This is Document "Schedule 9 Part 1" referred to in this Contract

SCHEDULE 9 PART 1

SPECIFICATION FOR MAINTENANCE OPERATIONS

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PREAMBLE TO THE SPECIFICATION

1. The Specification for Operations shall be the 'Specification for Highway Works', published by The Stationery Office (formerly HMSO) as Volume 1 of the Manual of Contract Documents for Highway Works, as modified and extended by the following:

   (i) Appendix 0/1: Contract-specific Additional, Substitute and Cancelled Clauses, Tables and Figures;

   (ii) Appendix 0/2: Contract-specific minor alterations to existing Clauses, Tables and Figures;

   (iii) The Numbered Appendices listed in Appendix 0/3;

   (iv) Appendix 0/5: Special national alterations of the Overseeing Organisation of Scotland, Wales or Northern Ireland.

   Appendix 0/4 contains a list of the drawings.

2. The relevant publication date of each page of the Specification for Highway Works is given in the Schedule of Pages and Relevant Publication Dates.

3. An Additional Clause as indicated by a suffix 'A' in Appendix 0/5 is an alteration originating from the Overseeing Organisation of Scotland, Wales or Northern Ireland. An Additional Clause as indicated by a suffix 'AR' in Appendix 0/1 is a Contract-specific alteration.

4. A Substitute Clause, as indicated by the suffix 'S' in Appendix 0/5 is an alteration originating from the Overseeing Organisation of Scotland, Wales or Northern Ireland. A Substitute Clause as indicated by a suffix 'SR' in Appendix 0/1 is a Contract-specific alteration.

5. A Cancelled Clause as indicated by a suffix 'C' in Appendix 0/5 is an alteration originating from the Overseeing Organisation of Scotland, Wales or Northern Ireland. A Cancelled Clause indicated by a suffix 'CR' in Appendix 0/1 is a Contract-specific alteration.

6. Insofar as any of the Numbered Appendices may conflict or be inconsistent with any provision of the Specification for Highway Works the Numbered Appendices shall always prevail. Additionally, Numbered Appendices 0/1 and 0/2 shall take precedence over Numbered Appendix 0/5.

7. Any reference in this Contract to a Clause number or Appendix shall be deemed to refer to the corresponding Substitute Clause number or Appendix listed in Appendix 0/1, 0/2 or 0/5.

8. 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.

9. Where a Clause in the Specification relates to work goods or materials which are not required for the Operations it shall be deemed not to apply.

10. Any Appendix referred to in the Specification which is not used shall be deemed not to apply.

11. Where a Clause in the Specification is prefixed by an # this indicates that this particular Clause has a substitute National Alteration for one or more of the Overseeing Departments of Scotland, Wales or Northern Ireland. Substitute or additional National Clauses shall be used within countries to which they specifically apply and they are deemed to replace corresponding Clauses in the main text of the Specification as appropriate. The substitute National Clauses are located at the end of the relevant Series together with the additional National Clauses of the Overseeing Organisations.

12. Other than where references to the Overseeing Organisation are made in the context of the Overseeing Organisation granting statutory or type approvals, the roles and functions of the Overseeing Organisation shall be undertaken by the Director

    Where the Specification requires the provision of documentation to the Overseeing Organisation for statutory or type approval such documentation shall be provided to the Scottish Ministers.

13. Where the Operating Company is responsible for the Design for any part of the Operations, the delegation of the roles and functions of the Overseeing Organisation as stated in paragraph 12 above shall be amended as follows:

    (i) If any agreement, consent or approval required to be obtained from the Overseeing Organisation impacts on the health and safety of the general public, the environment or any property or equipment not owned or operated the Operating Company, such agreement, consent, approval shall be obtained from the Director.

    (ii) Where the Specification provides for the Overseeing Organisation to require a test, waive the requirement for a test or alter testing frequency, the party to whom the Overseeing Organisation's roles and functions have been ascribed by paragraph 12 above shall exercise such decisions in accordance with the Scottish Minister's requirements stated in this Contract.

14. Subject to the other provisions of this Contract

    Any references to any obligations and/or actions in this Specification shall be deemed to be obligations on the Operating Company unless such obligations and/or actions shall be identified otherwise and/or inferred otherwise.

Specification for Highway Works

Schedule of Pages and Relevant Publication Dates

Specification for Highway Works - Schedule of Pages and Relevant Publication Dates		
Series/Appendix	**Page Number**	**Publication Date**
000	1	March 1998
000	2	May 2004
000	3F	November 2003
100	2, 7, 12 to 13, W1F	May 2001
100	9, N4	August 2003
100	3, 5 to 6, N1	November 2003
100	1, 4, 8, 10, 11, 14 to 15F, N2 to N3, N6F	May 2004
200	1, 3F	May 2001
200	2	May 2004
300	1	May 2001
300	2, 4, 6F	November 2002
300	3, 5	May 2004
400	1 to 14F	May 2004
500	1 to 3, 10 to 11, 13, 19 to 28F	November 2004
500	4	November 2003
500	5 to 9, 12, 14 to 18 and N1F	May 2004
600	1 to 30, 58, N1 to N4F	November 2004
600	31, 35 to 57, 59 to 66F	May 2004
600	32 to 34 and S1F	November 2003
700	1 to 7, 9 to 10, N1 to N4	November 2004
700	11 to 17, N5F	May 2001
700	18 to 25F	May 2002
700	8	May 2004

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Series/Appendix	**Page Number**	**Publication Date**
800	1 to 6, 8 to 27F	November 2004
800	7	May 2004
900	1 to 72F	November 2004
1000	1 to 38F	November 2004
1100	1 to 4F and N1F	November 2004
1200	1, 8 to 16F, N3 to N4F	May 2004
1200	2 to 3, 6 to 7, W1F, N2	August 2003
1200	4	March 1998
1200	5, N1	May 2001
1300	1 to 12F, N1	November 2004
1300	N2F	November 2003
1400	1	March 1998
1400	2, 4, 7, N1F	May 2001
1400	3, 5 to 6, 8F	November 2003
1500	1 to 2	February 2003
1500	3 to 6, 8 to 16	November 2004
1500	7, 17F	May 2001
1600	1, 4 to 5, 9, 15, 17 to 18, 22, 24 to 26, 29 to 31, 35, 38, 49F	March 1998
1600	2 to 3, 6 to 8, 10 to 14, 16, 19 to 21, 23, 27 to 28, 32 to 34, 36 to 37, 39 to 48	November 2003
1700	1 to 22F	May 2004
1800	1 to 10F	May 2004
1900	16, S2F	May 2001
1900	2 to 7, 9 to 10, 13, 17, 26 to 27, S1	May 2003
1900	1, 11 to 12, 14 to 15, 18 to 25, 28 to 29F	November 2003

Specification for Highway Works - Schedule of Pages and Relevant Publication Dates		
Series/Appendix	**Page Number**	**Publication Date**
1900	8	May 2004
2000	1, 3 to 4F	May 2001
2000	2	November 2004
2100	1 to 4F	March 1998
2100	2 to 3	November 2003
2300	1	March 1998
2300	2 to 3F	May 2001
2400	1	March 1998
2400	2 to 5F	November 2003
2500	1	May 2001
2500	2 to 5, 8, 11F	November 2003
2500	6 to 7	May 2004
2500	9 to 10	November 2004
2600	1	March 1998
2600	2 to 4, 7F	November 2003
2600	6	May 2004
2600	5	November 2004
3000	1, 3 to 19, 21 to 27F	May 2001
3000	2, 20	November 2004
5000	2 to 6, 9 to 10, 17 to 19, S1F	May 2003
5000	1, 7 to 8, 11 to 16, 20F	November 2003
Appendix A	1 to 2, 4 to 11, 14 to 17F	May 2004
Appendix A	3, 12 to 13	November 2004
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Appendix C	1	May 2002

Specification for Highway Works - Schedule of Pages and Relevant Publication Dates		
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Appendix C	2F	November 2004
# Appendix D	1F	May 2001
Appendix D (NI)	N1F	March 1998
# Appendix E	1F	November 2004
Appendix E (NI)	N1F	November 2004
Appendix F	1 to 53F	November 2004
Appendix G	1F	May 2004
Appendix H	1	May 2004
Appendix H	1 to 7F	November 2004

Appendix 0/1

Contract-Specific Additional, Substitute and Cancelled Clauses Tables and Figures Included in this Contract

List of Additional Clauses, Tables and Figures

Appendix 0/1

Contract-Specific Additional, Substitute and Cancelled Clauses Tables and Figures Included in this Contract

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Appendix 0/1

Contract-Specific Additional, Substitute and Cancelled Clauses Tables an Figures Included in this Contract

List of Substitute Clauses, Tables and Figures

Appendix 0/1

Contract-Specific Additional, Substitute and Cancelled Clauses Tables an Figures Included in this Contract

List of Cancelled Clauses, Tables and Figures

Clause No	Title	Written on Page No Following
951CR	Patching	156

APPENDIX 0/1

CONTRACT-SPECIFIC ADDITIONAL SUBSTITUTE AND CANCELLED CLAUSES AND TABLES INCLUDED IN THIS CONTRACT

Appendix 0/1

Contract-Specific Additional, Substitute and Cancelled Clauses, Figures and Tables included in this Contract

Additional Clauses and Tables

Clause No. **Title and Written Text**

170AR **Licences Servitudes Wayleaves and Rights of Access**

1 The Operating Company shall gain access to boundary fences and adjacent areas from the Unit.

If in the opinion of the Operating Company access from the Unit shall be impractical then the Operating Company shall notify the Director of any licences servitudes wayleaves or rights of access that have to be arranged to enable the work to be undertaken.

Under no circumstances shall the Operating Company gain access across private land without the prior written consent by the Director.

171AR **Depots**

1 In accordance with Schedule 5 Part 5 the Operating Company shall establish depots and the like from which to carry out its site Operations.

173AR **Cleanliness of Unit and Use of Land**

1. The Operating Company shall take all necessary steps to avoid creating a dust nuisance.

If in the opinion of the Director the Operating Company shall not be dealing adequately with the control of dust the Director may require the Operating Company to carry out such additional measures as the Director considers shall be necessary at the Operating Company's expense.

2. The Operating Company shall keep all roads private entrances verges paths footways drains and ditches that are affected by the Operations or by vehicles of the Operating Company or by any of its sub-contractors or by suppliers of materials or by plant free from mud slurry or other hazardous substance that have been deposited as a consequence of his Operations and in a safe clean and passable state.

The Operating Company shall promptly remove all waste or superfluous material or any substance deposited by the Operating Company or its sub-contractor.

3. The Director shall have the authority to close any crossings and exits if any substance deposited shall not have been promptly removed by the Operating Company.

Appendix 0/1

Contract-Specific Additional, Substitute and Cancelled Clauses, Figures and Tables included in this Contract

Additional Clauses and Tables

Clause No.		**Title and Written Text**
173AR (cont'd)	4.	The Operating Company shall take all necessary precautions to prevent danger nuisance or inconvenience to the owners tenants or occupiers of adjacent properties and to the public generally. The Operating Company shall make its own arrangements with the owners tenants and occupiers concerned for the use of any private land for plant and equipment stores working space borrow pits or spoil dumps and the like it requires. Access to all frontages whether commercial or residential shall be maintained at all times by the Operating Company.
174AR		**Safety of Operations**
	1.	The Operating Company shall comply with the requirements of Appendix 1/74 in respect of the safety of Operations on the Unit.
175AR		**Material Stocks**
	1.	The Operating Company shall establish a minimum stock of material as described in Part 5 of Schedule 5 of this Contract which shall be maintained by the Operating Company for this Contract Period or for the Annual Period.
176AR		**Access Lighting and Protective Measures for Operations above Ground Level** General
	1.	Whenever Site Operations above ground level shall be required the Operating Company shall provide access lighting and protective measures as necessary.
	2.	The Operating Company shall prepare method statements for all Operations above ground level as part of its Quarterly Management System. The method statements shall include but not be limited to methods for complying with all relevant legislation, standards and industry best practice and shall include but not be limited to access scaffolding, access equipment, protection of the surrounding environment and temporary lighting.

Appendix 0/1

Contract-Specific Additional, Substitute and Cancelled Clauses, Figures and Tables included in this Contract

Additional Clauses and Tables

Clause No.	**Title and Written Text**
176AR (cont'd)	Operations shall not commence until the method statements have been prepared and approved in accordance with the other provisions of this Contract and operatives have received adequate training.
	3. Any access equipment and equipment (for example scaffolding hoists hydraulic platforms or boats) provided by the Operating Company for the carrying out of the Operations shall be made available for use by the Director at any time.
	Lighting
	4. Adequate measures shall be taken to ensure that light spill from the Operations area shall not encroach upon adjacent live carriageways.
	Control of Ambient Conditions
	5. The Operating Company shall erect maintain and remove any necessary measures including heating and dehumidification to comply with any requirements in respect of ambient conditions for the Operations
177AR	**Other Works on the Unit**
	1. The Operating Company shall take into account the presence from time to time of other authorised contractors and other third parties executing work which could have or may have an impact on Operations. Typical activities shall be as shown in Appendix 1/17.
	Site Clearance
273AR	**Sign Posts**
	1. Removal of existing sign posts Operations shall include removal of all foundations.
	2. Prior to the removal of sign posts carrying illuminated signs the Operating Company shall arrange to have the electricity supply to the electrical equipment de-energised.
	3. The filling of voids following removal of sign foundations shall include for backfilling and compaction with suitable material and reinstatement of the surface to match the adjacent surface.

Appendix 0/1

Contract-Specific Additional, Substitute and Cancelled Clauses, Figures and Tables included in this Contract

Additional Clauses and Tables

Clause No.	Title and Written Text
	Fencing
370AR	**Repairs to and Renewal of Existing Fencing**

1. Repairs to and renewal of existing fences shall comply with the relevant Clauses in Series 300 of this Part 1 to this Schedule 9.

2. Repairs and renewals of existing fences shall match the existing material and dimensions as far as shall be practicable.

Appendix 0/1

Contract-Specific Additional, Substitute and Cancelled Clauses, Figures and Tables included in this Contract

Additional Clauses Tables and Figures

Clause No. **Title and Written Text**

Road Restraint Systems (Vehicle And Pedestrian)

470AR **Site Operations to Vehicle Restraint Systems**

1. All Operations on vehicle restraint systems shall be undertaken by organisations certified under the Sector Scheme listed in Appendix A of the Specification for Operations.

471AR **Repair of Safety Barriers**

1. All repairs and installations of safety barrier systems shall comply with the requirements of BS 7669: Part 3:1994.

2. All repairs and installations of safety barrier systems shall be carried out in accordance with:

   (i) in the case of non-proprietary systems the layout drawings contained in Non-Proprietary Safety Barrier Systems as referred to in Interim Advice Note 44/02 (IAN 44/02)of the DMRB.

   (ii) in the case of proprietary systems the manufacturers' latest drawings and instructions

3. All accident damage repairs shall be carried out using the same type of safety barrier system as shall currently exist at the location.

   The type of post used shall depend on the results from examination of post foundations and where necessary loading tests being carried out by the Operating Company in accordance with Annex B of BS 7669 Part 3:1994.

4. All materials arising from the repair of safety barrier systems which shall be surplus to requirements or unacceptable for re-use shall be removed to a licensed waste disposal facility.

473AR **Re-tensioning of Tensioned Corrugated Beam and Tensioned Rectangular Hollow Section Beam Safety Barriers as a Cyclic Maintenance Activity**

1. Tensioned safety barriers shall be re-tensioned at the frequencies stated in Schedule 7 Part 1.

2. At other times the Director shall instruct the Operating Company of each length where the slack shall be required to be removed.

Appendix 0/1

Contract-Specific Additional, Substitute and Cancelled Clauses, Figures and Tables included in this Contract

Additional Clauses Tables and Figures

Clause No. **Title and Written Text**

473AR (cont'd)

3. Re-tensioning of such safety barrier systems shall be carried out in accordance with the procedure referred to in Appendix 4/71.

4. Safety barriers shall be re-tensioned in sections.

   The re-tensioning of a section shall be completed by the end of each working period and in any event before the removal of any traffic management.

474AR **Re-tensioning of Wire Rope Safety Barrier as a Cyclic Maintenance Activity**

1. Wire rope safety barriers shall be re-tensioned at the frequencies stated in Schedule 7 Part 1.

2. The following procedure shall be used:

   (i) slacken off wire ropes previously tensioned;

   (ii) re-tension as referred to in Appendix 4/71;

   (iii) only one rope between anchorages to be de-tensioned at any one time.

476AR **Safety Barrier System Stock Requirement**

1. The Operating Company shall maintain a stock of safety barrier system components such that at no time does it fall below the minimum level referred to in Part 2 to Schedule 5.

477AR **Repairs to and Renewal of Existing Pedestrian Guardrail**

1. Repairs to and renewal of existing pedestrian guardrail shall comply with the following:

   (i) in general work shall comprise the taking down of parts or sections of existing guardrail and the erection in their place of new parts or sections following accident damage or long term deterioration of the guardrail

Appendix 0/1

Contract-Specific Additional, Substitute and Cancelled Clauses, Figures and Tables included in this Contract

Additional Clauses Tables and Figures

Clause No. **Title and Written Text**

477AR (cont'd)

(ii) where existing posts and concrete footings shall be removed and new posts and concrete footings shall be installed in the same location any remaining voids shall be filled with concrete and the surrounding surface reinstated to match the existing.

Concrete shall be mix ST1

(iii) existing bolts nuts and washers shall not be reused

(iv) repairs to pedestrian guardrails shall be carried out using panels and posts which match the original installation as closely as possible

(v) all component parts shall comply with Clause 411.

2. Damaged sections of guardrail shall be removed and the resultant opening temporarily closed off.

The Operating Company shall make permanent repairs using panels to match existing.

Permanent repairs shall be carried out in accordance with the requirements of Paragraph 2.2 of Part 1 of Schedule 7 and in any case no later than 28 days after the erection of the temporary units.

478AR **Painting of Pedestrian Guardrails and Handrails**

General

1. Painting shall be carried out in accordance with the recommendations of British Standard Code of Practice CP6150.

2. All steel fabricated into units before delivery to the Site of the Operations shall be free of visible mill scale rust and foreign matter and primed without delay with a primer to Clause 5007.

3. All other surfaces of iron and steel shall be rendered clean dry and free from grease rust or mill scale prior to priming as described in sub-Clause 2 of this Clause.

4. Galvanised surfaces which have been exposed to atmospheric weathering for a period of 26 weeks or more shall be cleaned down and primed with a primer to Clause 5007.

Appendix 0/1

Contract-Specific Additional, Substitute and Cancelled Clauses, Figures and Tables included in this Contract

Additional Clauses Tables and Figures

Clause No. **Title and Written Text**

478AR (cont'd) Galvanised surfaces which have not been weathered for 26 weeks shall first be treated with an etching compound of the following composition by volume

Industrial methylated spirit	60 per cent
Toluol	30 per cent
Carbon tetrachloride	5 per cent
Commercial hydrochloric acid	5 per cent

After etching and before priming galvanised surfaces shall be thoroughly rinsed with clean water to remove chemical residues from the treatment and allowed to dry.

5. Aluminium surfaces shall be cleaned and thoroughly degreased with industrial methylated spirit prior to the application of a thin coat of proprietary etch primer applied in accordance with the manufacturer's written instructions.

   The surfaces shall then be coated with a compatible zinc chromate primer containing not less than 20 per cent by mass of zinc chromate and free from graphite and from oxide or hydroxide of lead.

   Undercoat and Finishing Coats

6. All primed surfaces shall be painted with one coat of undercoating of the colour appropriate to the colour of finishing coat.

7. Two finishing coats of the colour and type referred to in Appendix 4/2 shall be applied.

Appendix 0/1

Contract-Specific Additional, Substitute and Cancelled Clauses, Figures and Tables included in this Contract

Additional Clauses and Tables

Clause No. **Title and Written Text**

Drainage and Service Ducts

570AR **Rodding Eyes**

1. Rodding Eyes shall be either a Type 1 single or Type 2 double arrangement.

2. Rodding eyes shall not be used for pipe diameters in excess of 225mm.

3. The connecting pipe shall be laid at an angle of 45° to the horizontal

4. The connecting pipes shall be surrounded with 150mm concrete mix ST2 for the full depth of the connection and extending 150mm beyond the connection with the main drain.

5. Covers and frames shall comply with the loading category of BS EN124 as referred to in Appendix 5/1 with a clear opening of 150 or 225mm

6. Covers and frames to be bedded and haunched with mortar to Clause 2404 mix designation (ii) and set flush with the surface.

   Bedding mortar shall be a maximum of 25mm thick and placed directly on the concrete surround.

573AR **Renewal of Filter Drains**

1. Filter drains shall be renewed by replacing the filter media or the complete drain.

2. Where the filter media only shall be being replaced the existing material within the trench shall be removed to the specified depth.

   The trench shall then be back-filled up to ground level with Type B material in accordance with Table 5/5 of Clause 505.

   Any geotextile membrane present shall be replaced with new material equivalent to that removed

3. Where the complete drain shall be replaced all of the existing filter media pipe and pipe bedding shall be removed down to the base of the original trench.

Appendix 0/1

Contract-Specific Additional, Substitute and Cancelled Clauses, Figures and Tables included in this Contract

Additional Clauses and Tables

Clause No. **Title and Written Text**

573AR (cont'd) The drain shall then be reconstructed and back-filled up to ground level with Type B material in accordance with Table 5/5 Clause 505

4. Where required, the top 80mm of material in central reserves shall be replaced with red chippings.

   The chippings shall be 14mm nominal size igneous stone, natural red in colour.

576AR **Water Jetting and Suction**

1. In addition to the jetting requirements which shall be in accordance with Clause 521 the suction facility shall be provided by a liquid ring exhauster and shall have an air flow of at least 70 cu m per minute and 380mm Hg vacuum through a 200mm boom mounted pipe with a debris tank capacity of at least 5.5 cu m.

577AR **Closed Circuit Television Surveys**

1. Definition

   For the purposes of this Clause 'drain' shall be deemed to include sewers drains filter drains ducts piped grips combined drainage and kerb systems and linear drainage channel systems.

2. Extent of Survey and Method to be Used

   (i) The survey shall be of any of the drains on the Unit as stated on the Order.

   (ii) The drains shall be inspected by closed circuit television so that all cracks blemishes encrustations open joints silt debris collapsed sections roots vermin and alignment can be observed.

   (iii) Television cameras shall be drawn by cables and winches self-propelled tractor driven or fixed to rods.

   (iv) Where the survey of a drain length shall be stopped by a blockage in the drain the drain shall be surveyed from the other direction. Jetting cleaning or remedial work shall be the subject of a separate Order.

Appendix 0/1

Contract-Specific Additional, Substitute and Cancelled Clauses, Figures and Tables included in this Contract

Additional Clauses and Tables

Clause No. **Title and Written Text**

577AR (cont'd)

3. Picture Quality

(i) The electronic systems television camera and monitor shall be capable of providing a picture of not less than 350 lines definition with 5 shades of grey.

(ii) Horizontal and vertical linearity shall be better than 10 per cent positional error over the whole television monitor screen (central circle only).

(iii) The adjustment of focus shall give a focus range from near objects to infinity

(iv) The combination of illumination of the object and light sensitivity of the camera shall obtain an effective picture of the structure of the drains.

(v) The Operating Company shall provide on the Site a suitable test device which shall enable it to demonstrate to the Director that the definition of shades of grey and linearity comply with the above requirements by use of the Marconi Resolution Chart No 1 (central circle only).

A test shall be carried out using this equipment as frequently as may be required.

4. Linear Measurement

(i) The monitor display shall incorporate an automatically updated record of the metreage of the camera position along the drain accurate to plus or minus 2 per cent.

(ii) The Operating Company shall provide a suitable metering device which shall enables the cable length to be accurately measured.

(iii) The Operating Company shall demonstrate that the above tolerance shall be being complied with using one or both of the following methods

(a) use of cable calibration device

(b) tape measurement on the surface between chambers.

Appendix 0/1

Contract-Specific Additional, Substitute and Cancelled Clauses, Figures and Tables included in this Contract

Additional Clauses and Tables

Clause No. **Title and Written Text**

577AR (cont'd)

5. Video Tapes

The Operating Company shall provide a video recording on E180 VHS tapes of all drain lengths showing a continuous record of data displayed automatically on the monitor screen containing the following information.

(i) automatic update of the camera's metreage position in the drain line

(ii) date of survey

(iii) direction of survey

(iv) pipe dimensions and

(v) length/location reference

and shall be recorded on tapes which comply with the recording equipment manufacturer's standard tape specification (VHS compatible)

Video recordings shall become the property of the Scottish Ministers.

6. Photographs

(ii) Photographs shall be taken of Defects and samples of average condition.

(ii) Where colour in-line photography shall be used photographs shall be taken at intervals not exceeding 5 metres.

(iii) Durable half plate photographs shall be provided.

They shall be identified in relation to the metreage of the place taken shall show clear definition and accurately reflect what shall be shown on the monitor.

(iv) The speed of the camera in the drain shall be limited to 0.10 m/s for drains of diameter less than 200mm 0.15 m/s for diameters exceeding 200mm but not exceeding 300mm and 0.20 m/s for those exceeding 300mm or such other speed consented to in writing by the Director as shall enable all details to be seen on the video tape recording.

Appendix 0/1

Contract-Specific Additional, Substitute and Cancelled Clauses, Figures and Tables included in this Contract

Additional Clauses and Tables

Clause No. **Title and Written Text**

577AR (cont'd) 7. Reports

(i) All reports shall be presented to the Director in accordance with the format laid down in the NEC/DOE 'Manual of Sewer Condition Classification' published in 1980.

(ii) The Director may instruct as part of an Order different sections of the survey to be grouped together in separate reports.

Each chamber shall be recorded on a separate sheet except for buried chambers which may be included within a length.

(iii) Photographs shall be mounted and shall follow the relevant page of the report.

(iv) All dimensions shall be in metric units.

(v) The report shall include the depth measured from cover level to invert for every drain in each chamber.

(vi) All dimensions shall be in metric units.

(vii) The report shall include the depth measured from cover level to invert for every drain in each chamber.

(viii) One copy of the report shall be provided within 14 days of completion of each survey or if otherwise required by the Director each section of the survey.

Appendix 0/1

Contract-Specific Additional, Substitute and Cancelled Clauses, Figures and Tables included in this Contract

Additional Clauses Tables and Figures

Clause No **Title and Written Text**

Pavements - Bituminous Bound Materials

970AR **Repair of Carriageway Category 1 Defects**

1. Temporary repairs of carriageway Category 1 Defects shall be undertaken in accordance with Appendix 7/72.

2. The Operating Company may undertake a permanent repair in lieu of a temporary repair in the timescales stated in Part 1 of Schedule 7 for a temporary repair of a Category 1 Defect.

   The permanent repair shall be carried out in accordance with the relevant Clauses of Series 600, 700and 800 using material complying with Series 900.

971AR **Stone Mastic Asphalt (SMA) Surface Course**

General

1. Stone mastic asphalt shall comply with the general requirements of BS 4987 for coated macadam Series 700 and 900 and the specific requirements of sub-Clauses 2 to 44 of this Clause.

2. Stone mastic asphalt shall be produced in plants that shall be registered to the BS EN ISO 9001 ‘Sector Scheme for the Production of Asphalt Mixes’, described in Appendix A.

3. The Design for SMA to Clause 970AR shall be to the general requirements of Clause 942 and shall specifically comply with the requirements for wheel tracking and sensitivity to water.

   The Operating Company shall declare target aggregate gradings and binder contents prior to commencement of the Operations.

4. The nominal installation depths shall be classified into three categories as given in Table 9/70

Appendix 0/1

Contract-Specific Additional, Substitute and Cancelled Clauses, Figures and Tables included in this Contract

Additional Clauses Tables and Figures

Clause No **Title and Written Text**

971AR (cont'd)

TABLE 9/70 Nominal Installation Depth Classifications

Type	Type A	Type B	Type C
Nominal installation depth (mm)	<18	18 to 25	>25

Aggregates

5. Coarse aggregate shall be crushed rock or crushed slag complying with Clause 901.

6. The shape of the coarse aggregate shall comply with a maximum flakiness index of Category FI25 as defined in BS EN 13043, clause 4.1.6.

7. Fine aggregate shall comply with Clause 901 and shall comprise crushed fine aggregate derived from, rock, slag or gravel, which may be blended with not more than 50% of natural sand.

8. The resistance to polishing of the coarse aggregate shall have a minimum declared PSV category specified in Appendix 7/1 in accordance with BS EN 13043, clause 4.2.3.

   The resistance to abrasion of coarse aggregate shall have a maximum AAV specified in Appendix 7/1 in accordance with BS EN 13043, clause 4.2.

   Filler

9. Added filler aggregate shall be hydrated lime, crushed limestone or Portland Cement, in accordance with the requirements of BS 594-1 and shall be not less than 2% by mass of total aggregate.

   Binder

10. Bitumen shall comply with BS EN 12591 or BS 3690-3 and shall be produced in plants that shall be registered to BS EN ISO 9001 'Sector Scheme for the Supply of Paving Grade Binders', described in Appendix A.

    The said binder shall not be harder than penetration reference 50 (paving grade 40/60).

Appendix 0/1

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Additional Clauses Tables and Figures

Clause No	Title and Written Text
971AR (cont'd)	If the deformation resistance requirement in sub-Clause 18 of this Clause shall not be required, then the binder penetration reference shall be as specified in Appendix 7/1.

Binder Modifiers

11. Binder modifiers pre-blended with bitumen or binder modifiers, including but not limited to natural or man-made fibres, which shall be added or blended with base bitumen complying with BS EN 12591 of the stated penetration range at the mixing plant shall have a British Board of Agrément HAPAS Roads and Bridges Certificate.

    In the event that no such certificates have been issued, binder modifiers, pre-blended modified binders or additives shall not be used without the prior written approval of the Overseeing Organisation.

12. In the event that no British Board of Agrément HAPAS Roads and Bridges Certificates have been issued, the Operating Company shall provide with its Design a data sheet giving details of the properties of the modified binders or additives proposed including those referred to in Appendix 7/1.

    The Operating Company shall provide the rheological product identification data for pre-blended modified binders in accordance with Clause 928 and cohesion in accordance with Clause 939.

Mixture

13. The binder drainage of the loose mixture at the target composition at a temperature of 175°C in accordance with DD 232 : 1996 shall not be more than 0.3% by total mass of mixture.

14. The agreed binder content for the mixture shall be the target binder content ± 0.6%.

Job Mixture Approval

15. Details of the proposed mixture Design from each asphalt mixing plant shall be submitted to the Overseeing Organisation.

    The information may be obtained from either a job mixture trial or from the use of the mixture on a previous contract carried out in accordance with this Clause, and shall include all the following particulars:

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Additional Clauses Tables and Figures

Clause No	Title and Written Text

971AR (cont'd)

(i) bitumen penetration reference

(ii) quantities of binder and aggregate

(iii) aggregate source and grading

(iv) proprietary name and generic type of binder modifier

(v) quantity of any binder modifier, including natural or man-made fibres added at the mixer and

(vi) modified binder and mixture data requirements specified in Appendix 7/1.

16. If a modified binder including but not limited to any proportion of the modifier shall not be fully recovered on analysis for determination of binder content details of alterations to the test method and/or the correction necessary to the results together with supporting data shall be submitted to the Overseeing Organisation with the proposed mixture Design for prior written consent by the Director to implement them.

17. The mixture shall be approved in writing by the Overseeing Organisation as the Job Standard Mixture provided that:

    (i) the mixture Design proposed complies with sub-Clauses 1 and 3 of this Clause

    (ii) information has been submitted in accordance with sub-Clauses 9 and 10 of this Clause

    (iii) information submitted in accordance with sub-Clause 16 of this Clause has been approved in writing by the Overseeing Organisation and

    (v) test results submitted demonstrate compliance with sub-Clauses 37 38 and 39 of this Clause.

18. If the mix Design or constituent materials of a Job Standard Mixture shall be changed by The Operating Company details of the revised mixture shall be submitted for written approval in accordance with sub-Clause 17 of this Clause.

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Contract-Specific Additional, Substitute and Cancelled Clauses, Figures and Tables included in this Contract

Additional Clauses Tables and Figures

Clause No	Title and Written Text
971AR (cont'd)	Job Mixture trials may be carried out on or off Site, however material laid for a Job Mixture trial on Site which complies with this Specification may form part of the binder/regulating course in the Permanent Works. If carried out off site trials may be arranged independently or in conjunction with other works. Mixing 19. Unless otherwise specified by the supplier of the modified binder, stone mastic asphalt shall be mixed at a temperature in accordance with the requirements of BS 4987-1 for the penetration reference of the bitumen. This shall be done in such manner that a homogeneous mixture of aggregate, filler, bitumen and additive is produced. At the time of mixing the coarse aggregate shall be in a surface dry condition. Transportation 20. The transportation of Stone Mastic Asphalt shall be in accordance with sub-Clause 901.3. Permanent Works 21. When specified in Appendix 7/1, sampling and testing shall be carried out to establish compliance of material laid in the Permanent Works. Sampling from the Laid Material 22. Samples of uncompacted material shall be taken from the paver as near to where the cores shall be taken as shall be practicable, in accordance with BS 598-100 Clause 6.3. 23. Six 200 mm diameter cores shall be cut, where practical from the centre of the lane out of material from each mixing plant: (i) from material laid specially in a Job Mixture Approval Trial (ii) from the first 1 km length of stone mastic asphalt from a mixing plant laid in the Permanent Works or

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Additional Clauses Tables and Figures

Clause No	Title and Written Text
971AR (cont'd)	(iii) within 3 days of laying stone mastic asphalt from a mixing plant in the Permanent Works, where less than 1 km length has been laid whichever occurs first.

24. The 200 mm diameter cores shall be cut within 3 days of laying the material unless they have been cut under the requirements of sub-Clause 35 of this Clause.

    The cores shall be transported as soon as possible to the laboratory.

    If the storage period is less than 4 days, the storage temperature shall be within the range 0°C to 25°C.

    For storage beyond 4 days, the temperature shall be within the range 0°C to 5°C. Cores shall be stored on a flat face on a horizontal surface, and shall not be stacked.

    Site storage of cores where unavoidable and conditions of transportation shall be as close as shall be practicable to the laboratory conditions.

    The storage temperature and times, including whilst cores are on Site shall be recorded.

25. Three pairs of 150 mm diameter cores shall be cut at the same chainages as the 200 mm diameter core.

    One core of each pair shall be taken from the centre of the lane adjacent to the 200 mm diameter core and one whose centre shall be between 500 mm and 1000 mm from the edge of the mat.

26. Cores shall be taken after the stone mastic asphalt has cooled to ambient temperature and not less than 12 hours after laying and before trafficking unless otherwise specified in Appendix 7/1.

    The walls and base of all holes from which core samples shall have been cut shall be painted with hot bitumen or cold applied polymer modified intermediate or premium grade bitumen emulsion containing normally 60% binder immediately prior to making good.

    Core holes shall be backfilled with materials compacted to refusal with a circular headed vibrating hammer in layers not exceeding 75 mm thick.

    Hot base material shall be similar to existing pavement.

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Contract-Specific Additional, Substitute and Cancelled Clauses, Figures and Tables included in this Contract

Additional Clauses Tables and Figures

Clause No	Title and Written Text

971AR (cont'd)

27. In the Permanent Works, after the first 6 cores and where the required thickness of the material exceeds 25 mm for material from each mixing plant not less than one pair of 200 mm diameter cores shall be cut from the centre of the lane every 1 lane kilometre laid a day's production if less than 1 lane kilometre shall have been laid.

Tests and Calculations

28 For each uncompacted sample the compositional analysis shall be carried out in accordance with BS 598 : Part 102, corrected by any correction factor approved under sub-Clause 16 of this Clause.

29. Each six consecutive 200 mm diameter cores of material from the same mixing plant shall form a set of cores on a running basis.

For each set the wheeltracking rate and rut depth shall be determined in accordance with the procedure in BS 598-110 at the test temperature specified in Appendix 7/1.

30. For each 150 mm diameter core the bulk density shall be determined in accordance with the procedure in BS 598-104, Clause 4.

The bulk density at a chainage shall be the mean from the two cores taken at a chainage.

Subsequent to determining the bulk density, the maximum density shall be determined from the pair of the cores in accordance with BS EN 12697-5.

The air void content of each pair of 150 mm diameter cores shall be calculated to ± 0.1% as follows: 100% x)

Air voids content = (1- ρ) x 100 %

ρ Max

where: ρ . shall be the bulk density in accordance with BS 598-104 (Mg/m3)

and ρ Max shall be the maximum density in accordance with BS EN 12697-5 (Mg/m3).

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Additional Clauses Tables and Figures

Clause No	Title and Written Text
971AR (cont'd)	Compliance Requirements

32 When determined in accordance with BS 598 : Part 102, the compositional analysis shall demonstrate compliance with following

(i) the binder content on analysis shall not differ from the target binder content declared by the Operating Company by more than ± 0.6% and

(ii) the aggregate grading shall not differ from that declared by the Operating Company.

33. Deformation resistance shall be determined in accordance with the requirements of Clause 952 and the deformation values specified in Appendix 7/1.

34. The air voids content shall be not more than 6% for a pair of cores at a chainage and shall be not more than 4% for the mean of any six consecutive determinations from pairs of cores from material from the same mixing plant.

When the Stone Mastic Asphalt shall be being used as a regulating course at thicknesses below 30 mm the appropriate limiting void contents shall be 8% and 6% respectively

Reporting Results

35. Where specified in Appendix 1/5 that the Operating Company shall be responsible for testing the individual determinations including location of samples and results from all tests shall be given to the Overseeing Organisation in writing within two weeks of the material having been laid.

Surface Preparation

36. Existing surfaces shall be prepared in accordance with the requirements of BS 4987-2 and Series 700 Clauses.

Bond coats and tack coats shall be in accordance with Clause 920 except that where the thickness of the stone mastic asphalt is less than 20 mm, only polymer modified bond coats shall be used.

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Additional Clauses Tables and Figures

Clause No **Title and Written Text**

971AR (cont'd)

Laying

Unless required otherwise in Appendix 7/1, stone mastic asphalt shall be laid and compacted in accordance with the requirements of Clause 901, to the thickness stated in Appendix 7/1.

Weather Conditions

38. The weather conditions specified in Clause 945 shall not apply to stone mastic asphalt laid in accordance with this Clause.

The manufacturer's recommendations for the use of modified binders in various weather conditions for laying and compaction temperatures of the modified stone mastic asphalt shall be submitted to the Overseeing Organisation with details of the modified binder required under sub-Clause 9 of this Clause and shall include information on early trafficking particularly in hot weather.

Temporary Trafficking

39. The Operating Company shall ensure the pavement material has adequately cooled and hardened before it shall be subjected to temporary traffic.

Unless otherwise agreed in writing by the Overseeing Organisation the material shall not be trafficked if its surface temperature exceeds 25°C unless the maximum temperature within the mat has fallen below 35°C.

973AR **Overband Sealing**

1. The Operating Company shall use systems holding Highway Authorities Product Approval Scheme certification and the system shall be applied in accordance with Highway Authorities Product Approval Scheme requirements

2. The minimum skid resistance value of the overband material shall be 60 measured by the Skid Resistance Pendulum method.

3. All material removed from the cracks and joints shall be removed to a licensed waste disposal site.

4. All loose material shall be removed off the Unit to a licensed waste disposal site or recycling centre.

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Contract-Specific Additional, Substitute and Cancelled Clauses, Figures and Tables included in this Contract

Additional Clauses Tables and Figures

Clause No	Title and Written Text

974AR Pavement Reinforcement

1. Pavement reinforcement shall be in accordance with the requirements of Appendix 7/70.

975AR Concrete Pavement Repair Systems

1. Concrete pavement repair systems shall comply with the requirements of Appendix 7/71.

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Contract-Specific Additional, Substitute and Cancelled Clauses, Figures and Tables included in this Contract

Additional Clauses and Tables

Clause No **Title and Written Text**

Kerbs Footways And Paved Areas

1171AR **Relaying of Existing Footways**

Relaying of existing footways shall be carried out with materials compatible with the adjacent areas.

1172AR **Siding Out**

General

1. Siding out shall normally be carried out at the edges of footways and paved areas but may be extended to more general areas for the breaking up and removal of excessive or hardened dirt or weeds or any other undesirable material on the footway or paved surface.

2. Footways and paved areas may be sided out either manually or mechanically.

   However the Operating Company shall ensure that any siding out machine it employs does not cause damage to the existing footway or paved surface.

3. Arisings shall be disposed of by removal off the Unit.

Footways and Paved Areas

4. Footways shall be sided out up to and including any existing footway edging or to a specified width of line.

   Where the sided out edges do not generally exceed a height of 75mm above the existing footway surface they may be trimmed with a vertical face.

   Where they generally exceed a height of 75mm above the existing footway surface they shall be trimmed to an approximately 45 degree battered face.

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Additional Clauses and Tables

Clause No **Title and Written Text**

1173AR **Artificial Stone Paving or Natural Stone Paving and Precast Concrete Paving Flags and Blocks**

1. Before work in any individual existing artificial stone paving York stone or precast concrete flag/block paved footway commences the Operating Company shall record the dimensions and number of flags to be replaced and take photographic records.

   These records shall be maintained and made available to the Director or the Performance Audit Group at any time when required by other or both.

2. There shall be no payment for flags/blocks broken or damaged in lifting or relaying.

   The Operating Company shall carefully lift the flags/blocks and set aside.

   If these flags/blocks shall not be permanently relaid on the same day as they shall be lifted the Operating Company shall stack them in neat piles to a height not exceeding one metre.

1174AR **Laying of Artificial Stone Paving Natural Stone Paving and Precast Concrete Paving Flags**

Paving of artificial stone York stone or precast concrete flags shall be reconstructed to match existing as closely as possible and shall be in accordance with BS 7533 Part 4:1998.

1179AR **Timber Edging to Footways**

1. Timber shall be as described in Clause 304 and sized to match existing although the minimum dimensions to be used shall be not less than 75mm x 32mm.

2. Timber shall be pressure impregnated with preservative in accordance with Clause 310.

3. Fixing shall be by means of 50mm x 50mm x 300mm pointed pegs at 600mm centres impregnated as in sub Clause 2.

Appendix 0/1

Contract-Specific Additional, Substitute and Cancelled Clauses, Figures and Tables included in this Contract

Additional Clauses and Tables

Clause No. **Title and Written Text**

Traffic Signs

1270AR **Cyclic Maintenance of Traffic Signs Hazard Posts Illuminated Bollards Marker Posts Telephone Hoods Refuge Beacons and ECP Cylinders**

1. Traffic signs hazard posts illuminated bollards and marker posts shall be maintained in compliance with paragraph 5.1 of TD25 of the DMRB and the following sub-Clauses.

2. Traffic signs hazard posts illuminated bollards and marker posts shall be maintained in a clean condition.

   Stiff-bristled brushes or abrasive tools or cleaners shall not to be used for cleaning reflectorised sign faces.

   A wet non-abrasive detergent cleaner shall be used which has generally neutral acidity/alkalinity in the range pH 6.8 to pH 7.2.

   Strong aromatic solvents alcohol steam cleaning or high pressure water jets shall not be used.

   Proprietary cleaning products with prior written consent by the Director may be used.

   All brushes mops detergents and chemicals shall not damage the surface of the item being cleaned.

3. As part of the cleaning Operations all hazard posts and marker posts shall be straightened and the ground around the base of the post re-compacted.

4. Sign cleaning shall not be carried out when the ambient temperature shall be 2°C or less and falling or when the Operations shall be likely to result in the formation of ice on the footway or carriageway.

5. The Operating Company shall ensure that the method used to clean any illuminated unit sign or bollard shall in no way affect the electrical installation to the unit.

6. Leaning ladders against sign faces shall not be permitted.

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Contract-Specific Additional, Substitute and Cancelled Clauses, Figures and Tables included in this Contract

Additional Clauses and Tables

Clause No. **Title and Written Text**

1270AR (cont'd)

7. Records of cleaning work carried out shall be maintained and be available for inspection by the Director and the Performance Audit Group at any time.

1271AR **Cyclic Maintenance of Sign Lighting Units**

1. The Operating Company shall carry out cyclic maintenance of sign lighting units to ensure their proper and efficient function.

2. The cyclic maintenance operation shall include

   (i) A thorough cleaning of all photo electric control units' luminaire external and internal surfaces and any other components affecting the optical performance of the luminaire.

   The cleaning methods and materials shall be in accordance with Clause 1371AR

   (ii) Degreasing lubrication and operation of all toggles wing nuts hinges door locks and lifting gear.

   (iii) The bracket luminaire and luminaire optical equipment to be correctly aligned in respect of the sign face and to minimise glare to traffic.

   (iv) All grub screws locking devices and the like shall be properly tightened in accordance with the manufacturer's written instructions.

   (v) A report of any damage corrosion or misalignment of posts.

   (vi) A report of any electrical component showing signs of overheating fracture condensation or tracking.

   (vii) The removal of the lamps for luminaire cleaning purposes.

   The lamp to be refitted shall be the existing or new as appropriate.

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Additional Clauses and Tables

Clause No. **Title and Written Text**

1271AR (cont'd)

(viii) The replacement of lamps.

(ix) All new lamps shall be marked with date of installation and this date to be recorded centrally.

(ix) Identifying faults on any lighting unit and recording.

(x) Spraying of all electrical components with a de-moisturising spray.

(xi) Visual checking of sign face fixings.

Any Defects shall be recorded.

(xii) Checking of conduits for any corrosion and other Defects.

Any Defects shall be recorded.

(xiii) Checking of all electrical connections.

Any Defects shall be recorded.

(xiv) Checking of all earthing connections.

Any Defects shall be recorded and

(xv) Clearing of debris from around sign post bases for 1 metre radius.

3. The supply shall be isolated at the cut-out for the removal and fitting of lamps.

4. Any faulty lamp shall be disposed of in accordance with Clause 1372AR.

5. Records of cleaning work carried out shall be held and be available for inspection by the Director and the Performance Audit Group at any time.

1273AR **Cyclic Maintenance of Traffic Signals**

1. The Operating Company shall carry out cyclic maintenance of traffic signals as necessary to ensure their proper and efficient function.

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Contract-Specific Additional, Substitute and Cancelled Clauses, Figures and Tables included in this Contract

Additional Clauses and Tables

Clause No.		**Title and Written Text**
1273AR (cont'd)	2.	The cyclic maintenance operation shall include
		(i) compliance with Section 3.1 of TD24/97 of the DMRB.
		(ii) thorough cleaning of all traffic signal lenses internal and external surfaces and any other components affecting the optical performance of the lenses. The cleaning methods and materials shall be in accordance with Clause 1371AR. Cleaning materials shall not cause harmful effects to the range of materials and surfaces to be cleaned.
		(iii) All grub screws locking devices and the like shall be properly tightened in accordance with the manufacturer's written instructions.
		(iv) A report of any damage corrosion or misalignment of posts.
		(v) A report of any electrical component showing signs of overheating fracture condensation or tracking.
		(vi) The removal of the lamps for luminaire cleaning purposes. The lamp to be refitted shall be the existing or new as appropriate.
		(vii) The replacement of lamps
		(viii) Identifying faults on any unit and recording.
		(ix) Spraying of all electrical components with a de-moisturising spray.
		(x) Visual checking of fixings. Any Defects shall be recorded.
		(xi) Checking of conduits for any corrosion and other Defects. Any Defects shall be recorded.

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Additional Clauses and Tables

Clause No. **Title and Written Text**

1273AR (cont'd)

(xii) Checking of all electrical connections.

Any Defects shall be recorded.

(xiii) Checking of all earthing connections.

Any Defects shall be recorded.

(xiv) Clearing of debris from around post bases for 1 metre radius

3. The supply shall be isolated at the cut-out for the removal and fitting of lamps.

4. Any faulty lamp shall be disposed of in accordance with Clause 1372AR.

5. Records of cleaning work carried out shall be held and be available for inspection by the Director and the Performance Audit Group at any time.

1274AR **Non-Cyclic Maintenance of Traffic Signals**

1. The Operating Company shall carry out non cyclic operations on or in

(i) Traffic signals

(ii) Posts

(iii) Underground cable systems

(iv) Control systems and

(v) Any other related electrical equipment.

2. The Operating Company shall attend to Emergency call-outs and provide a report to the Director.

3. The Operating Company shall carry out repairs of Category 1 and Category 2 Defects in accordance with the requirements of Part 1 of Schedule 7.

4. The Operating Company shall maintain daily records of the progress of Operations and details of labour and Constructional Plant used.

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Additional Clauses and Tables

Clause No.	**Title and Written Text**
	Road Lighting Columns And Brackets
1370AR	**Cyclic Maintenance of Road Lighting Units**

1. The cyclic maintenance of road lighting units shall be carried out in accordance with TD 23/99 of the DMRB.

   The following tasks shall be undertaken

   (i) thorough cleaning of all photo electric control units luminaire external surfaces internal surfaces and any other components affecting the optical performance of the luminaire.

   The cleaning methods and materials shall be in accordance with Clause 1371AR.

   The Operating Company shall ensure that the internal surfaces and any other components affecting the optical performance of luminaires with an ingress protection rating of IP65 shall not normally be cleaned.

   Cleaning materials shall not cause harmful effects to the range of materials and surfaces to be cleaned

   (ii) the degreasing lubrication and operation of all toggles wing nuts hinges door locks and any raising and lowering gear

   (iii) correct alignment of the bracket luminaire and luminaire optical equipment with respect to the carriageway.

   (iv) tightening of all grub screws locking devices and the like in accordance with the manufacturer's written instructions

   (v) a report of any damage or corrosion

   (vi) a report of any electrical component showing signs of overheating fracture condensation ingress of moisture or tracking

   (vii) the removal of the lamp(s) during the luminaire cleaning process. The lamp(s) to be refitted shall be the existing or new as appropriate

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Contract-Specific Additional, Substitute and Cancelled Clauses, Figures and Tables included in this Contract

Additional Clauses and Tables

Clause No.	**Title and Written Text**

1370AR (cont'd)

(viii) replacement of lamps either by bulk replacement or individually following burn to extinction. (Bulk replacement required on motorways and dual carriageways with a speed limit in excess of 40 mph.)

(ix) marking all new lamps indelibly with date of installation

(x) identifying faults on any lighting unit which fails to operate or undertaking minor repairs or reporting such failure

(xi) spraying of all isolated electrical components with a demoisturising spray

(xii) checking of all electrical connections any Defects shall be recorded

(xiii) checking of all earthing connections any Defects shall be recorded

(xiv) removal of all debris from 1 metre radius of column base or foundation

(xv) cleaning of the column flange

(xvi) repair of grouting

(xvii) raising and lowering of columns including provision and operation of all necessary specialist equipment and

(xviii) cleaning of all warning and numbering labels.

2. The electricity supply shall be isolated at the cut-out before lamp removal and fitting and all maintenance Operations.

3. Disposal of lamps shall be in accordance with Clause 1372.

4. All labour employed on electrical or associated Site Operations shall comply with the requirements of Appendix 14/71.

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Additional Clauses and Tables

Clause No. **Title and Written Text**

1370AR (cont'd)

5. The Operating Company shall each day prepare a report that details Site Operations progress labour employed and Constructional Plant used.

The format of the report shall be in accordance with Appendix 14/74.

These Records shall be maintained and be made available for inspection by the Director and the Performance Audit Group at any time.

1371AR **Cleaning Methods and Materials**

1. The cleaning of all lighting equipment shall be carried out using an anti-static water based alkaline cleaner/degreaser and cloths complying with the following requirements

   (i) An approved detergent cleaning solution shall be used and shall be non-toxic and cause no handling dangers to personnel

   (ii) the cleaning solution shall cause no harmful effects to the range of materials and surfaces to be cleaned

   (iii) the cleaning solution shall be highly effective against greasy surface deposits fast acting and suitable for use in cold water and in hard or soft water areas

   (iv) the cleaning solution shall not give rise to smearing and it shall not be necessary to carry out rinsing with clean cold water after cleaning

   (v) the cleaning solution shall not cause persistent foaming in use and shall not promote the formation of static charges on the equipment surfaces and

   (vi) the cleaner/degreaser solution shall be diluted with clean uncontaminated water in accordance with the manufacturer's written instructions and shall be applied by means of soft muslin cloths.

2. The cleaning cloths shall be continually cleaned or changed to ensure that no scouring or abrasive action damages the surfaces of the optical components.

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Additional Clauses and Tables

Clause No. **Title and Written Text**

1371AR (cont'd)

The cloths shall not be "wrung out" or cleaned on the working platform of the lift vehicle and quantities of the cleaning solution in open containers shall not be carried on the working platform of the lift vehicle.

3. The Operating Company shall ensure that during the Site Operations dropping of quantities of water or solution onto vehicles passing below or adjacent to the cleaning vehicle shall not occur.

4. After the use of the cleaning solution all surfaces treated shall be wiped with a clean dry cloth and left reasonably dry.

1372AR **Lamp Disposal**

1. All lamps for disposal shall be passed through a lamp disposal machine

2. The discharge into sewers and/or watercourses of any contaminated water arising from the disposal of lamps shall not be permitted.

   The lamp disposal machine used shall incorporate a recirculation facility.

3. The Operating Company shall provide a skip for the neutralised lamp debris and a separate skip for the lamp containers the skips shall be located as near as possible to the lamp disposal machine.

1373AR **Removal of Existing Equipment**

1. The Operating Company shall carefully excavate around and dismantle any existing equipment to be removed.

   Following removal any excavation Site Operations shall be reinstated.

2. If the equipment shall not be immediately re-erected the Operating Company shall then transport it to be stored in one of its depots.

   It shall remain the property of the Scottish Ministers.

