base 40/60	930	BS EN 13108-1:2006	Y		
	AC 32 HMB base 30/45	935	BS EN 13108-1:2006			
Binder Course	AC 20 dense bin 40/60	906	BS EN 13108-1:2006	Y	Y	
	AC 20 dense bin 160/220	906	BS EN 13108-1:2006		Y	
	AC 20 dense bin 100/150	906	BS EN 13108-1:2006		Y	
	AC 20 HDM bin 40/60	933	BS EN 13108-1:2006	Y	Y	
	AC 20 HMB bin 30/45	936	BS EN 13108-1:2006		Y	
	HRA 60/20 bin 40/60	905	BS EN 13108-1:2006		Y	
	HRA 50/14 bin 40/60	906	BS EN 13108-1:2006	Y		
	HRA 50/10 bin 40/60	906	BS EN 13108-1:2006	Y		
	SMA 20 bin 40/60	937	BS EN 13108-5:2006	Y	Y	

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**APPENDIX 7/1**  
**REQUIREMENTS FOR PAVEMENTS AND PAVEMENT CONSTRUCTION**  
**MATERIALS (continued)**

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**Table 2 : Specific Requirements for Construction Materials (continued)**

Pavement Layer	Description	Cl.	Other Requirement	R	P	X
Surface Course	AC 14 close surf 100/150	912	BS EN 13108-1:2006	Y	Y	Y
	AC 10 close surf 100/150	912	BS EN 13108-1:2006	Y	Y	Y
	AC 6 dense surf 100/150	909	BS EN 13108-1:2006	Y	Y	Y
	AC 6 dense surf 160/220	909	BS EN 13108-1:2006		Y	Y
	AC 4 fine surf 100/150	914	BS EN 13108-4:2006		Y	
	HRA 0/2 F reg 40/60 regulating material	911	BS EN 13108-4:2006	Y		
	HRA 30/14 F surf 40/60	910	BS EN 13108-4:2006		Y	Y
	HRA 35/14 F surf 40/60	910	BS EN 13108-4:2006		Y	Y
	HRA 30/14 surf 40/60 des	911	BS EN 13108-4:2006		Y	
	HRA 35/14 surf 40/60 des	943	BS EN 13108-4:2006		Y	
	HRA 55/14 F surf 40/60	911	BS EN 13108-4:2006		Y	
	HRA 55/10 F surf 40/60	911	BS EN 13108-4:2006	Y	Y	
	SMA 14 surf 40/60	942	BS EN 13108-5:2006		Y	
	SMA 10 surf 40/60	942	BS EN 13108-5:2006		Y	
Coated Chippings	14/20mm size	915	BS EN 13108-4:2006 (Clause 7)		Y	
Surface Treatment	Coloured High Friction Surfaces	924	Hot or Cold applied			

**Key to Table 2**

- R** Permitted for use as Regulating Materials  
**P** Permitted for use as Patching Materials  
**X** Permitted for use as Inlay/Overlay Patching

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**APPENDIX 7/1**  
**REQUIREMENTS FOR PAVEMENTS AND PAVEMENT CONSTRUCTION**  
**MATERIALS (continued)**

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**Table 3 - Type 1 – Sub-base : Historical Grading**

<b>BS EN Sieve Size</b>	<b>Percentage by mass passing</b>
75mm	100
37.5	85-100
20	60-100
10	40-70
5	25-45
0.600	8-22
0.075	0-10
The particle size shall be determined by the washing and sieving method of BS EN 933-Part 1	

17. **Polished Stone Value** - the minimum PSV requirement for surface courses and surface treatments will be as agreed with the Director.
18. **Aggregate Abrasion Value** - all coarse aggregates used in surface courses and coated chippings shall be in accordance with Volume 7, Design Manual for Road & Bridges, Table 2.2 of HD 28/94.
19. **Test Temperature** - 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 9/33.
20. **Generic Stone Mastic Asphalt Surface Course (SMA)** – shall be in accordance with Specification Clause 942 and BS EN 13108 Part 5. When tested in accordance with the appropriate test standard, the coarse aggregate shall additionally have the following properties :
  - (a) Aggregate Abrasion Value: not more than 14.  
As defined in BS EN 13043, Clause 4.2.4
  - (b) Flakiness Category for coarse aggregate: Fl<sub>20</sub>  
As defined in BS EN 13043, Clause 4.1.6

SMA surface course manufactured with an established or modified binder shall only be used by agreement with the Director. If a stabilised binder is selected, the stabilising additive shall be dry organic fibres containing a minimum of 70% of cellulose manufactured for this purpose. The stabilising additive shall be at least 0.3 percent by mass of the total mixture.