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Contract-Specific Additional, Substitute and Cancelled Clauses, Figures and Tables included in this Contract

Additional Clauses and Tables

Clause No.	Title and Written Text

1374AR Cyclic Maintenance of High Mast Lighting

1. Cyclic maintenance of high mast lighting units shall include all Operations in accordance with Clause 1370 Appendix 13/70 and in addition maintenance in accordance with Section 6 of Technical Report No. 7 "High Mast Lighting" published by The Institution of Lighting Engineers 1996.

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Contract-Specific Additional, Substitute and Cancelled Clauses, Figures and Tables included in this Contract

Additional Clauses and Tables

Clause No. **Title and Written Text**

Electrical Work for Road Lighting and Traffic Signs

1470AR **Temporary Overhead Feed to Lighting Units**

1. The temporary overhead feed to lighting unit system shall consist of conductor wires supported by a steel catenary wire.

   The minimum height above ground of the span shall according to the location be as follows

   (i) 10 metres for motorways and

   (ii) 5.8 metres for all other roads and road crossings.

1471AR **Non Cyclic Maintenance**

1. The Operating Company shall carry out non-cyclic maintenance Operations on or in

   (i) Luminaires

   (ii) Columns and brackets

   (iii) Underground cable systems

   (iv) Feeder pillars and associated switchgear

   (v) Control systems and

   (vi) Any other related electrical and lighting equipment.

2. When undertaking the replacement of luminaries columns and brackets as non-cyclic maintenance Operations the Operating Company shall have regard to the aesthetic requirements of Clause 1302 and shall ensure that any replaced items match the existing in both physical appearance and lighting levels.

3. For the purpose of energy efficiency electronic control gear or low loss control gear shall be used in all replacement luminaries.

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Contract-Specific Additional, Substitute and Cancelled Clauses, Figures and Tables included in this Contract

Additional Clauses and Tables

Clause No.	**Title and Written Text**
1471AR (cont'd)	4. The Operating Company shall attend to Emergency call-outs and prepare a report in a format as Appendix 14/73 or similar as consented to in writing by the Director. The report shall be stored and made available to the Director or the Performance Audit Group at any time. 5. Isolation Energising of Power Supplies and Making Safe Electricity Cables (i) All work shall be carried out in accordance with Electricity Council Engineering Recommendation G39. (ii) Any person isolating or energising power supplies shall be "competent" in accordance with G39. (iii) The Operating Company shall inform the Traffic Controller and the NADICS contractor prior to isolating or energising power supplies to any equipment its uses or for which it shall be responsible. 6. Private Cable Supplies (i) In the event of an Emergency no authorisation shall be required to isolate any cable but the Director shall be notified as soon as possible. (ii) If a communication system supply shall be isolated the police and the NADICS contractor shall be informed initially by telephone followed immediately thereafter be a written confirmation. (iii) The isolation or energising of power cable shall be recorded by the Operating Company who shall ensure only one activity shall be being carried out on any cable at this time. (iv) Whenever cyclic maintenance Operations shall be being undertaken only the minimum number of feeder pillars shall be de-energised at any one time. (v) Control circuits shall be returned to normal operation on completion of the Site Operations.

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Additional Clauses and Tables

Clause No.	**Title and Written Text**
1471AR (cont'd)	(vi) All cable shall be isolated at the main isolator or switched fuse.
	(vii) The isolation of individual circuits shall be carried out using the mini circuit breaker or fuses within a distribution board.

7. Electricity Company Supplies

   (i) Where electricity companies supplies shall be required to be isolated above the cut out only competent persons in accordance with Electricity Council Engineering Recommendations G39 and qualified to "Electrician" status (see Appendix 14/71) may remove the fuse.

   (ii) Where electricity companies' supplies shall be required to be isolated below the cut out the Operating Company shall liaise with the electricity company before Site Operations commence (see Appendix 14/76).

8. Special Tools

   Duplicate sets of special tools keys and handling devices essential for the correct running operation and maintenance of electrical equipment shall be handed to the Director at this Contract Termination Date.

9. Fixings for Attachment to Structures

   Fixings for attachment to Structures shall use a resin fixed replaceable bolt system.

Appendix 0/1

Contract-Specific Additional, Substitute and Cancelled Clauses, Figures and Tables included in this Contract

Additional Clauses and Tables

Clause No. **Title and Written Text**

Structural Concrete

1770AR **Additional Requirements for Concrete and Concrete Repairs**

Storage of Materials

1. All proprietary materials shall be stored in a dry weatherproof lock up store free from extremes of cold or heat in accordance with the manufacturer's written instructions.

2. The materials shall not be removed from the store for use until immediately prior to mixing.

Records

3. As repair work proceeds the Operating Company shall keep records including but not limited to date stamped photographs of the Site Operations.

   Records shall be maintained and be available for inspection by the Director and the Performance Audit Group at any time

High Pressure Water Jetting

4. High pressure water jetting shall use clean and fresh potable water.

   The Operating Company shall not add antifreeze agents or any other chemicals.

1771AR **Removal of Concrete in Areas to be Repaired**

Requirements for the Removal of Concrete

1. The Operating Company shall cut remove concrete from areas specifically identified following inspection and testing.

2. Concrete shall be removed from the area until sound concrete is reached.

   Where reinforcement becomes exposed concrete shall be removed for a minimum distance of 25mm beyond the rear face of the reinforcement.

Appendix 0/1

Contract-Specific Additional, Substitute and Cancelled Clauses, Figures and Tables included in this Contract

Additional Clauses and Tables

Clause No.	**Title and Written Text**
1771AR (cont'd)	Where corroded reinforcement is identified the area of concrete removed shall be extended to expose 100mm of uncorroded reinforcement.

3. The Operating Company shall determine the position and depth of the reinforcement.

   The perimeter of the concrete to be removed shall be saw cut perpendicularly to the face of the concrete to a depth of not less than 15mm or to within 10mm of the reinforcement whichever shall be the lesser.

4. At the outer limits of repairs to be made using repair concrete sloping cuts may be used to avoid the entrapment of air when the concrete shall be poured.

5. Cut edges shall be abraded.

6. Concrete shall be removed by employing safe methods and equipment identified by the Operating Company.

   Removal of concrete by water jetting shall be carried out by companies registered with the Association of High Pressure Water Jetting Contractors.

7. Where concrete shall be removed by high pressure water jetting final trimming of the area maybe broken out using other processes.

8. Overbreak of concrete shall be made good using a concrete repair system selected from Clause 1773AR.

9. Reinforcement damaged during concrete removal shall be made good.

   Existing reinforcement which has corroded or is otherwise damaged shall be removed and additional steel reinforcement shall be lapped or welded onto the existing reinforcement.

   All such welding shall be in accordance with Clause 1717.

   All loose reinforcement shall be securely tied with stainless steel tying wire.

Appendix 0/1

Contract-Specific Additional, Substitute and Cancelled Clauses, Figures and Tables included in this Contract

Additional Clauses and Tables

Clause No.	**Title and Written Text**

1771AR (cont'd)

10. The Site of the Operations shall be kept free of debris or standing water arising from the high pressure water jetting and other activities.

11. On completion of removal of concrete all concrete surfaces and exposed reinforcement which shall be in contact with repair materials shall be prepared in accordance with Clause 1772AR.

1772AR **Surface Preparation**

General Requirements

1. Where Blast Cleaning shall be adopted the Operating Company shall ensure that the grade and particle shape of abrasives is adequate to achieve the appropriate standard of cleanliness.

   Non-metallic abrasives shall not be recycled.

2. Water for Cleaning - Only clean potable water shall be used for cleaning and rinsing.

Preparation of Surfaces of Reinforcement

3. Standard - Bright steel: Removal of all detrimental contamination and corrosion products to produce a generally bright appearance overall.

   The surfaces shall be free of embedded abrasive particles and corrosion products when viewed through a x10 illuminated magnifying glass.

4. Process

   (i) Where dry blast cleaning shall be employed these shall use a dry air/abrasive system.

   (ii) Where wet blast cleaning shall be employed a low pressure air/water/abrasive system shall be used.

   The equipment shall not allow the air/water pressure to exceed 14 bar and shall incorporate a metering device to allow the abrasive quantity introduced to be adjusted from zero to 14 bar.

   (iii) Within an hour of cleaning the treated reinforcement shall be pressure washed with water for cleaning as above.

Appendix 0/1

Contract-Specific Additional, Substitute and Cancelled Clauses, Figures and Tables included in this Contract

Additional Clauses and Tables

Clause No.	**Title and Written Text**
1772AR (cont'd)	Preparation of Surfaces of Concrete

5. Standard - Concrete surfaces shall be clean free of cement laitance contaminants and loose friable material.

   Surfaces shall be wetted one hour before repair concrete is applied.

   There shall be no standing water.

   Repair concrete shall flow freely into all voids and be in intimate contact with the existing concrete.

6. Process

   (i) Where High Pressure Water Jetting shall be employed

   The surface profile after cutting out shall be irregular with aggregate particles projecting above the surrounding concrete matrix.

   (ii) Where Hand or Mechanical Tools shall be employed

   All "bruised" concrete surfaces to receive repair materials exposed by percussive methods using hand or mechanical tools shall be prepared by low vibration processes such as grit blasting or high pressure water jetting to remove all fractured aggregate particles and expose a sound substrate.

Trials

7. The Operating Company shall remove cut back and prepare the surface of an area of one square metre of concrete to be repaired as a trial of the methods proposed for carrying out the work and obtain photographic record for inspection by the Director and the Performance Audit Group at any time.

Appendix 0/1

Contract-Specific Additional, Substitute and Cancelled Clauses, Figures and Tables included in this Contract

Additional Clauses and Tables

Clause No. **Title and Written Text**

1773AR **Concrete Repairs**

General

1. Concrete repairs shall be carried out using either normal flow concrete proprietary repair mortar high-flow repair concrete proprietary sprayed concrete or a proprietary repair system proposed by the Operating Company and subject to consent in writing by the Director.

   Crack repairs carried out by a resin injection system shall be proposed by the Operating Company and subject to written consent by the Director.

2. Proprietary repair materials and systems shall have an Agrément Board Roads and Bridges Certificate registered with the Department of Environment and Transport for the Regions/Highways Agency.

3. Proprietary repair mortars shall be used for repair areas less than 1m2 or repair depths less than 30mm deep.

   Normal flow concrete or high flow concrete or sprayed concrete shall be used for repair areas greater than 1m2 or greater than 30mm deep or as otherwise proposed by the Operating Company and subject to consent in writing by the Director.

Repairs using Normal Flow Concrete

4. Materials

   (i) Cement shall comply with sub-Clause 1702.1

   (ii) Repair concrete shall be a designed concrete as defined in sub-Clause 1701.2 and Clause1705

   (iii) Cement or combination content shall be not less than 360 kg/m^3 in any designed concrete.

   (iv) Maximum aggregate size shall be 20mm

   (v) The free water/cement ratio shall not be greater than 0.4

   (vi) The minimum strength class shall be C32/40

Appendix 0/1

Contract-Specific Additional, Substitute and Cancelled Clauses, Figures and Tables included in this Contract

Additional Clauses and Tables

Clause No.	**Title and Written Text**
1773AR (cont'd)	(vii) Alkali - silica reaction shall be controlled as specified in sub-Clause 1704.5

Repairs Using Proprietary Repair Mortar

5. Materials

(i) Prebatched polymer modified cementitious mortars incorporating a shrinkage reduction agent shall be used

(ii) Mortars for hand screeding of surfaces to be waterproofed shall be sand/cement mortar containing styrene acrylate or styrene butadine polymer bonding admixture

(iii) The maximum aggregate grain size in the mortar shall be suitable for the depths of repair required

(iv) Water required to mix repair mortars shall be clean potable water

(vii) The maximum total chloride content expressed as % of chloride ion by mass of cement of the materials shall not exceed 0.3%. and for repairs to prestressed or heat cured concrete shall not exceed 0.1%.

Calcium chloride or admixtures containing chloride salts shall not be used

(viii) The minimum 28 day cube strength of the repair mortar shall be 40 N/mm^2 and

(ix) Alkali-silica reaction shall be controlled as specified in sub-Clause 1704.5.

6. Delivery and Storage of Material

(i) The Operating Company shall provide and retain for each batch of the material delivered to the Site of the Operations certificates furnished by the supplier stating

(a) the polymer used

Appendix 0/1

Contract-Specific Additional, Substitute and Cancelled Clauses, Figures and Tables included in this Contract

Additional Clauses and Tables

Clause No.	**Title and Written Text**

1773AR (cont'd)

(b) evidence that the total chloride content is less than specified in sub-Clause 5(vii) of this Specification.

(c) the content of sodium oxide equivalent in the mortar

(d) maximum shelf life.

(e) handling arrangements

(ii) The material shall be stored in a dry environment free from extremes of cold and heat and any specific storage requirements of the manufacturer and

(iii) The materials shall not be removed from store until immediately prior to mixing.

7. Placing Repair Mortar

(i) Repair mortar shall be built up in accordance with the manufacturer's written instructions.

The surface of each layer except the final layer shall be scored to provide a key for the next layer

(ii) The repair mortar shall be suitable for the purpose intended i.e. for soffits or vertical surfaces as appropriate

(iii) Repair mortar shall not be applied when the temperature of the surface to be repaired falls below 5°C

(iv) The material shall be incorporated within 1 hour of mixing or such lesser period as stated in writing by the manufacturer and

(v) Repair mortar shall be cured in accordance with sub-Clause 1710.5 and the manufacturer's written instructions.

During the curing period air and surface temperatures shall be maintained at or above 5°C or in accordance with the manufacturers written instructions which may require artificial means if necessary.

Appendix 0/1

Contract-Specific Additional, Substitute and Cancelled Clauses, Figures and Tables included in this Contract

Additional Clauses and Tables

Clause No.	**Title and Written Text**

1773AR (cont'd)

8. Surface Finish to Repair Mortar

(i) Repair mortar shall be float finished to produce a dense smooth uniform surface free from float marks to the specified line and level.

Repairs Using Proprietary High-Flow Repair Concrete

9. Materials

(i) Materials for proprietary high-flow repair concretes shall comply with the specification requirements in BS 8500 part 1

(ii) Water shall be clean potable water

(iii) Aggregate shall be well graded with the maximum size not exceeding 8mm except when pumping is to be employed when the maximum size shall not exceed 6mm and shall comply with sub-Clause 1702.2

(iv) Proprietary material shall be of such composition and grading that when mixed with water a flowable concrete is produced which shall flow freely into the confined spaces to be filled and shall not be prone to segregation bleeding or cracking in either the plastic or hardened state and

(v) The minimum strength class shall be C32/40

10. Delivery and Storage of Material

(i) Records shall be kept of each batch of material delivered to the site of the Operations and shall include

(a) formulator's name and address

(b) formulator's agent's name and address where applicable

(c) material identification

(d) batch reference number size of batch and number of containers in the delivery

Appendix 0/1

Contract-Specific Additional, Substitute and Cancelled Clauses, Figures and Tables included in this Contract

Additional Clauses and Tables

Clause No.	**Title and Written Text**
1773AR (cont'd)	(e) date of manufacture (f) evidence that the chloride contents are less than specified in table 17/1 of Clause 1704 (g) details of the significant rock components contained in the aggregates (h) cement content (i) combinations and additions used and (j) the equivalent sodium oxide content. (ii) Containers shall be damp proof and readily emptied of their contents (iii) Containers shall be marked with the following information (a) material identification (b) batch reference number (c) formulator's name (d) net weight and lifting arrangements and storage specific requirements (e) any warnings or precautions concerning the contents. (iv) The material shall be stored in a dry environment free from extremes of cold and heat (v) Material shall not be older than 3 months or lesser period specified by the formulator when used in the Site Operations and (vi) The materials shall not be removed from the store for use in the Site Operations until immediately prior to mixing.

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Contract-Specific Additional, Substitute and Cancelled Clauses, Figures and Tables included in this Contract

Additional Clauses and Tables

Clause No.	**Title and Written Text**

1773AR (cont'd)

11. Formwork Site Mixing Placing and Curing

(i) Formwork shall be Class F2 to sub-Clause 1708.4 with the perimeter of the repair well sealed to prevent grout loss.

Release agents shall be compatible with proposed surface treatments

(ii) Mixing in a forced action paddle mixer and placing shall be carried out strictly in accordance with the formulator's written instructions together with the following additional conditions

(a) The free water cement ratio shall be derived from BS 8500. The water content shall be determined during approval tests and maintained for batch tests works tests and in the Operations within ± 2% of the agreed content

(b) No extra water shall be added after the original mixing

(c) The material shall be incorporated in the Site Operations within 20 minutes of completion of mixing or such lesser period as stated by the formulator.

The concrete shall be continuously agitated after the mixing and before placing

(d) The material shall not be mixed or placed in the Site Operations at ambient temperatures lower than 5°C or where the surface temperature of the concrete in the repair void is less than 5°C

(e) The concrete when placed shall have a temperature of not less than 5°C and not more than 20°C

(f) The surface temperature of the concrete shall be maintained at not less than 5°C until the concrete reaches a strength of 10 N/mm^2 as determined by tests on cubes cured under similar conditions to the structural concrete.

Heat shall not be applied direct to any concrete

Appendix 0/1

Contract-Specific Additional, Substitute and Cancelled Clauses, Figures and Tables included in this Contract

Additional Clauses and Tables

Clause No.	**Title and Written Text**

1773AR (cont'd)

(g) Repair concrete shall not be placed against other concrete which has been in position for more than 30 minutes unless a construction joint is formed in accordance with sub-Clause 1710.1.

In addition the joint surface shall be saturated for a minimum of 2 hours before concrete is placed against it.

When repair concrete has been in place for 4 hours no further concrete shall be placed against it for a further 20 hours

(h) Vibration shall not be used.

The side shutters shall be tapped lightly with a hammer to expel surface air voids

(iii) Immediately after placing and for 14 days thereafter concrete shall be protected against harmful effects of weather including but not limited to rain rapid temperature changes and frost and from drying out.

Impregnation in accordance with the manufacturers written instructions shall not be applied before 14 days as described in Clause 1709.

Curing membranes shall not be used

(iv) When the mix proportions have been determined no variations shall be made in the manufacture supply mix proportions or method of mixing of the material.

12. Approval Tests

(i) Before Site Operations commence all properties of the proposed high-flow repair concrete shall be demonstrated by the Operating Company and the formulator's representative by carrying out the tests specified below in an UKAS accredited laboratory.

Records shall be maintained of all tests in accordance with the procedures in the Quality Management System.

Appendix 0/1

Contract-Specific Additional, Substitute and Cancelled Clauses, Figures and Tables included in this Contract

Additional Clauses and Tables

Clause No.	**Title and Written Text**

1773AR (cont'd)

(ii) The composition of the high flow concrete including the source of water the mix proportions and the method of mixing shall be the same as that proposed for use in the Site Operations.

The composition shall not be varied throughout the course of the tests and the material shall be obtained from the same batch

(iii) The tests fall into two categories flowability and compressive strength.

(iv) The flowability tests shall demonstrate

(a) flow characteristics in a trough at 5°C and 20°C as specified in Note 1 of this sub-Clause

(b) flow characteristics in a simulated soffit repair at 5°C and 20°C as specified in Note 2 of this sub-Clause.

Note 1: The flow characteristics of the concrete in a trough shall be assessed.

For each test the concrete and trough shall be at the specified temperature.

The funnel of the apparatus shall be fitted with a rubber bung and charged with 6 litres of concrete.

On release of the bung the concrete shall flow along the trough and the length of the flow along the trough shall be measured.

A test shall consist of three readings the flow requirements shall be deemed to be satisfied if none of the readings shall be below 750mm in 30 seconds without signs of segregation or bleeding.

Appendix 0/1

Contract-Specific Additional, Substitute and Cancelled Clauses, Figures and Tables included in this Contract

Additional Clauses and Tables

Clause No.	**Title and Written Text**
1773AR (cont'd)	Note 2: The flow characteristics of the concrete in a simulated soffit repair shall be tested in accordance with BD27 of the DMRB. For each test the concrete and apparatus shall be at the specified temperature. The concrete shall be poured in one operation into the supply tube until the level of the concrete has reached 100mm above the underside of the top plate. After the concrete has set the specimen shall be removed from the apparatus and sawn into two parts and the sawn concrete surfaces shall be examined. The concrete shall be homogeneous free from excessive air holes voids segregation and other Defects and shall completely fill the simulated repair. 13. Compressive Strength Tests (i) Compressive strength tests shall comply with conformity testing requirements in BS 8500-2, section 10. (ii) Compressive strength tests shall be carried out to determine the compressive strength of the concrete at 5°C and 20°C (iii) Test cubes shall be made in 100mm metal moulds to BS EN 12390. The moulds shall be carefully filled by pouring concrete through a funnel to produce void free specimens. There shall be no compaction. The cubes shall be cured and testing shall be carried out all in accordance with the appropriate parts of BS EN 12390

Appendix 0/1

Contract-Specific Additional, Substitute and Cancelled Clauses, Figures and Tables included in this Contract

Additional Clauses and Tables

Clause No.	**Title and Written Text**

1773AR (cont'd)

(iv) The minimum compressive strength shall be established using a set of three cubes.

The requirement shall be satisfied if none of the compressive strengths obtained shall be lower than the specified value and the difference between the highest and lowest values shall be not more than 20% of the average.

Identity testing where required shall be carried out in accordance with Clause 1707

14. Batch Acceptance Tests

Each batch of material delivered to the Site of the Operations shall be tested as follows

(i) the material shall be taken at random from one or more containers from the same batch

(ii) flow trough tests shall be carried out as specified in Note 1 of sub-Clause 12 of this Clause at 20°C

(iii) compressive strength tests shall be carried out as specified in sub-Clause 13 of this Clause at 20°C.

15. Site Tests

(i) Site tests shall be carried out to monitor

(a) flowability and

(b) compressive strength.

(ii) The flowability of a sample of fresh concrete shall be determined in a trough as specified in sub-Clause 12 Note 1

(iii) The gain in strength of the repair concrete shall be monitored by testing cubes cured alongside the repaired areas at ambient temperature

Appendix 0/1

Contract-Specific Additional, Substitute and Cancelled Clauses, Figures and Tables included in this Contract

Additional Clauses and Tables

Clause No.	**Title and Written Text**

1773AR (cont'd)

(iv) For each days production of repair concrete six 100mm cubes shall be made in accordance with sub-Clause 13 of this Clause.

The cubes shall be cured for 24 hours in the moulds with the top surfaces covered by polythene sheets.

After 24 hours the cubes shall be stripped and placed in polythene bags which shall be sealed.

The cubes shall continue to be stored alongside the repaired areas throughout the curing period until required for testing.

The cubes shall be crushed at times determined by the Operating Company but at least 2 cubes shall be retained to be tested at 28 days.

Repairs Using Proprietary Sprayed Concrete

16. Materials

(i) The proprietary material shall be pre-weighed and pre-mixed at a location off the Site of the Operations.

(ii) Cement shall comply with sub-Clause 1702.1

(iii) Alkali-silica reaction shall be controlled as specified in Clause 1704

(iv) The total chloride content of the materials shall be expressed as % of chloride ion by weight of cement and shall not exceed 0.3%.

Any additional chloride or admixtures containing chloride salts shall not be used

(v) Aggregate shall be well graded with the maximum size not exceeding 3mm and shall comply with sub-Clause 1702.2

Appendix 0/1

Contract-Specific Additional, Substitute and Cancelled Clauses, Figures and Tables included in this Contract

Additional Clauses and Tables

Clause No.	**Title and Written Text**

1773AR (cont'd)

(vi) Combinations and additions may comprise pulverised fuel ash ground granulated blast furnace slag microsilica and plasticisers.

Calcium chloride or admixtures containing chloride salts and expansion agents shall not be used

(vii) Material shall be capable of being applied to a thickness of 100mm without the requirement for additional mesh reinforcement or fibres.

Once placed it shall be capable of being profiled and trowel finished (to the equivalent of formed Class F2) without detrimental effects.

17. Performance Characteristics

The proprietary material shall have performance characteristics as detailed in Table 17/71 which shall be verified by an independent testing authority employed by The Operating Company.

Appendix 0/1

Contract-Specific Additional, Substitute and Cancelled Clauses, Figures and Tables included in this Contract

Additional Clauses and Tables

Clause No. **Title and Written Text**

1773AR (cont'd) TABLE 17/71: Performance Characteristics

TEST	PERFORMANCE
Bond Strength to BS EN 1452:1999	greater than 1.0 N/mm2
Characteristic strength of cores (28 days) to BS EN 12504-1	40 N/mm2
Tensile splitting strength (28 days) to BS EN 12390-6	greater than 2.4 N/mm2
Static Modulus of elasticity to BS EN 13412	27000 ± 3000 N/mm2
Shrinkage to BS EN 12617-4	less than 0.002%
Coefficient of Thermal Expansion to BS EN 1770	8 to 12 x 10-6/°C
Coefficient of Chloride Ion Diffusion to BS EN 13396:2004	To be agreed with the Overseeing organisation

18. Delivery and Storage of Material

(i) Records shall be kept of each batch of material delivered to the Site of the Operations and shall include

(a) formulator's name and address

(b) formulator's agent's name and address where applicable

(c) batch reference number size of batch and number of containers in the delivery

(d) date of manufacture

(e) evidence that the chloride contents are less than specified in sub-Clause 16(iv) of this Clause

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Contract-Specific Additional, Substitute and Cancelled Clauses, Figures and Tables included in this Contract

Additional Clauses and Tables

Clause No.	**Title and Written Text**
1773AR (cont'd)	(f) details of the significant rock components contained in the aggregates (g) cement content (h) additives used (ii) the sodium oxide equivalent content (iii) containers shall be damp proof and readily emptied of their contents (iv) containers shall be marked with the following information (a) material identification (b) batch reference number (c) formulator's name (d) net weight – lifting arrangements and specific storage requirements (e) any warnings or precautions concerning the contents. (v) The material shall be stored in a dry environment free from extremes of cold and heat (vi) Material shall not be older than 3 months or lesser period specified by the formulator when incorporated in the Site Operations (vii) The materials shall not be removed from the store for use in the Site Operations until immediately prior to mixing. 19. Trial Mixes Practical tests shall be carried out on the Site of the Operations by constructing test panels to confirm the suitability of the mix for the Site Operations.

Appendix 0/1

Contract-Specific Additional, Substitute and Cancelled Clauses, Figures and Tables included in this Contract

Additional Clauses and Tables

Clause No.	**Title and Written Text**
1773AR (cont'd)	In these tests the type of Constructional Plant used for mixing and placing and the finished face to the panel shall be similar in all respects to those intended for use in the Site Operations.

20. Procedure Trials

(i) Before work commences on the Site of the Operations procedure trials shall be carried out to pre-qualify the nozzlemen proposed for use on the Site Operations.

Nozzlemen who have not been pre-qualified shall not be permitted to apply sprayed concrete on the Site Operations.

(ii) Each nozzleman shall carry out procedure trial panels.

The procedure trial panels shall have minimum dimensions of 750mm x 750mm x 100mm deep and shall be made of plywood with 45º sloped edge to permit rebound to escape.

(iii) One half of each procedure trial panel shall contain reinforcement representative of the size and spacing of the work.

The second half of the procedure trial panel shall contain no reinforcement (with the exception of fibre reinforcement) to allow for the extraction of cores for testing in accordance with sub-Clause 29(ii) of this Clause.

(iv) One procedure trial panel shall be carried out by each nozzleman proposed for use on the Site Operations using each proposed mixture proportion at each proposed orientation i.e. horizontal overhead and the like.

(v) A minimum of three 100mm diameter cores shall be extracted from the location of intersecting reinforcing steel to check the adequacy of consolidation of the sprayed concrete around the reinforcement and

(vi) No sprayed concrete shall be carried out on the Site Operations until the procedure trial testing requirements shall have been met.

Appendix 0/1

Contract-Specific Additional, Substitute and Cancelled Clauses, Figures and Tables included in this Contract

Additional Clauses and Tables

Clause No.	**Title and Written Text**

1773AR (cont'd)

21. Surface Preparation for Sprayed Concrete

(i) Sound surfaces which shall receive sprayed concrete shall be thoroughly cleaned and roughened by grit blasting or high pressure water jetting.

All "bruised" concrete surfaces to receive sprayed concrete exposed by percussive methods using hand or mechanical tools shall be prepared by low vibration processes such as grit blasting or high pressure water jetting to remove all fractured aggregate particles and expose a sound substrate.

(ii) Grit blasted areas shall have sprayed concrete applied within 48 hours or shall be reblasted.

(iii) Immediately prior to spray concreting all the surfaces to be sprayed shall be thoroughly cleaned and wetted with a strong blast of oil-free air and water.

22. Outline Definition

(i) The outline of the finished sprayed concrete shall be defined by screed boards guide wires or other means proposed by the Operating Company and written consent by the Director.

(ii) Guide wires shall be installed tight and true to line and in such a manner that they may be easily tightened.

23. Mixing Sprayed Concrete

(i) Sprayed concrete shall be mixed in a batch type mixer complying with the requirements of BS1305 except that the water shall be delivered direct to the nozzle.

The delivery equipment shall be capable of delivering a continuous even stream of uniformly mixed material to the nozzle.

Water supply at the nozzle shall be maintained at a uniform pressure sufficient to ensure adequate hydration at all times.

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Contract-Specific Additional, Substitute and Cancelled Clauses, Figures and Tables included in this Contract

Additional Clauses and Tables

Clause No.	**Title and Written Text**
1773AR (cont'd)	The delivery equipment and nozzle shall be thoroughly cleaned and inspected at the end of each day and parts replaced as required
	(ii) The temperature of water and cement when added to the mix shall not exceed 60°C and 65°C respectively
	(iii) Water used in sprayed concrete shall be clean potable water
	24. Reinforcement
	Welded wire mesh fabric reinforcement shall be fixed to prepared surfaces and shall be carefully bent to follow the shape of the members and held in position by anchors spaced at not less than 2 per m2.
	The fabric shall be spaced at not less than 25mm from the finished surface of the concrete.
	25. Transport and Placing Sprayed Concrete
	(i) No concrete shall be sprayed in air temperatures less than 5°C or onto a surface temperature less than 5°C.
	Surfaces shall be free from standing water
	(ii) Sprayed concrete shall emerge from the nozzle in a steady uninterrupted flow and an uninterrupted supply of compressed air shall be provided to maintain adequate nozzle velocity.
	Should the flow become intermittent the nozzle shall be directed away from the work until the flow again becomes uniform
	(iii) Sprayed concrete shall be applied under sufficient pressure so as to give a dense and homogeneous covering to the surface in one or more layers of a thickness compatible with the mix Design constituents position of reinforcement and plane of application to ensure the placed concrete does not slump or sag

Appendix 0/1

Contract-Specific Additional, Substitute and Cancelled Clauses, Figures and Tables included in this Contract

Additional Clauses and Tables

Clause No.	**Title and Written Text**

1773AR (cont'd)

(iv) Adequate precautions shall be taken to ensure that sprayed concrete rebound shall not be incorporated in the finished work and that any previously deposited hardened rebound which may prevent a proper bond or encasement shall be removed from reinforcement

(v) Adequate protection shall be given to the nozzle and application surface during high winds

(vi) The final coat shall be hand screeded to a Class U3 finish in accordance with sub-Clause 1708.4.

26. Fibre Reinforced Sprayed Concrete

(i) The weight of steel and/or composite fibres shall not exceed 5% by weight of the combined weight of cement and aggregate.

Fibres shall be added to the mix in such a manner that the fibres shall be evenly distributed and not bent.

Procedure trials shall be undertaken to demonstrate that the proposed methods can achieve the requirements of this sub-Clause

(ii) Unless otherwise stated elsewhere in this Contract a final 15mm thick coat of unreinforced sprayed concrete shall be applied over the whole exposed surface to cover exposed fibres

(iii) The gun and nozzle shall be electrically earthed.

27. Construction Joints

Construction joints in sprayed concrete shall be tapered at approximately 30 degrees or cut back square to the reinforcement and then tapered at 30 degrees.

The construction joint shall be thoroughly cleaned all laitance and loose material removed and the surface wetted using a strong blast of air and water prior to the placement of adjacent sprayed concrete.

Appendix 0/1

Contract-Specific Additional, Substitute and Cancelled Clauses, Figures and Tables included in this Contract

Additional Clauses and Tables

Clause No.	**Title and Written Text**
1773AR (cont'd)	28. Curing of Sprayed Concrete

(i) Freshly sprayed concrete shall be protected from rain or water until the surface is sufficiently hard to resist damage

(ii) Immediately after placing and for 14 days thereafter sprayed concrete shall be protected against harmful effects of weather including rain rapid temperature changes and frost and from drying out.

Curing membranes shall not be used and

(iii) Impregnation in accordance with Clause 1709 may be carried out after 14 days.

29. Production Testing of Sprayed Concrete

(i) One production test panel shall be carried out for each nozzle orientation for each day of sprayed concrete production or every $15m^3$ of sprayed concrete whichever is the lesser.

(ii) Sprayed concrete production test panels shall be made with dimensions 450mm x 450mm x 100mm thick with 45º sloped edge forms to permit escape of rebound.

Production test panels shall contain no reinforcement (other than fibre reinforcement).

The production test panels shall be marked cured cored and tested in compression in accordance with the appropriate parts of BS EN 12390.

They shall be tested in a UKAS accredited laboratory. Records shall be maintained of all tests and stored in the Central Office.

(iii) Routine tests shall be carried out by the Operating Company on the finished sprayed concrete.

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Contract-Specific Additional, Substitute and Cancelled Clauses, Figures and Tables included in this Contract

Additional Clauses and Tables

Clause No.	**Title and Written Text**
1773AR (cont'd)	These shall consist of taking 25mm or 100mm diameter cores from the finished sprayed concrete and testing them in the same manner as cores taken from the test panels or by carrying out non-destructive tests by means of a 'Schmidt' hammer or 'Windsor Probe' and the like to determine compressive strength and testing for bond by the use of a hand hammer.

Resin Injection Repairs

30. Preparation of Surfaces Around Cracks

(i) The concrete surface at least 50mm either side of the crack shall be dry blast cleaned to a sound surface free from dirt moss salt staining and loose concrete.

The full extent of the crack shall be found and the cleaned area shall extend 50mm beyond the end of the crack or until the crack becomes too narrow to warrant resin injection

(ii) Where algae or other bacterial growth emanates from the crack it shall be removed by scrubbing with bactericide and rinsing with clean water.

Health and safety precautions appropriate to the bactericide cleaning agent used shall be adopted including those recommended in writing by the manufacturers.

Measures shall be taken to ensure that any adjacent water course shall not be contaminated and that run-off shall be collected and disposed of in a safe manner.

31. Moisture in Cracks

(i) Where excess moisture is evident in the crack to be resin injected the crack shall be blown through with dry hot air starting at the top of the crack.

A temporary crack sealant shall be applied immediately after blowing through and the resin shall be injected into the crack immediately the necessary preparations shall be complete

Appendix 0/1

Contract-Specific Additional, Substitute and Cancelled Clauses, Figures and Tables included in this Contract

Additional Clauses and Tables

Clause No.	**Title and Written Text**

1773AR (cont'd)

(ii) If for whatever reason the crack becomes damp before it shall be resin injected no further work shall be permitted until the temporary crack sealant shall be removed and the crack blown through again with dry hot air

(iii) The temperature of the hot air shall be sufficient to dry the full depth of the crack and shall not exceed the maximum temperature specified by the equipment manufacturer.

32. Resin Injection

(i) The resin to be used shall be either polyester or epoxy based and shall be mixed and injected in accordance with the manufacturer's written specification.

Resin shall not be injected when the air temperature or the surface temperature concrete to be repaired shall be less than 5°C

(ii) The spacing of the nozzle positions shall be equal to the depth of the crack and shall not in any case be less than 250mm

(iii) Injecting shall start at the bottom of the crack and work shall proceed upwards in a continuous operation throughout.

Resin shall be seen extruding from the crack at the next nozzle position before the current nozzle location is locked off

(iv) The injected crack shall be left undisturbed for a period of at least 24 hours to allow the resin to harden

(v) When the resins shall be sufficiently cured the cracks and any resin spillages shall be cleaned from the face of the concrete

33. Proving Tests

When the resin has set two 20mm diameter proving cores shall be taken to the full depth of the crack.

These shall be filled with either the resin used for injecting or with a suitable filler of a compatible thixotropic resin.

Appendix 0/1

Contract-Specific Additional, Substitute and Cancelled Clauses, Figures and Tables included in this Contract

Additional Clauses and Tables

Clause No. **Title and Written Text**

1773AR (cont'd)

34. Sealing of Cracks in Concrete Bridge Decks

The preparation of surfaces around cracks and the measures to deal with algae or other growth in cracks shall be as described in sub-Clause 30 of this Clause.

35. Application of Sealer

(i) The sealing resin shall be a low viscosity polyester epoxy or acrylic polymer which shall be compatible with any proposed waterproofing system

(ii) The material shall be applied by pouring through a fine nozzle directly into the crack or into preformed dams

(iii) The injected crack shall be left undisturbed for a period of at least 24 hours to allow the resin to harden and

(iv) When the resins are sufficiently cured the cracks and resin spillages shall be cleaned to the face of the concrete

1774AR **Foamed Concrete Fill to Structures and Backfilling to Drainage Trenches**

1. Foamed concrete fill to arches or bridge decks shall be of density 1400 – 1600 kg/m3.

Minimum cement content shall be 350 kg/m3.

The maximum free water cement ratio shall be 0.4. The minimum cube compressive strength shall be 8 N/mm2.

2. Foamed concrete fill to drainage trenches shall comply with sub-Clause 1 above.

Appendix 0/1

Contract-Specific Additional, Substitute and Cancelled Clauses, Figures and Tables included in this Contract

Additional Clauses Tables and Figures

Clause No. **Title and Written Text**

Waterproofing For Concrete Structures

2070AR **Replacement of Bridge Deck Waterproofing**

Removal of Existing Waterproofing

1. The existing surfacing shall generally be removed by cold-milling (planing) in accordance with Clause 709.

   Small areas may be removed using other suitable methods.

2. The existing bridge deck waterproofing and/or protective layer comprising the last 30mm above the concrete substrate shall be carefully removed to avoid damage to the concrete.

   In exceptional cases for particularly difficult materials method statements shall be submitted for written consent of the Director before these techniques shall be used.

3. The final removal of the remaining waterproofing and/or primer to expose the concrete substrate shall be by recoverable abrasive blast cleaning systems.

   'Open' blast cleaning shall not be permitted except on vertical surfaces or intricate details.

Inspection and Testing

4. Prior to application of the new waterproofing the deck concrete shall be examined by the Operating Company to determine the following

   (i) if any testing is required (in accordance with the requirements of Series 3300)

   (ii) if additional deck preparation is required and

   (iii) if structural concrete repairs are required (in accordance with the requirements of Series 1700).

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Contract-Specific Additional, Substitute and Cancelled Clauses, Figures and Tables included in this Contract

Additional Clauses Tables and Figures

Clause No.	**Title and Written Text**

2070AR (cont'd) **Additional Preparation of Bridge Deck**

5. Additional work required in the preparation of the bridge deck prior to the application of the new waterproofing shall include but shall not be limited to the following

   (i) removal of surface Defects such as screed marks and footprints

   (ii) removal of formwork/falsework anchors from the original construction which have inadequate cover

   (iii) sealing of cracks greater than 0.25mm

   (iv) repairs to or forming of fillets and chases to facilitate waterproofing and

   (v) additional preparation of the surface of concrete deck to an acceptable standard for the application of the waterproofing membrane.

6. Any work required in addition to the items listed above such as removal of chloride contaminated concrete or delaminated concrete and concrete repairs considered necessary by the Operating Company shall be deemed to be structural concrete repairs and shall be undertaken in accordance with Series 1700.

Replacement of Bridge Deck Waterproofing

7. The replacement waterproofing system shall be in accordance with Clauses 2001 to 2003 and be installed in accordance with Clause 2005.

2071AR **Repairs to Existing Waterproofing**

1. Repairs shall be carried out to the existing waterproofing only where the existing system has a current British Board of Accreditation -Roads and Bridges Agrèment certificate showing compliance with the requirements of BD47/99 of the DMRB 'Waterproofing and Surfacing of Concrete Bridge Decks' or for other spray applied waterproofing with the written consent of the Director.

Appendix 0/1

Contract-Specific Additional, Substitute and Cancelled Clauses, Figures and Tables included in this Contract

Additional Clauses Tables and Figures

Clause No.	Title and Written Text
2071AR (cont'd)	Repairs shall be carried out using systems compliant with BD47/99 of the DMRB and compatible with the system to be repaired. The waterproofing shall be applied in accordance with the method statement included with the Agrèment certificate for the particular system. 2. All waterproofing repairs shall be carried out in accordance with Clause 2070AR. 3. Where the existing waterproofing shall be a spray applied system for repair areas of less than 2m2 at any one location a hand-applied system equivalent to and compatible with the existing may be used subject to the written consent of the Director 4. The repair areas within the carriageway width shall have a protective layer incorporated into the waterproofing system in accordance with sub-Clause 2003.4. 5. Details of current forms of waterproofing systems in use on the Trunk Road network shall be provided in Appendix B of the TRBDB User Manual (Table 46 47 and 48). Manufacturer's details for deck waterproofing shall be held for individual Structures within the TRBDB where records shall be known.

Appendix 0/1

Contract-Specific Additional, Substitute and Cancelled Clauses, Figures and Tables included in this Contract

Additional Clauses Tables and Figures

Clause No. **Title and Written Text**

2370AR **Bridge Expansion Joints Used on Bridge Decks**

1. Details of the basic types of bridge expansion joints on the Trunk Road network shall be as provided in Appendix 23/70.

2371AR **Replacement of Bridge Deck Expansion Joints and Gap Sealants**

1. Replacement repair and alterations to expansion joints shall be subject to consent in writing by the Director.

   Such work shall comply with the requirements of Clauses 2301 to 2304 and Standards BD33 and BA26 of the DMRB.

   It may comprise replacement of a complete joint or essential maintenance of a joint where complete or partial replacement is not considered necessary.

   Joints shall be installed in accordance with the manufacturer's written instructions.

2. Existing joints (including transition strips) shall be carefully broken out or unbolted and removed.

   The adjacent carriageway hardshoulder hardened verges and central reservations shall be saw cut to provide neat vertical edges.

   The location of any existing services or ducts shall be determined prior to breaking out or saw cutting and measures shall be taken to protect them.

3. Existing flashings and sealants shall be removed.

   Where appropriate existing intact waterbars may be retained.

   Existing galvanised plates in buried joints shall be set aside for possible re-use.

4. The existing surfacing and additional protective layer adjacent to the expansion joint shall be removed to expose the waterproofing membrane.

   The waterproofing shall be carefully cut back to expose the concrete surface which shall be prepared to receive the expansion joint system.

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Contract-Specific Additional, Substitute and Cancelled Clauses, Figures and Tables included in this Contract

Additional Clauses Tables and Figures

Clause No.	Title and Written Text
2371AR (cont'd)	Continuity of the waterproofing membrane shall be provided by bond or lap between the waterproof membrane and the expansion joint.

5. Existing holding down bolts and fixings shall be protected if required for installation of the proposed replacement joint.

   If they shall not be required they shall be removed or ground flush with the surface of the deck concrete.

6. The concrete substrate shall be examined by the Operating Company for Defects.

   Where required testing shall be carried out and concrete repairs undertaken in accordance with Series 1700 and this Appendix 0/1.

7. If the joint shall not be completely replaced material and components shall form the same system as the existing joint where possible.

8. Where recommended by the Operating Company and subject to an Order vertical drain holes shall be installed adjacent to expansion joints.

   The drain holes shall comprise a down pipe fixed into holes cored through the superstructure of minimum internal diameter 40mm and a conical entry funnel with cap to allow water to enter the funnel but prevent blocking of the waterway by the surfacing.

   The cap and funnel shall be covered with a sheet of permeable membrane prior to surfacing.

9. Where gap sealant shall be replaced the existing sealant and deteriorated joint filler shall be raked out to leave clean surfaces.

   Where possible new joint filler replacing that removed shall be installed prior to re-sealing the gap.

   Where it shall not be possible to replace joint filler the joint shall still be sealed.

10. All debris arising from the Site Operations shall be removed off the Site of the Operations

Appendix 0/1

Contract-Specific Additional, Substitute and Cancelled Clauses, Figures and Tables included in this Contract

Additional Clauses Tables and Figures

Clause No. **Title and Written Text**

2372AR **Asphaltic Plug Joints**

Installation

1. All joints shall have a valid Approval/Registration in accordance with Appendix E of this Specification.

2. The joints shall be installed in accordance with the manufacturer's written instructions which shall comply with the terms of the certification.

3. All batches of materials delivered to the Site of the Operations shall have a Certificate of Compliance stating

   (i) The binder compound and its properties including Penetration Value Softening Point (Ring and Ball) and Flow Resistance

   (ii) The specific type and density of aggregate/stone used in the asphaltic plug matrix

   (iii) The quantities and weights of binder and aggregate used at each joint location

Appendix 0/1

Contract-Specific Additional, Substitute and Cancelled Clauses, Figures and Tables included in this Contract

Additional Clauses and Tables

Clause No. **Title and Written Text**

Brickwork, Blockwork and Stonework

2470AR **Repointing of Brickwork Blockwork and Stonework**

1. Masonry joints to be repointed shall be ground out to a depth of 25mm to give adequate key.

   All unsound mortar at a greater depth than this shall be removed until sound mortar shall be encountered.

   Apparatus used for grinding out shall be fitted with a depth gauge to allow control of rake out depth.

2. All detritus shall be removed by low pressure water jetting.

   Repointing shall be carried out by trowel or by using injection techniques.

3. Mortar designation (i) (refer to Clause 2404) shall be used for repointing of hard brick or concrete block masonry ($\geq 20N/mm^2$ strength of unit).

   Good quality non-hydraulic lime mortars shall generally be appropriate for work with porous sandstone masonry in most locations.

   Cement based mortars with strong hydraulic properties shall be avoided in cases where the mortar would be denser and more impermeable than the stone itself.

4. The specification of mortars used in the repair of masonry construction shall be prepared with reference to the existing mortar in the remaining construction and appropriate adjustment shall be made to take account of existing Site conditions and availability of materials.

   For all historic brick Structures and all stone masonry Structures the mortar specification shall be prepared by the Operating Company in conjunction with specialist advice based on mortar analysis and evaluation carried out on the mortar samples from the existing construction.

   Lime mortar is extensively used in the construction of masonry road Structures mortars used for repairs and repointing shall match the appearance and characteristics of existing materials as closely as possible.

Appendix 0/1

Contract-Specific Additional, Substitute and Cancelled Clauses, Figures and Tables included in this Contract

Additional Clauses and Tables

Clause No. **Title and Written Text**

2470AR (cont'd)

The choice of lime mortar to be used shall generally be influenced by the nature of stone the nature of any surviving lime based materials and the environmental conditions or exposure of the Site.

5. Samples of mortar pointing at locations shall be provided for reference and comparison for the duration of the work.

   Mortar for pointing shall be required to match the standards and details of the samples.

6. Adequate protection of repair works and pointing from sun wind rain and frost shall be provided until cured.

7. For historic Structures power tools shall not be used to remove mortars. Damage to stone work shall be avoided.

   If any significant voids are present the Operating Company shall where necessary wedge and pin up loose stones.

   In deep cavities work shall be carried out in layers of not more than 35mm allowing the material to dry before placing the next layer and allow 24 hours between layers.

   Deep voids shall be filled to within 35mm or twice the width of the joint back from the finished wall face to allow sufficient depth for pointing.

2471AR **Replacement of Precast Concrete Copings**

1. Broken precast concrete copings shall be removed together with the old mortar bed and any loose and friable mortar in the joints of the brickwork below the coping.

   All debris shall be removed off the Site of the Operations.

2. New precast concrete copings shall be laid on a mortar designation (i) (refer to Clause 2404) bed to a line and level to match existing copings.

2472AR **Rebedding Existing Precast Concrete or Stone Masonry Copings**

1. Precast concrete or stone masonry copings shall be removed and stored for re-use.

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Contract-Specific Additional, Substitute and Cancelled Clauses, Figures and Tables included in this Contract

Additional Clauses and Tables

Clause No. **Title and Written Text**

2472AR (cont'd)

The existing mortar bed shall be completely removed together with any loose and friable mortar in brickwork joints below the coping.

All debris shall be removed off the Site of the Operations.

Copings shall be relaid on mortar designation (i) (refer to Clause 2404) or where wall construction contains lime mortar to Clause 2476AR.

Rebedding of existing precast concrete or stone masonry copings shall match existing line and level.

2473AR **Replacement Tiling**

1. All damaged or defective tiles adhesive mortar loose concrete grout and the like shall be broken out and removed off the Site of the Operations.

   Replacement tiles shall be in accordance with BS5385 Part 1 1995 Wall and Floor Tiling.

2. Any areas of the underlying concrete surface which have been damaged shall be made good as detailed in Series 1700.

   Repair materials shall be compatible with the tile adhesive to be used.

3. The edges of retained existing tiles shall be clean and free of any grout.

4. Unless otherwise determined by the Operating Company in accordance with other provisions of this Contract replacement tiles shall be glazed ceramic of a colour size and pattern to match existing tiles.

   They shall be installed to a line and level to match existing tiling with the joints grouted to match the existing grout colour and pattern.

   New tiling shall be cleaned of excess grout when the grout to the joints has hardened.

5. Where a mural or other new tile pattern shall be the subject of an Order to replace the existing the Operating Company shall produce final working drawings.

   Mural tile patterns shall be constructed from tiles of area approximately 225cm^2 cut as required.

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Contract-Specific Additional, Substitute and Cancelled Clauses, Figures and Tables included in this Contract

Additional Clauses and Tables

Clause No. **Title and Written Text**

2474AR **Rebuilding of Defective Masonry**

1. Bricks concrete blocks and stones designated for reuse in the repairs or reconstruction of existing masonry including bridge parapets shall be taken down and set aside for reuse or removed for storage.

   Where parapets have been damaged the Operating Company shall include for retrieval of displaced bricks, blocks and stones from their position after displacement.

   This may include recovery from watercourses and rail tracks.

   The Operating Company shall include for consultation with the appropriate bodies to obtain agreement on access and method of working for rebuilding.

   For scheduled ancient monument Structures consultation and appropriate approvals shall be obtained from Historic Scotland.

   For repairs to listed Structures consultation and appropriate approvals shall be obtained from the local Planning Department.

   The Operating Company shall set up lines of communication and processes to enable timescales for rebuilding to be achieved.

2. The Operating Company shall include in its procedure for approval by Historic Scotland the following steps to ensure early consent

   (i) Inform Historic Scotland Ancient Monument Division of damage to a scheduled ancient monument Structure and apply for Scheduled Monument Consent for repair works with cost estimates using new stone and sketch drawings of proposed repairs.

   Record photos of damaged areas shall be submitted at this point.

   (ii) Carry out assessment of retrieval of stones from river beds and alike and notify Historic Scotland of outcome.

   (iii) Send stone samples to British Geological Survey's for best matching replacement stones. Copy report to Historic Scotland.

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Contract-Specific Additional, Substitute and Cancelled Clauses, Figures and Tables included in this Contract

Additional Clauses and Tables

Clause No. **Title and Written Text**

2474AR (cont'd)

(iv) Meet Historic Scotland on site with draft proposals for repair.

(v) Agree final repair scheme and submit all information to Historic Scotland for final comment.

(vi) Historic Scotland issue Scheduled Monument Consent.

3. The Operating Company shall include in its procedures for the liaison and approval by local planning departments any proposals for repairs and any repair works or alterations required due to damage to listed historic Structures other than scheduled ancient monuments which shall be covered by sub-Clause 2 of this Clause.

4. All mortar from the faces of the bricks concrete blocks or stone shall be removed before incorporating into the reconstructed Site Operations.

   Recovered bricks, blocks and stones from watercourses and other situations where the surfaces have been discoloured or contaminated shall be cleaned and allowed to dry before incorporating into the reconstruction Site Operations.

5. Where new replacement parapet stones are required for listed/ancient monument Structures they shall be of matching stone based on British Geological Survey's analysis of stone samples from the structure.

6. New materials to be incorporated into existing brick concrete block or stone masonry construction shall match the remaining construction with regard to appearance and physical characteristics subject to the current Site conditions and availability of materials.

2475AR **Lime Putty**

1. Lime putty shall be traditional non-hydraulic slaked lime putty to comply with BS890 with a density of not less than 1.35kg/ltr.

   Hydraulic lime shall be natural hydraulic lime in accordance with ENV 459 or with other approved European standards applicable to the country of origin.

   Hydraulic lime shall be delivered to Site in sealed paper bags stored in dry conditions and used within 24 weeks of manufacture.

Appendix 0/1

Contract-Specific Additional, Substitute and Cancelled Clauses, Figures and Tables included in this Contract

Additional Clauses and Tables

Clause No. **Title and Written Text**

2475AR (cont'd)

2. Portland or other modern cements shall not be used.

   Water for mortars shall be clean and free from impurities which would adversely affect the mortar.

3. The Operating Company shall ensure that personnel responsible for the supervision of the production of mortars and the like shall be suitably experienced in the techniques of preparing and using traditional lime mortars.

   Where ready made mortars shall be being purchased the Operating Company shall obtain evidence that the supplier shall be suitably experienced in the techniques of production of traditional lime mortars.

   The Operating Company shall comply with BS8000: Part 3 'Code of Practice for Masonry' in terms of standards of workmanship and Site practice.

2476AR **Hydraulic Lime Mortars**

1. Hydraulic lime for preparation of lime mortars to be used for building, rebuilding, grouting, mechanical pointing and hand pointing shall be Natural Hydraulic Lime NHL5, or Natural Hydraulic Lime NHL3.5 and shall conform to BS EN459-1.

   Non-hydraulic lime shall conform to BS EN459-1

2. Proportions of hydraulic lime and non-hydraulic lime (where used) to sand shall be as Table 24/3 according to the required mortar Durability Designation as defined in BS 5629 *'Code of Practice for Masonry Design'* and as specified in Appendix 24/1.

Appendix 0/1

Contract-Specific Additional, Substitute and Cancelled Clauses, Figures and Tables included in this Contract

Additional Clauses and Tables

Clause No. **Title and Written Text**

2476AR (cont'd)

TABLE 24/3 Typical Hydraulic Lime Mortar Proportions by Volume

Durability Designation	NHL5 : sand	NHL3.5 : sand	Gauged mix*
9 – 10	1 : 2 (i)	NA	NA
7 – 8	1 : 2.5 (i)	NA	NA
5 – 6	1: 3 (i)	1 : 2 (ii)	3 : 1 : 10 (iii)
3 – 4	NA	1 : 3 (i)	2 : 1 : 9 (ii)

*Gauged mixes comprise Natural Hydraulic Lime NHL5 : Lime Putty : Sand

3. Hydraulic Lime Mortar shall be mixed as described below unless otherwise described in Appendix 24/1.

   Mortar shall be mixed thoroughly by hand or mechanically until its colour and consistency are uniform.

   The constituent materials shall be accurately gauged.

   Mortar shall be made in small quantities only as and when required.

   Mortar which has begun to set or has been mixed for a period of more than 2 hours shall be discarded.

   Hydraulic Lime : Sand Mortars

4. Hydraulic lime mortars may be provided as pre mixed dry lime/sand mixes - either bagged or, for larger projects, silo mixes may be appropriate - or they may be Site mixed from bagged hydraulic lime and sand.

5. Hydraulic lime mortars have good working qualities but develop strength more slowly than cement mortars.

   They can develop appropriate strength and durability and have a higher flexural strength in proportion to compressive strength than do cement mortars.

Appendix 0/1

Contract-Specific Additional, Substitute and Cancelled Clauses, Figures and Tables included in this Contract

Additional Clauses and Tables

Clause No.	Title and Written Text
2476AR (cont'd)	They shall be eminently suitable for the construction of masonry arch bridges which require a degree of flexibility to function structurally as arches. Hydraulic lime mortars shall always be used for repair of masonry arch bridges that were constructed using hydraulic lime mortars (i.e. all historic masonry arch bridges). 6. All hydraulic lime mortars shall be mixed in accordance with the supplier's written instructions. 7. Hydraulic lime mortar should be specified in accordance with the durability classification required. (refer to Table 24/3).

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Contract-Specific Additional, Substitute and Cancelled Clauses, Figures and Tables included in this Contract

Additional Clauses and Tables

Clause No. **Title and Written Text**

2476AR (cont'd) **TABLE 24/4 Durability Class Requirements for Straight Hydraulic Lime Mortars**

Mortar Durability Designation (with approximate compressive strengths) for General use building mortar & General use mechanical or hand pointing mortar			
Masonry Type	Parapet & copes Masonry facing roadsides subject to spray & de-icing salts	Other parapets, abutments & spandrel walls Above flood level	Soffit to arch barrel Above flood level
Dense impermeable masonry. Squared or random. Brick, Basalt, Granite etc. (No Suction)	9 – 10 2.2 N/mm^2	7 – 8 1.8 N/mm^2	5 – 6 1.5 N/mm^2
Medium permeability masonry. Squared or random. Brick, Sandstone, Limestone and mixed quality field stone masonry. (Moderate Suction)	7 – 8 1.8 N/mm^2	5 – 6 1.5 N/mm^2	3 – 4 1.34 N/mm^2
High permeability masonry. Squared or random. Brick, Sandstone, Limestone and poor quality mixed field stone masonry. (High Suction)	5 – 6 1.5 N/mm^2	3 – 4 1.34 N/mm^2	
When work is planned to continue beyond the autumn raise the durability class by at least 1 where the background masonry permits. Where the background masonry does not permit, plan to commence in the early spring and be complete before the end of summer.			

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Contract-Specific Additional, Substitute and Cancelled Clauses, Figures and Tables included in this Contract

Additional Clauses and Tables

Clause No. **Title and Written Text**

2476AR (cont'd)

8. Lime mortars suitable for use below flood level, depending on time required, are mortar designation 9-10 (i.e. 1:2 NHL5 mix), which shall be suitable for immersion within 24 hours or mortar designation 7-8 (i.e. 1:2.5 NHL5 mix) if a coffer dam shall be provided to allow 72 hours for setting.

9. Site mixed hydraulic lime mortars are sufficiently workable for laying and building stone masonry units but shall be generally not initially workable for laying bricks in a modern context without being banked up for several hours and reworked.

   Site mixed hydraulic lime mortars shall be generally not suitable for pumping without the use of air entraining additives.

   Where required for site mixed mortars, an air entrainer can be used to increase workability and minimise water requirement.

   Air entrainers shall be used in accordance with the manufacturer's written instructions.

   Pre-mixed dry bagged or silo mixes generally have a higher entrained air content than Site mixed mortars and shall be suitable for building, pumping and pointing without the need for additional air entrainers.

   The use of air entraining additives provides mortars of the same Durability Class which shall generally have superior performance characteristics in respect of earlier resistance to freeze/thaw action, faster rate of carbonation, better vapour permeability, and lower capillarity, due to their higher air content and reduced water demand.

   Gauged Hydraulic Lime : Sand Mortars

   (i.e. mortars containing hydraulic lime, non-hydraulic lime putty or hydrate and sand)

10. Gauged hydraulic lime mortars shall generally only be specified where this shall be necessary to match existing mortars in repointing work.

    There shall normally be no requirement for significant structural strength in re-pointing work.

Appendix 0/1

Contract-Specific Additional, Substitute and Cancelled Clauses, Figures and Tables included in this Contract

Additional Clauses and Tables

Clause No. **Title and Written Text**

2476AR (cont'd) **TABLE 24/5 Durability Class Requirements for Gauged Hydraulic Lime Mortars**

Mortar Durability Designation (with approximate compressive strengths) for Non-general use hand pointing mortar			
Masonry Type	Parapet & copes Masonry facing roadsides subject to spray & de-icing salts	Other parapets, abutments & spandrel walls Above flood level	Soffit to arch barrel Above flood level
Dense impermeable masonry. Squared or random. Brick, Basalt, Granite and the like. (No Suction)	NA	7 – 8 1.5 N/mm^2	5 – 6 1.8 N/mm^2
Medium permeability masonry. Squared or random. Brick, Sandstone, Limestone and mixed quality field stone masonry. (Moderate Suction)	NA	5 – 6 1.8 N/mm^2	3 – 4
High permeability masonry. Squared or random. Brick, Sandstone, Limestone and poor quality mixed field stone masonry. (High Suction)	5 – 6 1.8 N/mm^2	3 – 4 1.34 N/mm^2	1.34 N/mm^2
When work is planned to continue beyond the autumn raise the durability class by at least 1 where the background masonry permits. Where the background masonry does not permit, plan to commence in the early spring and be complete before the end of summer.			

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Contract-Specific Additional, Substitute and Cancelled Clauses, Figures and Tables included in this Contract

Additional Clauses and Tables

Clause No.	Title and Written Text
2476AR (cont'd)	11. Gauged hydraulic lime mortars exhibit slower rates of carbonation and higher capillarity than straight hydraulic lime mortars and shall not be used in close proximity to wet areas or in areas subject to road spray.
	12. Gauged hydraulic lime mortars do not require the addition of air entrainers as good workability is ensured by the inclusion of lime putty.

Appendix 0/1

Contract-Specific Additional, Substitute and Cancelled Clauses, Figures and Tables included in this Contract

Additional Clauses and Tables

Clause No. **Title and Written Text**

2672AR **Anti-Graffiti Coatings**

1. Anti-graffiti coatings shall be of the sacrificial type and shall be capable of being cleaned at least twice before re-coating is necessary.

2. The coating system shall be applied strictly in accordance with the manufacturer's written instructions.

3. The application of the coating system shall not change the appearance of the substrate.

4. Prior to application the surface shall be cleaned of all loose material oil grease dirt and existing graffiti.

   The surface shall be clean and dry before lightly abrading.

   All loose and flaking paintwork shall be feathered back to a sound edge.

   A suitable sealer/primer shall be applied to bare areas and areas of graffiti which resist cleaning and may present a problem by showing through the coating system unless sealed.

5. The cleaning of the coating/removal of graffiti shall not have any detrimental effect on the substrate.

   Grit-blasting water jetting or the use of chemical cleaning agents likely to have long term effects on the substrate shall not be acceptable.

6. Where an existing anti-graffiti coating system is of the type that requires grit-blasting water jetting or the use of chemical cleaning agents likely to affect the substrate then these methods shall only be used as and when specifically subject to consent in writing by the Director.

2674AR **Convex Safety Mirrors in Underpasses and Culverts Used by Pedestrians and Cyclists**

1. Convex safety mirrors in underpasses and culverts used by pedestrians and cyclists shall be polycarbonate external type.

   They shall be fixed in accordance with the manufacturer's written instructions.

Appendix 0/1

Contract-Specific Additional, Substitute and Cancelled Clauses, Figures and Tables included in this Contract

Additional Clauses and Tables

Clause No.		Title and Written Text
2674AR (cont'd)	2.	Cleaning of polycarbonate safety mirrors shall be carried out using a non hazardous de-greaser/cleaning agent. Repetitive use of the de-greaser/cleaning agent shall not have a detrimental effect on the safety mirrors.

Appendix 0/1

Contract Specific Additional, Substitute and Cancelled Clauses and Tables included in this Contract

Additional Clauses and Tables

Clause No. **Title and Written Text**

2801AR **Winter Service**

General

1. This Schedule shall be read in conjunction with Part 2 of Schedule 7.

2. Subject to the other provisions of this Contract the Operating Company shall provide all resources including but not limited to depots materials labour and Winter Constructional Plant required to fulfil its obligations under this Contract.

3. The resources identified in Annex 7.2/I of Part 2 of Schedule 7 shall be deemed to be the minimum provision and shall not be construed as being all resources required by the Operating Company to fulfil its obligations for the Winter Service.

   All necessary measures shall include the provision of labour and hiring leasing and the like of Winter Constructional Plant.

4. Within 24 hours of completing each precautionary treatment operation or other snow or ice removal or other Operations a report shall be completed by the Operating Company.

   The report shall be held electronically in accordance with the procedures in the Quality Management System and Quality Plan and be available for inspection by the Director and the Performance Audit Group at any time.

5. Each day during the Winter Service Period the Operating Company shall provide planned and actual reports for each route.

   These reports shall be recorded in an electronic data base shall include

   (i) summary forecast and actual weather data

   (ii) planned and actual spread rates

   (iii) planned and actual commencement times

   (iv) completion times for each route and

   (v) amount of de-icing material spread for each route and the like.

Appendix 0/1

Contract Specific Additional, Substitute and Cancelled Clauses and Tables included in this Contract

Additional Clauses and Tables

Clause No.	**Title and Written Text**

2801AR (cont'd)

6. A log of hours for each operative spent on "call out" or "standby" shall be kept in accordance with the procedures in the Quality Management System and Quality Plan.

7. The Operating Company shall take account of Health and Safety legislation in operating Winter Constructional Plant for the Winter Service particularly in relation to drivers hours.

8. At Unit boundaries treatment and ploughing routes shall be designed in conjunction with adjoining units to ensure that there is continuity and consistency of service provision at boundary interfaces.

   The arrangements for Winter Service Operations at the boundaries of the Unit with other units or local authority areas shall be set out in the Winter Service Plan.

9. The total width of carriageways including:

   (i) slip roads

   (ii) hard shoulders

   (iii) hard strips

   (iv) turning lanes

   (v) central reserve crossovers

   (vi) lay-byes

   (vii) bus bays and

   (viii) the like shall

   receive precautionary treatments and snow and ice clearance.

2802AR **Basic Facility**

1. Drivers of Winter Constructional Plant shall hold appropriate skills qualifications and experience.

Appendix 0/1

Contract Specific Additional, Substitute and Cancelled Clauses and Tables included in this Contract

Additional Clauses and Tables

Clause No.		Title and Written Text
2802AR (cont'd)	2.	The Operating Company shall ensure that at least one month prior to the commencement of the Winter Service Period sufficient drivers and operatives shall be available to provide the Winter Service Operations.
	3.	The Operating Company shall ensure that throughout the Winter Service Period there shall be available at least 3 trained drivers for each front line Winter Constructional Plant and loading Winter Construction Plant. Additionally every driver based at a vehicle loading point shall have a basic knowledge of every precautionary treatment route emanating from that point and be capable of undertaking that route if necessary.
	4.	The Operating Company shall arrange for sufficient qualified personnel to be on standby at all times during the Winter Service Period to respond to breakdowns or other failure of the Winter Constructional Plant. The Operating Company shall arrange for the necessary repairs to be carried out without delay or mobilise the reserve Winter Constructional Plant so that the response times shall be met.
	5.	A two way radio or hands free mobile phone shall be fitted in each vehicle used for Winter Service in accordance with the provisions of this Part 1 of Schedule 9.
	6.	The Operating Company shall be responsible for all arrangements necessary to ensure the availability of operatives to meet the response times detailed in Part 2 of Schedule 7. Prior to 1 October each year the Operating Company shall prepare rosters detailing the availability of supervisors Winter Constructional Plant drivers for the Winter Service Period. The rosters shall also include names addresses and telephone numbers of the personnel listed.
	7.	The Operating Company shall satisfy itself that arrangements for handling and loading de-icing materials at the loading points shall be adequate to achieve the specified response times.

Appendix 0/1

Contract Specific Additional, Substitute and Cancelled Clauses and Tables included in this Contract

Additional Clauses and Tables

Clause No.	Title and Written Text

2802AR (cont'd)

The loading points for de-icing materials shall be situated at locations which shall ensure that the Operating Company can comply with

(i) the requirements of paragraphs 3.1.2 and 3.1.3 of Part 2 of Schedule 7 and

(ii) the response times described in paragraph 3.3 of Part 2 of Schedule 7.

When pre-wetted salt shall be used such loading points shall require to have all necessary equipment for this process.

8. Prior to 1 October each year the Operating Company shall carry out a 'dry' run of each route and fit and remove the plough to all Winter Constructional Plant so equipped.

Records including but not limited to details of

(i) time taken to traverse the route

(ii) fit the plough and

(iii) any problems encountered

shall be held in accordance with the procedures in the Quality Management Quality System and Quality Plan and be available for inspection by the Performance Audit Group at any time.

2803AR **Winter Service Precautionary Treatment**

General

1. Precautionary treatment Operations shall commence at the time and be carried out at the spread rates instructed by the Winter Service Duty Office.

Precautionary Treatment for Carriageways

2. The minimum requirements for de-icing material spread rates for precautionary treatment shall be as provided in Tables 2 and 4 of Appendix 28/1 of this Part 1 of this Schedule 9.

Appendix 0/1

Contract Specific Additional, Substitute and Cancelled Clauses and Tables included in this Contract

Additional Clauses and Tables

Clause No.	Title and Written Text

2803AR (cont'd)

3. The Operating Company shall put into place arrangements for precautionary treatment when road surface temperatures of less than or equal to plus 1° C and relative humidity levels of less than or equal to 80% are forecast or present.

When such conditions shall prevail salt moisture content for precautionary treatment shall be 5%.

Guidance for precautionary treatments in these conditions is given in Appendix 28/1.

The Operating Company shall put into place arrangements to ensure that precautionary treatments for carriageways with negative texture surfaces shall be applied as close as is practicable to the forecast time for road surface temperatures to be at less than or equal to plus 1° C.

4. Precautionary treatment for carriageways in the Unit shall be provided by the Operating Company when road surface temperatures fall to or are forecast to fall to less than or equal to plus 1° C or when snow conditions shall be forecast.

No Winter Constructional Plant shall be driven above the legal speed limit at any time or at a speed greater than 40mph during precautionary treatment Operations on de-restricted dual carriageways and motorways.

A spreading vehicle shall not be used to treat a carriageway of more than 3 Lanes in a single pass. If the width of carriageway to receive de-icing treatment shall be greater than 3 Lanes de-icing treatment shall be carried out either

(i) with two passes of the spreading vehicle or

(ii) by the use of a second spreading vehicle.

Spread patterns shall be adjusted to suit the carriageway width and the Lane in which the spreading vehicle is travelling.

The completion times shall be in accordance with the response times stated in Part 2 of Schedule 7 of this Contract and shall be deemed to apply to the whole width of the carriageway.

Appendix 0/1

Contract Specific Additional, Substitute and Cancelled Clauses and Tables included in this Contract

Additional Clauses and Tables

Clause No.	Title and Written Text
2803AR (cont'd)	5. On single carriageway roads de-icing material shall be spread across the full width of the road in a single pass with the Winter Constructional Plant travelling at a speed no greater than 30mph.
	6. Site Operations on Trunk Roads requiring temporary traffic management including contra-flow running may require the Operating Company to amend a treatment route. Particular care shall be taken to ensure that all open Lanes and contra-flow crossovers shall be adequately treated with de-icing material prior to removal of temporary traffic management and reopening to traffic.
	7. In the event of a breakdown on any of the Operating Company's front line Winter Constructional Plan details shall be recorded. The Operating Company shall make immediate arrangements for reserve Winter Constructional Plant to be made available in order to comply with the requirements of this Contract.
	8. Where Ethylene Glycol is proposed to be used it shall be applied before ice forms or snow settles on surfaces whenever there is a likelihood of the road surface temperature falling to less than or equal to plus 1°C. Where temperatures drops below minus 4°C or ice forms then the application rate shall be increased in line with the application rates recommended in writing by the chemical supplier.
	9. The Operating Company shall put into place arrangements to deal with variable road and weather conditions that may occur after precautionary treatments have been completed. The specific arrangements shall ensure that resources shall be mobilised within 1 hour to keep the Trunk Roads free of snow and ice.
	10. Where the spread rate in Table 2 of Appendix 28/1 of this Part 1 of this Schedule 9 shall be greater than 20 grammes/square metre the Operating Company shall be deemed to comply with the Contract by undertaking two separate precautionary treatments. In such a case the Operating Company shall undertake the first precautionary treatment at a spread rate of at least 20 grammes/square metre and within the timescales required under the Contract.

Appendix 0/1

Contract Specific Additional, Substitute and Cancelled Clauses and Tables included in this Contract

Additional Clauses and Tables

Clause No.	**Title and Written Text**
2803AR (cont'd)	The Operating Company shall commence the second precautionary treatment within 3 hours of the completion of the first treatment unless the trend from a range of road sensors indicates that the road temperature shall remain at least 1°C higher than the intervention level in Table 2.

Precautionary treatment for footways, footbridges and cycleways

11. Precautionary treatments shall be carried out on Category A footways at locations identified in Annex 7.2/D of Part 2 of Schedule 7 when surface temperatures are forecast to fall to less than or equal to plus 1°C or when snow conditions are expected.

12. Precautionary treatment for

    (i) footways

    (ii) footbridges and

    (iii) cycleways

    shall be carried out as a separate Operation to carriageway precautionary treatments utilising equipment suitable for the purpose.

13. The minimum spread rate for de-icing materials for precautionary treatments to

    (i) footways

    (ii) footbridges and

    (iii) cycleways

    shall be 20 grammes/sq. metre.

    The total width of the footways, footbridges and cycleways shall be treated.

2804AR **Snow and Ice Clearance**

Snow Clearance of Carriageways

1. The Operating Company shall ensure sufficient resources are mobilised to prevent snow or ice from remaining on Trunk Roads.

Appendix 0/1

Contract Specific Additional, Substitute and Cancelled Clauses and Tables included in this Contract

Additional Clauses and Tables

Clause No.	**Title and Written Text**
2804AR (cont'd)	The Operating Company shall put in place specific arrangements to ensure these resources shall be mobilised to keep the Trunk Roads free of snow and ice subject to the other provisions of Appendix 0/1 Series 2800 of this Schedule and Part 2 of Schedule 7 of this Contract.

2. Subject to the other provisions of this Contract spreading of de-icing materials during ploughing shall be at the rate of spread instructed by the Winter Service Duty Officer.

   During prolonged periods of snow fall ploughing shall be continuous from the onset of snow to prevent a build-up of snow and compaction by traffic.

   Ploughing shall continue until the Trunk Roads shall be clear of snow and ice.

3. The plough blade shall be set as close to the road surface as shall be consistent with removal of the maximum amount of snow avoiding damage to

   (i) the road surface

   (ii) other equipment in the road surface and

   (iii) the plough blade.

4. When planning and carrying out snow clearance the Operating Company shall pay particular attention to the layout of the carriageway in terms of

   (i) the overall number of lanes and

   (ii) the location of entrance and exit slip lanes.

   Snow clearance of slip roads shall be co-ordinated with main carriageway clearance.

   A clear path shall be kept open between those entry and exit points where frequent Lane changes are necessary.

Appendix 0/1

Contract Specific Additional, Substitute and Cancelled Clauses and Tables included in this Contract

Additional Clauses and Tables

Clause No.	Title and Written Text

2804AR (cont'd)

5. The Operating Company shall provide details in its Winter Service Plan of the proposed arrangements for safe clearing of wide single carriageway Trunk Roads when they are covered in snow on dual carriageway and multi-Lane motorway Trunk Roads.

   (i) Echelon ploughing (2 or more vehicles moving in the same direction one behind each other on different lanes) shall always be employed.

   (ii) Only the right hand lane shall be ploughed towards the central reservation.

   (iii) Irregular winrows caused by ploughing passes, especially those which weave from one lane to another, shall be avoided.

   (iv) Lanes shall be completely cleared and the winrows of snow remaining shall form a smooth and continuous line without sudden encroachments into the cleared path.

   (v) On motorways winrows may be temporarily left on hard shoulders but these shall be cleared as soon as road surface conditions on running lanes are safe.

   (vi) Clearance work shall proceed continuously until no snow remains on the carriageway.

6. During and after prolonged falls of snow, ploughing shall be used continuously from the onset to prevent snow build up and compaction by traffic and to ensure the snow clearance of all Trunk Roads on the Unit.

   Such ploughing shall be supplemented by simultaneous de-icing treatment at a rate of not less than 20 grammes/square metre.

   If the temperature shall continue to fall and

   (i) the need for ploughing continues or

   (ii) ice or hard packed snow/ice has formed

   the salt spread rate shall be increased as necessary up to 40 grammes/ square metre in accordance with the minimum requirements in Table 3 of Appendix 28/1 of this Part 1 of this Schedule 9.

Appendix 0/1

Contract Specific Additional, Substitute and Cancelled Clauses and Tables included in this Contract

Additional Clauses and Tables

Clause No.	**Title and Written Text**

2804AR (cont'd)

7. Where conventional ploughing or snow ploughing is not possible for example

(i) in built up areas

(ii) in exceptional circumstances when the snow on the road is deep and cannot be removed by conventional ploughing or snow blowing

(iii) when de-icing treatment over packed snow is likely to provide an unacceptable surface and

(iv) when the traffic is insufficient to disperse the snow

the Operating Company shall carry out Operations to lift remove and dispose of snow and ice and/or utilise snow blowers, with the snow being directed onto adjacent land (where the Operating Company has obtained the prior agreement of the landowner and the Scottish Environmental Protection Agency.

Such operations shall be followed by de-icing treatment.

8 Where there is a formation of hard packed snow and ice not exceeding 20mm thick and the air temperature is above minus 5°C removal shall be achieved by using successive spreading of de-icing material.

Below minus 5°C or where the snow or ice is more than 20mm thick great care shall be taken as the use of de-icing material alone can result in an uneven and slippery surface.

A single sized abrasive aggregate of particle size of 6mm, or 5mm sharp and having low fines content shall be added to the de-icing material on a 1:1 ratio.

Reversion to the use of de-icing material only shall be made as soon as possible.

Abrasive aggregates shall be considered as a supplement in urban areas where de-icing material alone would provide an unacceptably slippery surface.

Appendix 0/1

Contract Specific Additional, Substitute and Cancelled Clauses and Tables included in this Contract

Additional Clauses and Tables

Clause No.	**Title and Written Text**

2804AR (cont'd)

9. The Operating Company shall in discussion with Network Rail ensure that appropriate safety precautions are taken when snow ploughing vehicles are negotiating railway level crossings.

   When snowploughing or snow blowing operations are undertaken care shall be taken that snow does not build up across the

   (i) railway tracks or against gates

   (ii) bridge

   (iii) parapets

   (iv) fences

   (v) walls and

   other boundaries.

   Where snow clearance is carried out adjacent to railway overhead electricity cables special care must be exercised to ensure snow does not activate electrical short circuits.

10. During prolonged periods of snow fall at locations where the use of salt for de-icing is prohibited, ploughing shall be continuous followed by repeated applications of de-icing chemical.

    If snow becomes hard packed consideration shall be given to applying 5mm sharp sand to aid traction while snow clearing operations are being carried out.

11. Lifting and removal of snow and ice from multi-level and grade separated interchanges and other locations shall be undertaken where necessary.

    Sites for the disposal of snow and ice arising from such operations shall comply with the requirement of the Scottish Environmental Protection Agency.

    The Operating Company shall provide temporary traffic management including road closures where required for these Operations.

Appendix 0/1

Contract Specific Additional, Substitute and Cancelled Clauses and Tables included in this Contract

Additional Clauses and Tables

Clause No.	**Title and Written Text**
2804AR (cont'd)	12. When ploughing to the nearside, other vehicles (unless stationary or on the hardshoulder) shall not be overtaken snow and shall not be thrown over bridge parapets onto the road beneath. When ploughing to the central reservation the speed shall be such as not to throw snow into the path of traffic on the opposing carriageway. Machine Snow Clearance other than by Front Line and Reserve Winter Constructional Plant 13. In the event of significant snow falls where snow ploughing being carried out by the front line and reserve Winter Constructional Plan shall not be sufficient the Winter Service Duty Officer shall deploy additional Winter Constructional Plant for snow clearance to ensure delays caused by the weather conditions shall be kept to a minimum. Hand Snow Clearance 14. When machine snow clearance shall not be suitable (including clearance around carriageway obstructions) hand snow clearance and salting shall be carried out. Snow and Ice Clearance of Footways, Footbridges and Cycleways 15. Snow and ice clearance shall take place on (i) Category A, B and C footway (ii) footbridges and (iii) cycleways identified in Annex 7.2/D of Part 2 of Schedule 7. 16. Following clearance of snow and ice from (i) footways (ii) footbridges and (iii) cycleways

Appendix 0/1

Contract Specific Additional, Substitute and Cancelled Clauses and Tables included in this Contract

Additional Clauses and Tables

Clause No.	**Title and Written Text**

2804AR (cont'd)

de-icing material shall be spread at a minimum spread rate of 20 grammes/sq. metre to prevent ice formation on the cleared surfaces.

The total width of the

(ii) footways

(ii) footbridges and

(iii) cycleways

shall be treated.

17. Response times for clearance of snow and ice from

(i) footways

(ii) footbridge and

(iii) cycleways

shall be as specified in Part 2 of Schedule 7.

2805AR **Operating Company's Winter Constructional Plant**

1. The Operating Company shall ensure that the Winter Constructional Plant listed in Annex 7.2/I of Part 2 of Schedule 7 shall be available as necessary for the Winter Service.

2. The Operating Company Winter Constructional Plant shall as a minimum meet the specification set out in this Clause 2805AR of this Part 1 of this Schedule 9.

3. The Operating Company shall state where required in Annex 7.2/I details of the Winter Constructional Plant to be used in connection with the Winter Service.

   Such details shall be incorporated into this Contract.

4. When used on the Trunk Road for operator training and maintenance runs the spinner disc at the rear of the Operating Company's Winter Constructional Plant shall be covered in such a way that damage by sharp edges in the event of an accident shall be reduced to a minimum.

Appendix 0/1

Contract Specific Additional, Substitute and Cancelled Clauses and Tables included in this Contract

Additional Clauses and Tables

Clause No.	**Title and Written Text**

2805AR (cont'd)

5. Front line and reserve Winter Constructional Plant shall be fitted with on-board electronic data loggers which shall provide an accurate record of

   (i) driver time

   (ii) distance travelled

   (iii) times when de-icing materials shall have been spread

   (iv) rate of spread and

   (v) width of spread.

   In the event of an on-board electronic data logger malfunction the Operating Company shall within 12 hours prepare a similar written record.

6. The Operating Company shall provide apparatus to measure and record the quantity of de-icing material spread on each occasion on each precautionary treatment route. Such apparatus can be fitted to Winter Constructional Plant or can be located at depots.

   Such apparatus shall be additional to the data loggers.

7. The Operating Company shall provide and operate a global positioning system (GPS) for all carriageway de-icing vehicles that shall record an accurate real time location for all front line and reserve Winter Constructional Plant.

   The GPS system shall be capable of downloading to personal computer to allow the displaying of real time information.

8. As a minimum requirement, in September and January of each Annual Period the Operating Company shall calibrate all de-icing material spreading equipment.

   In September and January the calibration for de-icing material spreading equipment shall comply with the requirements of BS1622.

Appendix 0/1

Contract Specific Additional, Substitute and Cancelled Clauses and Tables included in this Contract

Additional Clauses and Tables

Clause No.	**Title and Written Text**
2805AR (cont'd)	September testing shall comply with the requirements of tests 'A' and 'B' and January testing the requirements of test 'B' of BS1622.

All calibrations shall be independently carried out and certificated.

Re-calibration and testing shall be carried out after repairs to the spreading equipment and at other times when necessary to ensure the accuracy of de-icing material spreading.

Calibration Certificates shall be held in accordance with the requirements of the Winter Service Plan and the Operating Company's Quality Management System and Quality Plan shall be available for inspection by the Director and the Performance Audit Group at any time.

9. The Operating Company shall provide Winter Constructional Plant and other Constructional Plant in accordance with the specifications referred to in paragraph 9 to 13 of this Clause 2805AR of this Part 1 of this Schedule 9.

General

10. The Winter Construction Plant which shall be used for spreading rock salt on the Trunk Road shall consist of a truck chassis/cab upon which shall be mounted a salt spreading machine of sufficient capacity to enable the Operating Company to fulfil its obligations for Winter Service Operations.

Where alternative de-icing materials shall be specified the Operating Company shall provide Winter Constructional Plant to spread these in accordance with the manufacturer's written recommendations.

Winter Constructional Plant Specification for Plant used for Spreading Rock Salt

The chassis/cab shall

(i) be of robust construction and shall comply fully with the requirements of the Motor Vehicle Construction and Use Regulations

Appendix 0/1

Contract Specific Additional, Substitute and Cancelled Clauses and Tables included in this Contract

Additional Clauses and Tables

Clause No.	**Title and Written Text**

2805AR (cont'd)

(ii) have a suitable wheelbase to accommodate the appropriate salt spreader body without excessive overhang behind the rear spring suspension brackets and

(iii) be fitted with a diesel engine which develops sufficient horsepower to cater for snow clearing and Winter Service Operations

11. The salt spreading equipment shall

(i) be of proven design and comply fully with the requirements of BS.1622 – Spreaders for the Winter Maintenance of Roads

(ii) be capable of spreading dry salt to BS 3247

(iii) be capable of symmetrical and asymmetrical spreading in accordance with the Class A1 requirements of BS 1622

(iv) be fitted with a hopper that itself shall be fitted with removable salt screens

(v) be fitted with a spreading mechanism at the rear of the machine designed to minimise damage to passing vehicles when the machine is operating.

The level of the spreader shall be not greater than 350mm above the road surface.

The spreader shall be capable of even distribution of salt over the full width of spread at rates between 10g/sq. m and 40g/sq. m and the trajectory of the salt leaving the spreader shall at no time be higher than 150 above the point of distribution.

(vi) be fitted with a salt discharge indicator connected to the salt spreading machine so as to inform the operator that spreading has ceased

(vii) be fitted with an electronic data logger in accordance with Clause 2805AR.5.

(viii) be fitted with an on board global positioning system.

Appendix 0/1

Contract Specific Additional, Substitute and Cancelled Clauses and Tables included in this Contract

Additional Clauses and Tables

Clause No.	**Title and Written Text**

2805AR (cont'd)

11. The Operating Company shall provide a range of snowploughs which shall be capable of clearing all snow conditions in the Unit.

12. Snow blowers utilised shall

    (i) be capable of blowing up to 600 tonnes of snow per hour

    (ii) have a width of cutter head to be at least 1.8 metres

    (iii) be capable of operating in up to 4 metres depth of snow

13. All Winter Constructional Plant used for de-icing and snow and ice clearance Operations shall

    (i) be painted golden yellow to BS. 4800

    (ii) have 2 additional headlamps shall be fitted to permit forward visibility when the snow plough is fitted

    (iii) have 3 rotating amber beacons shall be fitted to the vehicle 2 on the roof of the cab and 1 beacon at the rear of the salt hopper

    (iv) be fitted with a sign board reading "SPREADING" fitted to the back of the salt hopper.

    The lettering shall be 160mm 'x' height in black capitals from the 'Transport heavy alphabet' described in the Traffic Signs Regulations and General Directions 1994 on a yellow Class 1 reflective background in accordance with BS. 381C lemon yellow No 355

    (v) The vehicle shall be fitted with a passenger seat.

2806AR **De-Icing Materials**

1. The Operating Company shall procure and provide the salt and other de-icing materials necessary to comply with the Winter Service requirements.

2. Stock level requirements for de-icing materials shall be indicated in Appendix WSP 3 Annex 7.2/I of Part 2 of Schedule 7 of the Winter Service Plan.

Appendix 0/1

Contract Specific Additional, Substitute and Cancelled Clauses and Tables included in this Contract

Additional Clauses and Tables

Clause No.		Title and Written Text
2806AR (cont'd)	3.	Salt for de-icing shall be 6.3mm grading particle size complying with BS 3247 and treated with an anti-caking agent.
	4.	At loading points salt storage shall ensure that the moisture content of the stored salt shall not exceed 4%. Where the moisture content of salt used for de-icing shall exceed 4% spread rates shall be increased by 100% for spread rates up to and including 20 grams/ square metre.
	5.	Within 10 days of delivery salt shall be tested by the Operating Company at loading points in accordance with BS 812 and results recorded to ascertain (i) moisture content (1 test per 500 tonnes) (ii) particle size distribution (1 test per 500 tonnes) (iii) chloride content (1 test per 1500 tonnes) and (iv) soluble sulphate compounds (1 test per 1500 tonnes).
	6.	New deliveries of salt shall be tested by the Operating Company in accordance with paragraph 3 of this Clause 2806AR of this Part 1 of this Schedule 9 but existing salt stocks shall be tested by the Operating Company for salt moisture content at monthly intervals throughout each Winter Period and the results shall be recorded.
	7.	An electronic data base shall be provided by the Operating Company for the storage of materials test data and shall be available for access at any time by the Director and the Performance Audit Group. Pre-wetted Salt
	8.	Pre-wetted salt for de-icing material shall be 6.3mm grading particle size complying with BS 3247.
	9.	If salt brine shall be used for pre-wetting salt the percentage of salt brine added to salt for spreading Operations shall not exceed 30% of the total spread material (70% dry salt/30% brine solution) and the saturated salt in the brine solution before combination shall not exceed 23%.

Appendix 0/1

Contract Specific Additional, Substitute and Cancelled Clauses and Tables included in this Contract

Additional Clauses and Tables

Clause No.	**Title and Written Text**
2806AR (cont'd)	Other De-icing Materials

10. Agricultural by-products or other additives used in de-icing materials shall be used in accordance with the supplier's instructions and shall require the prior written consent of the Director.

11. Prior to the use of ethylene glycol the Operating Company shall provide the Director with documentation to demonstrate that the de-icing material complies with all aspects of the Specification and specified use of this material including but not limited to details of the storage and use of materials to comply with the anti-pollution requirements of the Environmental Protection Act.

12. Ethylene glycol used for de-icing Operations shall comply with the Ministry of Defence Specification 68-118 (De-icing/Anti-Icing Fluid for Run Ways) unless otherwise consented to in writing by the Director.

    It shall be applied at the locations specified in Annex 7.2/H of Part 2 of Schedule 9 including those parts of the Trunk Road 200metres beyond the ends of each bridge.

    Abrasive Aggregates

13. A single sized abrasive aggregate of particle size of 6mm, or 5mm sharp sand having low fines content may be added to the salt in a 50% salt and 50% grit or sand mixture as referred to in paragraph 10 and 12 of Clause 2804AR of this Part 1 of this Schedule 9.

    Materials Storage

14. The Operating Company shall satisfy itself that in accordance with sub-Clause 4 arrangements for storage handling and loading de-icing materials at the loading points shall be adequate to achieve the specified response times.

15. Materials shall be stored in such a manner as to ensure compliance with sub-Clause 4 and in accordance with current planning and environmental regulations and in accordance with the supplier's written instructions in the case of additives and ethylene glycol.

Appendix 0/1

Contract Specific Additional, Substitute and Cancelled Clauses and Tables included in this Contract

Additional Clauses and Tables

Clause No.	Title and Written Text

2806AR (cont'd)

16. As salt de-icing material is removed from storage areas a positive slope shall be maintained to avoid danger to operatives and Winter Constructional Plant from the collapse of cliff walls of de-icing material stockpiles.

17. The Operating Company shall be responsible for the safeguarding and management of all de-icing material stockpiles.

18. The Operating Company shall ensure that de-icing material stockpiles do not become contaminated with foreign matter likely to

    (i) cause damage to Winter Constructional Plant and

    (ii) affect other Trunk Road users.

19. Alternative de-icing materials specifically required by the Director shall be used on the sections of Trunk Roads described in Annex 7.2/H of Part 2 of Schedule 7 and shall be used in accordance with the manufacturer's written instructions.

2807AR Maintenance of Operating Company's Winter Constructional Plant

1. The Operating Company shall be responsible for ensuring that its Winter Constructional Plant shall be maintained in accordance with manufacturers' recommendations.

2. The Operating Company shall arrange for sufficient qualified motor fitters to be on standby at all times during the Winter Service Period.

   In the event of mechanical breakdown of Winter Constructional Plant the Operating Company shall arrange for the repairs to be carried out without delay so that the response and treatment times shall be met.

2808AR Miscellaneous Winter Maintenance Operations

Salt Bins and Self Help Salt Heaps

1. Salt bins shall be provided by the Operating Company and placed at the locations identified in Annex 7.2/F of Part 2 of Schedule 7 in late September each year.

Appendix 0/1

Contract Specific Additional, Substitute and Cancelled Clauses and Tables included in this Contract

Additional Clauses and Tables

Clause No.	**Title and Written Text**
2808AR (cont'd)	Throughout the Winter Service Period the bins shall be replenished with salt to ensure a sufficient supply is always available for public use. Damaged or vandalised salt bins shall be replaced within 48 hours of the damage or vandalism becoming known by the Operating Company. At the end of each Winter Service Period bins shall be collected and taken to the Operating Company's depots for storage. Before storage the bins shall be (i) emptied of all salt (ii) thoroughly washed and (iii) hinges shall be greased. The Operating Company shall replace any damaged or missing bins. 2. Self help salt heaps shall be provided and placed on hard surfacing at the locations identified in Annex 7.2/F of Part 2 of Schedule 7 in late September each year. Throughout the Winter Service Period the heaps shall be replenished. At the end of each Winter Service Period such heaps shall be removed and the areas thoroughly washed down. Snow Gates 3. In weather conditions when sections of the Trunk Road require to be closed in liaison with the Police the Operating Company shall provide operatives to open and close snowgates. Once it has been ascertained that no person has been trapped between the gates, the gates shall be secured and all Operating Company personnel withdrawn except those involved in the actual clearance of snow. The Operating Company shall inspect the gates annually in the autumn and undertake Operations to ensure they are functional and of good appearance throughout the Winter Service Period.

Appendix 0/1

Contract Specific Additional, Substitute and Cancelled Clauses and Tables included in this Contract

Additional Clauses and Tables

Clause No.	**Title and Written Text**
2808AR (cont'd)	Snow Fences

4. The Operating Company shall maintain the snow fences identified in Annex 7.2/B of Part 2 of Schedule 7.

   The fences shall be inspected annually prior to the commencement of the Winter Service Period and any damage repaired before the commencement of the Winter Service Period.

2809AR **Snow Poles**

1. Snow poles shall comply with the following

   (i) 50mm external diameter aluminium poles 20mm gauge truck 2.5m length with

      (a) ends capped and

      (b) 150mm reflective strips at the top of the pole and 500mm above ground level.

         On single carriageways the reflective strips are to be red with white on reverse side.

         In central reserves on dual carriageways orange reflective strips are to be provided on both faces.

   (ii) pole foundations shall be

      (a) in-situ concrete grade ST2 as referred to in Clause 2602 of this Part 1 of this Schedule 9

      (b) 300mm deep

      (c) 400mm square

      (d) finished flush with ground level.

Appendix 0/1

Contract Specific Additional, Substitute and Cancelled Clauses and Tables included in this Contract

Additional Clauses and Tables

Clause No.		Title and Written Text
2809AR (cont'd)	(iii)	tops of poles shall be 2.2 metres above adjacent ground level.
	(iv)	pole cross sectional position shall be located nominally 1.2 metres from the carriageway edge or behind safety fences. Poles shall be located at 50 metre intervals on each verge at staggered intervals along opposing verges.

Appendix 0/1

Contract-Specific Additional, Substitute and Cancelled Clauses, Figures and Tables included in this Contract

Additional Clauses and Tables

Clause No. **Title and Written Text**

Emergency Response Operations

3201AR **Emergency Response**

1. Response Time

   The response time for attendance of the Operating Company's initial secondary and contingency Emergency Response Resources at the scene of an Emergency shall be as stated in Table 1 of Appendix 32/1

   During the hours of 07.00 to 19.00 Monday to Friday the Operating Company may use the personnel identified to respond to Emergency requests for assistance on other Operations in connection with this Contract.

   They shall however be able to attend at the site of any Emergency on any part of the Unit within the response time stated in Appendix 32/1.

Resources for Emergency Operations

2. Details of the types of resources that shall be made available by the Operating Company to respond to Emergencies shall be as specified in Table 2.1 of Appendix 32/1

Appendix 0/1

Contract-Specific Additional, Substitute and Cancelled Clauses, Figures and Tables included in this Contract

Additional Clauses and Tables

Clause No. **Title and Written Text**

Site Investigation

3301AR **Rotary Coring in Carriageways**

1. Rotary coring in carriageways shall be carried out in accordance with this Clause.

   Cores shall be 100mm or 150mm nominal diameter and taken in the positions and to the depths proposed by the Operating Company and consented to in writing by the Director.

2. Cores shall be cut in accordance with BS 598 using a coring machine that complies with BS 4019.

   Cores shall generally be required to test the bituminous and concrete carriageway layers only but the Operating Company shall allow for the coring entering lean mix base material and cement bound or granular sub-base.

3. The walls and base of all holes from which core samples have been cut shall be thoroughly dried and painted with hot bituminous binder immediately prior to reinstatement.

   The holes shall be filled to within 50 to 75mm inclusive from the road surface with wet lean concrete and topped off with well compacted bituminous repair material which on completion shall be at the same level as the adjacent surface.

4. The cores shall be handled carefully to prevent damage and wrapped in polythene to prevent moisture loss.

   They shall be indelibly marked to indicate the location and date of coring.

5. Cores shall be packaged to avoid damage clearly labelled and delivered to the Operating Company's store and the like.

   At the Operating Company's store and the like cores shall be handled carefully and stored on purpose built racks or shelves.

   Cores shall be stored for periods determined by the Operating Company to enable the necessary recording testing and data to be obtained and/or inspected by the Director or the Performance Audit Group.

Appendix 0/1

Contract-Specific Additional, Substitute and Cancelled Clauses, Figures and Tables included in this Contract

Additional Clauses and Tables

Clause No. **Title and Written Text**

3301AR (cont'd)

The Operating Company shall establish if the Director wishes to inspect the cores prior to disposal.

Any extended storage periods requested by the Director shall be subject to an Order.

6. Core sampling operations testing, referencing, information obtained from data analysis and interpretation shall be recorded by the Operating Company and a copy of data and reports supplied to the Director.

7. Any tests required to be carried out on cores shall be subject to an Order.

8. The Operating Company shall submit evidence in writing to the Director for written consent that the persons including any sub-contractor proposed to carry out coring testing and reporting Operations have the expertise and resources to carry out any such work.

   All coring testing and reporting Operations shall be carried out by a specialist testing firm or laboratory holding accreditation granted in respect of such coring and testing by the United Kingdom Accreditation Service (UKAS) or by the European Co-operation for Accreditation of Laboratories (EAL).

3302AR **Rotary Coring in Structure**

1. Rotary coring in Structures shall be carried out in accordance with this Clause.

   Cores shall be 50mm 75mm 100mm or 150mm nominal diameter and taken in the positions and to the depths proposed by the Operating Company and consented to in writing by the Director..

2. The cores shall be cut in accordance with BS 598 using a coring machine which complies with BS 4019.

   Cores shall generally be cut through structural concrete with measures taken to avoid encountering reinforcement.

3. The holes from which core samples have been cut shall be reinstated using repair mortar in accordance with Clause 1773.

Appendix 0/1

Contract-Specific Additional, Substitute and Cancelled Clauses, Figures and Tables included in this Contract

Additional Clauses and Tables

Clause No.		Title and Written Text
3302AR (cont'd)	4.	The cores shall be handled carefully to prevent damage and wrapped in polythene to prevent moisture loss. They shall be indelibly marked to indicate the location and date of coring.
	5.	Cores shall be packaged to avoid damage, clearly labelled and delivered to the Operating Company's store and the like. At the Operating Company's store and the like cores shall be handled carefully and stored on purpose built racks or shelves. Cores shall be stored for periods determined by the Operating Company to enable the necessary recording testing and data to be obtained or inspection by the Director. The Operating Company shall establish if the Director wishes to inspect the cores prior to disposal. Any extended storage periods requested by the Director shall be subject to an Order.
	6.	Core sampling operations testing referencing information obtained from data analysis and interpretation shall be recorded by the Operating Company and copies of data and reports supplied to the Director.
	7.	Any tests required to be carried out on cores shall be subject to an Order.
	8.	The Operating Company shall submit evidence in writing to the Director for written consent that the persons including sub-contractors proposed to carry out coring testing and reporting Operations have the expertise and resources to carry out the work. All coring testing and reporting Operations shall be carried out by a specialist testing firm or laboratory holding accreditation granted in respect of such coring and testing by the United Kingdom Accreditation Service (UKAS) or by the European Co-operation for Accreditation of Laboratories (EAL).

Appendix 0/1

Contract-Specific Additional, Substitute and Cancelled Clauses, Figures and Tables included in this Contract

Additional Clauses and Tables

Clause No. **Title and Written Text**

3303AR **Structural Investigations**

1. Structural investigation and testing Operations shall be carried out in accordance with this Clause.

2. Separate reports upon the findings testing and the like together with photographic evidence shall be supplied for each Structure as detailed in Appendix 33/1.

   Where the subject of an Order or where the Operating Company shall determine in accordance with the other requirements of this Contract the need for the reports to contain a section giving an expert interpretation of the results of the investigation the reports shall contain such a section.

   The number of copies for each report shall be as referred to in Appendix 33/1.

3. The Operating Company shall submit evidence to the Director that the persons including sub-contractors proposed to carry out investigation testing and reporting Operations have the expertise and resources to carry out the work.

   All sampling and testing Operations shall be carried out by a specialist testing firm or laboratory holding accreditation granted in respect of such sampling and testing by the United Kingdom Accreditation Service (UKAS) or by the European Co-operation for Accreditation of Laboratories (EAL).

3304AR **Inspection Patches Within Surfacing on Bridge Structures**

1. The general requirements for excavation and reinstatement of inspection patches within surfacing on bridges shall be as referred to in the appropriate Clauses of Series 700 900 and 1100 except that existing material may be removed by the use of air driven percussion tools.

2. Details of patch size and location within footways and carriageways shall be determined by the Operating Company in accordance with the other provisions of this Contract or the subject of an Order.

   Such inspection patches shall be excavated through any flexible surfacing asphaltic sand carpet and waterproofing system which may be present.

Appendix 0/1

Contract-Specific Additional, Substitute and Cancelled Clauses, Figures and Tables included in this Contract

Additional Clauses and Tables

Clause No.		Title and Written Text
3304AR (cont'd)	3.	Following excavation all residual deposits of surfacing and waterproofing shall be disposed of to a licensed disposal facility and the deck cleaned.
	4.	Excavation patches shall remain open for testing and inspection and shall only be reinstated after having received the written consent of the Director.
3305AR		**Trial Holes in Paved Areas**
	1.	The Operating Company shall excavate trial holes by hand or machine to permit inspection or sampling of unbound or bitumen bound materials. The size and location of the trial holes shall be determined by the Operating Company in accordance with the other provisions of this Contract or the subject of an Order.
	2.	Trial holes shall be excavated and reinstated in accordance with Clause 706 except that trial holes shall remain open for testing and inspection and shall only be reinstated after having received the written consent of the Director.
3306AR		**Falling Weight Deflectometer Tests**
	1.	The Operating Company shall undertake falling weight deflectometer tests to assess the structural condition of bituminous and cementitious road pavements. The location, length to be tested and number of tests to be carried out shall be determined by the Operating Company in accordance with the other provisions of this Contract or the subject of an Order.
	2.	The testing and reporting shall be carried out in accordance with the guidance given in HD 29/94 (Design Manual for Roads and Bridges Volume 7.3.2)

Appendix 0/1

Contract-Specific Additional, Substitute and Cancelled Clauses, Figures and Tables included in this Contract

Additional Clauses and Tables

Clause No. **Title and Written Text**

3307AR **Dynamic Cone Penetrometer Tests**

1. The Operating Company shall undertake dynamic cone penetrometer tests to assess the structural condition of bituminous and cementitious road pavements.

   The location, length to be tested and number of tests to be carried out shall be the subject of an Operating Instruction.

2. The testing shall be carried out in accordance with the manufacturers written instructions

3. The calculations and reporting shall be carried out in accordance with the guidance given in Transport and Road Research Laboratory Overseas Road Note 8 – "A Users Manual for a Program to Analyse Dynamic Cone Penetrometer Data".

Appendix 0/1

Contract-Specific Additional, Substitute and Cancelled Clauses, Figures and Tables included in this Contract

Additional Clauses and Tables

Clause No. **Title and Written Text**

Management and Maintenance

Road Restraint Systems (Vehicle and Pedestrian)

6101AR **Cyclic Maintenance of Safety Barriers**

1. Re-tensioning of Safety Barriers

   (i) Beam safety barriers shall be re-tensioned in accordance with the requirements of Clause 473 within the periods specified in Part 1 of Schedule 7.

   (ii) Wire rope safety fencing shall be re-tensioned in accordance with sub-Clause 474.2 within the periods specified in Part 1 of Schedule 7.

Drainage

6102AR **Cyclic Maintenance of Gullies Catchpits Soakaways and Oil Separators**

1. Cleaning of gullies catchpits soakaways and oil separators shall be carried out in accordance with Clauses 520, 521 and the following

2. Gullies catchpits soakaways and oil separators shall be emptied not less than once in each Annual Period and when necessary to ensure that water does not stand on the carriageway adjacent to or flow past the gully and silt traps and that oil separators are effective.

   All collected sediment debris and polluted water shall be disposed of to a licensed Special Waste Management Facility in accordance with the requirements of Scottish Environment Protection Agency.

   Where Scottish Environment Protection Agency agree polluted water may be disposed of in an alternative manner (for example to sewer, infiltration and the like) provided the necessary discharge consents arrangements with sewerage undertakers and permits have been obtained.

   Polluted water shall not be used to dislodge compacted materials in the gully pot if there is any risk of that water being discharged into the drainage system.

Appendix 0/1

Contract-Specific Additional, Substitute and Cancelled Clauses, Figures and Tables included in this Contract

Additional Clauses and Tables

Clause No.	Title and Written Text
6102AR (cont'd)	Polluted water shall not be used to refill gully pots. As part of the cleaning Operations the outlet pipe shall be jetted with clean water to ensure that it is flowing freely. Any restrictions in flow shall be noted. Oil separators shall be cleansed to avoid pollution. Polluted water shall not be used to jet or surcharge gullies. Polluted water and/or sludge shall not be discharged into watercourses or onto land other than suitably licensed waste management facilities. 3. Before putting a gully grating cover back on a spot of paint shall be sprayed onto the underside. The colour of the paint shall differ for each cycle of cleaning. 4. Notwithstanding the provisions of sub-Clause 1 of this Clause at least once a year all gullies and chambers on the Unit shall be emptied and cleaned. Details of the Site Operations including the Scheme Identification Operations Instruction road and number of gullies and chambers emptied and any Defects found in respect to blockages or damages to the drainage system or components together with the location of those Defects shall be recorded. 5. Any damage and Defects to gullies chambers or components shall be repaired immediately if considered a danger to the public. 6. Only clean water shall be used for flushing and filling gully pots and the Operating Company shall pay all charges for such water. Drawing water from fire hydrants shall not be carried out without written approval from the relevant water authority. 7. Cleaning and emptying of oil separators shall be carried out annually.

Appendix 0/1

Contract-Specific Additional, Substitute and Cancelled Clauses, Figures and Tables included in this Contract

Additional Clauses and Tables

Clause No. **Title and Written Text**

6103AR **Cyclic Maintenance of Drainage Grips**

1. Drainage grips shall be cut and maintained across verges such that free flow of water shall not be impeded and water does not stand on the carriageway adjacent to the grip.

   Care shall be taken not to disturb the soil beneath or alongside the excavation.

6104AR **Maintenance of Linear Drainage Systems**

1. Cleaning of linear drainage systems shall include piped drains combined drainage and kerb systems linear drainage channel systems kerb or channel offlet pipes and piped grips and shall when required be carried out in accordance with Clauses 520, 521 and the following

2. Additionally cleaning may be carried out by drawing through a mandrel with a diameter 20mm less than the nominal diameter of the pipe or nominal minimum area of the "waterway area" of the block

3. Where necessary a root cutter attachment shall be used with the high-pressure water jetter.

4. Any damage to drainage systems or components shall be repaired immediately if they shall be considered to be a danger to the public.