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**APPENDIX 7/1**

**REQUIREMENTS FOR PAVEMENTS AND PAVEMENT CONSTRUCTION MATERIALS (continued)**

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The air void content of a proposed Stone Mastic Asphalt Standard Mixture shall be between 2% to 4% over the range of target binder content plus/minus 0.3 percent.

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 Director.

The retained texture depth after two years shall not be less than 40% of the original texture depth before trafficking. Additionally for 1.5mm specified texture depth, the retained texture shall be 1.0mm or greater and for 1.2mm specified texture depth, the retained texture shall be 0.8mm or greater.

Where required, the Contractor shall submit to the Director the details of the proposed mixture, including those items listed below. Should it be necessary to vary the submitted details during the works, changes shall not be made without the prior agreement of the Director.

Details to be submitted :

- Proposed supplier and plant, including technical staff contacts;
- Target grading and tolerances;
- Target binder content and tolerances;
- Sources of coarse and fine aggregate;
- Binder type and details of any polymer modification;
- Binder drainage limits;
- Bond coat specification, including polymer type and content;
- Any information likely to affect analysis BS 598: Part 102;
- Laying details, including material temperature limits and ambient/surface temperature laying restrictions.

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 surface 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.

21. **High Friction Surfacing** : Aggregate used in high friction surfacing systems shall have a minimum polished stone value (PSV) of 70.

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**APPENDIX 7/4**

**BOND COATS, TACK COATS AND OTHER BITUMINOUS SPRAYS**

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**Location**

1. Unless otherwise agreed with the Director, the Contractor shall apply tack coat to all existing bituminous surfaces that are to receive a bituminous overlay.

**Type of Binder**

1. The binder shall be bitumen emulsion to BS 434, Part 1.
2. The binder grade shall be Class K1-40.
3. Additives will not be permitted.

**Rate of Spread**

1. The rate of spread shall be 0.3 to 0.5 litres/sq m, except where applied to pervious macadam when the rate of spread shall be 0.4 to 0.65 litres/sq m.

**Proprietary Systems**

1. Bond coats for proprietary systems shall be as specified for the relevant manufacturer's process.

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**APPENDIX 7/6**

**BREAKING UP OR PERFORATION OF EXISTING PAVEMENT**

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1. Where existing road surfaces or other pavements are to be broken up for drainage purposes and left in place, the breaks shall penetrate the pavement to the sub-grade to the satisfaction of the Director. The maximum plan area of the broken pieces shall be 0.25 square metre.
2. Perforations in the road surface shall be at least 75mm in diameter and backfilled with free draining material. The holes shall be spaced approximately at the corners of a 1 metre grid.

NUMBERED APPENDICES

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**APPENDIX 11/1**  
**KERBS, FOOTWAYS AND PAVED AREAS**

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

**Appendix 11/1 – Table 1**

**Pre-cast Concrete Kerb, Channel and Edging Detail**

Description	BS EN 1340 : 2003 Part 1 Type	Foundation Width
45° Splayed Kerb (Full Battered) 125mm x 225mm	N/A	375mm
Half Battered Kerb 125mm x 225mm	HB2	375mm
Half Battered Kerb (Bridge Deck) 125mm x 150mm	HB3	375mm
Bullnosed (Dropped Kerb) 125mm x 150mm	BN	375mm
Dropper Kerbs (Various)	DL1/DR1/ DL2/DR2	375mm
Channel (Square) 125mm x 255mm	CS1	375mm
Channel Dished 125mm x 255mm	CD	405mm
Kerb and Channel (Square)	SP/HB2 CS1	600mm
Double Kerb 125mm x 150mm x 2 + 50mm gap	2 x HB2	450mm
High Retainment Kerbs 380mm x 415mm	Proprietary approved by Director	610mm
Footway Edging 50mm x 150mm 50mm x 200mm	EF/ER/ EBN	250mm
Quadrant 305mm radius x 225mm	QSP or QHB	550mm
Quadrant 455mm radius x 225mm	QSP or QHB	700mm
Bus Stop Kerb	Proprietary approved by Director	Proprietary specification
Conservation Kerb	Proprietary approved by Director	Proprietary specification

2. Additional concrete foundation and/or backing may be specified where appropriate.

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**APPENDIX 11/1**

**KERBS, FOOTWAYS AND PAVED AREAS (continued)**

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3. Double kerbs shall be placed back to back separated by a 50mm gap filled with Grade ST3 mix concrete trowelled to a dense smooth uniform surface.
4. Kerb face heights above the carriageway/channel surface shall be as follows:

**Appendix 11/1 – Table 2 - Desired Kerb Face Heights**

Standard kerb line	110mm
Kerb line with twisted channel (false fall)	110mm to 145mm
Dropped kerbs at vehicular accesses	25mm
Dropped kerbs at pedestrian crossings	Flush
Dropped kerbs at cycleway crossings	Flush
High retainment kerb	325mm
Kassell Kerb (Bus Stop)	160mm

5. Channels shall be flush with the carriageway surface.
6. Kerbs and Edgings shall be flush with the footway/verge surface.
7. The levels of units of kerb, channel, edging and quadrant shall not deviate from the above design levels  $\pm$  6mm, nor shall the longitudinal surface regularity deviate more than 3mm in 3m when checked with a 3m straight edge. Horizontal alignment shall comply with Clause 702.
8. For curves of radius 12m or less, kerbs of an appropriate radius shall be used.

**Materials for flexible surfacing for footways**

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

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**APPENDIX 11/70**  
**TACTILE PAVING**

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**General**

1. Tactile Paving to be provided as part of the works must be agreed with the Director as part of the technical approval process.
2. The Developer's attention is brought to the DTP publication 'Guidance on the Use of Tactile Paving Surfaces'. Designs must comply with this guidance.
3. Standard details for tactile paved crossings are shown on Drawing No. HWC/34.
4. The tactile paving thickness should be no less than 65mm.
5. Dropped kerbs at tactile paved crossings shall be set flush with the carriageway channel level.
6. Stick on type tactile paviers are not acceptable.

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**APPENDIX 11/71**  
**CONCRETE BLOCK PAVING**

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**General**

1. Concrete Paving Blocks must be 200mm x 100mm rectangular blocks with integral spacers to BS6717 part 1, 80mm thick for carriageway use and 60mm thick for footways and other areas.
2. Concrete block paving must be designed in accordance with BS7533.
3. ESCC has a preference for Marshalls Keyblock. Colour to be brindle, similar to those available from Marshalls catalogue with ref. PV5051750.
4. The skid resistance of concrete blocks determined by the polished paver test (PPV) shall be a minimum of 50.

**Construction**

1. Laying Pattern – Block paving shall be laid in a 45o herringbone pattern with 2 stretcher courses adjacent to the kerbs and a single stretcher course around ironwork.
2. Surface Levels - Surface level tolerances are as detailed in Table 11/71 below:

Construction Layer	Level Tolerance
Formation	+20mm -30mm
Sub Base	+10mm -20mm
Roadbase	+10mm -10mm
Surface Course	0mm

3. Drainage of Subgrade – The subgrade shall be drained and protected against inundation and ground water by piped or channeled storm water drainage and sub soil drainage.
4. Formation Preparation – The formation shall be sufficiently wide to extend to the rear face of the proposed edge restraint and abut any adjacent structures.