5. Piped grips shall be cleaned as necessary such that all silt and loose obstructions shall be removed from the pipe such that the free flow of water shall not be impeded and that the water shall not stand on the carriageway adjacent to the pipe grip.

   Any suction system used shall comply with Clause 576.

6. Each end of the piped grip shall be maintained free from vegetation or other obstructions including any material expelled from the pipe.

   Where the invert of the outlet is below the invert of the ditch the invert of the ditch shall be excavated until the invert of the pipe is exposed

Appendix 0/1

Contract-Specific Additional, Substitute and Cancelled Clauses, Figures and Tables included in this Contract

Additional Clauses and Tables

Clause No. **Title and Written Text**

6105AR **Cyclic Maintenance of Filter Material**

1. The location of any obstruction that cannot be removed shall be recorded together with the location of the obstruction.

2. The filter media of filter drains shall be loosened by harrow and all weed growth removed in accordance with Clause 3002.

3. The filter material shall be loosened to a depth of 200mm over the full width of the drain so as to minimise retention of water within this depth.

4. Any build up of detritus between the edge of the carriageway and the filter drain shall be removed at the same time

6106AR **Cyclic Maintenance of Drainage Structures**

1. The Operating Company shall ensure that each end of the drainage structure including any ancillary drainage items shall be free of vegetation and other obstructions including any material disturbed during cleaning.

2. Where the invert of any drainage structure at intake and outfall points shall be below the invert of an adjacent watercourse, the watercourse invert shall be excavated to the invert level of the drainage structure to facilitate flow from the drainage structure.

3. The Operating Company shall maintain a daily record sheet during cleaning operations giving drainage structure locations and any Defects found and report any situation immediately to the Director if considered a safety hazard.

4. All collected sediment debris and polluted water shall be disposed of to a licensed Special Waste Management Facility in accordance with the requirements of Scottish Environment Protection Agency.

   Where Scottish Environment Protection Agency agree polluted water may be disposed of in an alternative manner (for example to sewer, infiltration and the like) provided the necessary discharge consents arrangements with sewerage undertakers and permits have been obtained.

   Polluted water shall not be used to dislodge compacted materials.

Appendix 0/1

Contract-Specific Additional, Substitute and Cancelled Clauses, Figures and Tables included in this Contract

Additional Clauses and Tables

Clause No. **Title and Written Text**

6107AR **Cyclic Maintenance of Ancillary Drainage Items**

1. Ancillary drainage items shall be cleared of all vegetation and debris and shall be cleaned to remove all silt loose obstructions and other detritus.

2. In the case of sluices, tidal flaps, penstocks, valves, pumps and other specialist equipment the Operating Company shall check that all mechanisms shall be functioning as required and shall lubricate any moving parts in accordance with any manufacturers written instructions.

3. The Operating Company shall maintain a daily record sheet during cleaning operations giving locations of control systems and mechanisms together with any Defects noted and shall report any situation immediately to the Director if considered a safety hazard.

4. The Operating Company shall dispose of all debris and arisings from the Operations to a licensed disposal facility and shall take all necessary precautions to prevent contamination of adjacent watercourses or ponds.

6108AR **Litter and Refuse**

1. Subject to the other provisions of this Contract the Operating Company shall ensure that all roads and other land within the Unit shall be maintained to the standards of a Category 6 Zone as set out in the Environmental Protection Act 1990 Code of Practice on Litter and Refuse.

2. Road cleaning and clearance of channels shall be to such a standard that on completion of the Operation there shall be an unimpeded passage for storm water into the drainage system.

   Seasonal variations of such accumulations shall be taken into consideration when formulating cleaning regimes.

   Vehicles engaged in sweeping shall only travel in the same direction of flow as the adjacent road traffic.

   Any growth of grass or other vegetation which shall be likely to obstruct the flow of water in the channel shall be controlled in accordance with Clause 3002.

Appendix 0/1

Contract-Specific Additional, Substitute and Cancelled Clauses, Figures and Tables included in this Contract

Additional Clauses and Tables

Clause No. **Title and Written Text**

6108AR (cont'd)

3. The term "grassed areas" as referred to in the Code of Practice shall include all areas that shall be either grassed planted granular or the like between the road boundary fences which shall not be hard surfaced or classified as central reservations.

4. Central reservations shall be both grassed and hard surfaced areas and no distinctions shall be made between either type.

5. Any necessary litter picking shall be undertaken prior to grass cutting Operations.

6109AR **Removal of Dead Animals**

1. The carcass of a dead animal found on the Unit that needs to be removed for safety or environmental reasons shall be collected and disposed of in accordance with the requirements of the Local Authority Environmental Health Officer.

Structures

6110AR **Cyclic Maintenance - General**

1. Vegetation on or adjacent to the Structure shall be removed using hand tools or appropriate mechanical means which preserve the integrity and do not damage the structure.

   Any injurious weed such as Japanese Knotweed and Giant Hogweed shall be removed in accordance with Clause 3002 and reported to the Overseeing Organisation.

2. Removal of debris from any part of the structure shall be undertaken using hand tools or appropriate mechanical means which preserve the integrity and do not damage the Structure and any protective systems.

   Disposal shall be to a licensed disposal facility.

   The removal of debris from carriageway verges shall not be included unless it constitutes an immediate hazard to traffic clause 6108AR and 6109AR pertain.

   Areas of Structures affected by bird droppings shall be cleaned using stiff bristle brushes, hoses, clean water and suitable detergents.

Appendix 0/1

Contract-Specific Additional, Substitute and Cancelled Clauses, Figures and Tables included in this Contract

Additional Clauses and Tables

Clause No. **Title and Written Text**

6110AR (cont'd) Disposal shall be to a licensed disposal facility.

3. Checking and tightening of bolts in particular holding down bolts to expansion joints parapets high mast lighting sign/signal gantries shall employ calibrated hand or mechanical wrenches to achieve where available the torque specified by the manufacturer/designer for the specific element.

   Local damage to protective systems shall be made good.

4. Missing bolts shall be replaced and tightened in accordance with the manufacturer's written specifications where available using calibrated torque wrenches.

   Local damage to protective systems shall be made good.

5. Where required by standard or the manufacturer suitably approved or registered personnel shall be used to undertake these tasks.

6111AR **Cyclic Maintenance of Expansion Joints**

1. Debris and vegetation shall be cleaned out from the expansion joint using hand tools or appropriate mechanical means that shall avoid damage to the joint.

2. Bolts securing the expansion joint cover plates and/or nosing joints shall be checked and tightened in accordance with Clause 6110AR.

3. Neoprene or elastomeric material shall be checked for splitting or detachment from the supporting frame by a visual inspection and the use of appropriate hand tools.

4. Cover plates and nosing joints shall be checked by visual inspection and the use of appropriate hand tools and if required tightened in accordance with sub-Clause 2 of this Clause.

5. Debris and sediment from associated drainage below the joint shall be cleared using hand tools or appropriate mechanical means that shall avoid damage.

Appendix 0/1

Contract-Specific Additional, Substitute and Cancelled Clauses, Figures and Tables included in this Contract

Additional Clauses and Tables

Clause No. **Title and Written Text**

6112AR **Cyclic Maintenance of Bridge Drainage Systems**

1. Cleaning of bridge drainage systems shall be carried out in accordance with Clauses 520, 6102AR 6103AR and 6104AR.

2. Drainage holes in structural components obstructions outlet pipes outlet manholes weep pipes silt and debris deposits shall be cleaned using appropriate hand tools drainage rods and mechanical means including jetting so as to avoid damaging the Structure.

3. Flap valves shall be checked for operation by hand or using appropriate lifting devices.

   Hinges and fixings shall be greased using a corrosion inhibiting lubricant that will not flow below 70 Degrees C.

4. Vegetation and weeds blocking pipes shall be removed using hand tools or appropriate mechanical means which preserve the integrity and do not damage the Structure

6113AR **Cyclic Maintenance of Parapets and Pedestrian Protection on Structures**

1. Hollow section drain holes shall be cleaned using appropriate hand or mechanical tools, avoiding damage to any paint and galvanising

2. Checking and tightening of bolts shall employ calibrated hand or mechanical wrenches to achieve the torque specified where available by the manufacturer/designer for the specific element.

   Local damage to protective systems shall be made good.

3. Missing bolts shall be replaced and tightened in accordance with the manufacturer's specification to the appropriate torque using a calibrated tool.

   Local damage to protective systems shall be made good.

5. Where required by standard or in writing by the manufacturer suitably approved or registered personnel shall be used to undertake these tasks.

Appendix 0/1

Contract-Specific Additional, Substitute and Cancelled Clauses, Figures and Tables included in this Contract

Additional Clauses and Tables

Clause No. **Title and Written Text**

6114AR **Cyclic Maintenance of Bearings and Bearing Shelves**

1. Removal of debris including bird droppings shall be as Clause 6110AR.

2. In accordance with the manufacturers written instructions clean and where appropriate grease accessible mating bearing surfaces and components to ensure satisfactory performance.

   Existing bearing grease shall be inspected (removing and replacing existing grease boxes if present) and if the grease is brittle or contaminated shall be removed by suitable degreasing solvents and scraping with plastic scrapers.

   New grease shall then be applied to a thickness of 3 mm.

   The new grease shall be corrosion inhibiting and shall not flow at temperatures below 70^{o}C.

3. Local damage to protective systems shall be made good.

4. Checking freedom of movement of bearings.

   Bearings shall be carefully observed and signs of misalignment, binding, distortion or excessive freedom shall be reported to the Overseeing Organisation.

6115AR **Cyclic Maintenance of Structures Conveying Watercourses**

1. All fittings shall be maintained including clearing of debris encrustations and the like greasing and/or lubrication where appropriate.

   This shall be in accordance with manufacturer's written instructions or information in the maintenance manual or as- built records and the like where available.

2. Vegetation debris and silt shall be removed using hand or mechanical tools as appropriate to ensure free flow of water and to preserve the integrity performance and to avoid damage to the Structure

3. All collected sediment debris and polluted water shall be disposed of in accordance with Clause 6106

Appendix 0/1

Contract-Specific Additional, Substitute and Cancelled Clauses, Figures and Tables included in this Contract

Additional Clauses and Tables

Clause No.	Title and Written Text

6116AR Cyclic Maintenance of Sign and/or Signal Gantries High Mast Lighting and Masts

1. Holding down assemblies and fixings including to cladding shall be checked and tightened employing calibrated hand or mechanical wrenches to achieve the torque specified by the manufacturer/designer where available for the specific element.

   Local damage to protective systems shall be made good.

2. Missing bolts in the holding down assemblies and fixings shall be replaced and tightened in accordance with the manufacturer's written specifications where this shall be available to the appropriate torque using a calibrated tool.

   Local damage to protective systems shall be made good.

3. Holding down assemblies shall be cleaned and re-greased and where available in accordance with the manufacturer's written specifications.

4. Cladding shall be cleaned with appropriate hand or power tools using detergents that will not discolour/degrade cladding finishes.

5. Seals to box type gantries shall be visually inspected for leaks using torches and tools suitable for use in confined spaces.

   Any box type gantries that shall not be wind and waterproof shall be reported to the Overseeing Organisation

6117AR Cyclic Maintenance of Non-structural items

1. Moveable parts shall be cleaned and greased and where available in accordance with the manufacturer's written specifications where available.

2. Holding down assemblies and fixings including to cladding shall be checked and tightened employing calibrated hand or mechanical wrenches to achieve the torque specified in writing by the manufacturer/designer where available for the specific element.

   Local damage to protective systems shall be made good.

Appendix 0/1

Contract-Specific Additional, Substitute and Cancelled Clauses, Figures and Tables included in this Contract

Additional Clauses and Tables

Clause No.		Title and Written Text
6117AR (cont'd)	3.	Missing bolts in the holding down assemblies and fixings shall be replaced and tightened in accordance with the manufacturer's written specifications where this shall be available to the appropriate torque using a calibrated tool. Local damage to protective systems shall be made good.
	4.	Holding down assemblies shall be cleaned and re-greased and where available in accordance with the manufacturer's written specifications.
	5.	Vegetation shall be removed in accordance with clause 6110AR.
6118AR		**Cyclic Maintenance of Underpasses and Culverts Used by Pedestrians and Cyclists and Retaining Walls**
	1.	All surfaces painted finishes and protective systems within culverts and underpasses including ceilings, soffits and handrails shall be cleaned using hand and/or the appropriate power tools with detergents and cleaning agents that shall not be detrimental to the surfaces painted finishes or protective systems.
	2.	Cleaning of light fittings shall be by hand using appropriate cleaning agents
	3.	Cleaning of polycarbonate mirrors shall be by hand using the appropriate cleaning agents as specified in writing by the manufacturer, where available.
	4.	Cleaning shall not be carried out when the ambient temperature is 2°C or less and falling or when the Operations shall be likely to result in the formation of ice.
	5.	Vegetation shall be removed in accordance with Clause 6110AR.
	6.	Clearing of weep pipes and drainage systems shall be in accordance with 6112AR.

Appendix 0/1

Contract-Specific Additional, Substitute and Cancelled Clauses, Figures and Tables included in this Contract

Additional Clauses and Tables

Clause No. **Title and Written Text**

6119AR **Removal of Graffiti**

Removal of Graffiti, Posters and Encrusted Deposits

1. Graffiti, posters and encrusted deposits shall be removed by suitable methods.

   Overpainting of painted surfaces may be carried out provided the substrate shall not be not damaged during the process.

2. Encrusted deposits may be removed by a light grit blast in accordance with Clause 1772 provided the substrate shall not be not damaged.

3. All electrical equipment and any other fixtures and fittings shall be fully protected during removal operations.

4. Over-painting shall be in a colour and material to match the existing where necessary and shall be subject to consent in writing by the Director.

Appendix 0/1

Contract-Specific Additional, Substitute and Cancelled Clauses, Figures and Tables included in this Contract

Additional Clauses and Tables

Clause No.	Title and Written Text
	Professional Services
6201AR	**Requirements for Professional Services Staff**
	The requirements of role, qualifications, experience, areas of knowledge and key and specific tasks for staff engaged in undertaking professional services shall be as stated in Appendix 62/1.

Appendix 0/1

Contract-Specific Additional, Substitute and Cancelled Clauses, Figures and Tables included in this Contract

Additional Clauses and Tables

Clause No. **Title and Written Text**

6470AR **Time Band Adjustments**

Normal Working hours

For the purposes of Time Band adjustments normal working hours and restricted working hours shall be as stated in Appendix 64/70.

Appendix 0/1

Contract-Specific Additional, Substitute and Cancelled Clauses, Tables and Figures included in this Contract

Substitute Clauses Tables and Figures

Clause No. **Title and Written Text**

Preliminaries

110SR **Information Boards**

1. The information boards required shall be:

(i) Network Customer Information Signs

The Operating Company shall supply erect and at the end of this Contract Period remove Network Customer Information Signs as referred to in Part 7 of Schedule 3.

The Operating Company shall maintain the signs in a clean condition.

Signs shall be manufactured in accordance with Clause 1207.

(ii) Works Contract Information Signs

Scheme Information Boards shall comply with the Traffic Signs Regulations and General Directions (2002) sign reference 7007.1 and in Appendix 1/21 and shall be manufactured in accordance with Clause 1207.

(iii) Site Operations Information Signs

Temporary scheme contact signs as defined in the Traffic Signs Regulations and General Directions (2002) sign reference 7008 shall be erected at all Sites within the Unit while Operations including but not limited to traffic management should be carried out.

In the permitted variants of sign reference 7008 the word "Undertaker's" shall be replaced with the words "Operating Company's".

In the description of the sign reference 7008 the word "employer" shall be replaced with the words "Operating Company"

Appendix 0/1

Contract-Specific Additional, Substitute and Cancelled Clauses, Tables and Figures included in this Contract

Substitute Clauses Tables and Figures

Clause No. Title and Written Text

110SR (cont'd)

The signs shall be erected in a prominent position at either end of the Site so that they may be read easily by users of the Trunk Road.

The sign shall display the name and telephone number of the organisation responsible for carrying out such Operations.

2. The Operating Company shall keep clean and maintain any information boards provided by it for its own use and shall dismantle and remove them on completion of the Operations.

Operating Company advertising boards other than those set out in paragraph 1.3 of Part 7 of Schedule 3 shall not be allowed on or adjacent to the Unit except at the entrance to compounds where they shall be subject to the restriction specified in Appendix 1/21.

113SR **Programme of Site Operations and Work by Others**

1. The requirements for programmes of Site Operations shall be specified in Part 1 of Schedule 4 and Part 3 of Schedule 5 to this Contract.

2. The Operating Company may be required to carry out Site Operations adjacent to railway lines which shall require track possessions.

The Operating Company shall make its own arrangements for track possessions and shall meet all requirements referred to in Schedule 1

3. The Operating Company shall take into account in its weekly programme of works required by Part 3 of Schedule 5 the presence from time to time of authorised contractors, Undertakers and the like executing other work which may have an impact on its Operations and responsibilities under this Contract and accessibility to the Unit or parts of the Unit. (See Appendix 1/17 for the various types of other work likely to be undertaken which shall not be construed as an all inclusive test).

4. From time to time there may be events occurring on different parts of the Unit or outwith the Unit which shall prevent or constrain the use of traffic management for planned Site Operations or Works or works by other third parties although Emergency Operations shall not be affected.

Appendix 0/1

Contract-Specific Additional, Substitute and Cancelled Clauses, Tables and Figures included in this Contract

Substitute Clauses Tables and Figures

Clause No. **Title and Written Text**

113SR (cont'd)

The Operating Company shall be aware of such events from its liaison with local authorities and other relevant authorities and the like and shall make any necessary alterations to traffic management measures or programmes to take account of such events.

Site Clearance

202SR **Existing Trees Bushes and Hedges**

1. Existing trees bushes hedges shrubs and the like shall be retained and protected wherever possible.

   When removal shall be unavoidable they shall be cut down in accordance with the requirements of Series 3000 of this Part 1 of this Schedule 9.

949SR **Repairs to Potholes**

A permanent repair to a Category 1 Defect including but not limited to road stud sockets shall be carried out in accordance with Appendix 7/22.

Appendix 0/1

Contract-Specific Additional, Substitute and Cancelled Clauses, Figures and Tables included in this Contract

Substitute Clauses, Tables and Figures

TABLE 50/2SR: Requirements for Bridges, Parapets, Bearings, CCTV Masts, Cantilever masts, Steel Lighting Columns and Bracket Arms and other Highway Structures: Protective Systems

I (M) – High Build Epoxy (2 pack)/ Polyurethane (2 pack) finish				
Substrate Type	1 Steel	2 Aluminium metal spray, zinc metal spray	3 Existing paint coats	4 Existing paint coats
Surfaces prepared to	Clean, bright Sa2 or St3 quality steel	Bright or sound metal coating	Sound finishing coat or last undercoat	Other sound paint coats
1st Coat Item No. Minimum dry film thickness (∝m)	Item 115 100	Item 115 100	Nil –	Nil –
2nd Coat Item No. Minimum dry film thickness (∝m)	Item 116 –	Item 116 or 112 –	Nil –	Item 116 or 112 100
3rd Coat Item No. Minimum dry film thickness (∝m)	Item 168 50	Item 168 50	Item 168 50	Item 168 50
Minimum total dft of the paint system to be obtained (microns)	300∝m	300∝m	50∝m	175∝m
STRIPE COATS	Item 112, 80 ∝m mdft. Brush or airless spray. One stripe coat in area prepared to clean steel or sound metal coating Applied over 1st coat			
PATCH COATS	Nil			

Appendix 0/1

Contract-Specific Additional, Substitute and Cancelled Clauses, Figures and Tables included in this Contract (continued)

Substitute Clauses, Tables and Figures

TABLE 50/2SR: Requirements for Bridges, Parapets, Bearings, CCTV Masts, Cantilever masts, Steel Lighting Columns and Bracket Arms and other Highway Structures: Protective Systems (CONTINUED)

NOTE: When a light tint gloss finish is required an extra coat of item 168 shall be applied. Item 169 Polyurethane Finish, may be used in lieu of Item 168 to provide a semi-gloss finish, alternatively Item 164 (Moisture Cure Polyurethane finish) can provide a semi-gloss finish and shall be tolerant of surface moisture (but not running water) and low temperatures during application and curing.

Types I (M) and II (M) can be combined to allow paint maintenance to proceed when temperature falls and relative humidity increases and for night work.

HEALTH & SAFETY

Polyurethane (2 pack) and Moisture Cured Polyurethane paints contain isocyanate and can be injurious to health if not used correctly.

An assessment of the risks and controls for their safe use shall be carried out before use.

Appendix 0/1

Contract-Specific Additional, Substitute and Cancelled Clauses Tables an Figures Included in this Contract (Continued)

TABLE 50/2SR: Requirements for Bridges, Parapets, Bearings, CCTV Masts, Cantilever masts, Steel Lighting Columns and Bracket Arms and other Highway Structures: Protective Systems (continued)

II (M) – MC/Polyurethanes				
Substrate Type	1 Steel	2 Aluminium metal spray, zinc metal spray	3 Existing paint coats	4 Existing paint coats
Surfaces prepared to	Clean or bright steel	Bright or sound metal coating	Sound finishing coat or last undercoat	Other sound paint coats
1st Coat Item No. Minimum dry film thickness (∝m)	Item 160 40	Item 160 40	_ _	_ _
2nd Coat Item No. Minimum dry film thickness (∝m)	Item 162 _	Item 162 _	_ _	Item 162 70
3rd Coat Item No. Minimum dry film thickness (∝m)	Item 162 70	Item 162 70	_ _	Item 162 70
4th Coat Item No. Minimum dry film thickness (∝m)	Item 164/169 40/50	Item 164/169 40/50	Item 164/169 40/50	Item 164/169 40/50
Minimum total dft of the paint system to be obtained (microns)	275/325∝m	275/325∝m	50/100∝m	225/275∝m
STRIPE COATS	Item 162, 50 ∝m mdft. Brush or airless spray. Two stripe coats, the first applied over 1st coat, the second coat applied over the 2nd coat			
PATCH COATS	Nil			

Appendix 0/1

Contract-Specific Additional, Substitute and Cancelled Clauses Tables an Figures Included in this Contract (Continued)

TABLE 50/2SR: Requirements for Bridges, Parapets, Bearings, CCTV Masts, Cantilever masts, Steel Lighting Columns and Bracket Arms and other Highway Structures: Protective Systems (continued)

NOTE: Item 168, Polyurethane (2 pack) gloss finish may be used in lieu of Item 164 MC Polyurethane semi-gloss finish (2 pack Polyurethane gloss finishes shall be less tolerant of moisture and low temperatures during application and curing than MC Polyurethanes and shall therefore only be specified when conditions preclude the formation of moisture on surfaces and when the ambient temperature is likely to be above 5oC during application and the curing period).

Types I (M) and II (M) can be combined to allow paint maintenance to proceed when temperature falls and relative humidity increases and for night work.

HEALTH & SAFETY

Polyurethane (2 pack) and Moisture Cured Polyurethane paints contain isocyanate and can be injurious to health if not used correctly.

An assessment of the risks and controls for their safe use shall be carried out before use.

Appendix 0/1

Contract-Specific Additional, Substitute and Cancelled Clauses Tables an Figures Included in this Contract (Continued)

TABLE 50/2SR: Requirements for Bridges, Parapets, Bearings, CCTV Masts, Cantilever masts, Steel Lighting Columns and Bracket Arms and other Highway Structures: Protective Systems (continued)

	III (M) – Extended Cure Epoxy/Polyurethanes	III (M) (alternative) – Extended Cure Epoxy/Polyurethanes
Substrate Type	1 Hot dip galvanizing	2 Hot dip galvanizing
Surfaces prepared to	Bright or sound metal coating	Bright or sound metal coating
1st Coat Item No. Minimum dry film thickness (∝m)	Item 155 or other adhesion promoter –	Item 121 100
2nd Coat Item No. Minimum dry film thickness (∝m)	Item 121 100	Item 164,168 or 169 50
3rd Coat Item No. Minimum dry film thickness (∝m)	Item 164,168 or 169 40/50/50	– –
Minimum total dft of the paint system to be obtained (microns)	175/250∝m	175∝m
STRIPE COATS	Item 121, 80 ∝m mdft. Brush or airless spray. One stripe coat in area prepared to clean steel or sound metal coating Applied over 1st coat	
PATCH COATS	Nil	

NOTE: Some Item 121 formulations have been developed for direct application to hot dipped galvanised surfaces with excellent adhesion without the need for an adhesion promoter (to be checked with and guaranteed by paint manufacturer).

Appendix 0/1

Contract-Specific Additional, Substitute and Cancelled Clauses Tables an Figures Included in this Contract (Continued)

TABLE 50/2SR: Requirements for Bridges, Parapets, Bearings, CCTV Masts, Cantilever masts, Steel Lighting Columns and Bracket Arms and other Highway Structures: Protective Systems (continued)

When a light tint gloss is required an extra coat of Item 168 shall be applied. Item 164, Moisture Cured Polyurethane Finish, may be used in lieu of Item 168 to provide a semi-gloss finish tolerant of surface moisture (but not running water) and low temperatures during application and curing

HEALTH & SAFETY

Polyurethane (2 pack) and Moisture Cured Polyurethane paints contain isocyanate and can be injurious to health if not used correctly. An assessment of the risks and controls for their safe use shall be carried out before use.

Appendix 0/1

Contract-Specific Additional, Substitute and Cancelled Clauses Tables and Figures Included in this Contract (Continued)

TABLE 50/2SR: Requirements for Bridges, Parapets, Bearings, CCTV Masts, Cantilever masts, Steel Lighting Columns and Bracket Arms and other Highway Structures: Protective Systems (continued)

IV (M) – MC/Epoxy/Polyurethane	
Substrate Type	1 Steel
Surfaces prepared to	Clean, bright or Sa2 or St3 quality steel
1st Coat Item No. Minimum dry film thickness (∝m)	Item 160 50
2nd Coat Item No. Minimum dry film thickness (∝m)	Item 116 or 112 –
3rd Coat Item No. Minimum dry film thickness (∝m)	Item 164 or 168 50
Minimum total dft of the paint system to be obtained (microns)	250∝m
STRIPE COATS	Item 112, 80 ∝m mdft. Brush or airless spray. One stripe coat in area prepared to clean steel or sound metal coating Applied over 1st coat
PATCH COATS	Nil

NOTE: When a light tint gloss finish shall be required an extra coat of Item 168 shall be applied. Item 164, Moisture Cured Polyurethane Finish may be used in lieu of Item 168 to provide a semi-gloss finish tolerant of surface moisture (but not running water) and low temperatures during application and curing.

HEALTH & SAFETY

Polyurethane (2 pack) and Moisture Cured Polyurethane paints contain isocyanate and can be injurious to health if not used correctly.

An assessment of the risks and controls for their safe use shall be carried out before use.

Appendix 0/1

Contract-Specific Additional, Substitute and Cancelled Clauses Tables an Figures Included in this Contract (Continued)

TABLE 50/2SR: Requirements for Bridges, Parapets, Bearings, CCTV Masts, Cantilever masts, Steel Lighting Columns and Bracket Arms and other Highway Structures: Protective Systems (continued)

Grease paint system for maintenance of an Oleo-resinous system on a zinc metal sprayed coating where there has been extensive breakdown of the paint system over areas where corrosion of the zinc metal coating has started.

Also may be used, subject to the written approval of the Overseeing Organisation as a temporary measure over steel strengthening (additional stiffeners welding and the like) on the insides of boxes and to external bridge bearings where loose surface paint has been removed.

V (M) – Grease Paint			
Substrate Type	1 Steel	2 Aluminium metal spray, zinc metal spray or hot dip galvanizing	3 Existing paint coats
Surfaces prepared to	Clean, bright or Sa2 or St3 quality steel	Bright or sound metal coating	Sound finishing coat or last undercoat or other sound paint coats
1st Coat: Grease Paint Penetrating Primer Item No. Minimum dry film thickness (∝m)	Item 200 Nominal	Item 200 Nominal	Item 200 Nil
2nd Coat: Grease Paint Undercoat, yellow Item No. Minimum dry film thickness (∝m)	Item 201 150	Item 201 150	Item 201 Nil
3rd Coat: Grease Paint Finish, black Item No. Minimum dry film thickness (∝m)	Item 201 150	Item 201 150	Item 201 150
Minimum total dft of the paint system to be obtained (microns)	330 ∝m	350 ∝m	160 ∝m
STRIPE COATS	Item 201, 150 ∝m mdft. Brush. One stripe coat in all areas over 2nd coat		
PATCH COATS	Item 201. Brush, over 2nd coat		

NOTE: The total dft of existing coats plus new coats including patch coats, shall not be less than 400 ∝m.

Number of patch coats to suit.

Appendix 0/1

Contract-Specific Additional, Substitute and Cancelled Clauses, Tables and Figures included in this Contract

Cancelled Clauses Tables And Figures

Clause No	Title and Written Text
951CR	Patching

APPENDIX 0/2

CONTRACT-SPECIFIC MINOR ALTERATIONS TO

EXISTING TABLES INCLUDED IN THIS CONTRACT

Appendix 0/2

Contract-Specific Minor Alterations to Existing Clauses Tables and Figures included in this Contract

Clause No.	Alterations to be made
	Preliminaries
104	**Standards Quality Assurance Agrèment Certificates and Other Approvals** Sub-Clause 4 add at the end- "All Quality Management Schemes listed in Appendix A of the Specification for Highway Works shall be applicable to this Contract"
201	**SITE CLEARANCE** **Clearing** Sub-Clause 6 after paragraph 2 add new paragraph as follows: "In the case of items such as stone, copes, granite setts, kerbs, concrete paving and the like, stacking and protection shall be achieved by palletising." Sub-Clause 7 delete and replace with: "7.Topsoil excavated for any purpose shall be reserved and protected for re-use. Multiple handling of topsoil shall be kept to a minimum."
204	**Hazardous Materials** In sub-Clause 1 after "…in Site clearance" insert "or any other work on the Unit including Emergency situations"

Appendix 0/2

Contract-Specific Minor Alterations to Existing Clauses and Tables Included in this Contract

Clause No.	Alterations to be made
	Road Restraint Systems (Vehicle and Pedestrian
403	**Installation of Safety Barriers, Terminals, Transitions and Crash Cushions – Overall Requirements**
	Omit sub-Clause 2 (i)

Appendix 0/2

Contract-Specific Minor Alterations to Existing Clauses and Tables included in this Contract

Existing Clauses and Tables

Clause No.	Alterations to be made
507	**DRAINAGE AND SERVICE DUCTS**

Chambers

Add the following new sub-Clauses 19-23:

19. The frame shall be haunched with mortar to within 40mm of its top.

    The remaining 40mm shall be painted with joint bitumen.

20. The remainder of the void around the frame shall be filled with either bitumen macadam or rolled asphalt surfacing material to match the surrounding surface.

    The surface course shall be laid in a uniform layer of the specified thickness and shall include any surface treatment necessary to match the surrounding surface.

    Such treatment shall comply with the relevant Clauses in this Specification

21. Covers and frames shall be broken-out adjusted reinstated and able to be trafficked in the course of one working day.

22. In certain circumstances for example if the Site shall be overlaid the Operating Company may adjust covers and frames to levels above the adjacent surface.

    The covers and frames shall be surrounded by a temporary ramp in bituminous material to a gradient not steeper than 1:10.

    The Operating Company shall provide warning signs in accordance with Clause 117.

23. Draw pit chambers for electrical supply cables shall be as referred to in Appendix 5/2."

Appendix 0/2

Contract-Specific Minor Alterations to Existing Clauses and Tables Included in this Contract

Clause No.	Alterations to be made
606	**Watercourses**
	In sub-Clause 1 after “ditches,” insert “drainage grips”
	Add new sub-Clause 5:
	“The cutting of new drainage grips shall be to the profiles required to deal with the discharge of surface water from the carriageway.
	All arisings from the cutting of new drainage grips shall be removed to a licensed disposal facility unless it is appropriate to spread and level the arisings on the verge.
	The grass shall be trimmed for a distance of 1 metre on either side of the grip.”
610	**Fill to Structures**
	In sub-Clause 1(iv):
	delete " unless otherwise required in Appendix 6/6".
	In sub-Clause 2 line 2 delete
	" 6P, 7A and 7B".
	In sub-Clause 2 lines 3 and 4 delete
	“, in the locations described in Appendix 6/6”
	In sub-Clause 3 lines 2 and 3 delete:
	“6P, 7A and 7B ”
	In sub-Clause 6 lines 1 and 2
	delete " 6P and 7B"
611	**Fill Above Structural Concrete Foundations**
	In sub-Clause 1 (i)
	delete ”6P, 7A or 7B”
	In sub Clause 1 (ii) delete whole sub Clause.

Appendix 0/2

Contract-Specific Minor Alterations to Existing Clauses and Tables included in this Contract

Existing Clauses and Tables

Clause No. **Alterations to be made**

Kerbs Footways And Paved Areas

1101 **Precast Concrete Kerbs Channels Edgings and Quadrants**

Sub-Clause 2 lines 13 and 14

delete "At expansion joints in bridge decks the kerb joints shall be as described in Appendix 11/1."

Sub-Clause 4 - delete and replace with the following

"4. The longitudinal surface regularity shall not deviate by more than 3mm in 3 metres when checked with a 3 metre straight edge.

Horizontal alignment shall comply with Clause 702."

1102 **In Situ Asphalt Kerbs**

Sub-Clause 2 – delete sub-Clause.

1103 **Freestanding In Situ Concrete Kerbs Channels and Edge Details**

Sub-Clause 1 line 8

delete all text after "dragging" and add

"The longitudinal surface regularity shall not deviate by more than 5mm in 3 metres when checked with a 3 metre straight edge."

1104 **Footways and Paved Areas (Precast Concrete Flags)**

Sub-Clause 2 lines 2 and 3

delete "with a bond as described in Appendix 11/1".

1106 **Footpaths and Paved Areas (In Situ Concrete)**

Add

"4. Synthetic fibres shall be added to the concrete at the concrete mixing plant at a rate of 0.9kg per cubic metre of concrete as and when specified by the Director."

Appendix 0/2

Contract-Specific Minor Alterations to Existing Clauses and Tables included in this Contract

Existing Clauses and Tables

Clause No.	Alterations to be made

1107 Footways and Paved Areas (Concrete Block Paving)

Add new sub-Clause 4:

"4. When replacing in existing areas of block paving the type and colour of the blocks and the pattern used shall match existing.

1108 Footways and Paved Areas (Clay Pavers)

Add new sub-Clause 4:

"4. When replacing in existing areas of block paving the type and colour of the blocks and the pattern used shall match existing.

Appendix 0/2

Contract-Specific Minor Alterations to Existing Clauses Tables and Figures included in this Contract

Clause No	Alterations to be made
1201	**Traffic Signs** **Regulations Sign Classification and Standards** Sub-Clause 4 (i) - delete "or specially authorised by the Scottish Ministers". Sub-Clause 4 (ii) - delete. Sub-Clause 4 (iii) - delete "or specially authorised by the Scottish Ministers, or any designed by the Operating Company".
1209	**Covering of Permanent Traffic Signs** Sub-Clause 7 add "Any damage caused as a result of the temporary covering of permanent traffic signs shall be rectified at the Operating Company's expense."
1213	**Road Studs** Add new sub-Clause "9 New or replacement thermoplastic road studs shall be installed as CHART node points as and when directed in writing by the Director. Details of material to be used and installation methods shall be as referred to in Appendix 12/3."

Appendix 0/2

Contract-Specific minor Alterations to Existing Clauses Tables and Figures included in this Contract

Clause No.	Alterations to be made
1310	**Road Lighting Columns and Brackets**
	Amendments and Additions to BS EN 40-5 : 2002 and BS EN 40-6 : 2002 for Lighting Columns and Brackets, CCTV Masts and Cantilever Masts
	In paragraph 1310.1 For Lighting Columns and Brackets
	Page 8 Clause 7.1 sub-Clause 7.1.5 Destructive Testing
	delete all text after paragraph 1.
	In paragraph 1310.2 For CCTV Masts and Cantilever Masts
	Page 8 delete all text

Appendix 0/2

Contract-Specific minor Alterations to Existing Clauses Tables and Figures included in this Contract

Clause No.	Alterations to be made
	Electrical Work For Road Lighting And Traffic Signs
1403	**Location of Lighting Units and Feeder Pillars**
	Sub-Clause 1 - delete completely and insert
	"1. The exact location of new Lighting Units and Feeder Pillars shall have the written consent of the Director before commencement of any ground work. The Operating Company shall be responsible for recording the approved location."
1407	**Luminaires**
	Sub-Clause 2(i) is deleted and replaced with
	"2(i). be full cut-off unless otherwise consented to in writing by the Director and comply with BS EN 60598-2.3 and shall be as referred to in Appendix 14/4
1407	**Luminaires**
	Sub-Clause 2(vi) is added
	"2(vi). be fitted with electronic control gear.
1422	**Cable Joints**
	Sub-Clause 3 - delete completely and insert
	"3. Cable joints shall not be provided for cables situated in a duct or trough."

Appendix 0/2

Contract-Specific Minor Alterations to Existing Clauses and Tables included in this Contract

Existing Clauses and Tables

Clause No. **Title and Written Text**

Brickwork, Blockwork And Stonework

2404 **Mortar**

In sub Clause 3 Add cement designation (iv) to Table 24/1 as follows

Mortar Designation	Cement: Limestone dust	Masonry Cementstone dust
(iv)	1:1:5 to 6	1:4½

Add following sub-Clause:

6. Where joints less than 2 mm wide in natural stone ashlar stonework shall be required a cement mortar designation (iv) containing natural stone dust of the same colour as the adjacent masonry shall be used.

APPENDIX 0/3

LIST OF NUMBERED APPENDICES REFERRED TO IN THE SPECIFICATION AND INCLUDED IN THIS CONTRACT

APPENDIX 0/3: LIST OF NUMBERED APPENDICES REFERRED TO IN THE SPECIFICATION FOR HIGHWAY WORKS

Appendix 0/3 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 Contract-specific numbered Appendices devised for this Contract.

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

Page No	To Be Completed By The Operating Company*	Appendix No	Title
			INTRODUCTION
15		0/1	Contract-Specific Additional Substitute and Cancelled Clauses and Tables included in this Contract
157		0/2	Contract-specific Minor Alterations to Existing Clauses and Tables included in this Contract
168		0/3	List of Numbered Appendices Referred to in the Specification and included in this Contract
183		0/4	List of drawings included in this Contract
NOT USED		0/5	Special National Alterations of the Overseeing Department of Scotland Wales or Northern Ireland
			PRELIMINARIES
NOT USED		1/1	Temporary Accommodation and Equipment for the Engineer
NOT USED		1/2	Vehicles for the Engineer
188		1/3	Communication System for the Overseeing Organisation
NOT USED		1/4	Working and Fabrication Drawings
189		1/5	Sampling and Testing

List 'A': List of Numbered Appendices Referred to in the Specification for Highway Works			
Page No	**To Be Completed By The Operating Company***	**Appendix No**	**Title**
NOT USED		1/6	Supply and delivery of Samples to the Overseeing Organisation
NOT USED		1/7	Site Extent and Limitations on Use
NOT USED		1/8	Operatives for the Overseeing Organisation
190		1/9	Control of Noise and Vibration
NOT USED		1/10	Structures to be Designed by the Operating Company
NOT USED		1/11	Structural Elements and Other Features to be Designed by the Operating Company
NOT USED		1/12	Setting Out and Existing Ground Levels
NOT USED		1/13	Programme of Works
NOT USED		1/14	Payment Applications
NOT USED		1/15	Accommodation Works
192		1/16	Privately and Publicly Owned Services or Supplies
193		1/17	Traffic Safety and Management
234		1/18	Temporary Diversions for Traffic
NOT USED		1/19	Routeing of Vehicles
235		1/20	Recovery Vehicles for Breakdown
247		1/21	Information Boards
NOT USED		1/22	Progress Photographs
NOT USED		1/23	Risks to Health and Safety from Materials or Substances
NOT USED		1/24	Quality Management System

List 'A': List of Numbered Appendices Referred to in the Specification for Highway Works			
Page No	**To Be Completed By The Operating Company***	**Appendix No**	**Title**
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 Roadworks (TASCAR)
NOT USED		1/27	Temporary Automatic Speed Camera System for the Enforcement of Mandatory Speed Limits at Roadworks (TASCAR) – Particular Requirements
			SITE CLEARANCE
NOT USED		2/1	List of Buildings etc to be Demolished or Partially Demolished
NOT USED		2/2	Filling of Trenches and Pipes
250		2/3	Retention of Material Arising from Site Clearance
NOT USED		2/4	Explosives and Blasting
NOT USED		2/5	Hazardous Materials
			FENCING
252		3/1	Fences Gates and Stiles
			ROAD RESTRAINT SYSTEMS (VEHICLE AND PEDESTRIAN)
253		4/1	Road Restraint Systems (Vehicle and Pedestrian)
256		4/2	Information Required to Demonstrate Compliance of Road Restraint Systems to BS EN 1317-1, BS EN 1317-2, BS EN 1317-3 and DD ENV 1317-4: 2002

List 'A': List of Numbered Appendices Referred to in the Specification for Highway Works			
Page No	**To Be Completed By The Operating Company***	**Appendix No**	**Title**
			DRAINAGE AND SERVICE DUCTS
263		5/1	Drainage Requirements
268		5/2	Service Duct Requirements
269		5/3	Surface Water Channels and Drainage Channel Blocks
270		5/4	Fin Drains and Narrow Filter Drains
271		5/5	Combined Drainage and Kerb Systems
NOT USED		5/6	Linear Drainage Channel Systems
272		5/7	Thermoplastics Structural Wall Pipes and Fittings
			EARTHWORKS
274		6/1	Requirements for Acceptability and Testing etc of Earthworks Materials
281		6/2	Requirements for Dealing with Class U2 Unacceptable Material
282		6/3	Requirements for Excavation Deposition Compaction (Other than Dynamic Compaction)
NOT USED		6/4	Requirements for Class 3 Material
283		6/5	Geotextiles Used to Separate Earthworks Materials
NOT USED		6/6	Fill to Structures and Fill Above Structural Foundations
NOT USED		6/7	Sub-formation and Capping and Preparation and Surface Treatment of Formation
284		6/8	Topsoiling

List 'A': List of Numbered Appendices Referred to in the Specification for Highway Works			
Page No	**To Be Completed By The Operating Company***	**Appendix No**	**Title**
NOT USED		6/9	Earthwork Environmental Bunds Landscape Areas, Strengthened Embankments
285		6/10	Ground Anchorages Crib Walling and Gabions
NOT USED		6/11	Swallow Holes and Other Naturally Occurring Cavities and Disused Mine Workings
NOT USED		6/12	Instrumentation and Monitoring
NOT USED		6/13	Ground Improvement
286		6/14	Limiting Values for Pollution of Controlled Waters
287		6/15	Limiting Values for Harm to Human Health and the Environment
			ROAD PAVEMENTS - GENERAL
288		7/1	Flexible Pavement Construction
301		7/2	Excavation, Trimming and Reinstatement of Existing Surfaces
302		7/3	Surface Dressing – Performance Specification (Sheets 1, 2 and 3)
308		7/4	Bond Coats, Tack Coats and Other Bituminous Sprays (Sheets 1, 2 and Binder Data Sheet)
312		7/5	In Situ Recycling: The Remix and Repave Process
313		7/6	Breaking Up or Perforation of Existing Pavement
314		7/7	Slurry Surfacing Incorporating Microsurfacing (Sheets 1, 2 and 3)

List 'A': List of Numbered Appendices Referred to in the Specification for Highway Works			
Page No	**To Be Completed By The Operating Company***	**Appendix No**	**Title**
NOT USED		7/8	Not Used
318		7/9	Cold Milling (Planing) of Bituminous Bound Flexible Pavement
319		7/10	Worksheet Pro Forma for Results of Testing for Constituent Materials in Recycled Aggregate and Recycled Concrete Aggregate
320		7/11	Overband and Inlaid Crack Sealing Systems
321		7/12	Arrester Beds
322		7/13	Saw-Cut and Seal Bituminous Overlays on Existing Jointed Concrete Pavements
323		7/14	Preparation of Jointed Concrete Pavements Prior to Overlaying and Saw-Cut and Seal of the Bituminous Overlay
324		7/15	Saw-Cut, Crack and Seat Existing Jointed Reinforced Concrete Pavements
325		7/16	Cracking and Seating of Existing Jointed Unreinforced Concrete Pavements and CBM Bases
NOT USED		7/17	Cracking Plant and Equipment Progress Record
326		7/18	Site Specific Details and Requirements for Cold Recycled Bitumen Bound Material
327		7/19	Site Specific Details and Requirements for Recycled Cement Bound Material
328		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

List 'A': List of Numbered Appendices Referred to in the Specification for Highway Works			
Page No	**To Be Completed By The Operating Company***	**Appendix No**	**Title**
			ROAD PAVEMENTS – CONCRETE AND CEMENT BOUND MATERIALS
NOT USED		10/1	Plant and Equipment for the Construction of Exposed Aggregate Concrete Surface
			KERBS FOOTWAYS AND PAVED AREAS
335		11/1	Kerbs Footways and Paved Areas
336		11/2	Access Steps
			TRAFFIC SIGNS
337		12/1	Traffic Signs: General
340		12/2	Traffic Signs: Marker Posts
341		12/3	Traffic Signs: Road Markings and Studs
NOT USED		12/4	Traffic Signs: Cones Cylinders FTDs and Other Traffic Delineators
343		12/5	Traffic Signs: Traffic Signals
NOT USED		12/6	Traffic Signs: Special Sign Requirements on Gantries
			ROAD LIGHTING COLUMNS AND BRACKETS, CCTV MASTS AND CANTILEVER MASTS
344		13/1	Information to be Provided when Specifying Lighting Columns and Brackets
347		13/2	(Specification for Highway Works) Typical Lighting Column and Bracket Data Sheets 1 and 2
349		13/3	Instructions for Completion of Lighting Column and Bracket Data Sheets

List 'A': List of Numbered Appendices Referred to in the Specification for Highway Works			
Page No	**To Be Completed By The Operating Company***	**Appendix No**	**Title**
NOT USED		13/4	Information to be Provided When Specifying CCTV Masts
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
			ELECTRICAL WORK FOR ROAD LIGHTING AND TRAFFIC SIGNS
354		14/1	Site Records
355		14/2	Location of Lighting Units and Feeder Pillars
356		14/3	Temporary Lighting
357		14/4	Electrical Equipment for Road Lighting
362		14/5	Electrical Equipment for Traffic Signs
			MOTORWAY COMMUNICATIONS
NOT USED		15/1	Motorway Communications
NOT USED		15/2	Cable Duct Requirements
			PILING AND EMBEDDED RETAINING WALLS
NOT USED		16/1	General Requirements for Piling and Embedded Retaining Walls

List 'A': List of Numbered Appendices Referred to in the Specification for Highway Works			
Page No	**To Be Completed By The Operating Company***	**Appendix No**	**Title**
NOT USED		16/2	Precast Reinforced and Prestressed Concrete Piles and Precast 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
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 Wall Elements
NOT USED		16/17	Instrumentation for Piles and Embedded Walls
NOT USED		16/18	Support Fluid
			STRUCTURAL CONCRETE
370		17/1	Schedule for the Specification of Designated Concrete

List 'A': List of Numbered Appendices Referred to in the Specification for Highway Works			
Page No	**To Be Completed By The Operating Company***	**Appendix No**	**Title**
375		17/2	Concrete - Impregnation Schedule
NOT USED		17/3	Concrete - Surface Finishes
376		17/4	Concrete - General
377		17/5	Concrete - Buried Concrete
NOT USED		17/6	Grouting and Duct Systems for Post-tensioned Tendons
			STRUCTURAL STEELWORK
NOT USED		18/1	Requirements for Structural Steelwork
			PROTECTION OF STEELWORK AGAINST CORROSION
380		19/1	(Specification for Highway Works) Form HA/P1 (New Works) Paint System Sheet
NOT USED		19/2	Requirements for Other Work
381		19/3	(Specification for Highway Works) Form HA/P2 Paint Data Sheet
382		19/4SE	(Specification for Highway Works) Form HA/P3 Paint Sample Despatch List: Sheets 1 and 2
NOT USED		19/5	General Requirements
			WATERPROOFING FOR CONCRETE STRUCTURES
385		20/1	Waterproofing for Concrete Structures
			BRIDGE BEARINGS
NOT USED		21/1	Bridge Bearing Schedule

List 'A': List of Numbered Appendices Referred to in the Specification for Highway Works			
Page No	**To Be Completed By The Operating Company***	**Appendix No**	**Title**
			BRIDGE EXPANSION JOINTS AND SEALING OF GAPS
NOT USED		23/1	Bridge Deck Expansion Joints Schedule
NOT USED		23/2	Sealing of Gaps Schedule (Other than in Bridge Deck Expansion Joints)
			BRICKWORK
387		24/1	Brickwork, Blockwork and Stonework
			SPECIAL STRUCTURES
NOT USED		25/1	Requirements for Corrugated Steel Buried Structures
NOT USED		25/2	Requirements for Reinforced Soil and Anchored Earth Structures
NOT USED		25/3	Requirements for Pocket - Type and Grouted - Cavity Reinforced Brickwork Retaining Wall Structures
NOT USED		25/4	Environmental Barriers
NOT USED		25/5	Requirements for Buried Rigid Pipes for Drainage Structures
			MISCELLANEOUS
389		26/1	Ancillary Concrete
NOT USED		26/2	Bedding Mortar
NOT USED		26/3	Cored Thermoplastic Node Markers
			LANDSCAPE AND ECOLOGY
394		30/1	General, sheets 1, 2 and 3
398		30/2	Weed Control
400		30/3	Control of Rabbits and Deer

List 'A': List of Numbered Appendices Referred to in the Specification for Highway Works			
Page No	**To Be Completed By The Operating Company***	**Appendix No**	**Title**
401		30/4	Ground Preparation
402		30/5	Grass Seeding, Wildflower Seeding and Turfing
406		30/6	Planting
414		30/7	Grass, Bulbs and Wildflower Maintenance
417		30/8	Watering
418		30/9	Establishment Maintenance for Planting
420		30/10	Maintenance of Established Trees and Shrubs
427		30/11	Management of Waterbodies
428		30/12	Special Ecological Measures
			MAINTENANCE PAINTING OF STEELWORK
440		50/1	(Specification for Highway Works) Form HA/P1 (Maintenance) Paint System Sheet
NOT USED		50/2	Requirements for Other Work
443		50/3	(Specification for Highway Works) Form HA/P2 Paint Data Sheet
445		50/4SE	(Specification for Highway Works) Form HA/P3 Paint Samle Despatch List: Sheets 1 and 2
NOT USED		50/5	General Requirements

List 'B': List of Contract-Specific Numbered Appendices devised for this Contract		
Page No.	**Appendix No.**	**Appendix Title**
		PRELIMINARIES
248	1/74	Safety of Operations
		ROAD RESTRAINT SYSTEMS (VEHICLE AND PEDESTRIAN)
262	4/71	Re-Tensioning of Safety Barriers
		ROAD PAVEMENTS - GENERAL
329	7/70	Pavement Strengthening Materials
330	7/71	Concrete Pavements Repair Systems
331	7/72	Temporary Repairs to Carriageway Defects
		ROAD LIGHTING COLUMNS AND BRACKETS, CCTV MASTS AND CANTILEVER MASTS
351	13/70	Maintenance of High Mast and other Lighting Incorporating Hoists Winches and Ropes
		ELECTRICAL WORK FOR ROAD LIGHTING AND TRAFFIC SIGNS
364	14/70	Purchase Delivery Handling and Storage of Materials
365	14/71	Labour Requirements
366	14/73	Call Out Report
367	14/74	Report
368	14/75	Competent Persons Authorisation Certificate
369	14/76	Liaison with Electricity Companies
		STRUCTURAL CONCRETE
378	17/70	Schedule for the Specification of Designated Concrete
		BRIDGE EXPANSION JOINTS AND SEALING OF GAPS
386	23/70	Replacement of Bridge Expansion Joints and Sealing of joints

List 'B': List of Contract-Specific Numbered Appendices devised for this Contract		
Page No.	**Appendix No.**	**Appendix Title**
		WINTER MAINTENANCE OPERATIONS
390	28/1	Requirements for Winter Maintenance Operations
		EMERGENCY RESPONSE OPERATIONS
429	32/1	Emergency Response
		SITE INVESTIGATION
431	33/1	Structural Investigations Test Requirements
		PROFESSIONAL SERVICES
448	62/1	Requirements for Professional Services
		TIME BAND ADJUSTMENTS
472	64/70	Time Band Adjustments

* For individual Operations Instructions the Operating Company shall compile the appropriate numbered Appendices giving specific information appropriate to the Instruction in accordance with the other provisions of this Contract.

APPENDIX 0/4: LIST OF DRAWINGS INCLUDED IN THIS CONTRACT

1 Contract-specific Drawings Supplied to Each Tenderer: None

2 Standard Drawings

2(i) Supplied to Each Tenderer:

Standard Drawings for this Contract are contained in Annex 9/1A to this Part 1 of Schedule 9.

2(ii) Inspected by Tenderers: None

2(iii) Brought into this Contract by Reference

HCD published by the Stationary Office (formerly HMSO) as Volume 3 of the Manual of Contract Documents for Highway Works contains the following drawings brought into this Contract by reference. Unless otherwise stated below the whole drawing is brought into this Contract.

Drawing No.	Title	Date	Aspect/Alternative(s) required if not whole Drawing
F1	Surface Water Drains – Trench and Bedding Details	Dec 91	
F2	Filter Drains – Trench and Bedding Details	Nov 03	
F3	Type 1 Chamber (Brick or In Situ Concrete Manhole)	Nov 03	
F4	Type 2 Chamber (Precast Concrete Manhole)	Nov 04	
F5	Type 3 Chamber (Precast Concrete Manhole)	Nov 04	
F6	Type 4 Chamber (Precast Concrete Manhole)	Nov 04	
F7	Type 5 Chamber (Precast Concrete Manhole)	Nov 04	
F9	Type 5 Chamber Grating Details	May 01	
F10	Chamber Fittings – Ladder, Handhold and Safety Chain	Nov 03	
F11	Type 7 Chamber (1050 Catchpit)	Nov 04	
F12	Type 8 Chamber (600 Catchpit)	Nov 04	
F13	Precast and In Situ Cast Gullies	Nov 03	

Drawing No.	Title	Date	Aspect/Alternative(s) required if not whole Drawing
F14	Sumpless Gully Chamber and Alternative Rising Section	Nov 03	
F15	Drainage Channel Blocks Types A, B and C	Nov 04	
F16	Drainage Channel Blocks Types D, E and F	Nov 04	
F17	Detail of Keyways and Keys for Manhole Tops and Kerb Type Gully Tops	Mar 98	
F18	Edge of Pavement Drains – Fin Drains and Narrow Filter Drains	Dec 91	
F19	Edge of Pavement Drains – Installation of Fin Drains	Dec 91	
F20	Edge of Pavement Drains – Installation of Narrow Filter Drains	Dec 91	
F25	Type 9 Chamber (Brick or In Situ Concrete Shallow Inspection Chamber)	Nov 03	
F26	Type 10 Chamber (Brick or In Situ Concrete Shallow Inspection Chamber)	Nov 03	
F27	Type 9 Chamber (Precast Concrete Deep Inspection Chamber)	Nov 04	
F28	Chamber Fittings - Guardrail	Nov 03	
H1	Temporary Fences Types 1 and 2	May 04	
H2	Temporary Fences Types 3 and 4	May 04	
H3	Motorway and Accommodation Works Timber Post and 4 (or 5) Rail Fences	May 04	
H4	Motorway and Accommodation Works High Tensile Strained Wire Deer Fences 135	May 04	
H5	Motorway and Accommodation Works High Tensile Strained Wire Deer Fences 180	May 04	

Drawing No.	Title	Date	Aspect/Alternative(s) required if not whole Drawing
H6	Motorway and Accommodation Works High Tensile Strained Wire Deer Fences 210	May 04	
H7	Turning Posts Strained Wire Fences	Dec 91	
H8	General Details Strained Wire Fences Sheet 1	May 01	
H9	General Details Strained Wire Fences Sheet 2	Dec 01	
H10	General Details Strained Wire Fences Sheet 3	Dec 01	
H11	Accommodation Works Chain link Fences	May 04	
H12	Accommodation Works Rectangular Wire Mesh and Hexagonal Wire Netting Fences	Aug 93	
H13	Accommodation Works Strained Wire Fences (General Pattern)	May 04	
H14	Accommodation Works Timber Palisade and Close Boarded Fences	May 04	
H15	Accommodation Works Wooden Post and 3 Rail Fences	May 04	
H16	Accommodation Works Woven and Lap Boarded Panel Fences	May 04	
H17	Steel Single Field Gate	May 04	
H18	Steel Half Mesh Single Field Gate	May 04	
H19	Steel Extra Wide Single Field Gate	May 04	
H20	Steel Double Field Gate	May 04	
H21	Timber Single Field Gate	May 04	
H22	Timber Double Field Gate	May 04	
H23	Timber Wicket Gate Type 1	May 04	

Drawing No.	Title	Date	Aspect/Alternative(s) required if not whole Drawing
H24	Timber Wicket Gate Type 2	May 04	
H25	Timber Kissing Gate	May 04	
H26	Hinges for Steel Field Gates	May 01	
H27	'D' Latch for Steel Single Field Gates	Dec 91	
H28	Sliding Bolt Latch Type B for Steel Single Field Gates	Dec 91	
H29	Tubular Steel Latch for Steel Double Field Gate	Dec 91	
H30	Hinges for Timber Field Gates	Dec 91	
H31	Spring Catch for Single Timber Field Gates	Dec 91	
H32	Latch and Drop Bolt for Timber Double Field Gate	Dec 91	
H33	Standard Gate Stops	Dec 91	
H34	Timber Stile Type 1	May 04	
H35	Timber Stile Type 2	May 04	
H36	Diagrammatic Methods of Attaching Fencing to Structures	Dec 91	
H37	Rules for the Selection of Non Structural Timber for Use in Environmental Barriers – Sheet 1	Dec 91	
H38	Rules for the Selection of Non Structural Timber for Use in Environmental Barriers – Sheet 2	Mar 98	
H39	Planting Works Fencing Rabbit and Deer Fencing Types 1 and 2	May 01	
H40	Planting Works Fencing Rabbit and Deer Fencing Types 3, 4 and 5	May 01	
H41	Planting Works Fencing Gate	May 01	

Drawing No.	Title	Date	Aspect/Alternative(s) required if not whole Drawing
H42	Planting Works Fencing Stile Types 3, 4 and 5	May 01	
H43	Planting Works Fencing Fenced Tree Guards Types 1, 2 and 3	May 01	
H44	Planting Works Fencing Urban Area Fencing	May 01	
H45	Badger Gate	May 01	
H46	Attachment of Wire Mesh to Fencing (Sheet 1 of 3)	May 01	
H47	Attachment of Wire Mesh to Fencing (Sheet 2 of 3)	May 01	
H48	Attachment of Wire Mesh to Fencing (Sheet 3 of 3)	May 01	
K4	Typical Trench Reinstatement Details for Bituminous and Concrete Pavements	May 02	Bituminous aspect only
K5	Planting Details for Planting Large Trees	May 01	

APPENDIX 1/3: COMMUNICATION SYSTEM FOR THE OVERSEEING ORGANISATION

The Operating Company's communication system shall be as Part 5 of Schedule 5 of this Contract.

APPENDIX 1/5: SAMPLING AND TESTING

1. The Operating Company shall carry out sampling and testing as required in this Contract.

2. Table NG 1.1. in the Notes for Guidance for the Specification for Highway Works gives an illustrative schedule of the sampling and testing required.

   The Operating Company shall include sampling and testing as described in table NG 1.1 for the Operations in its Quality Management System including the Quality Plan as an Inspection and Test Plan, which shall include similar sampling and testing for products proposed by the Operating Company not included in table NG 1.1.

   This Inspection and Test Plan when written consent by the Director shall form part of this Specification.

3. The Inspection and Test Plan shall also include but not be limited to the Operating Company's specific proposals for sampling frequencies for maintenance Operations as defined in Part 1, Part 2 and Part 7 of Schedule 7 to this Contract to ensure that the frequency and type of testing across the Unit shall be compatible with this Specification and shall be acceptable to the Director.

   The specific proposals shall ensure Operations falling below the minimum testing frequency shall be tested at a frequency acceptable to the Director which may include the aggregating of quantities of materials at individual Sites.

APPENDIX 1/9: CONTROL OF NOISE AND VIBRATION

1. The Operating Company shall employ the best practical means to minimise noise and vibration produced by the Operations and shall have regard to the recommendations in BS 5228 Parts 1, 2 and 4 (Noise Control of Construction and Open Sites) and any similar British Standard or Code of Practice which may be considered relevant.

2. Without prejudice to the Operating Company's obligations under the preceding paragraph the Operating Company shall comply in particular with the following requirements

   (i) All vehicles, mechanical plant and equipment used for the purpose of the Site Operations shall be maintained in good and efficient working order and shall be fitted with effective exhaust silencers.

   (ii) All compressors shall be "sound reduced" models fitted with properly lined and sealed acoustic covers which shall be kept closed whenever the machines are in use and all ancillary pneumatic percussive tools shall be fitted with mufflers or silencers of the type recommended in writing by the manufacturers.

   (iii) Machines in intermittent use shall be shut down in the intervening periods between Site Operations or throttled down to a minimum.

   (iv) Where practicable mechanical plant with directional noise characteristics shall be positioned to minimise noise at adjacent properties.

   (v) Static machines shall be sited as far away as practicable from inhabited buildings.

   (vi) In Built up Areas where it shall be necessary to provide power for the running of traffic signals pumps and the like at any time during the period 1900 to 0700 hours Monday to Saturday inclusive and all day on Sunday the sources of such power shall be from mains electricity.

   (vii) All piling and trench sheeting throughout the Site Operations shall be carried out by methods which include positive and effective measures such as vibrating jacking blanketing screening or the like.

   The method employed shall be subject to the prior written consent of the Director after the Operating Company has consulted but not complied with the local authorities.

   (viii) Blasting shall only be carried out after any necessary consultations with the local authorities and any other interested bodies and thereafter with the prior written consent of the Director but in any event shall be restricted to Monday to Friday between 0900 and 1600 hours.

3. For the purposes of noise control the Operating Company's normal working hours within or associated with the Unit shall be 0700 to 1900 hours Monday to Friday inclusive excluding Public Holidays and except for the Winter Service and situations where restrictions identified in Appendix 1/17 shall apply.

APPENDIX 1/9: NOISE CONTROL (CONTINUED)

During this period the equivalent continuous sound level (Leq) shall not exceed the following measured 1 metre outside the facades of any adjacent occupied buildings

(i) 70 dB(A) twelve hour value of Leq.

(ii) 73 dB(A) six hour value of Leq (provided the six hours fall within the period 0800 to 1600 hours)

(iii) 76 dB(A) three hour value of Leq (provided the three hours fall within the period 0900 to 1300 hours) and

(iv) 85 dB(A) at any instant (slow response).

The limit of twelve hour value of Leq shall always be met so that when the higher levels occur the levels permitted throughout the remainder of the normal working hours shall become progressively lower than the overall limit imposed.

4. The Operating Company shall furnish such information as may be required by the Local Environmental Health Officers in relation to noise levels emitted by Constructional Plant or equipment used or installed on the Site or which the Operating Company intends to use or install on the Site and also afford all reasonable facilities to enable such officers to carry out such Site noise-monitoring as may be necessary.

5. An Order may be issued to the Operating Company to cease using any item of Constructional Plant insufficiently silenced or generating noise levels in excess of those specified.

6. Compliance with this Appendix and the other provisions of this Contract shall not of itself constitute any ground of defence against any proceedings instituted under Section 59 of the Control of Pollution Act 1974 (whereby any occupier of premises may complain to the sheriff of a noise nuisance).

APPENDIX 1/16 : PRIVATELY AND PUBLICLY OWNED SERVICES OR SUPPLIES

1. Generally motorways do not contain any privately or publicly owned services or supplies other than

   (i) cabling for the Scottish Ministers' communication systems

   (ii) cabling for road lighting and lit signs on the Unit

   (iii) overhead power lines crossing the motorways and

   (iv) a small number of major pipelines and cables which cross the motorways in ducts.

2. Subject to the other provisions of this Contract Trunk Roads may contain in addition to all types of Undertakers' equipment and services cabling for communications systems variable message signs automatic traffic counters closed circuit television systems road ice prediction sensors road lighting systems lit signs and the like.

   There may be overhead power and communication cables.

3. The Operating Company shall co-ordinate Operations with works required to be carried out by Undertakers or their contractors or other third parties.

4. The Operating Company shall maintain a register of apparatus installed following the grant of permission in writing pursuant to Section 109 of NRSWA, showing details of the location and nature of the apparatus; the persons to whom permission has been granted; and any conditions to which the granting of permission shall be subject.

   The Operating Company shall update the register with any such apparatus and relevant associated information that it becomes aware of in the course of its Operations.

   The Operating Company shall make arrangements with the Undertakers and others concerned for the phasing of any disconnections and diversion of private services affected by the Site Operations.

APPENDIX 1/17: TRAFFIC SAFETY AND MANAGEMENT

1 Responsibility for Traffic Management Measures

(i) The Operating Company shall be responsible for the identification provision maintenance and surveillance of all traffic management measures which shall be necessary for its own Operations.

It shall ensure by examining proposals and inspecting installations that traffic management for activities by others on the Unit complies with relevant legislation and the standards referred to in this Contract and shall immediately report any failings to the organisation concerned and notify the Director in writing of significant failings.

Where practicable, a photographic record of any failings shall be maintained.

(ii) Such activities by others shall include but shall not be limited to

(a) major works for resurfacing, reconstruction and bridgework on any part of the Unit

(b) works for improvement works on any part of the Unit

(c) maintenance of Scottish Electrical/Electronic Systems (NADICS Maintenance Operator)

(d) installation, maintenance or removal of emergency telephones and hazard warning signals variable message signs for snow gates matrix signals and variable message signs automatic data collection systems and closed circuit television systems and the like

(e) technical surveys and minor specialist activities - Regular surveys undertaken by deflectograph machines high speed road monitor sideways coefficient routine investigation machine and individual contracts for work such as surveying, ground investigation and the like

(f) installation maintenance or removal of Undertakers equipment and apparatus

(g) landscape maintenance for Works Contracts

(h) installation maintenance or removal of Trafficmaster equipment

(i) authorised works being undertaken on the Trunk Road by private developers and

(j) galas and events.

(iii) In the case of mobile Lane closures the Operating Company in addition to its responsibility for the overall control of such closure shall be responsible for monitoring traffic flows to ensure compliance with the traffic volume parameters contained in Highways Agency departmental standards contained in the DMRB.

Mobile Lane closures shall be planned and carried out in accordance with TD 49 of the DMRB.

APPENDIX 1/17: TRAFFIC SAFETY AND MANAGEMENT (CONTINUED)

Additionally the Operating Company shall use the procedure "Mobile Lane Closure Risk Assessment Check List" contained in ANNEX 1/17 A to this Appendix 1/17 wherever mobile Lane closures shall be proposed for use within the Unit.

Copies of the completed "Mobile Lane Closure Risk Assessment Checklist" and the "For Use at Time of Mobile Lane Closure" checklists together with the risk assessments shall be held within the Central Office and shall be available for inspection by the Director and the Performance Audit Group at any time.

(iv) Where Operations shall be carried out on or adjacent to a Trunk Road open to vehicles the Operating Company shall ensure that vehicles and mobile Constructional Plant under its control operating on or adjacent to such road in the execution of the Operations shall be painted in a conspicuous colour.

All vehicles used in Mobile Lane Closures as defined in Section 6 "Type C Works" in Chapter 8 of the Traffic Signs Manual published by The Stationery Office shall be non-reflectorised yellow (Colour No 355 to BS 381C or similar).

All other vehicles under the Operating Company's control shall be generally light in colour preferably but not necessarily non-reflectorised yellow and/or provide over the full width and height of the vehicle which shall be exposed to approaching vehicles conspicuous markings and signs to clearly define that the vehicle is a roadworks vehicle.

Vehicles shall have a sign board reading 'Motorway Maintenance' or 'Road Maintenance' (to Diagram 7404 of Schedule 12 Part V of The Traffic Signs Regulations and General Directions 1994) fixed at the rear.

The lettering shall be 150mm 'x height' except that for light vans and cars it shall be the largest 'x height' that can be accommodated out of the followings heights 37.5 50 62.5 or 100mm.

The lettering shall be black capital letters from the alphabet described in The Traffic Signs Regulations and General Directions 1994 Schedule 13 Part II on a yellow non-reflectorised background in accordance with BS 381C colour No 355.

In addition the Operating Company's all purpose vehicles and Constructional Plant shall each be provided with either roof mounted light bars or at least two amber flashing beacons and the Operating Company's light vans and cars shall each be provided with a roof mounted amber flashing distinctive lamp.

The lamps shall be switched on

(a) when the vehicle or Constructional Plant shall be manoeuvring into or out of the Site of the Operations or operating at low speed on a carriageway or hardshoulder open to vehicles and

APPENDIX 1/17: TRAFFIC SAFETY AND MANAGEMENT (CONTINUED)

(b) when the vehicle or Constructional Plant is standing on a carriageway or hardshoulder open to vehicles.

(v) All vehicles and Constructional Plant operating within the Site of the Operations between sunset and sunrise and during periods of poor visibility and fog shall have mandatory lights illuminated and shall travel in the same direction of flow as the adjacent traffic.

Vehicles travelling within the Site of the Operations against the adjacent traffic flow shall not have headlights on or be similarly illuminated and shall keep as far away as possible from the Lanes open to vehicles.'

(vi) The Operating Company shall have clear method statements covering all relevant closure types used on the Unit.

The method statements confirmed in the Quarterly Management System shall be in accordance with Sector Scheme 12 as referred to in Appendix A to this Specification.

(vii) The Operating Company shall consult all parties directly affected by any Site Operations, Works and or works carried out by others and also consult but not comply the local roads authority regarding any diversion routes.

2. **Traffic Safety and Management Requirements**

(i) Layouts for traffic safety and management shall be in accordance with:

(a) the advice and plans contained in Chapter 8 of the Traffic Signs Manual published by The Stationery Office.

Where constraints of the Trunk Road Network do not allow full compliance with Chapter 8, alternative proposals, fully supported with risk assessments, shall be submitted for written consent by the Director.

(b) Departmental Standards and Advice Notes as set out in the DMRB.

(c) in the case of works carried out pursuant to NRSWA act.

(ii) When planning Operations or co-ordinating with works by others all traffic safety and management shall take account of the Code of Practice 'The Reduction of Traffic Delays at Roadworks' published by the Scottish Office and the County Surveyor's Society in Scotland 1992.

(iii) Operations shall take account of local events and the like.

Such Operations shall be planned and carried out in accordance with any standing local agreements such as the "Guidance for Gala Days and Other Such Events" as contained in Annex 1/17C to this Appendix.

(iv) The Operating Company shall make optimum use of all traffic management measures for Operations Works and works carried out by others to minimise overall disruption to traffic.

APPENDIX 1/17: TRAFFIC SAFETY AND MANAGEMENT (CONTINUED)

(v) The Operating Company shall liaise and co-operate with the operator of NADICS local roads authorities the police and other emergency services to ensure that traffic diverted from trunk roads on to the non-Trunk Road network and vice versa shall have the minimum impact on either network and shall not adversely affect the performance of the emergency services

(vi) Where others undertake work within the Unit the Operating Company shall so far as it shall be possible ensure that the organisation responsible for carrying out such work shall erect information signs as defined in the Traffic Signs Regulations and General Directions (2002) sign reference 7008 at locations as shall be required by Clause 110SR.

(vii) The Operating Company shall provide temporary mandatory speed restrictions at any Site involving a Type A closure as defined in the Traffic Signs Manual Chapter Eight subject to approval of the Director and the relevant Temporary Traffic Order being in place.

The extent and temporary speed limit proposed by the Operating Company shall take cognisance of the existing speed limit the surrounding environment (urban rural and the like) and the nature of the Operations as together with relevant legislation.

Where installed all signs markings and the like and the temporary covering of existing signs for the purpose of the temporary speed restriction shall be provided maintained and removed by the Operating Company.

(viii) The Operating Company shall produce for each and every Site of the Operations a safety plan which amongst other safety issues shall identify the traffic management measures to be utilised and the surveillance and maintenance standards to be followed.

(ix) Notwithstanding the requirements of 4(v) sub-Clause of this Clause the Operating Company shall employ methods of working within the Unit such that wherever practicable all obstructions can be removed from a carriageway and that traffic Lanes or hardshoulders can be re-opened to vehicles within 30 minutes of a decision by the Director or the Operating Company to have the traffic management removed.

(x) Traffic management measures shall be monitored and modified by the Operating Company to ensure traffic delays shall be minimised.

When traffic signals are in use queue lengths shall be monitored to ensure that the phase settings result in equal queue lengths and shall be adjusted appropriately to accommodate varying flows.

(xi) The Operating Company shall make good any damage or disturbance to temporary signs or other traffic management measures within 30 minutes on motorways and dual carriageways and 2 hours on single carriageways of the Operating Company becoming aware of such damage or disturbance.

APPENDIX 1/17: TRAFFIC SAFETY AND MANAGEMENT (CONTINUED)

3. Temporary Traffic Regulation Orders

(i) Where the Operating Company Operations or works by others require the promotion of TTROs the Operating Company shall provide all such information identified in ANNEX 1/17B to this Appendix to the Director.

Where such TTROs can be used by both the Operating Company and other bodies this shall form part of the traffic management arrangements and be included in the Operating Company's rates.

Where an individual TTRO is required for the specific works or operations promoted by others these shall be the subject of an Order and paid for separately.

(ii) Shall be promoted by the Scottish Ministers to allow one carriageway of Trunk Road motorways or dual carriageways to be closed provided that a contraflow shall be installed and the adjacent carriageway shall be used as the alternative route.

The closure of only one Lane including a hardshoulder shall not require a TTRO provided that the remainder of the carriageway or hardshoulder shall still be available for traffic.

(iii) Where a carriageway or slip road shall require to be closed and the diversion involves any road other than the adjacent carriageway then a TTRO shall be required.

The Operating Company shall confirm to the Director during the planning of Site Operations whether a TTRO shall be required for the Operations being undertaken within the Unit.

If a TTRO shall be required the Operating Company shall undertake the necessary preparatory work as detailed in sub-Clause (vi) of this Clause within the timescales identified in sub-Clause (v) of this Clause.

(iv) Where the Operating Company requires a TTRO to impose a speed limit at an Operation the Operating Company shall confirm to the Director during the planning of the Site Operations whether a TTRO shall be required for the Operations being undertaken within the Unit.

The Operating Company shall undertake all the necessary preparatory work as detailed in sub-Clause (vi) of this Clause within the timescales identified in sub-Clause (v) of this Clause.

(v) The Director shall arrange for the publication and making of all TTROs.

It shall be noted that the minimum notice required from receipt of all the information identified in sub-Clause (vi) of this Clause to support the draft TTRO by the Director to the making or amending of such Traffic Regulation Orders shall be six weeks.

APPENDIX 1/17: TRAFFIC SAFETY AND MANAGEMENT (CONTINUED)

(vi) The Operating Company when submitting information to promote a TTRO shall complete a TTRO1 Form which shall require to be e-mailed to the Director together with a draft TTRO, press notice, method statement and plan of the roads affected.

A paper copy of the e-mail information shall also be posted simultaneously to the Director together with a completed Operating Company checklist.

A copy of the TTRO1 an example of a draft TTRO, press notice and Operating Company checklist shall be as referred to in ANNEX 1/17B.

(vii) The Operating Company shall consult with the Director in the case of carriageway closures required as a result of an Emergency.

(viii) If the Operating Company requires to carry out any remedial or other Site Operations at its own expense it shall give the required notice and provide all such information identified in ANNEX 1/17B to allow the Director to promote the TTRO and any costs incurred by the Director shall be recoverable from the Operating Company.

4. **Restrictions on Traffic Management Measures - Erection Operation and Removal of Traffic Management**

(i) Due to the nature of the Unit and variable traffic flows restrictions on the hours of working shall apply to parts of routes.

The erection, operation and removal of traffic management may be undertaken by the Operating Company at any time except within the restricted working hours referred to in Table 1/17 of this Appendix 1/17.

(ii) With the exception of Operations carried out in respect of Winter Maintenance and Emergencies restricted working hours as referred to in Table 1/17 of this Appendix 1/17 shall apply to all Site Operations and Works Contracts unless permitted by the prior written consent of the Director.

(iii) The extent of any traffic management layouts shall be limited to single Lane closures except in extreme circumstances where written consent by the Director whose discretion shall be absolute.

(iv) The Operating Company shall seek prior written consent by the Director should the Operating Company require to undertake Site Operations or oversee Works which shall be inconsistent with any constraints set out in Table 1/17.

(v) The Operating Company shall as far as shall be possible plan Site Operations in such a way that traffic management measurements can be removed at the end of each day when work shall have been carried out.

(vi) All signs erected for traffic management purposes which shall not be relevant to a situation shall be removed or covered immediately they become so.

APPENDIX 1/17: TRAFFIC SAFETY AND MANAGEMENT (CONTINUED)

5. Proximity of Traffic Management Measures

Unless the subject of an Order the minimum distance between Sites of Operations Works or works by others shall be as specified in Table F in Chapter 8 of the Traffic Sign Manual and the following.

The minimum distance from a hardshoulder closure to any other closure upstream or downstream including contraflow shall be 1.0 kilometre.

In this respect

(i) the distance between such Sites shall be measured from the 'Roadworks End' sign of the first Site to the commencement of coning at the second Site.

(ii) traffic management shall not be installed upstream or downstream of an existing layout and then extended to or from the existing layout.

An existing layout may be extended downstream.

6. Driver Information Signs

Information signs as specified and required in Clause 117 and forming part of the traffic management arrangements shall be provided.

APPENDIX 1/17: TRAFFIC SAFETY AND MANAGEMENT (CONTINUED)

Table 1/17	**North West Unit**	**Working Hours Restrictions for Routine Operations affecting One Lane only**	
Route No.	**Section**	**General Restrictions (Dates Days and Hours)**	**Additional Restrictions and comments (Dates Days and Hours)**
M8	Junction 8 - Junction 12	Monday-Friday 0600-0930 and 1530-2000 (Friday 1500- 2000) Saturday 0700-2000	1 December to 15 January: 0600-2200
M8	Junction 12 - Junction 24	Monday-Saturday 0600-2000, Sunday 0700-2000	1 December to 15 January: 0600-2200 When events are taking place in Glasgow which generate a significant increase in traffic the restriction period shall be Mon-Sat 0600-2200 Sun 0700-2200
M8	Junction 24 - Junction 27	Monday-Friday 0600-0930 and 1530-2000 (Friday 1500- 2000) Saturday 0700-2000	1 December to 15 January: 0600-2200
M8	Junction 27 - Junction 29	Monday-Saturday 0600-2000, Sunday 0700-2000	For electrical works on White Cart Viaduct only. Monday-Thursday 1530-0930, Friday 1500-0930
M8	Junction 29 - Junction 31	Monday-Friday 0600-0930 and 1530-2000 (Friday 1500- 2000) Saturday 0700-2000	1 December to 15 January: 0600-2200
M73	Junction 1 (M74) - Junction 2 (M8)	Monday-Friday 0600-0930 and 1530-2000 (Friday 1500- 2000) Saturday 0700-2000	1 April to 1 October: Friday & Saturday 0600-2000
M73	Junction 2 (M8) - Junction 3 (A80)	Monday-Friday 0600-0930 and 1530-2000 (Friday 1500-2000)	
M74	Junction 1 - Junction 4	Monday-Friday 0600-0930 and 1530-2000 (Friday 1500-2000)	
M74	Junction 4 - Junction 12	Monday-Thu 0630-0930 and 1530-2000 (Friday 0600- 2000)	1 April to 1 October Friday & Saturday 0600-2000
M77	M8 - Malletsheugh	Monday-Friday 0600-0930 and 1530-2000 (Friday 1500- 2000) Saturday 0700-2000	1 December to 15 January: 0600-2200
M80	M8 - A80	Monday-Friday 0600-0930 and 1530-2000 (Friday 1500- 2000)	1 December to 15 January: 0600-2200
M898	Entire Length	Monday-Friday 0600-0930 and 1530-2000 (Friday 1500-2000)	
A898	Entire Length	Monday-Friday 0600-0930 and 1530-2000 (Friday 1500-2000)	
A8	Entire Length	Monday-Friday 0600-0930 and 1530-2000 (Friday 1500-2000) Saturday 0700-2000	
A75	M74 to Dumfries Bypass	March-October Monday-Friday 0800-0930 & 1600-1800 Saturday & Sunday 1000-1700	Holiday Weekends 0800-1800
A75	Dumfries Bypass except A76 - A701 section	March-October Monday-Friday 0800-0930 & 1600-1800 Saturday & Sunday 1000-1700	Holiday Weekends 0800-1800
A75	Dumfries Bypass A76 - A701	All days 0800-1800	
A75	Dumfries Bypass - Stranraer	June-October. Saturday & Sunday 1000-1700	Holiday weekends 0800-1800
A76	Sanquhar - 50m either side of Tolbooth	Works by special arrangement only	

APPENDIX 1/17: TRAFFIC SAFETY AND MANAGEMENT (CONTINUED)

Table 1/17	**North West Unit**	**Working Hours Restrictions for Routine Operations affecting One Lane only**	
Route No.	**Section**	**General Restrictions (Dates Days and Hours)**	**Additional Restrictions and comments (Dates Days and Hours)**
A76	Mauchline Cross	Monday- Friday 0700 & 1600-1800 Saturday & Sunday 0800-1700	
A76	Crossroads	Monday-Friday 0700-0930 & 1600-1800 Saturday & Sunday 0800-1700	
A76	Crosshands	Monday-Friday 0700-0930 & 1600-1800 Saturday & Sunday 0800-1700	
A76	Templeton Roundabout	Monday-Friday 0700-0930 & 1600-1800 Saturday & Sunday 0800-1700	
A76	Dettigen Roundabout	Monday-Friday 0700-0930 & 1600-1800 Saturday & Sunday 0800-1700	
A76	Skerrington Roundabout	Monday-Friday 0700-0930 & 1600-1800 Saturday & Sunday 0800-1700	
A77	Bellfield Interchange	Monday-Friday 0600-0930 and 1530-2000 (Friday 1500-2000)	
A77	Malletsheugh (A77) to Meiklewood	Monday - Friday 0600-2000	
A77	Meiklewood to Dutch House	Monday-Friday 0600-0930 and 1530-2000 (Friday 1500-2000)	
A77	Ayr Bypass, Bankfiels Roundabout - Dutch House Roundabout	Monday-Friday 0700-0930 & 1600-1830	Public Holidays, Local Events – no works Saturdays 0800-1700
A77	Maybole	Monday-Friday 0700-0930 & 1600-1830	Public Holidays, Local Events – no works Saturdays 0800-1700
A77	Girvan	Monday-Friday 0700-0930 & 1600-1830	Public Holidays, Local Events – no works Saturdays 0800-1700
A77	Prestwick Bypass	Use/siting of tower lights to be agreed with Airport Authority	
A78	Skelmorlie, Largs, Fairlie, West Kilbride/Seamill, Ardrossan, Saltcoats, Stevenston	Monday-Friday 0700-0930 & 1600-1830	Public Holidays, Local Events – no works Saturdays 0800-1700
A78	Skelmorlie - A8 at Bullring Roundabout, Greenock	Monday-Friday 0700-0930 & 1600-1830	Public Holidays, Local Events – no works Saturdays 0800-1700
A82	Entire Length	Monday-Friday 0600-0930 and 1530-2000 (Friday 1500-2000)	1 Jun to 31 Aug: each day 0630-1930 1Oct to 1 April no restrictions on working between West of Barloan Roundabout - South of Tulliechewan Roundabout.
A701	Dumfries Urban Section	Monday-Saturday 0800-0930 & 1600-1800	
A701	Dumfries to A74	March-October Monday-Friday 0800-0930 & 1600-1800	
A725	Entire Length	Monday-Friday 0600-0930 and 1530-2000 (Friday 1500-2000)	
A726	Entire Length	Monday-Friday 0600-0930 and 1530-2000 (Friday 1500-2000)	
A737	Johnstone/Howwood Bypass	Use/siting of tower lights to be agreed with Airport Authority.	
A737/A738	Entire Length	Monday-Friday 0700-0930 & 1600-1830 Saturday 0800-1700	Public Holidays, Local Events, no works.

APPENDIX 1/17: TRAFFIC SAFETY AND MANAGEMENT (CONTINUED)

Annex 1/17A - Mobile Lane Closure Risk Assessment Checklist

Mobile Lane Closures

Those individuals within the Operating Company assessing the use of a mobile Lane closure shall first consider the possibility of other methods of executing Site Operations which minimise the risks to those involved.

In particular there may be an opportunity to schedule the Site Operations as part of a planned operation involving complete or partial road closure.

The Operating Company and any other parties engaged in the Site Operations being undertaken shall also have completed risk assessments under Regulation 3 of the Management of Health and Safety at Work Regulations 1992 which cover the principal tasks to be undertaken.

One advantage of mobile Lane closures shall be that they do not require operators to be on the live carriageway for either setting up or dismantling.

This avoids exposing them to risk from traffic and manual handling of cones and signs.

The technique also allows for the quick removal of the closure should circumstances change.

However, it shall be essential that the mobile Lane closure technique shall only be carried out on roads with good alignment in good visibility and during low traffic flows.

The attached check lists are designed to assist The Operating Company in considering the factors which influence the risks involved before deciding whether to use the mobile Lane closure technique and to record the decisions taken.

The check lists cover the main points to be considered.

However, each mobile Lane closure shall be considered and planned to suit the Operating Company and location.

Some aspects of the Site Operations can be considered well in advance (for example topography) others can only be checked on the day (for example weather).

Some such as traffic flow can be considered in advance but must still be continuously monitored throughout the Site Operations.

Having completed both check lists there are four possible outcomes:

(1) Proceed with the mobile Lane closure.

(2) Proceed with the mobile Lane closure but include additional precautions

(The check list should assist in identifying these).

(3) Proceed with the mobile Lane closure but at a different time or day.

(4) Decide to carry out the Site Operations using a static Type A or Type B closure as defined in Chapter 8.

Before proceeding to the checklists consider the following shall be considered.

APPENDIX 1/17: TRAFFIC SAFETY AND MANAGEMENT (CONTINUED)

Annex 1/17A - Mobile Lane Closure Risk Assessment Checklist Continued

Mobile Lane Closures shall not be appropriate:

(i) when traffic flows shall/may be expected to exceed recommended limits

(ii) when there shall be poor visibility

(iii) if there shall be no hard shoulder and suitable places on the verge for advance signing shall not be available within 1km before the Site Operations

(iv) if the sun shall/may be low on the horizon

(v) at dusk or dawn.

Mobile Lane Closure shall not generally be recommended at night when there shall be no hard shoulder.

Types Of Continuously Mobile Site Operations Suited To Mobile Lane Closure

1. White lining.
2. Erecting signs for static closures particularly on the central reserve.
3. Weed spraying (particularly on central reserves)
4. Overband joint sealing
5. Longitudinal work on the hard shoulder or central reserve.

Other Types Of Work Which May Be Suited To Mobile Lane Closures

6. Road lighting maintenance.
7. Gully emptying.
8. Replacement of inserts in depressible road studs and non-depressible road studs.
9. Deflectograph surveying.
10. Some Site Operations arising from the Code of Practice for Highway Maintenance including condition surveys such as CHART, concrete carriageway inspections and work associated with Routine Maintenance Management Systems.

The above lists shall not be construed as being exhaustive

APPENDIX 1/17: TRAFFIC SAFETY AND MANAGEMENT (CONTINUED)

Annex 1/17A - Mobile Lane Closure Risk Assessment Checklist Continued

Checklist : Advance Planning For a Mobile Lane Closure

(All questions should be answered and comments provided where answer is No or supportive information is considered necessary)

In Column P "X" Denotes - Do not proceed with mobile Lane closure if answer is "No"

"G" Denotes - Refer to general guidance information before deciding to proceed with the mobile Lane closure

No.	Question	Yes	No	Comments	P
1	Are the Site Operations suitable for mobile Lane closure?				X
2	Are traffic flows likely to be below specified levels?				X
3	Can normal (15-20%) heavy goods vehicle flows be expected?				G
4	Are stopping sight distances adequate?				X
5	Will you be prepared to abort the work during poor visibility?				G
6	Will the Site Operations avoid introducing a north/south lane closure on a left hand bend?				G
7	Is there a hard shoulder?				G
8	Is the hard shoulder continuous?				G
9	If no hard shoulder, can advance sign vehicles/trailers be located on verge or close to north/south of carriageway without blocking the north/south lane?				X

APPENDIX 1/17: TRAFFIC SAFETY AND MANAGEMENT (CONTINUED)

Annex 1/17A - Mobile Lane Closure Risk Assessment Checklist Continued

No.	Question	Yes	No	Comments	P
10	If no hard shoulder, are suitable places on the verge available to site warning vehicles within 1km before the Site Operations?				X
11	Will the sun be in a position such that it does not blind drivers throughout?				X
12	Will all the Site Operations be done so as to avoid dawn / dusk?				X
13	Will the mobile lane closure allow more than one lane to remain open?				G
14	Will the Site Operations avoid the need for a north/south lane closure?				G
15	Can the Site Operations avoid being slow moving?				G
16	Will traffic flows be monitored regularly throughout by the team leader / supervisor?				G
17	Are uphill gradients less than 4%?				G
18	Are downhill gradients less than 4%?				G
19	Is the length of Site Operations free of junctions?				G
20	Are the Site Operations to be carried out over a long distance?				G

APPENDIX 1/17: TRAFFIC SAFETY AND MANAGEMENT (CONTINUED)

Annex 1/17A - Mobile Lane Closure Risk Assessment Checklist Continued

No.	Question	Yes	No	Comments	P
21	Can all the Site Operations be carried out from vehicles?				G
22	Are variable message signs available and able to be used?				G
23	For a 3 lane carriageway involving a 2 Lane closure can lanes 2 and 3 be closed to avoid slow moving traffic changing lanes?				G
24	Will the Site Operations not take place (or be suspended) if there is a risk of vehicles skidding?				G
25	Has there been consultation with the police?				G
26	Is there a system to ensure that The Operating Company specifically identifies all mobile Lane closures in its routine weekly closure notifications?				G
27	Is the team leader clear that mobile Lane closures shall only proceed or remain in place if traffic checks show that flow rates are well within limits?				G
28	At night if hard shoulder is less than 3.3 metres wide has this been considered in planning / accepting the Site Operations?				G
29	If verge marker posts have not been provided, has consideration been given to how vehicles will maintain positions?				G

APPENDIX 1/17: TRAFFIC SAFETY AND MANAGEMENT (CONTINUED)

Annex 1/17A - Mobile Lane Closure Risk Assessment Checklist Continued

No.	Question	Yes	No	Comments	P
30	Will the Site Operations last less than the time required to set up and dismantle the necessary advance signs and taper required for the static closure(s) that would otherwise be required to complete the operations.				G
31	Are there any other special conditions applying to these Site Operations?				

APPENDIX 1/17: TRAFFIC SAFETY AND MANAGEMENT (CONTINUED)

Annex 1/17A - Mobile Lane Closure Risk Assessment Checklist Continued

General Guidance Information For Advance Planning Checklist

(Numbers relate to checklist question numbers)

1. Non-exhaustive lists of types of Site Operations which shall have suited to mobile Lane closure and those which may be suited to mobile Lane closure shall be referred to in the first section of this Annex 1/17A.

2. The mobile Lane closure technique shall not be used if the total traffic volume levels shall/may be likely to exceed certain values.

   These traffic volume parameters shall be as given in TD49 of the DMRB.

   Before, and at 15 minute intervals during the operation of the mobile Lane closure technique a 3 minute check count of traffic shall be required to ensure the specified flow limits shall not be exceeded.

   Figure 1 of TD49 is a standard record sheet which summarises the traffic volume parameters and may be used to record traffic flows.

3. Should the traffic count data indicate heavy goods vehicle levels outside 15 -20% then reductions shall be made to the traffic flow limits.

   For example if heavy goods vehicles comprise 30% of traffic flow then the permissible maximum traffic level shall be reduced by 10%.

4. Ensure that this shall be specifically considered.

   For example on de-restricted dual carriageways the Stopping Sight Distance shall be not less than 295 metres.

5. Conditions which reduce visibility or increase the risk of skidding shall/may also increase the risk of accidents.

   Site Operations employing mobile Lane closures shall not be carried out in conditions of poor visibility; when spray from wet roads shall seriously affect visibility; or if the road or weather conditions would reduce the skidding resistance.

6. Particular care shall be required when operating a nearside Lane closure on a left hand bend.

   There shall/may be the possibility that approaching drivers may mistakenly interpret the position of the block vehicle as being on the hard shoulder or verge.

7. One of the most difficult applications of the mobile Lane closure technique involves Site Operations on roads without hard shoulders.

   Careful planning shall be required for the advance signing requirements and placement positions and advice may be obtained from TD 49. Questions 8, 9, 10 highlight specific difficulties.

8. Special care is required when a carriageway has discontinuous hard shoulders and advice may be obtained from TD 49.

APPENDIX 1/17: TRAFFIC SAFETY AND MANAGEMENT (CONTINUED)

Annex 1/17A - Mobile Lane Closure Risk Assessment Checklist Continued

General Guidance Information For Advance Planning Checklist (continued)

9. Special care is required where there is no hard shoulder.

   The vehicle - or trailer - mounted advance signs should be located on the verge or close to the nearside of the carriageway.

   These vehicles should not block the nearside lane. Where verges are restricted the use of lay-bys or field gate entrances may be considered.

10. If suitable places on the verge shall not be available to Site warning vehicles within 1km before the Site Operations the mobile Lane closure shall not be used.

11. The mobile Lane closure technique shall not be operated when drivers approaching the Site Operations shall be driving towards the sun and it shall be low on the horizon.

12. Care shall be taken to avoid operating the mobile Lane closure technique during periods of dusk and dawn when light levels shall be changing.

13. Mobile Lane closure operators' experience has shown that the number of Lanes which remain open for passing traffic can reduce the safety risk to operatives and road users than the number closed.

    For example the risk shall be considered to be less for a 2 Lane closure on a 4 Lane carriageway than for a 1 Lane closure on a 2 Lane carriageway.

14. Accident information has indicated that the closure of the nearside Lane using the mobile Lane closure technique can pose a greater safety risk than offside Lane closures.

    This shall be probably due to the requirement for slower moving vehicles to change Lane.

15. The risk to safety associated with relatively fast moving operations, for example central reserve weed spraying shall be lower than for short term stationary or slow moving Site Operations such as deflectograph surveying.

16. See notes on questions 2 and 3 of this Appendix. This shall require a 3 minute count beginning at whole minute every 15 minutes.

    It shall be vital that indication of increases in flow shall be detected to allow the mobile Lane closure to be suspended or aborted if traffic levels become excessive.

    If this shall not be done by the team leader then the person carrying it out shall fully understand the implications of changes in the flow and be able to communicate these quickly to the team leader.

    The closure shall be taken off if either of the two following situations occur

    (i) 2 successive counts give results above the levels set for the Site Operations

    (ii) the count shows a rising trend with the last one above the limit

APPENDIX 1/17: TRAFFIC SAFETY AND MANAGEMENT (CONTINUED)

Annex 1/17A - Mobile Lane Closure Risk Assessment Checklist Continued

17. Site Operations on roads with steeper than normal gradients will need additional care.

    Difficulties can occur at uphill sections because the manoeuvrability of slow moving vehicles, including heavy goods vehicles, is likely to be reduced.

18. Downhill gradients can lead to problems because of the likelihood of vehicles, in particular heavy goods vehicles travelling at higher and excessive speed.

19. The mobile lane closure technique may be used for sites which involve working through junctions although the movements are such that special care is required. Certain Site

    Operations at particular junctions and interchanges may not be appropriate for the mobile Lane closure technique.

20. The relative safety risk of operating mobile against static Lane closures during Site Operations shall be reduced the longer the length of the Site Operations.

    One reason for this shall be the increased risk to operatives associated with the setting out and removal of perhaps several kilometres of cones.

    Additionally the longer the Lane closure the greater the difficulty and time required to remove the closure should a queue develop.

21. Special care shall be required when Site Operations require operatives to be on foot on the carriageway.

    If the mobile Lane closure technique shall be used in this situation consideration shall be given to providing an additional block vehicle(s) to protect the working area.

22. Experience has shown that variable message signs including central reserve matrix signals can be very beneficial in supplementing mobile Lane closure hard shoulder warning signs.

    This shall be particularly so during slow moving or stationary operations.

    It shall be recommended that variable message signs are used when the police are able to co-ordinate this support.

23. See 14 of this Appendix.

24. See 5 of this Appendix.

25. The police shall be informed of the proposals so that they can advise on Site specific or timing conditions and also provide assistance during the Site Operations (see 22 above).

26. To ensure efficient and effective co-ordination of roadworks all Site Operations shall be identified in the weekly roadworks bulletins.

27. See also 16 of this Appendix.

APPENDIX 1/17: TRAFFIC SAFETY AND MANAGEMENT (CONTINUED)

Annex 1/17A - Mobile Lane Closure Risk Assessment Checklist Continued

28. For Site Operations at night where hard shoulders are less than 3.3 metres wide the operator shall decide whether or not safety may be prejudiced by working on a narrow hard shoulder.

    An occasional short discontinuity of the hard shoulder may be acceptable provided that the maximum traffic level for the mobile Lane closure shall be reduced by 10%.

29. Station keeping by hard shoulder sign display vehicles relative to the working vehicles may be a problem. One method found to be effective is for the driver of the leading vehicle to broadcast the marker post number at the current location and the approximate speed of the convoy. If there are no marker posts then this will have to be considered in planning the mobile lane closure. The problem of station keeping increases with speed.

30. Where the Site Operations are programmed to occupy the carriageway for several hours and involve stationary or very slow moving vehicles a detailed comparison between the risks involved in utilising one or a series of static closures and those utilising mobile lane closure's shall be carried out.

31. The person planning the mobile lane closure shall also consider if there are any special or unique features which may not have been covered by this checklist.

APPENDIX 1/17: TRAFFIC SAFETY AND MANAGEMENT (CONTINUED)

Annex 1/17A - Mobile Lane Closure Risk Assessment Checklist Continued

Checklist: For Use At Time Of Mobile Lane Closure

No.	Question	Yes	No	Comments
1	Are all vehicle drivers trained and fully competent in the mobile Lane closure technique?			
2	Will everyone working on the carriageway have high visibility clothing?			
3	Are all advance sign and block vehicles painted yellow and in clean condition?			
5	Are operational vehicles fitted with amber warning beacons?			
6	Are lorry mounted crash cushions fitted to block vehicles?			
7	Is the weight of the block vehicles (including ballast) in the range 7.3 - 17 tonnes?			
8	Are head restraints fitted to the drivers and other occupants seats in advance sign and block vehicles?			
9	If additional equipment/switches have been provided in the block vehicles cab has a safety survey been carried out?			
10	Has a reliable 2 way communications system been provided?			
11	Does the communications system include contractors vehicles?			
12	Is it possible to use a dedicated radio channel?			
13	Has a contingency plan for failure of communications been made?			
14	Are all signs to appropriate standards?			

APPENDIX 1/17: TRAFFIC SAFETY AND MANAGEMENT (CONTINUED)

Annex 1/17A - Mobile Lane Closure Risk Assessment Checklist Continued

Checklist: For Use At Time Of Mobile Lane Closure

No.	Question	Yes	No	Comments
15	Will all signs on the carriageway be vehicle or trailer mounted and attended at all times?			
16	Can you confirm that signs will not be manually changed when the vehicle is standing in a live traffic Lane?			
17	Do the vehicles rear lights, reflectors and number plates remain clearly visible when the backing board for the sign is fitted?			
18	Can you confirm that signs can/will be covered or removed from view when not in use or normal driving of sign vehicle has been resumed?			
19	Are working and block vehicle drivers aware of the minimum/maximum separation distances?			
20	Have additional block vehicles been provided where the Site Operations require them?			Refer to appropriate layout(s)
21	Are variable message signs available and able to be used?			
22	For a 3 Lane carriageway involving a 2 Lane closure can Lanes 2 and 3 be closed to avoid slow moving traffic changing Lanes?			
23	Where the working vehicle/personnel are operating on the hard shoulder has a block vehicle with a lorry mounted crash cushions been provided and correctly positioned?			NB for this work if Site Operations vehicle is substantial e.g. gully cleaner / sweeper and is fitted with a lorry mounted crash cushions block vehicle may be dispensed with.
24	If no hard shoulder can advance sign vehicles/trailers be located on verge or close to n/s of carriageway without blocking the n/s Lane?			

APPENDIX 1/17: TRAFFIC SAFETY AND MANAGEMENT (CONTINUED)

Annex 1/17A - Mobile Lane Closure Risk Assessment Checklist Continued

Checklist: For Use At Time Of Mobile Lane Closure

No.	Question	Yes	No	Comments
25	If no hard shoulder are suitable places on the verge available to site warning vehicles within 1km before the Site Operations?			
26	For Site Operations on foot can worker remain within the area on the non-trafficked side between the front of the leading vehicle and 10 metres in front of the second vehicle?			Refer to appropriate layout(s)
27	For Site Operations on foot on a central reserve to prevent traffic passing between the block vehicle and the central reserve safety fence is an additional block vehicle required?			Refer to appropriate layout(s)
28	Will suitable high visibility clothing be provided and worn?			
29	Can all advance sign display and covering for mobile lane closure be carried out on the hard shoulder (if available) or on a lightly trafficked road?			NB. The establishment or covering of vehicle mounted signs should never be undertaken on an on-slip or off-slip road.
30	Has a team leader(s) been appointed and made known to all drivers including contractors?			
31	If circumstances require has an additional supervisor been provided and responsibilities clearly established?			
32	Has the need for a relief driver fully trained and capable of replacing any other driver been considered and provided if required?			
33	Can you confirm that all personnel have received adequate training?			
34	If heavy goods vehicle levels are 30% have vehicle flow levels been decreased by 10%			See traffic count

APPENDIX 1/17: TRAFFIC SAFETY AND MANAGEMENT (CONTINUED)

Annex 1/17A - Mobile Lane Closure Risk Assessment Checklist Continued

Checklist: For Use At Time Of Mobile Lane Closure

No.	Question	Yes	No	Comments
35	For Site Operations at night where there is an occasional short discontinuity of the hard shoulder has the maximum traffic flow been reduced by 10%?			

APPENDIX 1/17: TRAFFIC SAFETY AND MANAGEMENT (CONTINUED)

Annex 1/17b – Temporary Traffic Regulation Orders.

Sample Pro-Forma

Temporary Traffic Regulation Order Request [TTRO1]

A Pro-Forma in the following format shall be completed by the Operating Company and sent by e-mail to the relevant Area Manager and Network Administrator in TR-NMD with a draft Order, Press Notice and Method Statement (hard copies shall follow by post together with completed Operating Company checklist).

(i) Name and Route Number of Trunk Road

_____

_____

(ii) Type of Order
- Temporary Prohibition of Traffic (Full Temporary Order)
- Temporary Restriction of Traffic (Full Temporary Order)
- Blue Notice - Danger (Maximum 21 days)
- Blue Notice - Works (Maximum 5 days)
- Other (Specify type of Traffic Order)

_____

_____

(iii). State the reason(s) for requesting the Traffic Order

_____

_____

_____

(iv) Give a full description of length(s) of trunk road over which traffic is to be prohibited

_____

_____

_____

_____

APPENDIX 1/17: TRAFFIC SAFETY AND MANAGEMENT (CONTINUED)

Annex 1/17b – Temporary Traffic Regulation Orders (continued).

(v) Give full descriptions of prohibited turns (if applicable)

_____

_____

_____

(vi) If request is for a Prohibition of Traffic or Specified Turns (or both) state the alternative route(s)

_____

_____

_____

_____

_____

_____

_____

(vii) If the Traffic Order is to Prohibit or Restrict traffic (or a particular manoeuvre) please state types of vehicles, which may be, excepted from the terms of the Order, eg Police, Fire, Ambulance, Works etc

_____

_____

_____

(viii) If request is for a Full Temporary Order please give names of suitable newspapers (indicate if daily or weekly) in which Press Notice can be published

_____

_____

(ix) Give start and finish dates for the Traffic Order or Notice _____ to

(x) Any other information or instructions?

_____

_____

(xi) Please sketch below the alternative route(s) in relation to the affected section of road(s) or attach a plan

APPENDIX 1/17: TRAFFIC SAFETY AND MANAGEMENT (CONTINUED)

Annex 1/17b – Temporary Traffic Regulation Orders (continued).

(xii) Please state the name, address and telephone number of the Operating Company official who can be contacted if any additional information is required

_____

_____

_____

_____

_____

[A copy of the made Traffic Order will be sent to this official. He/she shall also arrange for the display of Blue Notices locally and advise the Emergency Services of road closures etc authorised by a Blue Notice.]

(xiii) Form completed by:

NAME IN BLOCK CAPITALS_____

Designation _____ Telephone No _____

Signature _____ Date _____

APPENDIX 1/17: TRAFFIC SAFETY AND MANAGEMENT (CONTINUED)

Annex 1/17b – Temporary Traffic Regulation Orders (continued)

Operating Company Roads and Traffic Order Checklist

	Checked by Area Engineer (initial & date)	Checked by Traffic Officer (initial & date)
Order and Press Notice • Ensure that correct template has been used. • The title of the Traffic Order is always repeated in Article 1 of the Traffic Order. Ensure it is exactly the same as the title at the top of the Traffic Order. *The title of the Traffic Order shall only refer to the number of the Trunk Road, e.g. A96 Trunk Road and shall not include the name of the Trunk Road, e.g. A96 Aberdeen – Inverness Trunk Road.* • The same title shall be identical in the heading of the Press Notice. • Ensure that the dates quoted in the Traffic Order and Press Notice are identical. • Ensure that the descriptions of the affected lengths of road are identical in both the Press Notice and the Schedule to the Traffic Order. *The name(s) of Trunk Road(s) shall be quoted in the descriptions, e.g. A96 Aberdeen – Inverness Trunk Road.* • Check that the information in the TTRO1/PTRO1/Method Statement corresponds with the details in the Order and Press Notice. • Check the alternative routes to ensure they are accurate and easily understood. *The numbers and names of roads shall be quoted if known.* • If certain vehicles are to be excepted from the terms of the Traffic Order make sure that this is mentioned in the Press Notice. • If you require a longer period than is necessary for the Traffic Order to be in force, to take account of weather etc, make sure that the Press Notice includes a paragraph with details of the anticipated timescale for the work, *e.g. It is anticipated that the work will be carried out over two weekends during the above period.*		

APPENDIX 1/17: TRAFFIC SAFETY AND MANAGEMENT (CONTINUED)

Annex 1/17b – Temporary Traffic Regulation Orders (continued)

Operating Company Roads and Traffic Order Checklist

	Checked by Area Engineer (initial & date)	Checked by Traffic Officer (initial & date)
Plan • For temporary Traffic Orders check that the plan of the alternative routes is accurate and corresponds with the descriptions contained in the press notice. • For all permanent Traffic Orders check that the plan is accurate and corresponds with the descriptions in the Schedule to the Traffic Order. • Make sure that names of roads/reference points referred to in the Schedule are clearly marked on the plan. • In the case of Roads (Scotland) Act Orders make sure that the title of the plan, the plan number and the numbers allocated to the affected lengths of road are consistent with the Schedule to the Traffic Order.		