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**APPENDIX 11/71**

**CONCRETE BLOCK PAVING (continued)**

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5. Edge Restraint – Unless otherwise agreed with the Director, the edge restraint shall be provided in advance of laying the paving blocks.
6. Laying Course – The laying course shall be such that after compaction it forms a uniform layer 30mm below the blocks. The laying course shall be screeded to produce a uniform surface to the correct design profiles and falls.
7. Laying of Blocks – The blocks should be laid hand tight in the design pattern, working from an existing face edge or edge restraint wherever possible. Mechanical force should not be used to obtain tight joints. Full blocks should be laid first, then closure units. The minimum size of cut blocks shall be no less than 100mm x 100mm.
8. Trimming – Blocks should be neatly trimmed to shape using a diamond edge cutter.
9. Compaction – The surface course shall be compacted into the laying course by two or three passes of the appropriate vibration plate. Compaction should follow laying as soon as possible but never within 1m of the laying face. After compaction, silver sand shall be spread over the surface and brushed into the joints.
10. Trafficking – The block paved surface may be trafficked immediately following compaction.
11. Completion of Carriageway Surface Course – The completion of the laying course and surface course should be delayed until such time that construction traffic no longer requires frequent use of the carriageway.

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**APPENDIX 11/72**  
**POROUS PAVING**

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**General**

1. Porous or permeable paving may be accepted as a suitable SUDS system subject to the approval of the Director.
2. Porous paving must be designed in accordance with BS7533 Part 13: Guide for the structural design of Porous Pavements.
3. Concrete Paving Blocks must be 200mm x 100mm rectangular blocks with integral spacers to BS6717 part 1, 80mm thick. Colour to be brindle, similar to those available from Marshalls catalogue with ref. PV6501750.
4. Porous paving is regarded as requiring extraordinary maintenance (see Appendix 1/77) and as such ESCC will require payment of a commuted sum for any installation to be adopted.

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**APPENDIX 12/1**

**TRAFFIC SIGNS : GENERAL**

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1. Two number keys to each new traffic sign housing lock shall be provided to the Director.
2. Posts shall be installed centrally in holes of the dimensions given below and filled in compliance with Specification Clause 2602 with mix ST2 concrete to within 150mm of the ground surface. Cover to the base of all posts shall be 75mm.

<b>Post diameter (mm)</b>	<b>Excavation (mm)</b>
60	500 x 500 x 600 deep
76	500 x 500 x 675 deep
89	525 x 525 x 750 deep
114	750 x 750 x 1005 deep
139	825 x 825 x 1050 deep
168	1000 x 1000 x 2000 deep
193	1100 x 1100 x 2200 deep

3. For posts with enlarged bases, the sides of the excavation shall be increased by 75mm for all post diameters.

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**APPENDIX 12/3**

**TRAFFIC SIGNS, ROAD MARKINGS AND STUDS**

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**General**

1. The information in this Appendix shall be used in conjunction with the Traffic Signs Regulations and General Directions 2002.

**Permanent Road Markings**

1. The precise location of all proposed permanent road markings shall comply with the Traffic Signs Regulations and General Directions 2002 (Statutory Instrument No. 2002, No. 3113) and with Chapter Five of the Traffic Signs Manual (or subsequent revisions).
2. All permanent road markings shall be White, unless otherwise stated herein, and shall consist of continuous or intermittent lines, characters or symbols. Yellow materials shall comply with Colour No. 355 (Lemon) of BS 381C, or Colour No. 310 (Primrose), if specified.
3. All permanent road markings shall comprise thermoplastic material to BS EN 1871 – Class A, with applied solid glass beads and laid between 2mm and 5mm thick, excluding surface applied solid glass beads.
4. The skid resistance level for road markings, measured as described in BS EN 1436, shall not be less than 55.
5. The application of a tack coat for road markings is only required on stone or concrete surfaces.

**Permanent Reflecting Road Studs**

1. The precise location of all proposed permanent road studs shall comply with the Traffic Signs Regulations and General Directions 2004, Statutory Instrument No. 2002 No. 3113 Regulations 28,29 and Direction 50 and with Chapter Five of the Traffic Signs Manual, as agreed with the Director on site prior to the removal of any existing road studs.
2. The Contractor shall be responsible for the correct setting out of all studs.
3. Cavities for inset retro-reflective studs shall be cut by mechanical milling.
4. Inset studs for removal shall be removed from the carriageway by cutting round the perimeter of the stud. Levering out of position shall not be permitted. The size of sockets shall be kept to a minimum with the edges and base cut to sound pavement materials. The resulting cavities shall be prepared to receive backfill material, including cleaning by vacuum suction or air blast.

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**APPENDIX 12/3**

**TRAFFIC SIGNS, ROAD MARKINGS AND STUDS (continued)**

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5. Redundant sockets shall be primed in accordance with Specification Clause 901.22 and backfilled with 6mm medium graded macadam. Where approved by the Director, a proprietary bituminous material installed in accordance with the “manufacturer” instructions may be used.
6. Where directed by the Director, heavy duty road studs, “catseye” or equivalent approved shall be fixed to the carriageway strictly in accordance with the manufacturer’s instructions and to the current Specification for Highway Works.
7. Existing road studs taken up for re-use by the Contractor shall be replaced in the carriageway in accordance with the manufacturer’s instructions.
8. All non retro-reflecting studs shall be installed in accordance with the manufacturer’s instructions.

**Temporary Road Markings**

1. The precise location of any temporary road markings and road studs shall comply with the Traffic Signs Regulations and General Directions 2002 and with Chapter 8 of the Traffic Signs Manual and as agreed with the Director.
2. Temporary road markings shall be laid using prefabricated road markings as specified below.
3. Thermoplastic material may only be used on areas which will be subsequently re-surfaced as a part of the Works.
4. **Preformed Temporary Road Markings** : Prefabricated temporary road markings shall comply with BS EN 1790 : 1998. The method of application shall be in accordance with the manufacturer’s instructions and Specification Clause 1212. Particular attention shall be paid to the preparation of the road surface and the application of appropriate primers. Markings, such as warning arrows etc., shall be formed using pre-cut shapes.

**Temporary Reflecting Road Studs**

1. Temporary reflecting road studs using hot melt adhesive shall only be used on surfaces which will subsequently be resurfaced as a part of the Works.
2. On all other surfaces self-adhesive road studs shall be used.

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**APPENDIX 12/5**  
**TRAFFIC SIGNALS**

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**General**

An Appendix 12/5 is currently under preparation by our Traffic Signals section. This is expected to be complete by Christmas 2008 and will be inserted upon completion.

In the interim period, please liaise directly with Peter Hodge on 01273 481834 or [peter.hodge@eastsussex.gov.uk](mailto:peter.hodge@eastsussex.gov.uk) .

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**APPENDIX 12/70**  
**STREET NAMEPLATES**

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**General**

1. The Street Naming Authority is the appropriate Borough or District Council within whose jurisdiction the Development is situated.
2. Street Nameplates will be supplied and installed by the Developer to the satisfaction of the Director and Street Naming Authority.
3. No street nameplate shall be displayed in a new street until the naming process has been completed by the Street naming Authority in accordance with their statutory powers.

**Nameplates**

1. Street Nameplates and any supplementary plates considered necessary, will normally be reflective and shall satisfy the DTp Roads Circular 3/93.
2. The nameplate for a street must be erected prior to any property on that street being occupied. If the street is still under construction, temporary signage may be used until such time as the permanent nameplates can be installed.
3. If a nameplate is to be erected outside the limits of the highway or attached to any adjacent property, the Developer shall obtain any necessary agreement from the landowner and provide the Street Naming Authority such easement as may be required for future access.
4. At cul-de-sacs, street nameplates shall incorporate a 'No Through Road' sign as approved by the Street Naming Authority and as shown in the Traffic Signs Regulations & General Directions 2002 Fig.816.1 .

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**APPENDIX 14/70**  
**STREET LIGHTING**

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**General**

An Appendix 14/70 is currently under preparation by our Highway Lighting section. This is expected to be complete by Christmas 2008 and will be inserted upon completion.

In the interim period, please liaise directly with Simon Hall on 01273 482781 or [simon.hall@eastsussex.gov.uk](mailto:simon.hall@eastsussex.gov.uk) .