APPENDIX 1/17: TRAFFIC SAFETY AND MANAGEMENT (CONTINUED)

Annex 1/17b – Temporary Traffic Regulation Orders (continued)

Template for Press Notice

THE «ONE» UNIT TRUNK ROADS AREA (TEMPORARY PROHIBITIONS OF TRAFFIC, TEMPORARY PROHIBITIONS OF OVERTAKING AND TEMPORARY SPEED RESTRICTIONS) («ONE») ORDER 2004

The Scottish Ministers give notice that they propose to make the above Order temporarily prohibiting traffic, temporarily prohibiting overtaking and temporarily restricting the speed of vehicles on the lengths of road identified in the Schedule to this Notice during the periods corresponding to those lengths of road specified in the Schedule to this Notice.

The Order, which is required because works are being or are proposed to be executed on or near the lengths of road for certain purposes in relation to the lengths of road stated in the Schedule to this Notice, will be in operation from «ONE» until midnight on «ONE», but will only have effect in relation to such part or parts of the lengths of road as are indicated by the appropriate traffic signs and during the periods corresponding to those lengths of road specified in the Schedule to this Notice. The provisions relating to temporary prohibitions of traffic do not apply to vehicles being used in an emergency for fire brigade, ambulance, police or coastguard purposes or vehicles used for carrying out the works. There are no exemptions for those vehicles in respect of temporary prohibitions of overtaking and temporary speed restrictions unless otherwise provided by law.

Where the closure of a carriageway on a dual carriageway road is involved the alternative route for traffic will be the adjacent carriageway by means of contraflow working. Other alternative route or routes for traffic in relation to the lengths of road affected by the Order during a prohibition will be signposted. Detailed descriptions can also be obtained «ONE»

«ONE»

Network Manager, Network Management Division

A member of the staff of the Scottish Ministers

Scottish Executive, Enterprise, Transport and Lifelong Learning Department

Victoria Quay

Edinburgh

EH6 6QQ

APPENDIX 1/17: TRAFFIC SAFETY AND MANAGEMENT (CONTINUED)

Annex 1/17b – Temporary Traffic Regulation Orders (continued)

SCHEDULE

(a) Description of road: The following length of the «ONE» Trunk Road:

1. «ONE»

(b) Duration:

(c) Purpose:

(d) Alternative route or routes for traffic will be signposted.

APPENDIX 1/17: TRAFFIC SAFETY AND MANAGEMENT (CONTINUED)

Annex 1/17b – Temporary Traffic Regulation Orders (continued)

Template For Traffic Order

11-Scottish Statutory Instruments

«ONE» No.

ROAD TRAFFIC

The «ONE»Unit Trunk Roads Area (Temporary Prohibitions of Traffic, Temporary Prohibitions of Overtaking and Temporary Speed Restrictions) (No. «ONE») Order 2004

Made - - - - «ONE»

Coming into force - - «ONE»

The Scottish Ministers, in exercise of the powers conferred by section 14(1) and (4) as read with section 2(1) and (2) of the Road Traffic Regulation Act 1984(1), and of all other powers enabling them in that behalf, being satisfied that the traffic on the lengths of road specified in the Schedule to this Order should be restricted or prohibited as hereinafter provided because works are being or are proposed to be executed on or near the said lengths of road and having had regard to the existence of alternative routes suitable for the traffic which will be affected by this Order, hereby make the following Order:

Citation, commencement and cessation

1. This Order may be cited as the «ONE» Unit Trunk Roads Area (Temporary Prohibitions of Traffic, Temporary Prohibitions of Overtaking and Temporary Speed Restrictions) («ONE») Order «ONE», shall come into force on «ONE» and shall cease to have effect at midnight on «ONE».

2. In this Order a reference to a numbered column is to the column in the Schedule to this Order bearing that number.

Temporary prohibition on use of a road

3. Subject to Article 6, no person shall use, or permit the use of, any vehicle on each length of road specified in column 1 during the period corresponding to that length of road specified in column 2 when a prohibition is identified as applying to a part or parts of that length of road by means of traffic signs prescribed by the Traffic Signs Regulations and General Directions 2002(2).

---

(1) 1984 c.27; section 14 was substituted by the Road Traffic (Temporary Restrictions) Act 1991 (c.26), section 1(1) and Schedule 1. Section 2 was amended by the New Roads and Street Works Act 1991 (c.22), Schedule 8, paragraph 18. The Scottish Ministers are the traffic authority by virtue of section 121A of the Road Traffic Regulation Act 1984 (inserted by the New Roads and Street Works Act 1991 (c.22), Schedule 8, paragraph 70 and amended by the Scotland Act 1998 (Consequential Modifications) Order 2001 (S.I. 2001/1400)) as read with section 151(1) of the Roads (Scotland) Act 1984 (c.54). The functions of the Secretary of State were transferred to the Scottish Ministers by section 53 of the Scotland Act 1998 (c.46).

(2) S.I. 2002/3113.

APPENDIX 1/17: TRAFFIC SAFETY AND MANAGEMENT (CONTINUED)

Annex 1/17b – Temporary Traffic Regulation Orders (continued)

4. (i) Subject to paragraph (2) of this Article, no person shall use, or permit the use of, any vehicle in such a way that it overtakes any other moving vehicle on each length of road specified in column 1 during the period corresponding to that length of road specified in column 2 when a prohibition is identified as applying to a part or parts of that length of road by means of a traffic sign prescribed in Diagram 632 of the Traffic Signs Regulations and General Directions 2002.

(1) Nothing in paragraph (1) of this Article shall prohibit any person from using, or permitting the use of, any vehicle in such a way that it overtakes a cycle, motor cycle, tricycle or any other vehicle not being a motor vehicle in accordance with section 140 of the Road Traffic Regulation Act 1984(3).

Temporary speed restriction

5. (1) Subject to paragraph (2) of this Article, no person shall drive any vehicle on the lengths of road specified in column 1 of Parts 2 and 3 of the Schedule to this Order during the period corresponding to that length of road specified in column 2 at a speed exceeding that specified in column 3 when a restriction is identified as applying to a part or parts of that length of road by means of a traffic sign prescribed in Diagram 670 of the Traffic Signs Regulations and General Directions 2002.

(2) When convoy working is in operation and indicated by one or more of the signs shown in Diagrams 7025, 7026, 7027, 7028 and 7029 of the Traffic Signs Regulations and General Directions 2002, no person shall drive any vehicle on the length of road specified in column 1 of Part 3 of the Schedule at a speed exceeding 10 mph when a restriction is identified as applying to a part or parts of that length of road by means of a traffic sign prescribed in Diagram 670 of the Traffic Signs Regulations and General Directions 2002.

Exemption for emergency and works vehicles

Nothing in Article 3 of this Order shall apply to a vehicle being used in an emergency for fire brigade, ambulance, police or coastguard purposes or a vehicle while being used for carrying out the works. «ONE»

Network Manager, Network Management Division

A member of the Staff of the Scottish Ministers

Scottish Executive Enterprise, Transport and Lifelong Learning Department,

Victoria Quay

Edinburgh

«ONE»

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(3) 1984 c.27; section 140 was amended by the Road Traffic (Consequential Provisions) Act 1988 (c.54), Schedule 3, paragraph 25(9).

APPENDIX 1/17: TRAFFIC SAFETY AND MANAGEMENT (CONTINUED)

SCHEDULE

PART 1 Articles 3 and 4

1	2
Description of particular lengths of road	Duration of restriction or prohibition

PART 2 Articles 3, 4 and 5 (1)

1	2	3
Description of particular lengths of road	Duration of restriction or prohibition	Speed restriction

PART 3 Articles 3, 4, 5 (1) and (2)

1	2	3
Description of particular lengths of road	Duration of restriction or prohibition	Speed restriction

APPENDIX 1/17: TRAFFIC SAFETY AND MANAGEMENT (CONTINUED)

Annex 1/17C - Draft Guidance To Organisers Of Events And Galas

Galas And Events Affecting Public Roads

Guidance TO ORGANISERS

CONTENTS

APPENDIX 1/17: TRAFFIC SAFETY AND MANAGEMENT (CONTINUED)

Annex 1/17C - Draft Guidance To Organisers Of Events And Galas

1.0 INTRODUCTION

Many towns and villages in Scotland traditionally host a variety of events that are part of the historic culture of the area. Over the years, common ridings, riding of the marches, town galas, festive celebrations, military processions and other similar events have been held often involving the whole community and affecting a great part of the towns' fabric, including the main streets and major routes in and out of the towns. The Scottish Executive recognises the importance and value of these historic events and this guidance document offers advice to ensure they are properly managed with regard to current traffic levels and public safety concerns.

Where the staging of an event interferes with traffic on public roads this can be controlled in one of two ways. The practice that has often been followed for a number of years involves the police at a local level assisting to close off roads, control traffic, and generally ensure the safety of the public for the duration of the event. This has been done on an informal basis without the backing of official orders made under the legislative powers bestowed on roads authorities. With the pressures of the increasing traffic demand over the years, and increasing risks to public safety, it may not be appropriate to follow these informal practices. In many instances these practices bring into question the legality of the police activity, as exceeding the powers available to them.

Where the police do not consider it appropriate to halt traffic under these informal practices, a temporary traffic regulation order (TTRO) can be promoted on behalf of the event organiser by a roads authority to effect road closures and control the movement of traffic. This can be done by virtue of legislation contained in the *'Road Traffic Regulation (Special Events) Act 1994'* which was specifically introduced for this purpose.

The decision on the most appropriate method of controlling traffic or effecting road closures will be based on a number of factors including the physical extent and duration of the interruption to traffic flow and the volume and nature of traffic affected. Event organisers should discuss their requirements with the police and roads authorities at an early stage to ascertain whether a formal TTRO will be required

This guidance document has been prepared by the Scottish Executive's Network Management Division, in partnership with local authorities, police forces, and event organisers. The document provides guidance to Organisers on how to apply for temporary road closures, what measures they will be expected to put in place, and what information they will be expected to provide.

2.0 LEGISLATION

Traffic may be held up for short periods for events such as a march, or a moving procession. These can be controlled under police powers, providing there will be limited traffic disruption. The *Civic Government (Scotland) Act 1982 Part V – Public Procession* sets out statutory provisions for the application and provision of notice from event organisers to their local authority for permission to hold such events.

APPENDIX 1/17: TRAFFIC SAFETY AND MANAGEMENT (CONTINUED)

Annex 1/17C - Draft Guidance To Organisers Of Events And Galas

Temporary road closures for any other event are empowered by a Temporary Traffic Regulation Order made under Section 16A of the *Road Traffic Regulation Act 1984*. Sections 16A, 16B and 16C, inserted by virtue of the *Road Traffic Regulation (Special Events) Act 1994* "make provision, in connection with sporting or social events held on roads or entertainments so held, for the restriction or regulation of traffic on roads; and for connected purposes."

2.1 Applying for a TTRO - Where to Seek Advice and Make Application

There are a number of parties involved in the consideration of an application for a temporary closure of a road for the purpose of hosting an event:

The Roads Authority – The Roads Authority is the authority responsible under the Roads (Scotland) Act 1984 for the management and maintenance of the road. If the road in question is a local road the local roads authority is the Council in whose area the road lies. If the road in question is a trunk road the trunk roads authority is the Scottish Ministers. It is roads authorities that are empowered by the Road Traffic Regulation (Special Events) Act 1994 to raise and promote orders for the temporary closure of roads.

The Scottish Executive – The Scottish Executive execute the Scottish Minister's responsibilities as trunk roads authority.

The Operating Company – The management and maintenance of the trunk road network is contracted by the Scottish Executive. The Operating Companies appointed will advise the Scottish Executive and liaise with other bodies on the impact of a requested closure on a trunk road, considerations for alternative routes and traffic management, and the co-ordination of other activities on the trunk road network.

The Police – The police will advise on whether they consider the event can be managed under police powers, or whether a formal closure is necessary. The police will consider traffic safety and traffic management implications of a requested closure but also have further interest in the general public safety and maintenance of public order. The police are able to offer advice on undertaking risk assessments to identify and manage the hazards.

The Local Authority (or Council) – The roads division of the local authority will consider implications of a requested closure on their local road network. The local authority may have further interest in such events through its community services functions. A number of local authorities have established multi agency forums to manage and organise major events within their area and this type of approach can develop clear understanding and expertise of the issues involved. Local authorities can offer advice on the Health and Safety requirements an organiser is required to comply with, and can offer advice on undertaking risk assessments.

APPENDIX 1/17: TRAFFIC SAFETY AND MANAGEMENT (CONTINUED)

Annex 1/17C - Draft Guidance To Organisers Of Events And Galas

Organisers of an event may seek initial advice from the police as to whether the event can be managed under police powers or whether a formal closure will be required. If a formal closure is necessary the Organisers will be required to make application, in the majority of cases, to the local authority with details of the event and supporting information. cases an event may affect only a trunk road and no local roads. In such circumstances the Scottish Executive will be responsible for the promotion of the Temporary Traffic Regulation Order.

In the majority of cases the Temporary Traffic Regulation Order made under Section 16A of the Act will be promoted by the local roads authority. The local roads authority can also make such Orders where a trunk road is affected, with the permission of Scottish Executive. In a minority of

2.2 Notice Required

When applying for permission to hold a march or procession a minimum 7 day statutory notice period is required. However, to fully consider the implications of a request for a temporary closure of roads, a greater notice period is necessary. Organisers should allow a minimum of 12 weeks Notice from submission of a written application with full supporting information, to allow full consultation to take place with other interested parties, advertising and notification, before an Order is to come into effect.

2.3 Consultation and Notification

There are no Regulations prescribing the advertising and consultation process to the making of orders under the Roads Traffic Regulation (Special Events) Act 1994 and local roads authorities, when promoting a temporary closure of a road, will follow their own procedures. Once an application with full supporting information is received the roads authority will consult with interested parties which may include:

- Police and other emergency services
- Other local roads authorities
- The Scottish Executive as trunk roads authority
- The Operating Company responsible for managing and maintaining the trunk road network
- Operators of Public Service Vehicles, and the Traffic Commissioners
- Utilities Undertakers

Public Notification of the proposed closure will normally be given by publication of a notice in at least one local paper. The Notice will carry the following details:

- The Roads Authority making the Order
- The title of the Order

APPENDIX 1/17 : TRAFFIC SAFETY AND MANAGEMENT (CONTINUED)

Annex 1/17C - Draft Guidance To Organisers Of Events And Galas

- The name of the event and name and address of the Organiser
- A statement of the effect of the Order including names and description of roads affected
- A statement to the effect that pedestrian access to premises will not be affected
- The date and times the Order will come into effect, and the maximum duration.
- Where applicable a description of the alternative routes available to traffic.

2.4 Restrictions

The Road Traffic Regulation (Special Events) Act 1994 contains certain requirements and restrictions:

s.16A (3) requires the roads authority to be satisfied that it is not reasonably practicable for the event to be held otherwise than on a road.

s.16A (6) states that a local roads authority can include a trunk road within an order affecting its local roads, with the consent of the Scottish Executive.

s.16B (1) and further sub-Clauses relate to the planned or eventual duration of the closure, and restrict it to 3 days unless the order has been made by the Scottish Executive or has the Scottish Executive's consent to a longer duration.

s.16B (6) restricts orders to 1 per calendar year for any section of road unless the order has been made by the Scottish Executive or is made with the consent of the Scottish Executive.

The Scottish Executive recognises the local roads authority is best placed to consider the value of a proposed event to the local community, and therefore best placed to raise the necessary order. The value of historic events is recognised by both local authorities and the Scottish Executive and while there is a need to minimise disruption to road networks and minimise danger to the public and road users, the traditional format of valued historic events can be given due cognisance.

The Scottish Executive's consent under these sub-Clauses will not be unreasonably withheld. The consent relates to the making of an order, not the order itself, and the process thereof need not be protracted.

3.0 RESPONSIBILITY OF ORGANISERS

While roads authorities have a general duty of care for the safety of road users, an Organiser of an event has a duty of care under The Occupiers Liability (Scotland) Act 1960 to ensure the safety of all those engaged in or spectating at the event. Organisers should consider their liability to third parties in respect of injury to participants, spectators, and anyone put at risk by the holding of the event, and are advised to arrange public liability insurance. Organisers will also be required to arrange public liability insurance in order to keep the trunk and local roads authorities and their operating companies fully indemnified against claims.

APPENDIX 1/17 : TRAFFIC SAFETY AND MANAGEMENT (CONTINUED)

Annex 1/17C - Draft Guidance To Organisers Of Events And Galas

It is a public duty of all roads authorities to maintain their road networks open and in a safe condition. Trunk Roads, in particular, are primarily provided for the safe and expeditious movement of long distance traffic. The Organisers will therefore be required to keep disruption to traffic to a minimum. Organisers are expected to maintain the priority towards trunk roads, and where feasible, utilise off road sites or the local road network as far as possible for hosting the event in order to minimise the impact on the trunk road network.

Any work to be carried out within the boundary of a road requires to be approved by the local roads authority, or in the case of a trunk road, the operating companies appointed by the Scottish Executive.

3.1 Other Considerations

The Organisers will be responsible for gaining prior approval from the Roads Authorities and their agents for the design of signing, barriers, coning etc necessary to implement the closures, and will also be responsible for ensuring their placement and removal is carried out to their approval. The Organisers will be required to liaise with the above bodies at each stage of their design, placement, and removal.

The Organisers will be required to consult directly with the Police with regard to the overall safety and organisation of the event and any possible need for Police attendance to maintain public order. Guidance should be sought from the relevant Police Force.

3.2 Health & Safety Requirements

Organisers of events, whether they act as employers or not, have certain legal health and safety obligations under the Health and Safety at Work etc Act 1974 and specifically they have a duty under the Management of Health and Safety at Work Regulations 1999 to carry out risk assessments. These assessments should determine any additional control measures necessary to avoid risk or reduce risk to acceptable levels. There is a separate legal requirement to carry compulsory employers' liability insurance.

The Health and Safety Executive has published guidance on public events in a document entitled 'The Event Safety Guide' A Guide to Health, Safety and Welfare at Music and Similar Events HSG195 1999 published by HSE Books, PO Box 1999, Sudbury, Suffolk CO10 2WA ISBN 0-7176-2453-6.

Additionally Health and Safety advice, and advice on the formulation of risk assessments is often available from the local authorities and the police.

4.0 SUPPORTING INFORMATION REQUIRED FOR TTRO's

The Organisers of an event, when applying for a temporary traffic regulation order and when seeking approval for works affecting the Trunk or Local Roads Networks, will be required to provide relevant supporting information. As a guide the Organisers should give due consideration to the following. The list is not exhaustive and further information may be required by the Police to ensure public safety is adequately planned for.

APPENDIX 1/17 : TRAFFIC SAFETY AND MANAGEMENT (CONTINUED)

Annex 1/17C - Draft Guidance To Organisers Of Events And Galas

(i) Organisers name address and other contact details

(ii) Event Details, programme, expected number of participants / spectators, etc.

(iii) Date(s) to be held

(iv) Roads affected, time and duration of requested closure.

(v) Organisation effecting closures, providing temporary signing etc.

(vi) Description of Alternative routes.

(vii) Evidence of Insurance and Indemnification.

(viii) Method Statements covering:

- Placing and removal of Traffic Management arrangements to implement the closure and sign alternative routes where applicable.
- Removal of Traffic Management arrangements in the event of an emergency.
- The erection of any banners, flags, lights etc on the trunk and local road networks.
- The placement of any crowd control devices on the trunk and local road networks.
- The erection of any other temporary structures/stands/marquees etc on the trunk and local road networks.
- Deployment and disbanding of participants.

(ix) Contingency plans for the passage of emergency vehicles.

(Any Temporary Traffic Regulation Order made under Section 16A of the Road Traffic Regulation Act 1984 will carry exemptions with respect to emergency vehicles or anything done under the direction of a police constable.)

(x) Risk Assessments identifying hazards to people and those at risk; evaluating risks and identifying appropriate controls to reduce the risk to acceptable levels.

Further advice on the preparation of risk assessments is available in the Health and Safety Guidance referred to above, or from the appropriate Police Force, and basically shall follow 5 steps:

1. Identify the hazards
2. Decide who might be harmed
3. Evaluate risks and decide whether the existing precautions are adequate or whether more should be done
4. Record the findings
5. Review your assessment and revise it if necessary in the light of experience.

APPENDIX 1/17 : TRAFFIC SAFETY AND MANAGEMENT (CONTINUED)

Annex 1/17C - Draft Guidance To Organisers Of Events And Galas

(xi) Other relevant information, which may include:

- Access for disabled
- Provision of toilet facilities
- First aid stations
- Method of crowd control
- Mustering points
- Requirement for car parking
- Storage areas for plant/vehicles involved in the event
- Refuse collection and disposal
- Contact details of all responsible persons.

5.0 COSTS

This document does not seek to regulate when or at what level organisers may be recharged for costs associated with the promotion and implementation of a road closure. The document serves only as an advice note to organisers so that they may be aware that they may be expected to meet certain costs.

5.1 Making of Orders

There are administration and advertising costs associated with the making of an order under section 16A of the Road Traffic Regulation (Special Events) Act 1994. It is for each local authority to determine if and under what circumstances they will either recharge or waive these costs. Typical considerations may be where the event is either community led, is non profit making, or relies on charitable donations and sponsorship.

5.2 Implementation of Traffic Management

There are also costs associated with traffic management which may include the placing of advance information signs, placing of cones and barriers, signing of alternative routes, and direction signing for car parking and the management of the event. While the Organiser is primarily responsible for the provision of all necessary traffic management arrangements, they may, at the discretion of the local authority, arrange for them to carry out this work on their behalf. In such an instance it is for each local roads authority to determine if and under what circumstances they will either recharge or waive costs for carrying out this work.

Alternatively the Organiser may wish to appoint a suitable contractor to implement the traffic management arrangements.

APPENDIX 1/18 : TEMPORARY DIVERSIONS FOR TRAFFIC

1. Standard Diversion Routes

Standard Diversion Routes have been developed for use on the network. These routes are set out in a protocol document a controlled copy of which is held by all the local authorities and police authorities within or adjacent to the Unit. The Operating Company will assume responsibility for the operation, management and updating of Standard Diversion Routes established for use in any response to an Emergency situation in accordance with the protocol document.

The Operating Company shall take action to ensure that

(i) All Standard Diversion Routes documentation and protocols be kept under regular review and shall be modified to ensure the requirements of this Contract are met at all times. The Operating Company shall arrange and attend an annual meeting of all the relevant Local Authorities and Police Authorities to ensure to discuss any amendments required to the Standard Diversion Routes or their operation following which meeting any amendments to routes procedures or signing shall be effected within 1 month of the date of the meeting. The Operating Company shall only make amendments in consultation with the Local Authorities and Police Authorities affected by the Standard Diversion Routes and with the prior consent of the Director. The Operating Company shall provide copies of any amendments to Standard Diversion Routes to the holders of controlled copies.

2. Non – Standard Diversionary Routes

If non-standard diversionary routes are proposed by the Operating Company, the Operating Company shall fully liaise with all relevant Local Authorities and the Police. A full set of plans and schedules for each route shall be prepared and copies of these distributed to the appropriate authorities.

The Director shall arrange all Traffic Orders required on the Trunk Road Network.

APPENDIX 1/20 : RECOVERY VEHICLES FOR BREAKDOWN

Requirements for Recovery Vehicle Operation

1 Recovery Vehicles to be provided

1.1 Requirements for Provision

(i) The Operating Company shall provide heavy and light recovery vehicles as part of the traffic management arrangements when the subject of an Order issued by the Director.

Subject to the requirements of an Order the Operating Company shall

(a) Provide recovery vehicle(s) as described in the Order to be available on Site for the period required by an Order.

(b) Make all necessary arrangements for recovery vehicle(s) as described in an Order to be on standby to be available on Site within 30 minutes of a call-out.

(ii) The Operating Company shall have immediately available on Site when required sufficient experienced recovery operatives capable of operating all the recovery vehicles provided.

The personnel shall wear high visibility jackets complying with BS 6629.

(iii) The Operating Company shall provide suitable mess arrangements for the recovery operatives.

These arrangements shall be in the form of temporary accommodation and shall be located at the recovery vehicle station.

(iv) When moving broken down or damaged vehicles the Operating Company shall take all reasonable measures to prevent further damage to the vehicles.

(v) Notwithstanding the requirements of sub-Clause 1.1(iv) of this appendix the Operating Company shall indemnify and keep indemnified the Scottish Ministers against all losses and claims arising from moving broken down or damaged vehicles.

(vi) The Operating Company shall assist when required by the Director and/or the Police in the removal of loads or parts thereof accidentally deposited within the Site

1.2 Heavy recovery vehicles

(i) A heavy recovery vehicle shall be provided having a crew of at least two operatives

(ii) A heavy recovery vehicle shall

(a) be a recovery vehicle with not less than three axles, capable of towing by means of an underlift a loaded 44 tonnes vehicle up a slope of 4 º and shall comply with all appropriate current legislation including Motor Vehicle (Construction and Use) Regulations, Road Transport Act and Road Traffic Act and shall be fitted with either a 10 tonne single power winch or two power winches of not less

APPENDIX 1/20 : RECOVERY VEHICLES FOR BREAKDOWN (CONTINUED)

(b) than 8 tonnes each all of which equipment shall be power-operated with safe working load indicated and with operating levers/buttons clearly marked for operational use

(c) be equipped with chains wire ropes and shackles suitable for the recovery of a fully-laden vehicle up to 44 tonnes Gross Vehicle Weight and all such chains, wire ropes and shackles shall have test certificates and/pr stamped showing the safe working load be free from snags excess stretching and wear

(d) have seating for not less than two adult passengers (in addition to the recovery operatives)

(e) be conspicuous, for example by marking with suitable reflective tape complying with BS EN 1436 and BS EN 1871 or BS EN 1790 as appropriate (not less than 125mm wide) to sides and rear of the vehicle

(f) be equipped with the following as a minimum requirement

(a) 1 number amber lightbar to comply with The Road Vehicles Lighting Regulations 1989

(b) 2 number fully adjustable lights to illuminate both the sides and rear of the vehicle

(c) 2 number fire extinguishers (1 Number 6 kg (nett) dry powder; 1 Number 9 litre (nett) aqueous film forming foam)

(d) 1 number 1 – 10 person first aid kit to include disposable surgical gloves

(e) 2 number 10 metres12 tonne nylon straps

(f) 2 number 30metresx 13mm polypropylene rope

(g) 1 number 44’ tonne straight tow pole

(h) 1 number 44 tonne cranked row pole

(j) 10 number highway cones 750 mm height

(k) 1 number proof load tested crane (overlift proof test-static 7.5 tonnes, underlift proof test-static 7.0 tonnes)

(l) 1 number suitable socket set including a range of commonly used AF metric and BA sizes)

(m) 1 number suitable took kit

(n) 2 number 12 tonne bottle jacks

(o) 1 number suitable wheelbrace and 1number torque wrench suitable to fit Light Goods Vehicles

(p) 1 pair of jump leads (24 volt)

(q) 1 number explosion-proofed and flame-proofed hand lamp

(r) 1 number crowbar

APPENDIX 1/20 : RECOVERY VEHICLES FOR BREAKDOWN (CONTINUED)

(s) 1 number copper hammer

(t) the necessary fittings for connection from the air braking system of a broken-down or accident-damaged vehicle to the air braking system of the heavy recovery vehicle

(u) 1 number broom and shovel

(v) 2 number wheel chocks of Light Goods Vehicle size

(w) 4 number suitable lengths of wood block skidding

(x) 1 number rear lighting board incorporating "On Tow" legend in lettering of not less than 70mm on conspicuously coloured background to conform with the size, colour and type illustrated by Diagram 5, Section B, Schedule 19 of the Road Vehicles Lighting Regulations, 1989 and fitted with lights, reflectors and indicators. When required the recovery vehicle index number or trade licence plate shall be fitted

(y) 1 number sledge hammer – 7lbs minimum

(z) 1 number L'Accord Euopean Relatif au Transport International des Marchandises Dangereuses par Route (Hazardous Chemicals) chart

(aa) 50 kg of dry fine sand stored in a waterproof container

(bb) 4 number 'D' shackles safe working load 12 tonnes each

(cc) 4 number 'D' shackles safe working load 3 tonnes each

(dd) 2 number suitable length chains safe working load 12 tonnes each

(ee) 2 number suitable length chains safe working load 15 tonnes each

(ff) 2 number suitable length chains safe working load 3 tonnes each

NOTE: All lifting chains and equipment must be fully certified by an independent competent person to comply with all current legislation. Shackles shall be stamped with the appropriate safe working load. Equivalent wire ropes may be substituted for chains listed in this Appendix.

(vii) carry equipment designed and manufactured for the purpose of locking the steering of the broken-down or accident-damaged vehicle in order to tow it safely in a reverse direction

(viii) carry equipment to enable the recovery crew to remove the drive line or shafts of a broken-down or accident-damaged vehicle

(ix) carry blocks with a safe working load of 8 tonnes, 1 Number per winch and 2 Number on boom (crane) wires.

APPENDIX 1/20 : RECOVERY VEHICLES FOR BREAKDOWN (CONTINUED)

1.3 Light Recovery Vehicle

(i) A light recovery vehicle shall:

(a) by means of an underlift be capable of carrying or towing a vehicle weighing 2800kg up a slope of 4 º and shall comply with all appropriate current legislation including Motor Vehicle (Construction and Use) Regulations, Road Transport Act and Road Traffic Act

(b) be capable of recovering motor cycles

(c) be capable of recovering trailers (for example. caravans, boat trailers, horse boxes and the like)

(d) have seating capacity for four adult passengers (in addition to the recovery operatives)

(e) be conspicuous, for example by marking with suitable reflective tape complying with BS EN 1436 and BS EN 1871 or BS EN 1790 as appropriate (not less than 125mm wide) to sides and rear of the vehicle

(ii) be equipped with the following as a minimum requirement

(a) 1 number amber lightbar to comply with The Road Vehicles Lighting Regulations 1989

(b) 2 number fully adjustable lights to illuminate both the sides and rear of the vehicle

(c) 2 number fire extinguishers (1 Number 6 kg (nett) dry powder; 1 Number 9 litre (nett) aqueous film forming foam)

(d) 1 number 1 – 10 person first aid kit which should include disposable surgical gloves

(e) 1 number 30 metres x 13mm polypropylene rope

(f) 1 number 6 tonne straight tow pole

(g) 10 number highway cones 750mm height

(h) 1 number proof load tested winch and/or spectacle lift

(j) 1 number suitable socket set including a range of AF metric and BA sizes

(k) 1 number suitable took kit

(l) 1 number 3 tonne bottle or trolley jack

(m) 1 number suitable wheelbrace to fit cars and light goods vehicles in common use

(n) 1 pair of jump leads (24 volt)

(o) 1 number explosion-proofed and flame-proofed hand lamp

(p) 1 number crowbar

(q) 1 number quick change towing hitch suitable for 50mm, 2 inch and jaw type fittings

APPENDIX 1/20 : RECOVERY VEHICLES FOR BREAKDOWN (CONTINUED)

(r) 1 number broom and shovel

(s) 1 number wheel chock of light commercial size

(t) 2 number suitable lengths of wood block skidding

(u) 1 number rear lighting board incorporating 'On Tow' legend in lettering of not less than 70mm on conspicuously coloured background to conform with the size, colour and type illustrated by Diagram 5, Section B, Schedule 19 of the Road Vehicles Lighting Regulations 1989 and fitted with lights, reflectors and indicators.

When required the recovery vehicle index number or trade licence plate shall be fitted

(v) a total lift facility – 2800kg slideback deck (7.6metresminimum) or heavy duty dollies

(w) 50kg or dry fine sand stored in a waterproof container

(x) 4 number 'D' shackles SWL 3 tonnes each

(y) 2 number suitable length wire ropes SWL 3 tonnes each

(z) 2 number ratchet jacks SWL 6 tonnes each, or hydraulic equivalent and

(aa) 1 number suitable towing trolley

NOTE: All lifting ropes and equipment shall be fully certified by an independent competent person to comply with all current legislation. An equivalent chain may be substituted for the wire rope listed in (vi) (y).

(vii) carry equipment designed and manufactured for the purpose of locking the steering of the broken-down or accident-damaged vehicle in order to tow in a reverse direction.

2 Inspection Requirements

2.1 The vehicle

For each recovery vehicle the Operating Company shall provide evidence of roadworthiness which shall be by successful completion of an inspection by the Vehicle and Operator Services Agency or the Freight Transport Association conducted not less than 14 days nor more than 28 days before the vehicles are required. If the duration of the works exceeds 6 months, the Operating Company shall arrange for all recovery vehicles to be inspected by Vehicle and Operator Services Agency or Freight Transport Association at not less than 6 monthly intervals.

APPENDIX 1/20 : RECOVERY VEHICLES FOR BREAKDOWN (CONTINUED)

2.2 Reports

A copy of each inspection report shall be kept in:

(i) the Operating Company Central Office

(ii) the recovery vehicle.

The reports shall be made available for inspection by the Director or the Performance Audit Group

2.3 Record form

The Operating Company shall maintain at the Central Office weekly record forms which log the regular checks made on each recovery vehicle. A sample form shall be as given in Sheet 2 of this Appendix.

3. Locations for Recovery Vehicles

When not engaged in recovery operations the recovery vehicles shall be positioned on or adjacent to the Site at all times whenever they shall be required to be provided.

They shall be situated at positions to written consent by the Director following a risk assessment carried out by the Operating Company.

4 Communication System

In addition to the requirements of Appendix 1/3 of this Specification and where required by the Police the Operating Company shall provide an emergency telephone and line at the recovery base station(s) for the sole use of emergency calls.

Where possible the link between the recovery base station(s) and the Police shall be by direct land line.

The Operating Company shall be responsible for all associated equipment and payment of fees to operate the system which shall be established and fully tested prior to the start of the Operations.

5. Limits of Service and Leaflets

The vehicle recovery service shall be limited to those vehicles requiring assistance within the temporary traffic management system that is between the "2 miles ahead" advance signs and the "end of works" sign on each carriageway.

Any broken down or accident damaged vehicles on the operating carriageway of the motorway or other Trunk Roads shall be removed immediately to the hardshoulder or hardstrip adjacent to an operational emergency telephone clear of the Site of the Operations or off the motorway or Trunk Roads at an interchange whichever shall be the nearer as written consent by the Director prior to the commencement of Site Operations.

No charge shall be made to the owner or driver of a vehicle so assisted for this service.

All drivers so assisted shall be informed by means of a handout leaflet which shall be prepared by the Operating Company in liaison with the police and in accordance with Sheet 3 of this Appendix.

APPENDIX 1/20 : RECOVERY VEHICLES FOR BREAKDOWN (CONTINUED)

Copies of the leaflet shall be supplied to the Director for written consent prior to the commencement of the Site Operations.

Drivers shall be informed that they shall make their own arrangements for further assistance.

A prominent notice shall be displayed at all times on each recovery vehicle provided in accordance with the provisions of this Contract to this effect clearly stating that the service shall be free and that the recovery vehicle cannot complete the tow to any further destination.

6 Requirements for Recovery Personnel

(i) **Suitability:** It is the responsibility of the Operating Company to ensure that all personnel involved with vehicle recovery shall be suitable to carry out such work.

(ii) **Training:** The Operating Company shall ensure that all personnel involved with vehicle recovery shall hold a certificate certifying successful completion of an appropriate vehicle recovery course recognised by either the Institute of the Motor Industry (IMI) or the Moor Industry Training Standards Council.

A copy of each certificate shall kept by the Operating Company at the Central Office.

(iii) **Personal Protective Equipment:** In addition to the provisions identified in the Health and Safety risk assessment conducted by the Operating Company, the following items will be provided for each crew member of the recovery vehicle

(a) a safety helmet CE marked to BS EN 397

(b) a reflective safety garment complying with sub-Clause 117.18 of the Specification

(c) boots with steel reinforcement toecaps and/or safety footwear in accordance with BS EN 345

(d) suitable gloves with the appropriate CE mark and

(e) protective goggles in accordance with BS EN 166:2002.

Note: All Personal Protective Equipment shall be stored and maintained in good clean condition.

(iv) **Identification:** The Operating Company shall ensure that all personnel involved with vehicle recovery are issued with the following

(a) An identity card which incorporates the name of the recovery contractor (or the Operating Company) and the name and a photograph of the holder. This card must be available for inspection at all time and a copy must be submitted to the Director prior to the commencement of the operative working.

(b) A reflective safety garment (referred to in (iii) (b) above) which prominently displays the contractor's name.

APPENDIX 1/20 : RECOVERY VEHICLES FOR BREAKDOWN (CONTINUED)

(v) **Working hours:** The maximum hours to be worked by recovery operatives shall be in accordance with relevant legislation.

7 Record form

This Operating Company shall submit and maintain at the Central Office record forms which log the assistance given by the recovery vehicle and its operatives and the registration mark of the vehicle assisted.

Sample forms shall be as given in Sheet 4 of this Appendix.

APPENDIX 1/20 : RECOVERY VEHICLES FOR BREAKDOWN (CONTINUED)

SHEET 2: Information to be provided by the Operating Company

Form For 'Recovery Vehicle Daily Check Sheet'

RECOVERY VEHICLE DAILY CHECK SHEET							
				Week Commencing:			
Drivers Name:		Vehicle Type/Registration No:			Mileage:		
Driver to initial against check list below:							
	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
OIL LEVEL							
WATER							
ENGINE							
CLEANLINESS – interior							
CLEANLINESS – exterior							
WIPER/WASHERS							
TYRES							
LIGHTS							
Driver's Report (detail any problems): Action Taken (to solve above problems):							
Date:			Supervisor's Signature:				
COMPLETED SHEET TO BE RETURNED TO OVERSEEING ORGANISATION EACH WEEK							

APPENDIX 1/20 : RECOVERY VEHICLES FOR BREAKDOWN (CONTINUED)

SHEET 3: Information to be provided by the Operating Company

Leaflet For Issue By Recovery Vehicle Operatives To Drivers Of All Broken down Or Accident-Damaged Motor Vehicles

Name of Scheme:

[compiler: Insert accurate name of the scheme before the issue of tender documents]

.....……

Vehicle Recovery Service - Explanatory Leaflet authorised by the Scottish Executive for issue to drivers of broken-down and accident-damaged motor vehicles within the above works.

Leaflet to be distributed by recovery vehicle operatives of the appointed recovery firm on behalf of the Scottish Executive.

1. The roadworks operations commence at the "Roadworks Ahead - 2 miles" sign and end at the "Roadwork End" sign. *[compiler: See Note 1 below]*
2. The recovery service provided along the extent of the roadworks operations is free.
3. Vehicles will be recovered clear of the roadworks operations to ……unless otherwise directed by the police. *[compiler: See Note 2 below]*
4. It will then be at the discretion of individual drivers of broken-down or accident-damaged vehicles requiring assistance to arrange for assistance or the removal of their vehicle to a garage of their choice. The operators of the free recovery service do not make such arrangements.

A list of local garages is given below:

……

……...

Assistance will also be given by telephoning …….. *[compiler: See Note 3 below]*

If a motorway emergency telephone is used, the police will assist.

[Notes to compiler:

(1) If different, replace with the appropriate limits of service for the Works.

(2) The chosen location should take into account safety, security and the availability of a telephone, see Chapter 1.3 of Volume 1 of the Trunk Road Maintenance Manual.

(3) The telephone number should be agreed with the police prior to the commencement of the Works.]

APPENDIX 1/20 : RECOVERY VEHICLES FOR BREAKDOWN (CONTINUED)

SHEET 4: Information to be provided by the Operating Company

LAYOUT FOR 'VEHICLE RECOVERY LOGSHEET'

VEHICLE RECOVERY LOGSHEET (1 of 2) [Scheme name]	Recovery vehicle: ……	Week Ending: ……	Sheet No: ……

Date	Time			Where?	Dir	Lanes Closed					Police etc Present*	Incident		Recovery	Vehicle Type#	Q'ing	Weather	Road Surface		Remarks
	Call Out	Arrival at Scene	Road Clear	Marker Post No.		HS	1	2	3	4		Acc	B/d	Tow?** Y/N		Y/N		Dry	Wet	

* - Police **Y – Tow/Lift #C – Car M/C – Motorcycle
F – Fire Service R – Restart V – Van
A – Ambulance F – False Call HGV – Heavy Goods Vehicle

APPENDIX 1/20 : RECOVERY VEHICLES FOR BREAKDOWN (CONTINUED)

SHEET 4 (continued)

VEHICLE RECOVERY LOGSHEET (2 of 2) [Scheme name]		Recovery Vehicle: …….		Week Ending: …../……./……..	Sheet No: …….
Date & Time	Type of Vehicle	Registration No.	Name & Address of driver or Firm	Location of Breakdown	Nature of Breakdown	Recovery Operator's Name

APPENDIX 1/21 : INFORMATION BOARDS

Details of Network Customer Contact Signs shall be as provided in Annex 3.7A of Part 7 of Schedule 3.

The locations of Network Customer Contact Signs shall be as required in paragraph 1.3.1 of Part 7 of Schedule 3.

The Operating Company may erect for its own purpose sign boards at the entrance to each of the compounds which it uses in connection with the maintenance of the Unit.

The size of these boards shall be no greater than the boards required for Network Customer Contact Signs and shall be subject to the written approval of the appropriate planning authority.

The location, number and legend of Site Operations Information Signs shall written consent by the Director when required by an Order.

APPENDIX 1/74 : SAFETY OF OPERATIONS

General

1. Notwithstanding compliance with any Legislation in connection with Site safety including but not limited to the Construction Design and Management Regulations 1994 and also the other provisions of this Contract the Operating Company shall comply with its own published safety policy current at the time the particular Site Operations are carried out.

2. The Operating Company shall while carrying out Site Operations within or associated with the Unit comply with traffic management requirements specified elsewhere in this Contract.

3. The Operating Company shall while carrying out the Site Operations comply specifically with the requirements of

   (i) Control of Substances Hazardous to Health Regulations 1988

   (ii) Electricity at Work Regulations 1989 and

   (iii) BS 7671 1992 - Requirements for Electrical Installations (The IEE Wiring Regulations).

4. The Operating Company shall prior to complying with Clauses 1 to 3 inclusive of this Appendix 1/74 carry out a formal risk assessment as required by Management of Health and Safety at Work Statutory Instrument No 2951 conforming to the approved code of practice.

   Records of risk assessments shall be maintained and be available for inspection by the Director and the Performance Audit Group at any time.

5. The Director may suspend the Site Operations or part thereof in the event of non-compliance by the Operating Company with health and safety matters specified in this Contract.

   The Operating Company shall not resume Site Operations until the Director shall be satisfied that non-compliance has been rectified.

   In respect of any such period of suspension the Operating Company shall not add any cost to the Site Operations price and no extra time shall be allowed for completion of any such like.

The Wearing of Safety Helmets

1. All Sites of Operations under the jurisdiction of the Operating Company shall be managed in strict accordance with the Construction (Head Protection) Regulations 1989 and supporting Health and Safety Executive guidance.

2. The Operating Company shall display at appropriate locations signs described in the Health and Safety Executive Guidance on Regulations (Regulation 5).

APPENDIX 1/74 : SAFETY OF OPERATIONS (CONTINUED)

High Visibility Clothing

1. The Operating Company shall ensure that the clothing required to be worn shall be maintained to a standard that accords with its intended use.

APPENDIX 2/3: RETENTION OF MATERIAL ARISING FROM SITE CLEARANCE

The Table below shall be completed for an individual Order where required.

Description	Location	Delivered to:	Requirements
Kerbs, quadrants, edgings			
Paving slabs			
Paving blocks			
Setts			
Masonry stonework			
Chamber covers			
Gully gratings & frames			
Combined kerb and drainage systems			
Linear drainage systems			
Gates and fencing			
Safety barrier components			
Vehicle parapets			
Pedestrian parapets			
Pedestrian guardrails and handrails			
Traffic signs			
Bollards			
Marker posts			
Road studs			
Traffic signals			

APPENDIX 2/3: RETENTION OF MATERIAL ARISING FROM SITE CLEARANCE (CONTINUED)

Description	Location	Delivered to:	Requirements
Road lighting columns			
Luminaires			
Electrical equipment			
Communications equipment			
Cables			
Timber arising from trees			

[The column headed 'Requirements' is available for including such instructions as:]

(i) Disconnection of electrical supplies.

(ii) Transportation of equipment.

(iii) Stacking/storage of material.

(iv) Reinstatement of voids left by removal of equipment.

APPENDIX 3/1 : FENCES GATES AND STILES

1. Fencing for the protection of planted areas shall be hexagonal wire netting fencing complying with BS 1722 : Part 2 Section 8 and in accordance with HCD Drawing Number H39 Fencing Type 1.

2. Where shown on the drawings wire mesh shall be attached to permanent or existing fencing in accordance with HCD Drawing Numbers H46 and H47 to protect the hedge from rabbits and hares.

APPENDIX 4/1: ROAD RESTRAINT SYSTEMS (VEHICLE AND PEDESTRIAN)

1 Location:

1.1 Vehicle Restraint Systems

(i) The location, Containment Performance Class and Working Width Class requirements for safety barriers and transitions shall be determined by the Operating Company in accordance with other provisions of this Contract.

(ii) The location, Containment Performance Class and Working Width Class requirements for vehicle parapets shall be determined by the Operating Company in accordance with other provisions of this Contract.

(iii) The location, Performance Class and Lateral Displacement Zone Class requirements for terminals shall be determined by the Operating Company in accordance with other provisions of this Contract.

(iv) The location and other requirements for concrete vehicle parapets shall be determined by the Operating Company in accordance with other provisions of this Contract.

1.2 Pedestrian Restraint Systems

(i) The location for pedestrian parapets and pedestrian guardrails shall be determined by the Operating Company in accordance with other provisions of this Contract.

2. Other Details

2.1 Safety Barriers, Terminals, Transitions and Crash Cushions

(i) Any special requirements shall be determined by the Operating Company in accordance with other provisions of this Contract .

(ii) Specific connection requirements to existing safety barriers, vehicle parapets or other structures shall be determined by the Operating Company in accordance with other provisions of this Contract.

Vehicle Parapets Including Anchorages and Attachment Systems

2.2 Any special requirements including any aesthetic requirements shall be determined by the Operating Company in accordance with other provisions of this Contract

3. Temporary Safety Barriers

3.1 When necessary to ensure the safety of the users of the Unit and Operating Company employees the installation of temporary safety barriers shall be carried out in accordance with Non-Proprietory Safety Barrier Systems as referred to in Interim Advice Note 44/02 (IAN 44/02) and the layout drawings therein or for proprietary systems the manufacturers' latest instructions and drawings.

APPENDIX 4/1: ROAD RESTRAINT SYSTEMS (VEHICLE AND PEDESTRIAN) (CONTINUED)

The Operating Company shall have immediate access to at least 90 metres of temporary safety barrier and shall ensure that the necessary plant and qualified personnel shall be available to commence erection of the barrier as soon as practicable but within 24 hours of the need for the barrier being known to the Operating Company.

Records of such use including risk assessments shall be held within the Operating Company's Quality System and be available for inspection by the Director and the Performance Audit Group at any time

3.2 Temporary safety barriers with a Performance Class of N1 shall not be used on roads with a permanent speed limit greater than 50mph to protect short sections of work that can be carried out without closure or restriction of any of the running Lanes.

The imposition of a temporary 50mph limit in such circumstances shall be contrary to Chapter 8 of the Traffic Signs Manual and against Police advice.

If in these circumstances, after undertaking a risk assessment, it is considered necessary to provide protection over a short length (for example. for the replacement of a bridge parapet) then a temporary safety barrier with a Performance Class of N2, H1 or H4a shall be used so that no temporary speed restriction shall be required.

APPENDIX 4/1 : ROAD RESTRAINT SYSTEMS (VEHICLE AND PEDESTRIAN) (CONTINUED)

4. Schedule of Road Restraint Systems (Vehicle and Pedestrian)

[To be determined by the Operating Company and included for each Individual Order]

Location & Start Chainage* **(m)**	**Finish Chainage (m)**	**Position on Cross-Section +**	Type of Road Restraint System** (Safety barriers, vehicle parapets, transitions, terminals, crash cushions, pedestrian parapets, pedestrian guardrails)	**Set-back (m)**	Containment Performance Class** (Safety barriers, vehicle parapets, transitions) Performance Level (Crash Cushions)	Available Working Width** (m) (Safety barriers, vehicle parapets, transitions)	Working Width Class** (Safety barriers, vehicle parapets, transitions)	Velocity Class (Crash Cushions)	**Lateral Displace-ment Zone Class** (Terminals, Crash Cushions)	**Redirective (R) or Non-redirective (NR)** (Crash Cushions)	**Other Requirements/** Comments ** ++ +++

NOTES:* e.g. Road name, verge, central reserve, slip road etc. ** Enter temporary safety barrier where required.

\+ e.g. LH verge; central reserve, RH hand verge etc. ++ Height requirements etc. +++ Anti-glare Screens

APPENDIX 4/2: INFORMATION REQUIRED TO DEMONSTRATE COMPLIANCE OF ROAD RESTRAINT SYSTEMS TO BS EN 1317-1, BS EN 1317-2, BS EN 1317-3 AND DD ENV 1317-4:2002

The Operating Company shall submit the following supporting information demonstrating compliance with BS EN 1317-1, BS EN 1317-2, BS EN 1317-3 and DD ENV 1317-4:2002 to the Director for acceptance:

European Committee For Standardization (Cen) Complaince [1]

Initial submission documents to be supplied for consideration of initial type test shall be as follows:

(i) Test report in accordance with BS EN 1317-1, Clause 9 (and including any additional test data required under BS EN 1317-3, Clauses 7.3 and 7.4 and DD ENV 1317-4:2002, Clauses 7.3 and 7.4).

(ii) Video/high speed film of test annotated showing date, test number and performance class.

(iii) Still photographs of complete installation including anchorage points.

(iv) Still photographs of vehicle before and after impact.

(v) Full drawings of tested items.

(vi) Certification from the manufacturer that the item tested complies with drawings supplied.

(vii) Certificate from test house accredited in accordance with the requirements of Series 400 (MCHW 1.400).

Additional information which shall be required on acceptance of initial type test prior to installation.

(viii) Manufacturer's specification.

(ix) Installation drawings.

(x) Manufacturer's installation instructions including foundation requirements and test methods to verify their performance.

(xi) Manufacturer's repair and maintenance manual.

(xii) Certificate of compliance with the Quality Management Scheme 1 for the Manufacture of Fencing Components. [2]

(xiii) Compliance with the Quality Management Sector Scheme 2 – Supply and Installation of Fences:

(a) Sector Scheme 2B for Vehicle Restraint Systems. [2]

(xiv) Certificate of compliance for the Quality Management Sector Scheme 5 for the Fabrication and Installation of Bridge Parapets and Cradle Anchorages. [3]

(a) Sector Scheme 5A for The Manufacture of Parapets for Road Restraint Systems; and

(b) Sector Scheme 5B for The Installation of Parapets for Road Restraint Systems.

APPENDIX 4/2: INFORMATION REQUIRED TO DEMONSTRATE COMPLIANCE OF ROAD RESTRAINT SYSTEMS TO BS EN 1317-1, BS EN 1317-2, BS EN 1317-3 AND DD ENV 1317-4:2002 (CONTINUED)

(xv) Nominal loads (direct forces, moments and co-existent shears) to be transferred from the parapet to the structure or foundation. [2] & [3]

Notes:

1. All documents, which are not in English, shall have an English translation.

   If they shall be in a language other than French or German the promoter will be required to supply a full translation.

2. Items 12 and 13 shall be required for safety barrier systems and transitions

3. Items 14 and, 15 shall be required for vehicle parapets.

APPENDIX 4/2: INFORMATION REQUIRED TO DEMONSTRATE COMPLIANCE OF ROAD RESTRAINT SYSTEMS TO BS EN 1317-1, BS EN 1317-2, BS EN 1317-3 AND DD ENV 1317-4:2002 (CONTINUED)

Sheet 1 of 4

SUBMISSION FOR COMPLIANCE WITH BS EN 1317-1, BS EN 1317-2, BS EN 1317-3 and DD ENV 1317-4:2002
TYPE OF VEHICLE RESTRAINT SYSTEM:
CONTAINMENT PERFORMANCE CLASS/PERFORMANCE LEVEL/PERFORMANCE CLASS (*):
TEST REPORT NUMBER: (Test of)
Test Type: (Primary/Complementary Test) (*)
TEST NUMBER: TEST DATE: (*) delete as appropriate

COMPANY NAME: CONTACT: ADDRESS: Tel:/Fax:/E-mail: PRODUCT NAME:	

Initial submission documents to be supplied for consideration of Initial Type Test (ITT).

	Item	Comment	Item Received (Y or N)	Date requested
1	Test report	In accordance with BS EN 1317-1, Clause 9 (and including any additional test data required under BS EN 1317-3, Clauses 7.3 and 7.4 and DD ENV 1317-4:2002, Clauses 7.3 and 7.4).		
2	Video/high speed film	Of test coverage as specified in relevant part of BS EN 1317 or DD ENV 1317-4:2002. Annotated showing date, test number and performance class.		
3	Still photographs	Of complete installation including anchorage points.		
4	Still photographs	Of vehicle before and after impact.		
5	Drawings	Fully detailed drawings of tested item.		
6	Certification from the manufacturer	Confirming that the item tested complies with drawings supplied.		
7	Confirmation from test house	That the test conforms to the relevant requirements of BS EN 1317-1 (and including and additional test data required under BS EN 1317-2, BS EN 1317-3 and DD ENV 1317-4:2002).		
Additional information, which will be required on acceptance of initial type test prior to installation.				
8	System specification	Manufacturer's specification.		
9	Installation details	Manufacturer's drawings.		
10	Installation procedures	Manufacturer's installation instructions		
11	Maintenance Manual	Manufacturer's inspection, repair, and maintenance instructions.		
12	Certificate of compliance	With the Qaulity Management Scheme 1 for Manufacture of Fencing Components. [2]		
13	Certificate of compliance	With the Sector Scheme 2B for the Supply and Installation of Fences Vehicle Restraint Systems. [2]		
14	Certificate of compliance	With the Quality Management Schemes 5 for the Fabrication and Installation of Bridge Parapets and Cradle Anchorages. [3] (i) Sector Scheme 5A for The Manufacture of Parapets for Road Restraint Systems; and (ii) Sector Scheme 5B for The Installation of Parapets		
15	Support loads	Nominal loads (direct loads, bending moments and shear forces) that have to be transferred from the vehicle restraint system to the supporting structure or foundation. [3]		

Notes:

1. All documents, which are not in English, will have to be translated. If they are in a language other than French or German the promoter will be required to supply a full translation.
2. Items 12 and 13 are required for safety barrier systems and transitions.
3. Items 14 and 15 are required for vehicle parapets.