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**APPENDIX 30/5**

**GRASS SEEDING, WILDFLOWER SEEDING AND TURFING**

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**Grass Seeding**

1. The upper 50mm thickness of all topsoil shall be reduced to a fine tilth by use of a rotovator followed by chain harrow for large areas or a rake for small areas. A fine tilth is defined as having no lumps larger than 15mm to 20mm, its top surface rolled and consolidated using a light garden roller. The consolidated topsoil shall be flush with any adjacent features, such as kerb edges, manholes etc.
2. Granular fertiliser evenly distributed and raked in, at a rate not less than 75g per m<sup>2</sup> is required over all areas of seeding.
3. Seeding shall be carried out during the period of September to October and March to April inclusive (which may include times within the Defects Correction Period). Seeding can be carried out between May and August, subject to conditions being moist and if approved by the Director.
4. Seeding shall be carried out by evenly distributing at a rate of not less than 17g/m<sup>2</sup> for side slopes of both embankments and cuttings and not less than 10g/m<sup>2</sup> elsewhere, and shall immediately be followed by lightly raking by use of a clean landscape rake or other plant approved by the Director, the surface of the topsoil to cover the seeds.
5. The first two mowings shall be carried out using a rotary type mower. The first mowing shall be carried out once the grass has reached a height of between 100mm and 150mm and the remainder mowings when it has re-grown to between 150mm and 200mm. The plant used for mowing shall comply with any requirements in Appendix 6/8. All areas shall, unless permitted otherwise by the Director, be left clear of grass cuttings following each mowing, by raking or other method approved by the Director, and arisings disposed off Site.
6. A variety of mixtures are available from seed houses to suit the range of topsoil/subsoil pH encountered in East Sussex. Wherever possible, preference shall be given to using suitable native grass species of local provenance, providing they comply with low growth characteristics. The mixture, British Seed Houses – Mix A22, is suggested as being suitable for general low maintenance/low growth characteristics and shall be used unless an alternative more specific to a particular soil type is available and submitted to and approved by the Director.

**Turfing**

7. Where turfing has been specified, imported grass turves shall be used.
8. Turfed areas shall be kept watered after laying until well established.

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**APPENDIX 30/70**

**RETENTION OF TREES & HEDGEROWS ON THE EXISTING HIGHWAY**

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**General**

1. Existing trees and hedgerows to be retained as part of the development shall be protected and care shall be taken to avoid damage to them.
2. Tree protection should conform to Section 9 'The Construction Exclusion Zone: Barriers and Ground Protection in BS5837 Trees in relation to Construction (2005).
3. A 2.4m high hoarding must be erected to protect the trunk of retained trees. In addition, a 2m high spilt chestnut fence shall be erected along the drip line of the foliage, i.e. around the foliar area.. This fenced area must be maintained for the duration of the development and be kept clear of all construction activities, plant and materials.
4. The fence may only be temporarily removed where circumstances require access for excavation of trenches (by hand only) within the foliar area.
5. Particular care shall be taken such that trees and hedgerows to be retained and preserved shall not be damaged during the removal and disposal of adjacent trees and hedgerows.
6. No material or excavated waste shall be stored or deposited over the root system of the trees and hedgeroes to be preserved.
7. To reduce the risk of contamination due to spillage, no liquid storage shall be set up within 15 metres of any tree or hedgerow to be preserved.
8. No branches shall be trimmed nor any roots pruned or severed without the prior approval of the Director.
9. Trees and hedgerows to be preserved shall not be used as anchorage points and no fires shall be lit within 6 metres of the furthest extent of the tree canopy.

**Services**

1. Installation of services in proximity to trees must conform to the National Joint Utilities Group Guidelines For the Planning, Installation and Maintenance of Utility Apparatus in Proximity to Trees (Issue 2).

**Changes in Ground Level & Surface Materials**

1. Established trees and hedgerows may suffer if the adjacent ground levels and surface materials are significantly altered. Consideration must be given to such matters and conservation proposals demonstrated as part of the design process.