Signature: Name:

Date:

APPENDIX 4/2: INFORMATION REQUIRED TO DEMONSTRATE COMPLIANCE OF ROAD RESTRAINT SYSTEMS TO BS EN 1317-1, BS EN 1317-2, BS EN 1317-3 AND DD ENV 1317-4:2002 (CONTINUED)

Sheet 2 of 4

SUBMISSION FOR COMPLIANCE WITH BS EN 1317-1, BS EN 1317-2, and DD ENV 1317-4:2002
TYPE OF VEHICLE RESTRAINT SYSTEM: Safety Barrier, Vehicle Parapet or Transition (*)
CONTAINMENT PERFORMANCE CLASS/LEVEL(*)
TEST REPORT NUMBER: (Test of)
Test Type: (Primary/Complementary Test) (*)
TEST NUMBER: TEST DATE: (*) delete as appropriate

COMPANY NAME: CONTACT: ADDRESS: Tel:/Fax:/E-mail: PRODUCT NAME:	

			Specified	Actual	Satisfactory (Yes or No)	Compliance
BS EN 1317-1, Table 1	Vehicle Details	Impact Condition(s) Total vehicle mass (kg) Speed (kmh) Angle (degrees)	 ..... (+ …) …… (0, +7%) …… (-1, +1.5)			
		Centre of Gravity Vertical height (m) Longitudinal (m) Lateral (m)	 ..... (+ 10%) …… (+ 10%) + …….			
		Model				N/A
BS EN 1317-2,Clause 4.2	Vehicle Restraint System (VRS) Behaviour	1) The VRS shall contain and redirect the vehicle without breakage of principal longitudinal elements of the system. 2) No major part of the VRS shall become totally detached or present an undue hazard to other traffic, pedestrians or personnel in a work zone. 3) Elements of the VRS shall not penetrate the passenger compartment of the vehicle. Deformations of, or intrusions into the passenger compartment that can cause serious injuries are not permitted. 4) Ground anchorages and fixings shall perform according to the design of the VRS.				
BS EN 1317-2,Clause 4.3	Vehicle Behaviour	1) The centre of gravity (CG) of the vehicle shall not cross the centreline of the deformed system. 2) The vehicle shall remain upright during and after impact, although moderate rolling, pitching and yawing are acceptable. 3) The vehicle shall leave the VRS after impact, so that the wheel track does not cross a line parallel to the initial traffic face of the VRS, at a distance A (2.2m) plus vehicle width + 16% of the length of the vehicle within a distance B (10m) from the final intersection (break) of wheel track with the initial traffic face of the VRS.				
BS EN 1317-2,Clause5.3 .2	Installation	1) The length of the VRS shall be sufficient to demonstrate the full performance characteristics of the system. 2) If the VRS has to develop tension, end anchorages shall be provided in accordance with the VRS specification. Post foundation shall meet the design specification.				
BS EN 1317-2,Clause 4.4.	Severity Indices	SPECIFIED THIV Limit 33 km/h PHD Limit 20 g ASI Limit 1.4		ACTUAL THIV….. km/h PHD….. g ASI…. .		
BS EN 1317-2,Clause 5.7, Figure 3	Photographic coverage	1) Photographic coverage shall be sufficient to clearly describe behaviour and vehicle motion during and after impact. 2) High speed cameras shall be operated at a minimum of 200 frames per second and stills. 3) As recommended in Clause 5.7 and Figure 3.				
	Drawings	Drawings included			N/A = Not Applicable	

FULLY COMPLIES WITH STANDARD: BS EN 1317-1, BS EN 1317-2, DD ENV 1317-4:2002	
Signature:	Name:
Date:	

APPENDIX 4/2: INFORMATION REQUIRED TO DEMONSTRATE COMPLIANCE OF ROAD RESTRAINT SYSTEMS TO BS EN 1317-1, BS EN 1317-2, BS EN 1317-3 AND DD ENV 1317-4:2002 (CONTINUED)

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SUBMISSION FOR COMPLIANCE WITH BS EN 1317-1 and BS EN 1317-3
TYPE OF VEHICLE RESTRAINT SYSTEM: Crash Cushion (Redirective [R] or Non-redirective [NR](*)
TEST REPORT NUMBER: TEST TYPE: (Primary/Complementary Test) (*)
PERFORMANCE LEVEL: VELOCITY CLASS: (Test of)
TEST NUMBER: TEST DATE: (*) delete as appropriate

COMPANY NAME: CONTACT: ADDRESS: Tel:/Fax:/E-mail: PRODUCT NAME:	

			Specified	Actual	Satisfactory (Yes or No)	Compliance
BS EN 1317-1	Vehicle Details	Impact Condition(s) Total vehicle mass (kg) Speed (kmh) Angle (degrees)	 ..... (+ …) …… (0, +7%) …… (-1, +1.5)			
		Centre of Gravity Vertical height (m) Longitudinal (m) Lateral (m)	 ..... (+ 10%) …… (+ 10%) + …….			
		Model				N/A
BS EN 1317-3,Clause 6.2	Crash Cushion Behaviour	1) Elements of the crash cushion shall not penetrate the passenger compartment of the vehicle. Deformations of, or intrusions into, the passenger compartment that could cause serious injuries are not permitted. 2) No major element of the crash cushion, having a solid mass greater than or equal to 2.0kg, shall become totally detached, unless this is required by the working of the crash cushion. No major element of the crash cushion shall impede the path of adjacent traffic. The final position of the detached element shall be considered to determine the displacement classification.				
BS EN 1317-3,Clause 6.3	Vehicle Behaviour	1) The vehicle shall remain upright during and after the collision although yawing and moderate rolling and pitching are acceptable. The post-impact trajectory of the test vehicle shall be controlled by means of the exit box shown in Figure 2 and specified as detailed in Tables 11 and 12.				
BS EN 1317-3,Clause 7.3.2	Installation	1) The installation of the crash cushion for the test shall comply with the structural design details and the on-road system details as given in the design specification.				
BS EN 1317-3,Clause 5.4. and Table 4	Impact Severity Levels	SPECIFIED Level A: Level B: Levels A & B: PHD <20g	ACTUAL			
BS EN 1317-3,Clause 7.7 Figure 4	Photographic coverage	1) High speed cameras and/or high speed video cameras shall be operated at minimum of 200 frames per second. 2) Stills 3) As recommended in Clause 7.7 and Figure 4.				
	Drawings	Drawings included				
					N/A = Not Applicable	

FULLY COMPLIES WITH STANDARD: BS EN 1317-1 and BS EN 1317-3	
Signature:	Name:
Date:	

APPENDIX 4/2: INFORMATION REQUIRED TO DEMONSTRATE COMPLIANCE OF ROAD RESTRAINT SYSTEMS TO BS EN 1317-1, BS EN 1317-2, BS EN 1317-3 AND DD ENV 1317-4:2002 (CONTINUED)

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SUBMISSION FOR COMPLIANCE WITH BS EN 1317-1 and DD ENV 1317-4:2002
TYPE OF VEHICLE RESTRAINT SYSTEM: Terminal
PERFORMANCE CLASS: (Test of)
Test Type: (Primary/Complementary Test) (*)
TEST TYPE NUMBER:
TEST NUMBER: TEST DATE: (*) delete as appropriate

COMPANY NAME: CONTACT: ADDRESS: Tel:/Fax:/E-mail: PRODUCT NAME:	

			Specified	Actual	Satisfactory (Yes or No)	Compliance
BS EN 1317-1,Table 1, DD ENV 1317-4:2002, Clauses 7.4 & 7.5	Vehicle Details	Impact Condition(s) Total vehicle mass (kg) Speed (kmh) Angle (degrees)	 ..... (+ …) …… (0, +7%) …… (-1, +1.5)			
		Centre of Gravity Vertical height (m) Longitudinal (m) Lateral (m)	 ..... (+ 10%) …… (+ 10%) + …….			
		Model				N/A
DD ENV 1317-4:2002, Clauses 5.4 &5.5.2	Terminal Behaviour	1) Elements of the terminal shall not penetrate the passenger compartment of the vehicle. Deformations of, or intrusions into, the passenger compartment that could cause serious injuries are not permitted. 2) No major part of the terminal shall become totally detached and come to rest outside the permanent lateral displacement zones defined in Clause 5.4. 3) Anchorages and fixings shall perform to the terminal design specifications and other specified requirements as listed in the test report.				
BS EN 1317-4,:2002 Clause 5.5.3	Vehicle Behaviour	1) The vehicle shall not overturn, although rolling, yawing and moderate pitching may be accepted. For the performance class P1 rolling onto a side may be accepted. 2) The exit box values for the specified test are as defined in Figures 5.6 and 7 (as appropriate).				
DD ENV 1317-4:2002, Clause 7.3.2	Installation	1) The terminal shall conform to the structural design details and with the system installation details as given in the design specification of the manufacturer.				
BS EN 1317-4:2002, Clause 5.5.4 & Table 5	Impact Severity Levels	SPECIFIED Level A: THIV <44km/h (Tests 1,2 &3) THIV < 33km/h (Tests 4 &5) ASI < 1.0 Level B: THIV < 44km/h (Tests 1,2&3) THIV < 33km/h (Tests 4 & 5) ASI < 1.4 Levels A & B: PHD <20g	ACTUAL			
DD ENV 1317-4:2002, Clause 7.7. & Figure 7	Photographic coverage	1) Photographic coverage shall be sufficient to describe clearly terminal and vehicle motion during and after impact. 2) High speed cameras and/or high speed video cameras at a minimum of 200 frames per second. 3) Stills				
	Drawings	Drawings included				
					N/A = Not Applicable	

FULLY COMPLIES WITH STANDARD: BS EN 1317-1 and DD ENV 1317-4:2002	
Signature:	Name:
Date:	

APPENDIX 4/71: RE-TENSIONING OF SAFETY BARRIERS

Safety Barriers shall be re-tensioned in accordance with the following procedure:

Tensioned Corrugated Beam Safety Barrier

1. Tensioned Corrugated Beam Safety Fence shall be re-tensioned in accordance with BS 7669 : Part 3, Section 2.1.
2. Tensioning between any two limits shall not proceed until each limit shall be anchored sufficiently securely to resist the load effects due to tensioning.
3. Tensioning shall be undertaken only when the ambient temperature shall be between 25°C and -5°C.
4. Adjuster assemblies shall be located not more than 70.5 metres apart and each installation shall incorporate at least one adjuster assembly.
5. On completion of tensioning, the centre of each screw securing beams to posts shall be not closer than 25 mm ±2 mm to the end of the slotted hole in the beam.

Wire Rope Safety Barrier

1. Wire Rope Safety Fence shall be re-tensioned in accordance with BS 7669 : Part 3, Section 2.5.
2. Tensioning between any two limits shall not proceed until each limit shall be anchored sufficiently securely to resist the load effects due to tensioning.
3. Tensioning shall be undertaken only when the ambient temperature shall be between 30°C and - 10°C.
4. Before tensioning the ropes the ambient temperature shall be agreed by the Overseeing Organisation.

   The tension shall be measured using a tension indicating device approved in writing by the Overseeing Organisation.
5. Before putting the safety fence into service the tension in each rope shall be checked and it shall be retensioned if necessary.

Tensioned Rectangular Hollow Section

1. Assembly and tensioning shall be carried out in accordance with BS 7669 : Part 3, Section 2.4.
2. Tensioning between any two limits shall not proceed until each limit shall be anchored sufficiently securely to resist the load effects due to tensioning and that the safety fence has been completely assembled and connected to the anchorages.
3. Tensioning shall be undertaken only when the ambient temperature is between 10°C and 20°C.
4. Tensioner assemblies shall be located not more than 70.5 m apart and each installation shall incorporate at least one tensioner assembly.

APPENDIX 5/1: DRAINAGE REQUIREMENTS

1. The Design for new drainage systems shall be in accordance with other provisions of this Contract.

   The permitted alternative pipe/trench options for carrier drains shall be as given in Schedule 5/1 below:

Schedule 5/1 – Permitted Alternative Pipe/Bedding Combinations

Pipe Diameter (mm)	Pipe Group No.	Vitrified Clay					Pre-cast Concrete			Ductile Iron	GRP	Thermoplastic (Structured Wall)
		L	95	120	160	200	Class L	Class M	Class H			
100	1				ASBFN	ASBFN				S	S	ST
100	2				ASBFN	ASBFN				S	S	ST
100	3				ASBFN	ASBFN				S	S	ST
100	4				ASBFN	ASBFN				S	S	ST
100	5				ASBFN	ASBFN				S	S	ST
100	6				ASBFN	ASBFN				S	S	ST
100	17				Z	Z				Z	Z	Z
150	1				ASBFN	ASBFN	ASBFN	ASBFN		S	S	ST
150	2				ASBFN	ASBFN	ASBFN	ASBFN		S	S	ST
150	3				ASBFN	ASBFN	ASBFN	ASBFN		S	S	ST
150	4				ASBFN	ASBFN	ASBFN	ASBFN		S	S	ST
150	5				ASBFN	ASBFN	ASBF	ASBFN		S	S	ST
150	6				ASBFN	ASBFN	ASBF	ASBFN		S	S	ST
150	17				Z	Z	Z	Z		Z	Z	Z
225	1				ASBFN	ASBFN	ASBF	ASBFN		S	S	ST
225	2				ASBFN	ASBFN	ASBF	ASBFN		S	S	ST
225	3				ASBFN	ASBFN	ASBF	ASBF		S	S	ST
225	4				ASBFN	ASBFN	ASBF	ASBF		S	S	ST
225	5				ASBFN	ASBFN	ASB	ASBF		S	S	ST

APPENDIX 5/1: DRAINAGE REQUIREMENTS (CONTINUED)

SCHEDULE 5/1 – PERMITTED ALTERNATIVE PIPE/BEDDING COMBINATIONS CONTINUED

Pipe Diameter (mm)	Pipe Group No.	Vitrified Clay					Pre-cast Concrete			Ductile Iron	GRP	Thermoplastic (Structured Wall)
		L	95	120	160	200	Class L	Class M	Class H			
225	6				ASBF	ASBFN	ASB	ASBF		S	S	ST
225	17				Z	Z	Z	Z		Z	Z	Z
300	1				ASBFN	ASBFN	ASBF	ASBF		S	S	ST
300	2				ASBFN	ASBFN	ASB	ASBF		S	S	ST
300	3				ASBFN	ASBFN	ASB	ASBF		S	S	ST
300	4				ASBFN	ASBFN	ASB	ASB		S	S	ST
300	5				ASBFN	ASBFN	ASB	ASB		S	S	ST
300	6				ASBFN	ASBFN	AS	ASB		S	S	ST
300	17				Z	Z	Z	Z		Z	Z	Z
375	1				ASBFN	ASBFN	ASB	ASBF	ASBFN			
375	2				ASBFN	ASBFN	ASB	ASBF	ASBF			
375	3				ASBFN	ASBFN	AS	ASBF	ASBF			
375	4				ASBFN	ASBFN	AS	ASBF	ASBF			
375	5				ASBFN	ASBFN	A	ASB	ASBF			
375	6				ASBFN	ASBFN	A	ASB	ASBF			
375	17				Z	Z	Z	Z	Z			
450	1			ASBF	ASBFN		AS	ASBF	ASBFN			
450	2			ASBF	ASBFN		AS	ASBF	ASBF			
450	3			ASBF	ASBFN		A	ASBF	ASBF			
450	4			ASBF	ASBFN			ASB	ASBF			
450	5			ASBF	ASBFN			ASB	ASBF			
450	6			ASBF	ASBFN			ASB	ASB			
450	17			Z	Z		Z	Z	Z			
600	1	ASB	ASBF					ASBF	ASBFN	S	S	ST

APPENDIX 5/1: DRAINAGE REQUIREMENTS (CONTINUED)

Schedule 5/1 – Permitted Alternative Pipe/Bedding Combinations Continued

Pipe Diameter (mm)	Pipe Group No.	Vitrified Clay					Pre-cast Concrete			Ductile Iron	GRP	Thermoplastic (Structured Wall)
		L	95	120	160	200	Class L	Class M	Class H			
600	2	ASB	ASBF					ASBF	ASBF	S	S	ST
600	3	AS	ASBF					ASBF	ASBF	S	S	ST
600	4	AS	ASBF					ASBF	ASBF	S	S	ST
600	5	A	ASB					ASB	ASBF	S	S	ST
600	6	A	ASB					ASB	ASB	S	S	ST
600	17	Z	Z					Z	Z	Z	Z	Z
750	1						ASB	ASBF	ASBFN			
750	2						ASB	ASBF	ASBF			
750	3						AS	ASB	ASBF			
750	4						AS	ASB	ASBF			
750	5						A	ASB	ASBF			
750	6						A	ASB	ASB			
750	17						Z	Z	Z			
900	1						ASB	ASBF	ASBFN	S	S	ST
900	2						ASB	ASBF	ASBFN	S	S	ST
900	3						AS	ASBF	ASBF	S	S	ST
900	4						AS	ASB	ASBF	S	S	ST
900	5						A	ASB	ASBF	S	S	ST
900	6						A	ASB	ASBF	S	S	S
900	17						Z	Z	Z	Z	Z	Z

Bed Types Shall be in accordance with Drawings F1 and F2 of the Highway Construction Details

Replacement pipes in an existing system shall match the existing where practicable.

APPENDIX 5/1: DRAINAGE REQUIREMENTS (CONTINUED)

2. Covers to Chambers and Gullies

Covers to chambers and gullies shall comply with the loading category of BS EN124 as follows

(i) Chambers

Ductile heavy duty double triangular three point suspension non rock cover Class D400. Opening to be square.

Ductile medium duty double triangular three point suspension non rock cover Class B225.

Triple two piece gully type gratings Class D400 with waterway area 3330cm².

(ii) Gullies

Single piece hinged gully grating Class C250 with waterway area 1240cm².

Double triangular two piece non rock gully grating Class D400 with waterway area 1870cm².

(iii) Rodding Eyes

Ductile non-rocking cover Class D400, B225 or C250 as appropriate to the location.

The required loading category shall be determined by the Operating Company in accordance with other provisions of this Contract.

3. Adjustment of level to covers and frames

(i) Manhole covers and the like shall be set or reset to the final levels prior to the laying of the uppermost wearing course or if no surfacing Site Operations shall be required to be undertaken to the level of the surrounding ground surface.

Gully frames shall be set 6mm below the level of the adjacent surface.

(ii) Covers and frames together with any shims tiles brick and the like used to adjust the level shall be bedded using polyester epoxy or ultra-rapid hardening cementitious mortar applied in accordance with the manufacturer's written instructions.

4. The requirement for watertight joints shall be determined by the Operating Company in accordance with other provisions of this Contract.

5. Use of rigid joints shall be determined by the Operating Company in accordance with the other provisions of this Contract.

6. Use of saddles on existing pipes shall be permitted except where otherwise determined by the Operating Company in accordance with other provisions of this Contract.

7. Requirements for connections to existing drains shall be determined by the Operating Company in accordance with the other provisions of this Contract.

8. Chambers shall be constructed in accordance with HCD Drawings F3, F4, F5 and F11.

APPENDIX 5/1: DRAINAGE REQUIREMENTS (CONTINUED)

9. Gullies shall be trapped or un-trapped as determined by the Operating Company in accordance with the other provisions of this Contract.

10. All existing drainage systems within the Unit shall be cleaned in accordance with Clauses 520, 521 and 6102.

APPENDIX 5/2 : SERVICE DUCT REQUIREMENTS

1. The permitted alternative design groups for service ducts shown on HCD 12 shall be types D1 to D4 as shown on drawings number. 500/01/337 -339 in Annex 9/1.A of this Part 1 of this Schedule 9.

   Depth to top of ducts shall be 600mm in all cases.

Chambers

Chambers shall be constructed with 225mm thick walls of bricks complying with Clause 2406 set in Class 1 mortar laid on a base slab 150mm thick of mix ST4 concrete.

The cover and frame shall be bedded on Class 1 mortar.

Drawpits Types DP1 and DP2 shall be constructed in accordance with drawing numbers. 500/05/160-166 in Annex 9/1.A of this Part 1 of this Schedule 9.

Service ducts shall be built in to the end walls of the chambers.

2. Draw ropes for service ducts shall be secured by tying/fixing the draw rope to stoppers as detailed on drawings number. 500/01/337 -339 in Annex 9/1.A of this Part 1 of this Schedule 9. Two metres of slack rope shall be provided at both ends of every duct.

APPENDIX 5/3: SURFACE WATER CHANNELS AND DRAINAGE CHANNEL BLOCKS

Surface Water Channels and Drainage Channel Blocks shall be constructed as shown on drawings numbers 1100/01/085-115 in Annex 9/1.A of this Part 1 of this Schedule 9.

APPENDIX 5/4: FIN DRAINS AND NARROW FILTER DRAINS

Details of permitted types of fin drains and narrow filter drains together with any specific performance criteria shall be determined by the Operating Company in accordance with the other provisions of this Contract.

APPENDIX 5/5: COMBINED DRAINAGE AND KERB SYSTEMS

Combined drainage and kerb systems shall be Type DK1 to DK4 inclusive as referred to on Drawings number. 1100/02/124 to 127 inclusive, 1100/02/130 and 1100/02/133.

APPENDIX 5/7: THERMOPLASTICS STRUCTURAL WALL PIPES AND FITTINGS

Information to be provided by the Operating Company

The Operating Company shall provide the following information in accordance with sub-Clause 518.2 for the range of pipes and fittings (to be verified by the Certification body – see sub-Clause 518.15)

1. Technical drawings showing dimensions and tolerances including sealing rings and weight per metre together with properties as specified in sub-Clauses 518.3 and 518.5.

2. Material specification, as shall be required in sub-Clause 518.2

Table 1: Unplasticised polyvinyl-chloride (PVC-U)

Property	Test method reference	Specification
Tensile Properties	BS EN ISO 6259, BS EN ISO 527-1	
Vicat	BS EN 727	
Longitudinal reversion	BS EN 743	
K-value	BS EN 922	
PVC content	EN 1905	
Density	BS EN ISO 1183, ISO 4451	
Heat Reversion	ISO 12091	
Effects of heating (injection moulded fittings only)	BS EN 763	

Table 2: Polyethylene (PE)

Property	Test method reference	Specification
Tensile Properties	BS EN ISO 6259, BS EN ISO 527-1	
Oxygen induction time	BS EN 728	
Melt Flow Rate	BS EN ISO 1133	
Density	BS EN ISO 1183-3, ISO 4451	
Melt Flow Rate	ISO 4440	
Heat Reversion	ISO 12091	
Effects of heating (injection moulded fittings only)	BS EN 763	

APPENDIX 5/7: THERMOPLASTICS STRUCTURAL WALL PIPES AND FITTINGS (CONTINUED)

Table 3: Polypropylene (PP)

Property	Test method reference	Specification
Tensile Properties	BS EN ISO 6259, BS EN ISO 527-1	
Oxygen induction time	BS EN 728	
Melt Flow Rate	BS EN ISO 1133	
Density	BS EN ISO 1183-3, ISO 4451	
Heat Reversion	ISO 12091	
Effects of heating (injection moulded fittings only)	BS EN 763	

APPENDIX 6/1: REQUIREMENTS FOR ACCEPTABILITY AND TESTING ETC OF EARTHWORKS MATERIALS

1. The acceptability of earthworks materials shall be determined by compliance with the Specification, including Table 6/1, as amended by this Appendix.

2. The Operating Company shall be responsible for the assessment and selection for materials in earthworks and shall be responsible for the classification of materials on site, or off site, as appropriate. Fill materials shall be assessed at the place of excavation or deposition, as required by the Operating Company.

3. Class 3 material shall not be used.

4. Material for disposal shall be removed to a licensed disposal facility.

Table 6/1: Acceptable Earthworks Materials: Classification Requirements (see footnotes)

Class				General Material Description	Typical Use	Permitted Constituents (all subject to requirements of Class 601 and Appendix 6/1)	Material Properties Required for Acceptability (in addition to requirements on use of fill materials in Class 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	Acceptable Limits Within: Upper				
GENERAL GRANULAR FILL	1	A	-	Well graded granular material	General Fill	Any material or combination of materials other than chalk and material designated as Class 3 in this Contract. (Properties i, ii and iv in the next column, shall not apply to chalk) Recycled aggregate.	(i) grading	BS 1277: Part 2	Tab 6/2	Tab 6/2	Tab 6/4 Method 2	1	A	-
							(ii) uniformity coefficient	See Note 5	10	-				
							(iii) mc	BS 1377: Part 2	omc-2%	omc+2%				
							(iv) SMC	Clause 634		20%				
							(v) Optimum mc	BS 1377:Part 4 2.5kg rammer						
	1	B	-	Uniformly graded granular material	General Fill	Any material or combination of materials other than chalk and material designated as Class 3 in this Contract. Recycled aggregate	(i) grading	BS 1277: Part 2	Tab 6/2	Tab 6/2	Tab 6/4 Method 3	1	B	-
							(ii) uniformity cooefficient	See Note 5	-	10				
							(iii) mc	BS 1377: Part 2	omc-2%					
							(v) Optimum mc	BS 1377:Part 4 2.5kg rammer		omc+1%				
	1	C	-	Coarse granular material	General Fill	Any material or combination of materials other than material designated as Class 3 in this Contract. (Properties (i) and (ii) in the next column, shall not apply to chalk. Recycled Aggregate	(i) grading	BS 1377: Part 2	Tab 6/2	Tab 6/2	Tab 6/4 Method 5	1	C	-
							(ii) uniformity cooefficient	See Note 5	5	-				
							(iii) 10% fines	Clause 634	50kN	-				

Table 6/1: Acceptable Earthworks Materials: Classification Requirements (see footnotes) (continued)

Class				General Material Description	Typical Use	Permitted Constituents (all subject to requirements of Class 601 and Appendix 6/1)	Material Properties Required for Acceptability (in addition to requirements on use of fill materials in Class 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	Acceptable Limits Within: Upper				
GENERAL COHESIVE FILL	2	A	-	Wet cohesive material	General Fill	Any material or combination of materials other than material designated as Class 3 in this Contract. (Properties i), ii), iii) lower limit and iv) in the next column, shall not apply to chalk	(i) grading	BS 1277: Part 2	Tab 6/2	Tab 6/2	Tab 6/4 Method 1 except:- i) for materials with liquid limit greater than 50, determined by BS 1377: Part 2, only deadweight tamping or vibratory tamping rollers or grid rollers shall be used. ii) for chalk all types of vibratory rollers of Categories over 1800kg shall not be used.	2	A	-
							(ii) plastic limit (PL)	BS 1277: Part 2	10	-				
							(iii) mc	BS 1377: Part 2	omc-2%	omc+2%				
							(iv) MCVC	Clause 632	8	14				
	2	B	-	Dry cohesive material	General Fill	Any material or combination of materials other than chalk	(i) grading	BS 1377: Part 2	Tab 6/2	Tab 6/2	Tab 6/4 Method 2	2	B	-
							(ii) plastic limit (PL)	BS 1377:Part 2	-	-				
							(iii) mc	BS 1377:Part 2	-	PL-4%				
							(iv) MCV	Clause 632	8	14				
	2	C	-	Stony cohesive material	General Fill	Any material or combination of materials, other than chalk	(i) grading	BS 1377:Part 2	Tab 6/2	Tab 6/2	Tab 6/4 Method 2	2	C	-
							(ii) plastic limit (PL)	BS 1377:Part 2	-	-				
							(iii) MCV	Clause 632	8	14				
	2	D	-	Silty cohesive material	General Fill	Any material or combination of materials, other than chalk	(i) grading	BS 1377:Part 2	Tab 6/2	Tab 6/2	Tab 6/4 Method 3	2	D	-
							(ii) MCV	Clause 632	8	14				
	2	E	-	Reclaimed pulverised fuel ash cohesive material	General Fill	Reclaimed material from lagoon or stockpile containing not more than 20% furnace bottom ash	(i) mc	BS 1377:Part 2	To enable compaction to Clause 612		End product 95% of maximum dry density of BS 1377: Part 4 (2.5kg rammer method)	2	E	-

Table 6/1: Acceptable Earthworks Materials: Classification Requirements (see footnotes) (continued)

Class				General Material Description	Typical Use	Permitted Constituents (all subject to requirements of Class 601 and Appendix 6/1)	Material Properties Required for Acceptability (in addition to requirements on use of fill materials in Class 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	Acceptable Limits Within: Upper				
SGF ERIAL ENCL UTLE AD R												3	-	-
	4	-	-	Various	Fill to landscape areas	See Appendix 6/1	(i) grading	BS 1377:Part 2			See Clause 620 and Appendix 6/1	4	-	-
							(ii) MCV	Clause 632	8	14				
TOPSOIL	5	A	-	Topsoil, or turf, existing on Site	Topsoiling	Topsoil or turf designated as Class 5A in this Contract	(i) grading	BS 1377:Part 2	Tab 6/2	Tab 6/2	No compaction	5	A	-
	5	B	-	Imported topsoil	Topsoiling	General purpose grade complying with BS 3882	-	-	-	-	-	5	B	-

Table 6/1: Acceptable Earthworks Materials: Classification Requirements (see footnotes) (continued)

Class				General Material Description	Typical Use	Permitted Constituents (all subject to requirements of Class 601 and Appendix 6/1)	Material Properties Required for Acceptability (in addition to requirements on use of fill materials in Class 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				
SELECTED GRANULAR FILL	6	B	-	Selected coarse granular material	Starter layer	Natural gravel, natural sand, crushed gravel, crushed rock, crushed concrete, chalk, well burnt colliery spoil, slag or any combination thereof. (Properties (ii) and (iii) in next column, shall not apply to chalk. Recycled aggregate.	(i) grading	BS 1377:Part 2	Tab 6/2	Tab 6/2	Tab 6/4 Method 5	6	B	-
							(ii) plasticity index	BS 1377:Part 2	Non-plastic					
							(iii) Los Angeles Coefficient	Clause 636	50kN	-				
	6	F	2	Selected granular material (course 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:Part 2	Tab 6/2	Tab 6/2	Tab 6/4 Method 6	6	F	-
							(ii) optimum mc	BS 1377:Part 4 (vibrating hammer method)	-	-				
							(iii) mc	BS 1377:Part 2	Optimum mc -2%					
							(iv) 10% fines value	Clause 635	50kN	-				

Table 6/1: Acceptable Earthworks Materials: Classification Requirements (see footnotes)

Class				General Material Description	Typical Use	Permitted Constituents (all subject to requirements of Class 601 and Appendix 6/1)	Material Properties Required for Acceptability (in addition to requirements on use of fill materials in Class 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	Acceptable Limits Within: Upper				
	6	G	-	Selected granular material	Gabion filling	Natural gravel, crushed rock, crushed concrete or any combination thereof. None of these constituents shall include any argillaceous rock	(i) grading	BS 812:Part 103	Clause 626	Clause 626	None	6	G	-
							(ii) Los Angeles Coefficient	Clause 635		50				
	6	N	-	Selected well graded granular fill	Fill to structures	Natural gravel, natural sand, crushed gravel, crushed rock, crushed concrete, slag, well burnt colliery spoil or any combination thereof. None of these constituents shall include any argillaceous rock. Recycled aggregate except recycled asphalt.	(i) grading	BS 1377:Part 2	Tab 6/2	Tab 6/2	End product 95% of maximum dry density of BS 1377: Part 4 (vibrating hammer method)	6	N	-
							(ii) uniformity coefficient	See Note 5	10	-				
							(iii) Los Angeles Coefficient	Clause 635	-					
							(iv) undrained shear parameters (c and Ø)	Clause 633	to be determined by the Operating Company	-				
							(v) effective angle of internal friction (Ø') and effective cohesion (c')	Clause 636	to be determined by the Operating Company	-				
							(vi) permeability	Clause 640	to be determined by the Operating Company	-				
							(vii) mc	BS 1377:Part 2	to be determined by the Operating Company	to be determined by the Operating Company				

Table 6/1: Acceptable Earthworks Materials: Classification Requirements (see footnotes)

Class				General Material Description	Typical Use	Permitted Constituents (all subject to requirements of Class 601 and Appendix 6/1)	Material Properties Required for Acceptability (in addition to requirements on use of fill materials in Class 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				
							(viii) MCV	Clause 632	to be determined by the Operating Company	to be determined by the Operating Company				
							(ix) slope stability test (where required in App 6/6)	Clause 610	to be determined by the Operating Company	to be determined by the Operating Company				

Footnotes to Table 6/1

1. Where in the Acceptable Limits column reference is made to Appendix 6/1, only those properties have limits ascribed to them in Appendix 6/1 shall apply.

   Where Appendix 6/1 give limits for other properties not listed in this Table such limits shall also apply.

2. Where BS 1377:Part 2 is specified for mc, this shall mean BS 1377:Part 2 or BS EN 1097-5 as appropriate.

3. Uniformity coefficient is defined as the ratio of the particle diameters

   D60 to D10 on the particle-size distribution curve, where:

   D60 = particle diameter at which 60% of the soil by weight is finer

   D10 = particle diameter at which 10% of the soil by weight is finer

4. The above table contains details of materials, which are considered to be those most commonly encountered on the network, however, it this does not preclude the use of other materials, whose use shall be determined by the Operating Company in accordance with other provisions of the Operating Company.

APPENDIX 6/2: REQUIREMENTS FOR DEALING WITH CLASS U2 UNACCEPTABLE MATERIAL

1. The Operating Company shall dispose of Class U2 unacceptable material in accordance with statutory provisions and the requirements of the Scottish Environment Protection Agency.

   For specific Schemes where Class U2 unacceptable material shall be encountered the Operating Company shall submit its proposals for dealing with the material.

APPENDIX 6/3: REQUIREMENTS FOR EXCAVATION, DEPOSITION, COMPACTION (OTHER THAN DYNAMIC COMPACTION)

1 The use of a nuclear moisture/density gauge shall be permitted for measuring field dry densities of fill to Structures and fill above structural foundations where an end product compaction requirement shall be specified in Table 6/1.

2 Embankments shall be constructed in general with side slopes not steeper than 1 in 2.

APPENDIX 6/5 : GEOTEXTILES USED TO SEPARATE EARTHWORKS MATERIALS

1. Geotextile Type 1 shall be a general purpose woven or non-woven geotextile of nominal weight 100 g/m2.

   For Scheme specific purposes the Operating Company shall be required to prepare a further detailed Appendix 6/5 to reflect the particular needs of the Operations required to be carried out.

APPENDIX 6/8: TOPSOILING

1. The thickness of topsoil to be deposited shall be as determined by the Operating Company in accordance with the other provisions of this Contract.

2. The use of a tracked vehicle shall not be permitted to spread topsoil.

3. The use of topsoil class 5B shall be determined by the Operating Company in accordance with the other provisions of this Contract.

APPENDIX 6/10: GROUND ANCHORAGES, CRIB WALLING AND GABIONS

1. Unless stated otherwise in an Order gabions shall be constructed using a cage of 80mm nominal mesh opening filled with Class 6G material of grading 100mm to 200mm.

   Any variation in nominal mesh opening together with overall cage dimensions to suit specific Scheme requirements shall be determined by the Operating Company in accordance with other provisions of this Contract.

2. Where a plastic geomesh shall be proposed the properties shall determined by the Operating Company in accordance with other provisions of this Contract.

3. Gabions shall be stretched and maintained under tension during filling to give a good alignment and finish.

4. Bulges or depressions greater than 50mm per square metre of face shall be considered excessive and the stone in gabions shall be removed and the gabion replaced or repaired.

APPENDIX 6/14: LIMITING VALUES FOR POLLUTION OF CONTROLLED WATER

1. The Operating Company shall determine for each Scheme the limiting values in a material for pollution of controlled waters.

   These values may be expressed as total concentrations in the material or preferably as concentrations or cumulative leached amounts in standard leaching tests carried out on the materials.

2. The Operating Company shall through consultation with the Scottish Environment Protection Agency establish generic guideline values for given soil conditions or shall undertake Scheme specific risk assessments in order to derive such values.

   Any values established in this manner shall request be approved by Scottish Environment Protection Agency.

3. The Operating Company shall include for all testing requirements in relation to this Appendix in its Quality Management System as part of its Inspection and Test Plan or the like in accordance with the requirements of Appendix 1/5.

APPENDIX 6/15: LIMITING VALUES FOR HARM TO HUMAN HEALTH AND THE ENVIRONMENT

1. The Operating Company shall determine for each Scheme the limits on the amount of contaminants in a material which if exceeded shall lead to a significant possibility of significant harm to human health or the environment.

2. The Operating Company shall through consultation with the Scottish Environment Protection Agency establish generic guideline values for given soil conditions or shall undertake Scheme specific risk assessments in order to derive such values. Any values established in this manner shall be approved by Scottish Environment Protection Agency.

3. The Operating Company shall include for all testing requirements in relation to this Appendix in its Quality Management System as Part of its Inspection and Test Plan or the like in accordance with the requirements of Appendix 1/5.

APPENDIX 7/1: FLEXIBLE PAVEMENT CONSTRUCTION

1. Permitted Pavement Options – Schedule 1 – Not Used

2. General Requirements – Schedule 2

   1. Grid for checking surface level of pavement courses (Clause 702.4)

      Longitudinal dimension = 10 metres

      Transverse dimension = 2 metres

   2. Surface regularity Category of road: (Clause 702.7) - A.

   3. Coated chippings (Clause 915): Nominal size 20mm

   4. Surface Texture required: Sand Patch (Clause 921).

   5. BS 4987 Part 1 Traffic Category (Clauses 902, 912, 914, 933 and 934): Category A.

   6. The requirement for a surface macrotexture shall be determined by the Operating Company in accordance with the other provisions of this Contract.

   7. Full documentation of the manufacturer's design shall be supplied to the Director for his written consent before the commencement of laying of any material designed in accordance with MCHW Clause 929 or BS 598 Part 107.

APPENDIX 7/1: FLEXIBLE PAVEMENT CONSTRUCTION (CONTINUED)

3. Permitted Construction Materials – Schedule 3

Schedule 3: Permitted Construction Materials		
Pavement Options		
Pavement Layer	Material Reference	Thickness (mm)
Surface Treatment	AST1	
Surface Course*	SC1 to SC8 Inclusive	Scheme Specific
Binder Course*	BC1 to BC6 inclusive	Scheme Specific
Base*	B1 to B6 inclusive	Scheme Specific
Subbase*	SB1 AND SB2	Scheme Specific
[Other – e.g. regulating]	RC1 – RC4 inclusive	Varies
Total Thickness*		Scheme Specific
Capping*		Scheme Specific

* Scheme Specific Information shall be determined by the Operating Company in accordance with the other provisions of this Contract.

APPENDIX 7/1: FLEXIBLE PAVEMENT CONSTRUCTION (CONTINUED)

4. General Requirements for Construction Materials – Schedule 4

(i) The minimum PSV and Maximum AAV requirements for the permitted surface course materials listed in schedule 5 of this Appendix shall be Scheme specific and shall be determined in accordance with Tables 3.1 and 3.2 of HD 36/99 of the DMRB respectively.

The required values for each Scheme shall be determined by the Operating Company in accordance with the other provisions of this Contract.

(ii) Individual layer thicknesses shall be Scheme specific and the required values for each Scheme shall be determined by the Operating Company in accordance with other the provisions of this Contract.

(iii) Coated chippings for rolled asphalt surface courses listed in schedule 5 of this Appendix shall be 14/20 and comply with Clause 915.

(iv) Cement and other Hydraulically Bound Mixtures complying with Clauses 810 to 880 shall only be permitted for use with the prior written consent by the Director.

The requirements for these materials when proposed for use shall be determined by the Operating Company in accordance with the other provisions of this Contract.

(v) Requirements For Construction Materials – Schedule 5

Schedule 5: Requirements for Construction Materials

Material Reference	Clause	Description	Requirement
SB1	803	Type 1 unbound mixture for Sub-base	Crushed Gravel Coarse Aggregate - shall be permitted with the written consent by the Director Minimum CBR – 30% Trafficking Trial – Not Required
SB2	804	Type 2 unbound mixture for Sub-base	Minimum CBR – 30% More than 50% asphalt arisings – Not permitted
B1	903	Dense Macadam Base	Aggregate Types Blast furnace slag and steel slag shall not be permitted as coarse aggregates. Binder – 40/60 pen(machine laid) 100/150 pen (hand laid) Material to comply with Clause 929 BS 4987 : Part 1 Clause 5

APPENDIX 7/1: FLEXIBLE PAVEMENT CONSTRUCTION (CONTINUED)

Schedule 5: Requirements for Construction Materials (continued)

Material Reference	Clause	Description	Requirement
B2	904	Rolled Asphalt Base	Minimum Delivery Temperature – As Clause 945 Maximum wind Speed – As Clause 945 Minimum Air Temperature - As Clause 945 BS 594:Part 1Table 2 Column 2/5 Binder – 40/60 pen (machine Lay)
BC1	905	Rolled Asphalt Binder Course	Min Delivery Temperature – As Clause 945 Max wind Speed – As Clause 945 Min Air Temperature - As Clause 945 BS 594:Part 1Table 2 Column 2/2 Binder – 40/60 pen (machine Lay)
B3 & BC2	906	Recipe Mixtures: Dense Base and Binder Course Macadams with Paving Grade Bitumen	Aggregate Types Blast furnace slag and steel slag shall not be permitted as coarse aggregates. Binder penetration and aggregate size shall be determined by the Operating Company in accordance with the other provisions of this Contract and shall be selected from the materials listed in Table 9/3. Design to Clause 929 not required BS 4987 : Part 1 Clause 5 (Base) BS 4987 : Part 1 Clause 6 (Binder Course)
RC1	907	Regulating Course – Base materials	Any of the permitted materials for the appropriate layer subject to compliance with laying requirements of the relevant British Standard (4987 or 594) for the particular material.
RC2	907	Regulating Course – Binder course materials	Any of the permitted materials for the appropriate layer subject to compliance with laying requirements of the relevant British Standard (BS4987 or BS594) for the particular material
RC3	907	Regulating Course – Surfacing Course materials.	Any of the permitted materials for the appropriate layer subject to compliance with laying requirements of the relevant British Standard (BS4987 or BS594) for the particular material

APPENDIX 7/1: FLEXIBLE PAVEMENT CONSTRUCTION (CONTINUED)

Schedule 5: Requirements for Construction Materials (continued)

Material Reference	Clause	Description	Requirement
SC1	909	Dense Macadam Surface Course Note: Use of this material shall be subject to written consent by the Director.	BS 4987 : Part 1 Clause 7.5 0/6mm size aggregate Binder 100/150 or 160/220 pen.
SC2	910	Rolled Asphalt Surface Course (Recipe Mix)	Minimum Delivery Temperature – As Clause 945 Maximum wind Speed – As Clause 945 Minimum Air Temperature - As Clause 945 BS 594: Part 1: Table 6. Columns 6/4 and 6/5, Binder – 40/60 pen (machine laid) 70/100 pen (machine laid) Note: Use shall be subject to written consent by the Director. 100/150 pen (hand laid) Coarse Aggregate percentage 30 or 35% Aggregate types – As BS 594 Part1 Clause 4.2

APPENDIX 7/1: FLEXIBLE PAVEMENT CONSTRUCTION (CONTINUED)

Schedule 5: Requirements for Construction Materials (continued)

Material Reference	Clause	Description	Requirement
SC3	911	Rolled Asphalt Surface Course (Design Mix)	Minimum Delivery Temperature – As Clause 945 Maximum wind Speed – As Clause 945 Minimum Air Temperature - As Clause 945 BS594: Part 1 : Tables 3 and 4 Columns, 3/3, and 4/3 Binder – 40/60 pen (machine laid) 70/100 pen (machine laid) Note: Use shall be subject to written consent by the Director. 100/150 pen (hand laid) Coarse Aggregate percentage 35% The Marshall Stability Range shall be determined by the Operating Company in accordance with the other provisions of this Contract in accordance with the requirements of BS 594 Part 1 Annex B Aggregate types – As BS 594 Part1 Clause 4
SC4	912	Close Graded Macadam Surface Course	BS 4987 : Part 1 sub-Clause 7.3 Nominal Aggregate size 14mm Note: Use of this material shall be subject to written consent by the Director. Traffic Category and Binder Grade to be determined by the Operating Company in accordance with other provisions of this Contract
SC5	914	Fine Graded Macadam Surface Course	BS 4987 : Part 1 sub-Clause 7.7 Nominal Aggregate size 4mm Note: Use of this material shall be subject to written consent by the Director. Traffic Category and Binder Grade to be determined by the Operating Company in accordance with the other provisions of this Contract

APPENDIX 7/1: FLEXIBLE PAVEMENT CONSTRUCTION (CONTINUED)

Schedule 5: Requirements for Construction Materials (continued)

Material Reference	Clause	Description	Requirement
SC6	916	Open Graded Macadam Surface Course	BS 4987 : Part 1 sub-Clause 7.1 Nominal Aggregate size 14mm Note: Use of this material shall be subject to written consent by the Director. Traffic Category and Binder Grade to be determined by the Operating Company in accordance with the other provisions of this Contract
AST1	924	High Friction Surfaces	Type Classification – to be determined by the Operating Company in accordance with the other provisions of this Contract Minimum Declared PSV – 70
B4 & BC3 B4a & BC3a B4b & BC3b B4c & BC3c	929	Designed Mixtures: Dense Base and Binder Course Macadams HDM50 DBM50 HMB35	Aggregate Types Blast furnace slag and steel slag shall not be permitted as coarse aggregates. The type of material required for each Scheme shall be determined by the Operating Company in accordance with the other provisions of this Contract and shall be selected from the materials listed in Table 9/5. BS 4987 : Part 1 Clause 5 (Base) BS 4987 : Part 1 Clause 6 (Binder Course)
B5 & BC4	931	Recipe Mixtures: Heavy Duty Base and Binder Course Macadams with Paving Grade Bitumen	Aggregate Types Blast furnace slag and steel slag shall not be permitted as coarse aggregates. Binder penetration and aggregate size shall be determined by the Operating Company in accordance with the other provisions of this Contract and shall be selected from the materials listed in Table 9/3. Design to Clause 929 not required BS 4987 : Part 1 Clause 5 (Base) BS 4987 : Part 1 Clause 6 (Binder Course)

APPENDIX 7/1: FLEXIBLE PAVEMENT CONSTRUCTION (CONTINUED)

Schedule 5: Requirements for Construction Materials (continued)

Material Reference	Clause	Description	Requirement
BC5	937	Stone Mastic Asphalt Binder Course	Binder as Clause 937.7 Sampling and testing shall be undertaken by the Operating Company. Wheel tracking test temperature 45oC – class 1 roads Maximum Rut Rate 2mm/hr – class 1 roads Maximum Rut Depth 2mm – class 1 roads Wheel tracking test temperature 60oC – class 2 roads Maximum Rut Rate 5mm/hr – class 2 roads Maximum Rut Depth 7mm – class 2 roads Laying to be in accordance with Clause 901 Required deformation values shall be determined by the Operating Company in accordance with the other provisions of this Contract
RC4	937	Stone Mastic Asphalt Regulating Course	As for BC5 above

APPENDIX 7/1: FLEXIBLE PAVEMENT CONSTRUCTION (CONTINUED)

Schedule 5: Requirements for Construction Materials (continued)

Material Reference	Clause	Description	Requirement
SC7	942	Thin Surface Course Systems. Note: The use of this material shall be subject to written consent by the Director on a Scheme specific basis with the exception of small areas of repair to existing surface courses where Clause 942 material has been used(1).	The following parameters shall be determined by the Operating Company in accordance with the other provisions of this Contract: (i) Traffic Count (ii) Site definition and stress level (iii) Minimum wheel-tracking level required on BBA HAPAS Roads and Bridges Certificate (iv) Road/tyre noise level relative to HRA required on BBA HAPAS Roads and Bridges Certificate (v) The average macrotexture depth of each Lane kilometre if not 1.5mm and the average minimum value if not in accordance with sub-Clause 942.13 (vi) Surface macrotexture – Performance requirements if not in accordance with sub-Clause 942.16 The guarantee period shall be two years unless otherwise stated on the Order.
SC7a		Design Type1 - Fibre based SMA type surface course	Note: Where repairs require to be carried out to a surface of area less than 100m2 which shall be comprised of a thin surface course system the material used shall be of the Design Type previously used.
SC7b		Design Type2 – Polymer Modified SMA type surface course	
SC7c		Design Type3 – Polymer Modified SMA type veneer coat surface course	

APPENDIX 7/1: FLEXIBLE PAVEMENT CONSTRUCTION (CONTINUED)

Schedule 5: Requirements for Construction Materials (continued)

Material Reference	Clause	Description	Requirement
B6 & BC6	944	Performance-Specified Base and Binder Course. Note: The use of this material shall be subject to written consent by the Director on a Scheme specific basis.	Where use of this material shall be permitted the following parameters shall be determined by the Operating Company in accordance with the other provisions of this Contract: (i) Stiffness requirements (ii) Deformation Values
SC8	971	Stone Mastic Asphalt (SMA) Surface Course Note: The use of this material shall be subject to written consent by the Director on a Scheme specific basis.	

6. Thin Surface Course Systems: Information to Be Provided By The Operating Company - Schedule 6

The Operating Company shall provide the following information

(i) A copy of the British Board of Agrément HAPAS Roads and Bridges Certificate or Certificates for the thin surface course system or systems that shall be proposed for use in the Scheme, together with a copy of the Installation Method Statement associated with each Certificate

(ii) For any Certificate that covers several variants of one thin surface course system, proposed variant or variants of the system to be used in the Scheme *[variants of a system occur from any option that results in different values being reported on the Certificate for one or more properties, and could involve changes in nominal maximum aggregate size, aggregate type, aggregate grading, binder type, binder content, fibres or other additives, type and rate of spread of bond coat]*

(iii) If required or if the thin surface course system shall not be produced under a Sector Scheme, the proposed component materials to be used in the thin surface course system and their proportions for each proposed system

APPENDIX 7/1: FLEXIBLE PAVEMENT CONSTRUCTION (CONTINUED)

(iv) Proposed source or sources of coarse aggregate together with statement of properties including polished stone value, ten per cent fines value, aggregate abrasion value and flakiness index

(v) If regulating material shall be used, evidence of its deformation resistance either independently or in combination with the thin surface course system

7. Modified Binder And Mixture Data Requirements - Schedule 7

The following data shall be provided to the Director as required in sub-Clauses 937.9, 938.1, 943.5 and 943.8 and for materials the subject of a Design in accordance with 911, 929, 944 or 952 in respect of the proposed binder [note: all these Clauses cover materials that shall be designed by the supplier].

The data shall not be more than 26 weeks old. A table in which the binder data may be recorded shall be as given at the end of this section.

(i) Binder Samples Bituminous binders shall be sampled from the delivery according to 'BS 3195-3, EN 58'.

For modifiers blended with the other component materials of the mixture at the mixer a simulated binder shall be prepared.

Such modifiers are generally less intimately mixed with the bitumen and less well dispersed throughout the mixture than when pre-blended.

Evidence that the simulated binder offers the same performance as the binder produced when the modifier is added at the mixer shall be provided to the Director.

(ii) Penetration

Binder penetration at 25°C (BS EN 1426), 100g 5 secs and at 5°C 200g 60 secs, before and after hardening in the Rolling Thin Film Oven Test in accordance with BS EN 12607-1, or alternatively, after RTFOT and Ageing in accordance with Clause 923.

(iii) Product Identification Test and Rheological Properties

Results for the binder(s) proposed shall comprise rheological data for each binder in the form of complex shear (stiffness) modulus (G*) and phase angle (δ) determined in accordance with Clause 928 for binder as supplied, after RTFOT and Ageing in accordance with Clause 923.

(iv) Storage Stability Test

All binders shall be stored strictly in accordance with the manufacturer's instructions.

Polymer modified binders claimed to remain homogeneous in storage without agitation shall be tested for storage stability in the manner described in Clause 941.

The mean of the differences in softening point between the top and bottom samples, of not less than five pairs of such samples shall not exceed 5°C.

APPENDIX 7/1: FLEXIBLE PAVEMENT CONSTRUCTION (CONTINUED)

Manufacturers of pre-blended modified binders shall state in writing what precautions shall be necessary to ensure that adequate homogeneity shall be maintained during storage.

(v) Photomicrograph

A typical photomicrograph of the modified binder and binder suing ultra-violet or other technique to provide maximum contrast of the polymer structure to the binder before modification shall be supplied together with details of sample preparation techniques.

(vi) Cohesion

Vialit Pendulum cohesion test curve of the binder, in accordance with Clause 939 for the binder as supplied, after RTFOT and after RTFOT and Ageing in accordance with Clause 923.

(vii) FRAASS Brittle Point (IP 80)

FRAASS brittle point measured using BS EN 12593 shall be provided on the binder as supplied, after RTFOT and Ageing in accordance with Clause 923.

Manufacturer of Binder	Product Name		
Binder Type		Batch Reference	
Binder source			
Softening point difference in storage stability test			
Test	Supplied Binder	After RTFOT	After Ageing
Penetration at 25°C 0,1 mm (100g and 5 secs)			
Penetration at 5°C 0,1 mm (200g and 60 secs)			
Vialit pendulum cohesion See Clause 939 maximum peak value J/cm2	#	#	#
Fraass brittle point			
Other properties the Operating Company considers useful and/or necessary			

Where indicated with # the Operating Company shall attach a graphical output to this schedule.

APPENDIX 7/1: FLEXIBLE PAVEMENT CONSTRUCTION (CONTINUED)

8 Mixture Data Requirements - Schedule 8

The following data shall be provided to the Director as required in sub-Clauses 937.9, 938.1, 943.5 and 943.8 and for materials designed in accordance with 911, 929, 944, 952 or 953 in respect of the proposed mixture as appropriate [note: all these Clauses cover materials that shall be designed by the supplier].

(i) Mixing and compaction temperatures

Maximum and minimum mixing temperatures should be stated. Maximum and minimum compaction temperatures and any wind chill factor differing from conventional hot rolled asphalt utilising unmodified bitumen shall be stated.

(ii) Mix Sensitivity Analysis

Wheel-tracking rate for the proposed mixture but with the binder content by mass increased above the target to the maximum binder content anticipated by the Operating Company, but not more than + 0.6% above the target.

(iii) **Repeated Load Axial Test (RLAT)** to DD 226 : 1996 (for correlation to performance in terms of deformation).

(iv) **Indirect Tensile Fatigue Test (ITFT)** - after ageing, see LINK Protocol (for correlation to performance in terms of fatigue)

(v) Saturation Ageing Tensile Stiffness (SATS)

APPENDIX 7/2: EXCAVATION, TRIMMING AND REINSTATEMENT OF EXISTING SURFACES

1. Where excavation shall be required to be carried out in an existing pavement the limits of the excavation shall be formed by saw cutting and the excavation completed in such a manner as to minimise disturbance of the adjacent pavement.

2. The cross sectional diagram of a typical trench reinstatement shall be shown in HCD Drawing K4.

APPENDIX 7/3 : SURFACE DRESSING – PERFORMANCE SPECIFICATION SHEET 1:

1. The Design for surface dressing shall be carried out by the Operating Company in accordance with TRL Road Note 39 (5th Edition) (Revised) together with the requirements of this Appendix.

   The Code of Practice for Surface Dressing (RSDA 2000a) shall be referred to within TRL Road Note 39 and shall be complied with for this work.

   Where there shall be conflict between the requirement of Clause 919 and Road Note 39 Road Note 39 shall take precedence.

2. Patching and crack repair of the existing carriageway shall be carried out at least 21 days in advance of the surface dressing.

   Patching with a high stone content material shall have a similar hardness to existing adjacent surfacing and shall not have horizontal sealing strip applied.

3. Seasons and Weather Conditions – in accordance with TRL Road Note 39 (6.3.2 and Table 6.3.2).

4. Permitted options shall be restricted to ‘racked-in’ surface dressing systems and double surface dressing systems.

5. Binder shall be modified Premium Grade.

   Both cut-back bitumen and bitumen emulsion shall be permitted.

6. Binder cohesivity shall be a minimum of 1.2 J/cm2 over the widest possible temperature range.

7. Binder Rate of Spread – in accordance with TRL Road Note 39 adjusted where appropriate for local conditions and experience.

8. Except where stated in any Order chippings shall be 14mm and 6mm size complying with BS63 Part 2.

   Chippings Rate of Spread – in accordance with TRL Road Note 39 (8.3).

9. Chippings shall comply with Figure 6.3.1 in TRL Road Note 39 for PSV and AAV respectively.

10. Maximum pavement temperature – in accordance with TRL Road Note 39 (Table 6.3.2).

11. Notwithstaning any other provision of this Contract the finished surface dressing Site Operations shall be guaranteed by the Operating Company for 2 years in respect of surface texture and loss of chippings.

12. The Operating Company shall arrange an independent measurement of surface texture using the High Speed Texture Meter or the High Speed Road Monitor and shall submit these details to the Director.

    Measurement of Sensor Measured Texture Depth shall be made in the nearside and offside wheel tracks of all Lanes.

    The texture depth shall be measured after 11 months and before 13 months following initial trafficking and finally after 22 months and before the end of the guarantee period of 2 years.

APPENDIX 7/3 : SURFACE DRESSING – PERFORMANCE SPECIFICATION SHEET 1: CONTINUED

The minimum average Sensor Measured Texture

Depth at any point up to 2 years shall be 1.05mm for every 100metre Lane length.

In addition the percentage decrease in Sensor Measured Texture Depth between 12 and 2 years shall not exceed 40 per cent.

In the case of non-compliance detailed examination of the printout and the areas in question on the Site shall be undertaken.

Minimum lengths of 100metres and full lane width shall be considered for remedial action written consent by the Director.

Chip loss shall be visually monitored and upon detailed examination shall not exceed the following values at any time within the 2 years from opening to traffic:

Fretting	4 per cent
All Defects except fretting	2 per cent
Localised chip loss	10 per cent

13. The Operating Company shall be responsible for determining the extent of failures and for proposing remedial measures and shall be responsible for any costs incurred as consequence.

    The opportunity shall be afforded to the Director to participate in such evaluation in order that he is in a position to grant written consent to the appropriate actions.

14. The speed of traffic allowed onto new surface dressing shall be limited to 15mph by a suitable temporary traffic management scheme including the use of slow moving control vehicles.

    In pursuit of a requirement of nil chipping damage to Trunk Road users vehicles the Design for the surface dressing shall be such that by the end of each work shift the surface dressing shall be stable and all excess chippings removed by suitable suction sweeper with no requirement for further sweeping.

15. In addition to the Design proposal and binder data sheet the Operating Company shall keep compile and maintain the records required by Road Note 39 Clause 8.4 together with the following

    (i) type of surface dressing

    (ii) site sample peak binder cohesivity and the temperature range over which the specified minimum applies

    (iii) weather condition including humidity measurement

    (iv) road surface temperature

    (v) Sensor Measured Texture Depth measurements (12 and 24 months)

APPENDIX 7/3 : SURFACE DRESSING – PERFORMANCE SPECIFICATION (CONTINUED)

SHEET 2: Information to be provided by the Operating Company

The Operating Company shall provide the following information:

1 A copy of BS EN ISO 9001 certificate showing at least the name of the Company, the name of the certification body and the reference number and date of the certificate.

A copy of the relevant part of the company Quality Assurance document showing the appropriate scope and limitations of the certification.

The Director will wish to inspect all or any of the company's Quality Assurance documentation as part of the vendor assessment system and may wish to satisfy itself on the nature of the QA systems of the company's material suppliers.

2 Proposed binders together with their data sheets, product identification data and cohesivity data as specified.

3 Proposed source or sources of chippings together with statement of properties including target grading, target flakiness, minimum declared PSV and AAV.

4 A method statement for each site or group of similar sites showing how it shall be proposed to carry out the Site Operations in conformance with the Specification.

5 Proposals for traffic control and aftercare for each Site and reaction times for carrying out remedial measures and sweeping.

6 Contingency plans in the event of any breakdown of plant or failure of the dressing and provision for dusting.

7 A Type Approval Installation Trial certificate within the Sector Scheme for the Production of Surface Dressing or in the event of no certificates being issued a statement of any previous applications on roads similar in Site type and road hardness to this Contract sites containing the same data as listed in Sheet 3 of this Appendix

8 A statement of relevant experience and expertise, naming managers supervisors and teams responsible for and allocated to this Contract.

9 Design proposal for Surface Dressing for each location.

10 Estimated Design life of the Surface Dressing for each location.

11 For the performance specification the results of any other tests or other data the Operating Company considers would assist the Director in assessing the technical merit of the Design.

12 An 'As Built Manual' as specified in sub-Clause 922.18.

APPENDIX 7/3 SURFACE DRESSING – PERFORMANCE SPECIFICATION (CONTINUED)

Binder Data Sheet – Appendix 7/3	Surface Dressing – Performance Specification		
Manufacturer of Binder:	Product Name:		
Binder type:	Batch no:		
Binder Grade (highlight as required)	Conventional	Intermediate	
	Premium	Super-premium	
Binder source:	Supplied Binder	Aged Binder	Recovered Binder
Test	As supplied to Site	Recovered in accordance with Clause 923	Age Binder in accordance with Clause 923
Penetration at 25˚C 0,1 mm (100g and 5 secs)			
Penetration at 5˚C 0,1 mm (200g and 60 secs)			
Manufacturer's Quality Assurance viscosity test for supplied cutback binder within temperature range 100˚C to 160˚C or alternatively penetration at 5˚C 0,1 mm (100g and 5 secs)	†		
Vialit pendulum cohesion see Clause 939 maximum peak value J/cm²	†#	#	#
Product identification test sub-Clause 922.6. Complex shear (stiffness) modulus (G*) and phase angle (δ) data. See Clause 928.			#
Minimum viscosity STV 4 mm cup at 40˚C or Redwood II at 85˚C; (required to prevent binder flow on road – normal	‡		

APPENDIX 7/3 SURFACE DRESSING – PERFORMANCE SPECIFICATION (CONTINUED)

Binder Data Sheet – Appendix 7/3	Surface Dressing – Performance Specification		
camber)			
Other properties this Operating Company considers useful and/or necessary			
Weather limits – information from binder manufacturer: road or air temperatures; humidity; wind chill adjustment; tolerance of surface dampness and the like	Temperature max: Temperature min: Other:		

Where indicated with # this Operating Company shall attach a graphical output to this schedule.

† Cutback binders only.

‡ Emulsions only. Shaded cells do not require data.

APPENDIX 7/3 : SURFACE DRESSING – PERFORMANCE SPECIFICATION (CONTINUED)

Sheet 3: Tait Certificate Information to Be Provided By The Operating Company

The Operating Company shall provide the TAIT Certificate containing at least the following information for each Scheme:

Company Name and Address:

Quality Assurance reference number and certifying body:

TAIT reference number:

Date of TAIT:

Self-certified within the Sector Scheme for the Production of Surface Dressing or certified by British Board of Agrément

Proprietary Name:

Description of material:

Design procedure or method:

Material thickness (if applicable):

Macrotexture depth at 1 year (as measured and as a percentage of the initial value):

Colour retention (if applicable):

Other optional claims as declared by the installer (eg Profile improvement, reduced tyre-road noise emission or RSI, ability to accommodate a variable substrate, skid resistance if greater than PSV and macrotexture would indicate, etc.)

Expected life (Estimated Design Life)

Field of application for the particular material:

Traffic - maximum commercial vehicles per Lane per day:

Traffic - total traffic per Lane per day:

Traffic - Speed limit:

Degree of Site difficulty, see HD 36 (DMRB 7.5.1) for categories:

Constraints on application for the particular material:

Time of year:

Temperature:

Variability of existing surface hardness or type:

Other as declared by the installer:

Name and signature of company representative responsible for the TAIT:

APPENDIX 7/4: BOND COATS, TACK COATS AND OTHER BITUMINOUS SPRAYS

1. Location

(i) Unless otherwise the written consent by the Director the Operating Company shall apply a bond coat or a tack coat to existing surfaces which have been planed prior to laying a surfacing course.

(ii) Unless otherwise the written consent by the Director the Operating Company shall apply a tack coat to newly laid material which has remained uncovered by the successive covering layer for more than 3 consecutive days or which has been trafficked.

The Operating Company shall determine the following requirements in accordance with the other provisions of this Contract for bond coats or tack coats for each application:

(i) Site specific limitations

(ii) Type of Binder

(iii) Binder Grade.

(iv) Rate of Spread

(v) Any permitted additives to binder.

(vi) Binding Material.

All street furniture, ironwork, drop-kerbs and the like shall be masked in accordance with sub-Clause 920.6

APPENDIX 7/4: BOND COATS, TACK COATS AND OTHER BITUMINOUS SPRAYS CONTINUED

Sheet 2: Information to Be Provided By The Operating Company

The Operating Company shall provide the following information prior to the commencement of the work:

1. The product or products he proposes to use together with their data sheets, product identification data, cohesivity data as specified.
2. For each product, a copy of the BS EN ISO 9001 certificate showing the name of the manufacturer the name of the certification body and the reference number and date of the certificate.
3. The spraying equipment proposed, and a test certificate.
4. The source or sources of blinding material proposed.
5. Contingency plans in the event of any breakdown.
6. The results of any other tests or other data the Operating Company considers would assist the Director in assessing the technical merit of the treatment such as:
   (i) Tackiness test and/or trafficability time and methods of test.
   (ii) Breaking time test results for different weather conditions and substrates.
   (iii) Test results for bond to newly laid concrete *[e.g from a BBA/HAPAS certificate if available]*. The data supplied shall be not more than 26 weeks old.

APPENDIX 7/4: BOND COATS, TACK COATS AND OTHER BITUMINOUS SPRAYS CONTINUED

Binder Data Sheet – Appendix 7/4	Bond Coats, Tack Coats and Other Bituminous Sprays	
Manufacturer of Binder:	Product Name:	
Binder type:	Batch no:	
Binder Grade (highlight as required)		
Conventional Intermediate Premium Super-premium Non-tack Other		
Binder Source →	Recovered Binder	Recovered Binder after Ageing Test
Test ↓	Recovered in accordance with Clause 923	Aged in accordance with Clause 923
Penetration at 25˚C 0,1 mm (100g and 5 secs)		
Penetration at 5˚C 0,1 mm (200g and 60 secs)		
Vialit pendulum cohesion see Clause 939 maximum peak value J/cm²	The Operating Company shall attach a report and graphical output to this schedule as specified in Clause 939	The Operating Company shall attach a report and graphical output to this schedule as specified in Clause 939
Product identification test. The provision of data for identification and ageing is optional for unmodified bituminous emulsions to BS 434 and for bitumen to BS EN 12591 and cutback bitumen to BS 3690. Complex shear (stiffness) modulus (G*) and phase angle (δ) data. See Clause 928.	The Operating Company shall attach a report and graphical output to this schedule as specified in Clause 939	The Operating Company shall attach a report and graphical output to this schedule as specified in Clause 939

APPENDIX 7/4: BOND COATS, TACK COATS AND OTHER BITUMINOUS SPRAYS CONTINUED

Other properties the Operating Company considers useful and/or necessary: Minimum Binder Content Binder temperature range for spray application Emulsion Properties and Viscosity Break time Breaking Agent type Weather limits – information from binder manufacturer: road or air temperatures; humidity; wind chill adjustment; tolerance of surface dampnessand the like Temperature maximum: Temperature minimum: Other:	

APPENDIX 7/5: INSITU RECYCLING THE REMIX AND REPAVE PROCESS

The Operating Company shall determine the following requirements in accordance with the other provisions of this Contract for each individual Operation:

1. The location of the insitu recycling and repave process.
2. The requirements for milling.
3. Requirements for thickness and materials.
4. Proportions of new and existing materials.
5. Levels.

APPENDIX 7/6: BREAKING UP OR PERFORATION OF EXISTING PAVEMENTS

1. Where perforation of existing pavements shall be required the Operating Company shall perforate the full depth of the existing carriageway construction with holes of 100mm-mininum diameter on a 500mm x 500mm grid.

2. No perforation shall be made closer than 750mm to a chamber, cover, box or grating in the carriageway surface or edge of surfacing material.

APPENDIX 7/7: SLURRY SURFACING INCORPORATING MICROSURFACING

SHEET 1: Information to be provided the Operating Company in accordance with the other provisions of this Contract.

1. Location.
2. Traffic Count
3. Traffic Speed, 85 percentile and site speed limit
4. Category of site
5. Description of existing surface
6. Thickness of Slurry Surfacing
7. Guarantee period if not 2 years shall be stated on the Order
8. Minimum declared PSV of coarse aggregate
9. Maximum AAV of coarse aggregate
10. Preparation and masking requirements
11. Definition of colour required
12. Surface finish required for footways (if not by transverse brushing)
13. Minimum macrotexture depth at end of guarantee period
14. Maximum texture depth after 4 weeks trafficking
15. Maximum percentage decrease in macrotexture initially measured and at end of the guarantee period
16. Class of area Defects (% area affected) acceptable
17. Class of linear Defects (metre per 100metres) acceptable
18. Class of transverse regularity
19. Class of longitudinal regularity
20. Special Restrictions

APPENDIX 7/7: SLURRY SURFACING INCORPORATING MICROSURFACING CONTINUED

SHEET 2: Information to be provided by the Operating Company

1 A copy of BS EN ISO 9001 certificate showing at least the name of the Company, the name of the certification body and the reference number and date of the certificate.

A copy of the relevant part of the company Quality Assurance document showing the appropriate scope (Slurry Surfacing and Sector Scheme) and limitations of the certification.

2 Design Proposal for Slurry Surfacing for each location and target binder content with tolerances.

3 Estimated Design Life of the Slurry Surfacing for each location.

4 A copy of the Type Approval Installation Trial Certificate within the Sector Scheme for Slurry Surfacing for the proposed system together with its supporting data.

In the event of no certificates being issued a statement of any previous applications on roads similar in Site type to this Contract Sites containing the same data as listed in NG Sample Appendix Sheet 3.

5 A method statement for each Site or group of similar Sites showing how it shall be proposed to carry out the works in conformance with the specification.

6 Proposed source or sources of coarse aggregate together with statements of properties including target grading, declared PSV and AAV.

7 Proposed source or sources of fine aggregate including target grading and other constituents together with statements of properties.

8 Proposed binder together with data sheets and cohesivity data.

A copy of all the data shall be provided to the Director.

9 Proposals for traffic control and aftercare for each Site and reaction times for: carrying out remedial measures; sweeping; and Site visits with the Director.

10 Contingency plans in the event of any breakdown of plant or failure of the Slurry Surfacing.

11 An ‘As Built Manual’ as specified in sub-Clause 918.30.

12 If available the following information shall be provided in order to assist the Director to assess the technical merits of the Design Proposal:

(i) Test method for binder content.

(ii) Test for thickness of Slurry Surfacing.

APPENDIX 7/7: SLURRY SURFACING INCORPORATING MICROSURFACING CONTINUED

(iii) Trafficability time, including method of test.

(iv) Wheel tracking test results at 45ºC or 60ºC or other suitable measure of the ability of the proposed system to resist deformation and flow.

(v) Water sensitivity test results from the test used by BBA/HAPAS thin surfacing Guidelines Document or from wet wheel tracking (whichever is available).

(vi) Permeability test carried out on the system, if it is claimed that the process seals the existing surface together with the method of test.

(vii) Accelerated ageing test results in accordance with the appropriate BBA/HAPAS test.

(viii) Bond test results using the BBA/HAPAS test on either a bituminous or a concrete substrate as appropriate to the site or Bond Coat binder BBA/HAPAS certificate.

(ix) Shaking Abrasion test results.

(x) Slurry surfacing mix cohesion.

(xi) The results of any other tests or other data this Operating Company considers would assist the Director in assessing the technical merit of the Design Proposal.

APPENDIX 7/7: SLURRY SURFACING INCORPORATING MICROSURFACING CONTINUED

Binder Data Sheet -Appendix 7/7	Slurry Surfacing Incorporating Microsurfacing		
Manufacturer of Binder:	Product Name:		
Binder type:	Batch No:		
Binder source:			
Test	Binder as supplied to Site	Recovered binder in accordance with Clause 923	Aged binder in accordance with Clause 923
Penetration at 25°C 0,1 mm (100g and 5 secs)			
Penetration at 5°C 0,1 mm (200g and 60 secs)			
Vialit pendulum cohesion see Clause 939 maximum peak value J/cm2		#	#
Product identification test sub-Clause 918.7. Complex shear (stiffness) modulus (G*) and phase angle (™) data. See Clause 928.		#	#
Other properties this Operating Company considers useful			
Weather limits - information from binder manufacturer: road or air temperatures; humidity; wind chill adjustment; etc.	Temperature Max: Temperature Min: Other:		

Where indicated with # this Operating Company shall attach a graphical output to this schedule. Shaded cells do not require data.

APPENDIX 7/9:.COLD-MILLING (PLANING) OF BITUMINOUS BOUND FLEXIBLE PAVEMENT

The location of areas to be cold-milled (planing) together with details of whether profile planing or constant depth planing shall be required it shall be determined by the Operating Company in accordance with the other provisions of this Contract.

APPENDIX 7/10: WORKSHEET PRO FORMA FOR RESULTS OF TESTING FOR CONSTITUENT MATERIALS IN RECYCLED COARSE AGGREGATE AND RECYCLED CONCRETE AGGREGATE

Results Of Testing For Constituent Materials in Recycled Coarse Aggregate and Recycled Concrete Aggregate

Sample Reference	
Date	
Tested by	

Mass of test portion, M_{total}, Duplicate 1	
Mass of test portion, M_{total}, Duplicate 2	

Category	Mass $M_{subscript}$		Percentage $P_{subscript}$		
	Duplicate 1	Duplicate 2	Duplicate 1	Duplicate 2	Mean
Asphalt Class A					
Asphalt Class B					
Concrete and Concrete products (Class C)					
Lightweight particles (Class L)					
Unbound Aggregate (Class U)					
Other Particles (Class X)					
Sum*					

***Sum shall be the total of MA + MB + MC + ML + MU + MX. If sum shall not be within 1% of Mtotal, repeat the test.**

APPENDIX 7/11: OVERBAND AND INLAID CRACK SEALING SYSTEMS

1. The location of overband and inlaid crack sealing systems together with minimum PSV of source aggregate of chippings shall be determined by the Operating Company in accordance with the other provisions of this Contract.

APPENDIX 7/12: ARRESTER BEDS

South West

1. Location of each arrester bed to be maintained on the Trunk Road Network

Reg No	Location	Frequency	Area

APPENDIX 7/13: SAW-CUT AND SEAL BITUMINOUS OVERLAYS ON EXISTING JOINTED CONCRETE PAVEMENTS

1. The location of saw-cut and sealing of bituminous overlays on existing jointed concrete pavements shall be determined by the Operating Company in accordance with the other provisions of this Contract.

APPENDIX 7/14: PREPARATION OF JOINTED CONCRETE PAVEMENTS PRIOR TO OVERLAYING AND SAW-CUT AND SEAL OF THE BITUMINOUS OVERLAY

1. The location of the preparation of jointed concrete pavements prior to overlaying and saw–cut and sealing of the bituminous overlay shall be determined by the Operating Company in accordance with the other provisions of this Contract.

APPENDIX 7/15: SAW-CUT, CRACK AND SEAT EXISTING JOINTED REINFORCED CONCRETE PAVEMENTS

1. The location of the preparation of saw-cut, crack and seating existing jointed reinforced concrete pavements shall be determined by the Operating Company in accordance with the other provisions of this Contract.

APPENDIX 7/16: CRACKING AND SEATING OF EXISTING AND JOINTED UNREINFORCED CONCRETE PAVEMENTS AND CDM BASES

1. The location of the preparation of cracking and seating of existing and jointed unreinforced concrete pavements and CDM Bases shall be determined by the Operating Company in accordance with the other provisions of this Contract.

APPENDIX 7/18: SITE SPECIFIC DETAILS AND REQUIREMENTS FOR COLD RECYCLED BITUMEN BOUND MATERIAL

1. The Site specific details and requirements for cold recycled bitumen bound material shall be determined by the Operating Company in accordance with the other provisions of this Contract.

APPENDIX 7/19: SITE SPECIFIC DETAILS AND REQUIREMENTS FOR RECYCLED CEMENT BOUND MATERIAL

1. The Site specific details and requirements for cold recycled cement bound material shall be determined by the Operating Company in accordance with the other provisions of this Contract.

APPENDIX 7/20: SITE SPECIFIC DETAILS AND REQUIREMENTS FOR INDUCING CRACKS

1. The Site specific details and requirements for inducing cracks shall be determined by the Operating Company in accordance with the other provisions of this Contract.

APPENDIX 7/70: PAVEMENT STRENGTHENING MATERIALS

1. Pavement strengthening materials

Pavement strengthening materials shall be Glasgrid 8501 or equivalent.

The material shall be laid in accordance with the manufacturers instructions.

APPENDIX 7/71: CONCRETE PAVEMENTS REPAIR SYSTEMS

1. The following proprietary repair materials may be used on the Trunk Road Network for the repair of concrete pavements.

   The materials shall be used in accordance with the manufacturers written instructions.

   The Operating Company shall seek written consent from the Director for any alternative equivalent materials proposed.

   Fibrescreed manufactured by Prismo

   Toproc – for thin bonded and full depth repairs from Danlaid Contracting Pty Ltd

   Jointmaster (JMCrete) manufactured by Rhino Asphalt Solutions Limited.

APPENDIX 7/72: TEMPORARY REPAIRS TO CARRIAGEWAY DEFECTS

1. General

   Cut back and trim surface.

   Loose material shall be removed before filling the hole.

   Standing water shall be removed before filling the hole.

   The filling material shall be compacted to refusal with suitable compaction plant.

   The surface of the compacted material shall be level with that of the adjacent road.

   Temporary filling of depressions shall be in accordance with Clause 950

2. Temporary Repair Materials

   The Operating Company shall list in the following Table 1 alternative temporary repair materials suitable for use on the Trunk Road Network.

   When undertaking the Operations the Operating Company shall select the most appropriate temporary repair material from the completed table.

APPENDIX 7/72 : TEMPORARY REPAIRS TO CARRIAGEWAY DEFECTS (CONTINUED)

Table 1

Reference Number	Temporary Repair material

APPENDIX 7/72 : TEMPORARY REPAIRS TO CARRIAGEWAY DEFECTS (CONTINUED)

Table 1 (continued)

Column 1	Column 2	Column 3						
Locations On The Unit Where Temporary Repair Materials Are To Be Used.	Climatic Conditions/ Seasonal/Time Conditions Where Temporary Repair Materials Are To Be Used.	Type of Repair						
		Holes Less Than 0.5m^2 In Area	Holes Exceeding 0.5m^2 But Not Exceeding 1.0m^2 In Area	Holes Greater Than 1.0m^2 In Area	Road Stud Sockets	Depressions Not Exceeding 0.5m^2 In Area	Depressions Exceeding 0.5m^2 But Not Exceeding 1.0m^2 In Area	Depressions Exceeding1.0 M^2 In Area

APPENDIX 7/72 : TEMPORARY REPAIRS TO CARRIAGEWAY DEFECTS (CONTINUED)

Notes for completion of Table 1

1. In column 1 the Operating Company shall state in which location the particular temporary repair material is suitable for use which can be generic for example. all motorways or specific for example. routes XXX and the like.
2. In column 2 the Operating Company shall state under what conditions the temporary repair material is suitable for use e.g. summer winter temperatures greater than x degrees wet conditions etc.
3. In column 3 the Operating Company shall insert the reference number of the temporary repair material

APPENDIX 11/1: KERBS, FOOTWAYS AND PAVED AREAS

1. Details of Kerbs, Edgings, Channels, Footways, Paved areas and the like shall be as shown on Standard Drawings Series 1100/01 listed in Annex 9.1/A of this Part 1 of this Schedule 9.

2. Footways and Paved Areas shall be laid using materials and to thicknesses detailed in the Standard Drawings Series 1100/05 listed in Annex 9.1/A of this Part 1 of this Schedule 9.

APPENDIX 11/2 : ACCESS STEPS

1. Details of access steps to feeder pillars communications cabinets traffic counter cabinets Ice Prediction sites and the like shall be as shown on Standard Drawing No MCX 0138 (modified) listed in Annex 9.1A of this Part 1 of this Schedule 9.

APPENDIX 12/1 : TRAFFIC SIGNS - GENERAL

1. General

Sign schedules which detail the individual requirements for sign assemblies shall be prepared by the Operating Company in accordance with the other provisions of this Contract. These shall include:

(i) sign face details, dimensions and location

(ii) mounting height

(iii) Post details and

(iv) Foundation details

2. Sign faces

(i) Sign faces shall generally be constructed using Class 1 retroreflective material to BS 873 Part 6.

The requirement for the use of microprismatic retroreflective material and non reflective material shall be determined by the Operating Company in accordance with the other provisions of this Contract.

(ii) Where determined by the Operating Company in accordance with the other provisions of this Contract, sign faces shall be protected with a dew resistant sheeting as manufactured by 3M Scothchlite or equivalent.

3. Foundations

(i) Foundations for permanent traffic signs shall be in accordance with Clause 1203.

(ii) Details of foundations for sign posts and signal posts shall be shown on Drawings number. 1200/10/1 and 1200/10/2 in Annex 9/1.A of this Part 1 of this Schedule 9.

4. Sign Posts

(i) Base Plates

Each post shall have a galvanised base plate.

This shall be fixed to the post in order to prevent any rotation of the post.

It shall be of square section with the side dimensions being at least twice the diameter of the post.

(ii) Base Housings

The minimum diameter of base housings on tubular posts shall be 168mm.

Rectangular posts requiring an electrical supply shall be fitted with an integral flush fitting door above ground level.

Detachable root boxes are not to be used.

The internal base housing shall contain

A baseboard manufactured from marine plywood or hardwood with a minimum thickness of 15mm and minimum dimensions of 100 x 380mm.

APPENDIX 12/1 : TRAFFIC SIGNS – GENERAL (CONTINUED)

It shall be mounted securely to the back of the compartment on which the electrical equipment shall be mounted.

The minimum distance from the face of the baseboard to the inside of the front of the housing shall be at least 100mm.

A brass or stainless steel earthing screw or stud 8mm diameter complete with two brass washers and a brass nut and locknut shall be provided on the housing in a suitable and easily accessible position.

A door aperture measuring not less than 110 x 400mm.

The lower edge of the door shall be positioned so that when the post shall be installed it shall not be less than 300mm above ground level.

The door opening is to face away from oncoming traffic.

(iii) End Caps

All posts shall be supplied complete with plastic end cap. End caps shall be shaped to shed water to the outside of the post and shall be the same colour as the post.

(iv) Protective Finish

The protective finish to steel posts and brackets shall be as follows

Hot dip galvanised to BS 729 at the fabrication factory.

The post shall be covered in bitumen in accordance with BS 5649: Part 4 both outside and inside the post up to 150mm above proposed ground level.

5. Permanent Bollards

Internally illuminated bollards shall be base illuminated.

6. Sign Fix Clips

Sign fix clips shall be made of stainless steel.

7. Ducting

Ducting installed through the foundations of posts into which electrical equipment shall be installed shall be 50mm diameter uPVC street lighting duct with a wall thickness of 5mm.

8. Identification Numbers

Identification numbers shall be as follows

(i) Each sign shall be identified by a unique system of letters and numbers for maintenance and inspection purposes.

(ii) Letters and numbers shall be provided on both sides of sign located in the central reservation on all other signs the numbers shall face oncoming traffic.

APPENDIX 12/1 : TRAFFIC SIGNS – GENERAL (CONTINUED)

(iii) Letters and numbers shall be black on a yellow background with characters 75mm high at a minimum height of 1.5 metres and a maximum height of 2.5 metres above ground level.

(iv) Letters and numbers shall be screen printed onto reflective self adhesive vinyl mounted on 3mm thick Foamex.

The number shall be fixed to the sign by an appropriate adhesive.

APPENDIX 12/2: TRAFFIC SIGNS: MARKER POSTS

1. Hazard Marker Posts

   (i) Hazard marker posts shall be capable of being overrun by vehicles in order that they shall deflect and spring back to an upright position without shattering in all weather conditions and with little or no vehicular damage.

   (ii) Hazard marker posts shall be fitted with anti-removal tabs below the ground

   (iii) The reflectors shall be of Class 1 retroreflective sheet material to comply with Diagram 561 of Traffic Signs Regulations and General Directions 2002.

   The retroreflective sheeting shall be protected from damage from over-running vehicles by raised edges or other acceptable methods.

   (iv) The hazard marker post shall have the main body self-coloured black with a highly visible weather resistant white band to the sizes quoted in Figure 4.84 in Chapter 4 of the Traffic Signs Manual.

   (v) The top of the hazard marker post shall be installed in order that the top of the post shall be 750mm-1000mm above ground level.

2. Verge Marker Posts

   (i) Verge marker posts shall be the Glasdon Vergemaster or equivalent and shall be defined as follows:

      (a) Type VM1 - stake type fixing which shall include a timber pressure impregnated stake and automatic stake locking mechanism

      (b) Type VM2A – Extended Base Fixing backfilled with excavated material

      (c) Type VM2B - Extended Base Fixing backfilled with concrete type ST2

   (ii) Verge marker posts shall be constructed of material resistant to damage and vandalism and maintenance free.

   The posts shall have two integrally moulded shatterproof reflectors angled to give maximum visibility to traffic travelling from either direction on bends and a high visibility band integrally moulded into its body minimum 155mm wide to minimum class 1 retroreflectivity.

   (iii) The Verge marker post shall be installed in accordance with the manufacturer's instructions.

3. Motorway Marker Posts

   (i) Motorway maker posts shall be as specified in the Manual of Contract Documents for Highways Works Volume 3 Highway Construction Details Drawing E Series.

4. Edge of carriageway Markers

   (i) Edge of carriageway markers Type ECB1 shall be the Glasdon Scottish Admiral Bollard or equivalent

   (ii) The bollard shall be installed in accordance with the manufactures written instructions.

   (iii) A 150mm retroreflective red and white band shall be attached to the bollard.

APPENDIX 12/3: TRAFFIC SIGNS: ROAD MARKINGS AND STUDS

1. Road Markings

(i) The colour location and material type for permanent or temporary road markings shall be determined by the Operating Company in accordance with the other provisions of this Contract.

(ii) Ribbed road markings shall be formed of hot applied thermoplastic formulated to allow the formation of transverse ribs.

The transverse ribs shall not be less than 8mm and not greater than 10mm high and shall be at 500mm spacing except on slip roads where the spacing shall be reduced to 250mm.

(iii) The requirement for drainage gaps in raised rib markings shall be determined by the Operating Company in accordance with the other provisions of this Contract.

(iv) All road markings shall provide a skid resistance level of 55.

(v) Temporary road markings shall be laid in accordance with BS EN 1790.

(vi) Where existing road markings shall be required to be covered over the cover application shall comply with BS 7962.

2. Road Studs

(i) General Requirements

(a) Any road stud which has become displaced from its socket or shall be loose or broken shall be removed from the carriageway immediately and the resulting socket shall be filled with bituminous instant repair material as referred to in Clause 949.

(b) Replacement road studs shall not be installed in old sockets.

New road studs shall be placed in new sockets with a clearance of at least 300mm from the original sockets.

Existing or refurbished road stud sockets may be re-used but in all cases shall be fitted with new inserts.

(ii) Road studs that shall be used for this Contract shall be as follows

(a) Red, White and Green Studs

All red, white and green studs shall comply with Clause 1213.3.

Red and green reflectors shall be uni-directional.

White reflectors shall be bi-directional.

APPENDIX 12/3: TRAFFIC SIGNS: ROAD MARKINGS AND STUDS (CONTINUED)

(b) Amber Studs

Amber studs shall be of the corner-cube reflection type and shall be fixed in accordance with the manufacturer's written recommendations.

(c) Temporary Road Marking Studs

Temporary Road Marking Studs shall be either

(i) hot melt adhesive type

(ii) self adhesive type.

Fixing of temporary studs shall be in accordance with the manufacturer's written recommendations with respect to whether the studs shall be fixed to existing or new surfacing.

(d) Existing metal CHART node studs.

These shall be removed to ensure minimum damage to carriageway. Reinstatement shall be carried out using filled bitumen or bituminous instant repair material.

(e) Cored thermoplastic road markers shall be installed as CHART node points.

Installation of Cored thermoplastic road markers to be installed as CHART node points shall use the following method (Method No 5)

(i) a 100mm diameter x 20mm deep pocket shall be formed using a central pilot bit surrounded by an annular bit

(ii) the base of the pocket after breaking out the surfacing material shall be left jagged

(iii) the pocket shall be filled with hot thermoplastic material to the uppermost edge of the pocket projecting slightly above the road surface and the material allowed to cool and set to form a stud.

(iv) The material shall consist of a plastic resin with white filler and reflective glass particles to BS 3262.

APPENDIX 12/5: TRAFFIC SIGNS: TRAFFIC SIGNALS

Temporary Traffic Signals

1. Temporary traffic signals used to control alternate one-way working shall comply with current versions of Department of Transport specifications MCE 0111 and MCE 0114 for microwave detecting equipment and for haul route crossings specification MCE 0137 as published by the Highways Agency (TSS Division). The signals shall be located and operated in accordance with Section 4 of Chapter 8 Volume 1 of the Traffic Signs Manual.

2. The Operating Company shall obtain the prior written consent of the Director for multiphase temporary traffic signals.

3. The Operating Company shall provide to the Director a drawing to a scale of 1:500 with the position of the signals indicated by a dot and an arrow from the dot indicating the direction of the lights and a key to symbols used shall be shown.

   The position of signals shall be accurate to within 2 metres.

4. The Operating Company shall consult and comply with the requirements of the emergency services.

   Passenger transport operators and the like shall also be informed if the Site Operations affect any of their routes.

Controlled and Uncontrolled Crossings

1. Replacement of surfaces of controlled and uncontrolled crossings shall match that already existing unless otherwise determined by the Operating Company in accordance with the other provisions of this Contract.

APPENDIX 13/1: INFORMATION TO BE PROVIDED WHEN SPECIFYING LIGHTING COLUMNS AND BRACKETS

1. Lighting Columns

   (i) The cable entry slot shall be positioned directly below the door opening and have minimum dimensions of 50mm x 150mm and the lower edge of the slot shall be 500mm below ground level.

   (ii) The cable entry slot shall be free from sharp edges and burrs.

   (iii) Each column shall be earthed with an 8mm (minimum) diameter earthing terminal with two plain washers and nuts all of which shall be manufactured from brass.

   The earthing stud shall be so positioned in order to be readily accessible through the door opening.

   (iv) Lighting columns and bracket arm lengths shall be selected for each Scheme or area to be the same or similar to existing equipment.

   (v) 8 metres 10 metres and 12 metres fold down lighting columns shall be hydraulically raised and lowered.

   (vi) Column brackets shall be at an angle to match existing equipment.

   (vii) The lighting column silhouettes shall be the same as or similar to existing equipment.

2. Column Doors

   (i) Columns shall be provided with weatherproof doors each with a tamperproof locking device.

   (ii) Door openings bracket arms and columns shall be free from irregularities or burrs.

   (iii) Columns mounted on bridges or viaducts behind parapets shall have the bottom of the door opening above the top of the parapet plinth.

   (iv) Stainless steel fixings or chains shall be used to fix and lock those doors required to be captive.

   The chain shall be long enough to allow the door to be rested on the ground whilst maintenance is carried out.

   (v) Except for doors which shall be required to be captive all doors shall be interchangeable between similar types of columns without adjustment.

3. Identification Numbers

   Identification numbers shall be as detailed below

   (i) Each column shall be identified by a unique system of letters and numbers for maintenance and inspection purposes.

APPENDIX 13/1: INFORMATION TO BE PROVIDED WHEN SPECIFYING LIGHTING COLUMNS AND BRACKETS (CONTINUED)

(ii) Letters and numbers shall be provided on both sides of columns located in the central reservation on all other columns the numbers shall face oncoming traffic.

(iii) Letters and numbers shall be black on a yellow background with characters 75mm high at a minimum height of 1.5 metres and a maximum height of 2.5 metres above ground level.

(iv) Letters and numbers shall be screen printed onto reflective self adhesive vinyl mounted on 3mm thick Foamex.

The number shall be fixed to the column by an appropriate adhesive.

(v) The close proximity of any overhead electricity supplies shall be indicated by danger plates fitted to the columns.

4. Column Flanges

Where the column flange shall not be in accordance with BS 5649 Part 2 the Operating Company shall supply details of the flange sizes and fixing centres to the column manufacturer.

5. Wall Brackets and Service Boxes

Wall brackets and service boxes shall match existing wherever possible.

6. Miscellaneous

(i) The holes for the planted root columns shall be excavated to a diameter not more than twice the diameter of the column root.

The column that shall be erected with bracket affixed shall be placed centrally in the hole.

(ii) The bracket arms shall be fixed in accordance with the manufacturer's written instructions to prevent rotation in service.

(iii) Flange plate columns shall be carefully lowered on to the foundation bases prepared for them and shall be set vertical using metal shims where necessary.

The nuts shall be made tight to secure the columns to the foundations and the nuts and exposed bolts shall be coated with protective paste and tape.

(iv) Columns other than high mast columns manufactured in sections shall be assembled at the manufacturer's works.

The assembly of two sections of tube by butt welding shall not be permitted.

There shall be no sharp edges or burrs within the columns or brackets.

(v) Road lighting columns and brackets shall be constructed assembled located and erected in compliance with this Series and the 1400 Series of the Specification.

APPENDIX 13/1: INFORMATION TO BE PROVIDED WHEN SPECIFYING LIGHTING COLUMNS AND BRACKETS (CONTINUED)

7. Installations

(i) The following information shall be provided.

Completed data sheets – refer to Appendix 13/2.

Completed Appendix A of BD2/79 Part 4.

Column Quality Assurance Certification.

(ii) The number of door keys supplied shall be 1 No for every 10 columns supplied.

(iii) Columns shall be installed with the door openings as detailed below

Column Position	Door Position
As determined by the Operating Company in accordance with the other provisions of this Contract.	For single bracket arm columns the door shall be on the opposite side to oncoming traffic except for columns on parapet walls which shall face the road. For twin bracket arm columns the door position shall be determined by the Operating Company in accordance with the other provisions of this Contract.

(iv) All brackets shall have an angle uplift to match existing equipment.

(v) The location factors shall be the relevant exposure class as shown in the British Standard (BS 5649).

(vi) The columns shall be planted root or flange plate.

APPENDIX 13/2: TYPICAL LIGHTING COLUMN AND BRACKET DATA - SHEET 1

Name of manufacturer	

Column Reference No	
Revision No	
Date	

NAME OF CONTRACT

PART A General

Column nominal height	(m)		
Column material			
Material design strength	(N/mm²)		
No of door openings			
Door opening size - Height	(mm)		
Width	(mm)		
Cross-section of base compartment	Height (mm)	Width (mm)	Depth (mm)

Door Opening	
Any	
Manufacturer's drawing ref no	

Corrosion protection (steel columns only) – basic system type sub-Clauses (1911.9 and 1911.10)	
Reference Wind Velocity $V_{ref,o}$ as defined in BS EN 40-3-1:2000	m/s
Additional sacrificial steel thickness above that needed in the Design from the bottom of the column to at least 250mm above the anticipated ground level	(mm)

PART B Foundation Data

Planted base Planting depth (metres)

Diameter of concrete surround (if any)

Standard Soil Type Factor G		
630	390	230

Flange plate

Bolt hole centres	Bolt Hole diameter	Design load/bolt
(MM)	(mm)	(N)

Relevant forces and moments at ground level	
Line of action of max moment relating to door opening	

NOTE For flange plates with slotted holes a diagram shall be included with the data sheet

APPENDIX 13/2: TYPICAL LIGHTING COLUMN AND BRACKET DATA - SHEET 2

LUMINAIRE MAXIMUM CHARACTERISTICS

PART C

Acceptable Luminaires

		Terrain Categories as defined in BS EN 40-3-1:2000				
		I	II	III	IV	
Post Top Column	Luminaire Maximum Weight (kg)	Maximum Windage Area (m²) for terrain categories as defined in BS EN 40-3-1:2000				
Luminaire Connection						
Diameter	Length					

Single Arm Bracket Column

Luminaire lever arm (mm)	
Due to weight of luminaire	Due to Windage on luminaire

Bracket projection (metre)	Reference Number	Drawing Number	Material		Luminaire Fixing Angle	Luminaire Connection		Luminaire Maximum Wt (kg)	Maximum Windage Area (m²) for terrain categories as defined in BS EN 40-3-1:2000				
			Grade	Design Strength (N\mm²)		Diameter (mm)	Length (mm)						

Double Arm Bracket Column

Luminaire lever arm (mm)	
Due to weight of luminaire	Due to Windage on luminaire

Bracket projection (metre)	Reference Number	Drawing Number	Material		Luminaire Fixing Angle	Luminaire Connection		Luminaire Maximum Weight (kg)	Maximum Windage Area (m²) for terrain categories as defined in BS EN 40-3-1:2000				
			Grade	Design Strength (N\mm²)		Diameter (mm)	Length (mm)						

PART D CERTIFICATION

It is certified that the information given in this data sheet has been obtained in accordance with Departmental Standard BD 26 (DMRB 2.2.1) and the Specifications.

Signed on Behalf of the Operating Company _____ Date_____

Name (in Block Capitals): _____

APPENDIX 13/3: INSTRUCTIONS FOR COMPLETION OF LIGHTING COLUMN AND BRACKET DATA SHEETS

1. When information shall not be required a dash shall be inserted in the appropriate boxes.

2. Where a Data Sheet shall be amended it shall be given a new revision number with a date.

3. The revision number shall be consecutive letters of the alphabet commencing with 'A'.

4. The date of the revision shall agree with the date of the Operating Company's signature.

5. The column may be aluminium fibre glass or galvanised steel to match existing equipment.

6. The material Design strength shall be the minimum specified in the Design.

   Where more than one material is used values for all materials shall be given.

7. All relevant entries shall be made on the Data Sheet before the document shall be certified by the Operating Company

8. The column nominal height shall be selected from Clauses 2 or 3 of BS 5649 Part 2 as appropriate.

   The height shall also be dependent upon local factors for example overhead power lines.

9. The number of door openings shall agree with the manufacturer's drawing.

10. The cross-section of the base compartment shall be indicated by a dimensioned diagram/sketch.

11. The acceptable positions of bracket arms relative to the door position shall be indicated on the diagram.

    Where all positions shall be acceptable the box noted 'ANY' shall be ticked.

12. Where concrete shall be necessary around the planted base in accordance with Clauses 1305.3 and 1305.4 the minimum diameter shall be entered.

13. For flange bases all forces and moments necessary for the Design of the foundations shall be obtained in writing from the manufacturer.

14. The corrosion protection system used on the column when new shall be recorded.

    Where additional steel is provided for sacrificial purposes the amount shall also be recorded.

15. The signs and attachments surface area, eccentricity from the centre line of the column to the centre of area of the sign and height above ground level to the centre of area of the sign shall be stated.

16. The Luminaire lever arms weight and maximum windage area quoted shall be based on the most adverse loading on the bracket when it shall be attached to any of the columns quoted in the compatible column sections.

APPENDIX 13/3: INSTRUCTIONS FOR COMPLETION OF LIGHTING COLUMN AND BRACKET DATA SHEETS (CONTINUED)

Note The luminaire lever arms shall be the horizontal distances from the centre of gravity of the luminaire and if applicable, the centroid of the windage surface area to the end of the bracket joint.

APPENDIX 13/70: MAINTENANCE OF HIGH MAST AND OTHER LIGHTING INCORPORATING HOISTS WINCHES AND ROPES

Maintenance Schedule A

Six Monthly Intervals

A.1 Winch

(i) Remove any dirt or foreign matter that may have accumulated on top of winch or on wire ropes and thoroughly clean.

(ii) Check oil bath level (check each time winch shall be used).

Examine condition of oil and change it if excessively thick or dirty. (Compare it with fresh oil.) Before draining run luminaire down and up to heat oil.

The oil bath level in single double drum winches shall be correct when it shall be at the oil level hole.

The screw plug shall be removed to determine this and then replaced.

Oil shall be as recommended in writing by the manufacturer.

(iii) All other bearing surfaces of winches have (self-lubricating) Oilite bushes or thrust washers.

Additional lubrication may be added through the winch drum if required when the luminaire shall be in the lowered position.

(iv) Check security of bolts at end of first year of operation

(v) Operate power drive through full length of travel of the luminaire carriage and ensure that no undue wear shall be evident in the winch mechanism.

The gear cover shall be removed to view the gear teeth.

(vi) Cover entire winch with the cover provided removing it only when about to operate winch.

A.2 Wire Rope

The very limited running use of the ropes coupled with high corrosion resistance shall ensure a long rope life.

(i) Check rope lay on winch and section of rope visible at mast door opening for frays kinks or corrosion.

(ii) Check anchorage point of winch rope at compensating pulley (if fitted).

(iii) Check winch rope throughout length for frays, kinks or corrosion.

(iv) Check rope anchorage points on winch drum and luminaire carriage.

(v) From the base of the mast observe ropes from luminaire carriage in lowered position to mast head for any obvious Defects.

A.3 Compensating Pulley (when fitted)

(i) Check for damage wear or corrosion.

(ii) Lubricate if necessary.

APPENDIX 13/70: MAINTENANCE OF HIGH MAST AND OTHER LIGHTING INCORPORATING HOISTS WINCHES AND ROPES (CONTINUED)

NB During the operation of hoisting luminaires the ropes within the mast have a tendency to twist a little resulting in the compensator turning about 1/2 to 2 turns this untwists on the reverse journey and no harm results.

A.4 Luminaire Carriage

(i) Check guide rollers (where fitted) lubricate and adjust if necessary.

(ii) Check interconnecting cables and junction boxes for damage.

(iii) Check electric supply cable anchorage and check physical damage to cable.

(iv) Check and tighten if necessary all nuts and bolts.

(v) Clean outer surface of photo-electric cell (where fitted).

A.5 Luminaires

(i) Clean all luminaire bowls and reflectors.

(ii) Remove lamps from holders and check contact for arcing.

(iii) Check all electrical connections and tighten where necessary.

NB Avoid use of abrasive materials in cleaning.

A.6

(i) With luminaires returned to mast head check that all lamps light.

(ii) Check that details of rope and cable rigging (now visible in mast base) and luminaire carriage docking shall be all correct.

(iii) Check foundation bolts tighten nuts where necessary.

APPENDIX 13/70: MAINTENANCE OF HIGH MAST AND OTHER LIGHTING INCORPORATING HOISTS WINCHES AND ROPES (CONTINUED)

Maintenance Schedule B

Two Yearly Intervals

Maintain as Schedule A with the following additions

B.1

(i) Ascend in cradle check for damaged galvanising paint deterioration and rust over length of mast make good as necessary.

(ii) Check head pulleys split pins and the like for wear and corrosion and tighten all nuts and bolts.

Pulleys have Oilite bushes which shall not be expected to require attention.

B.2

(i) Wire ropes shall be withdrawn for inspection.

APPENDIX 14/1: SITE RECORDS

1. The Operating Company shall amend drawings provided by the Director whenever any part of the installation shall be amended or extended.

   Locations of Constructional Plant and equipment shall be referenced in accordance with the Trunk Road Network Referencing System.

APPENDIX 14/2: LOCATION OF LIGHTING UNITS AND FEEDER PILLARS

1. Any information relating to the existing installations possessed by the Director regarding the position of existing underground cabling feeder pillars and lighting unit positions shall be provided to the Operating Company during the Mobilisation Period.

   No guarantee as to the accuracy of this information shall be given or implied.

2. Electricity supplies within the Unit comprise both single phase 230 Volts and the equivalent three phase 50 Hz systems.

APPENDIX 14/3: TEMPORARY LIGHTING

1. Temporary lighting may be required at any Site where Operations shall be being undertaken.

2. All temporary lighting shall provide no less illuminance than existing lighting over the area of the carriageway.

   Mounting heights for this lighting shall be the same as the existing lighting

3. The installation of temporary lighting shall comply with the relevant Acts and Regulations (for example Electricity at Work Act and BS 7671).

   It shall not form a hazard to motorists.

4. No existing street lighting shall be disconnected until it has been replaced by either the new permanent lighting or a temporary lighting system to the written consent by the Director.

   The temporary lighting shall remain operative until the new permanent lighting is brought into use.

5. Temporary lighting arrangements shall have written consent by the Director before the commencement of any affected work.

APPENDIX 14/4: ELECTRICAL EQUIPMENT FOR ROAD LIGHTING

1. General

The Operating Company shall maintain records showing technical data on materials used.

Records shall be held within the Operating Company's Quality Management System and be available for inspection by the Director and the Performance Audit Group at any time.

All fixings screws bolts and the like shall be stainless steel.

Fixings shall not be subject to any reaction from the material used for the column construction.

2. Luminaires and Lamps

(i) All electrical wiring which shall be subject to heat shall be protected by heat insulating sleeving.

(ii) Luminaires shall be full cut-off, medium threshold increment and low threshold increment as appropriate.

(iii) The luminaires shall be compatible with the columns and brackets

(iv) Luminaires shall be fitted with either electronic control gear or low loss control gear.

3. Ancillary Equipment

(i) Photo Electric Control Units (Clause 1409)

(a) Shall have a switch on illuminance of 70 Lux.

(b) Shall have a switch on/off ratio of 1 to 0.5.

(c) Shall be electronic type.

(d) Mounting sockets shall be NEMA type of road lighting units only.

(e) Multiple wiring assemblies shall be controlled by separate Photo Electric Control Units individually wired

(f) Photo Electric Control Units switch settings shall be sensitive within the temperature range of -20ºC to +50ºC.

(g) Any photocell used to control contactors shall be able to switch a continuous rectified circuits of less than 20 Watts.

(ii) Cut-Outs and Termination Units

(a) All street lighting cut-outs shall be of the combined single phase and neutral type or 3 phase and neutral type incorporating an earth terminal and shall be for concentric or PVC armoured cables of up to 25mm2 cross sectional area with capacity for looping in and out.

(b) Fused links shall comply with BS 88 category of duty 240 AC 16 rating Class Q1.

(c) Gland plates shall be an integral part of the cut-out and be capable of terminating a maximum of 3 cables of up to 25mm2.

APPENDIX 14/4: ELECTRICAL EQUIPMENT FOR ROAD LIGHTING (CONTINUED)

(d) The fuse ratings shall be in accordance with the following

Lamp Type	Fuse Rating (Single Lamp)	Fuse Rating (Double Lamp)
Low Pressure Sodium		
18 to 180 Watts	6	10
High Pressure Sodium		
70 to 150 Watts	6	10
151 to 250 Watts	10	20
251 to 400 Watts	16	25

(iii) Capacitors/Ignitors

(a) All exposed metal casings shall be direct earthed.

Reliance on the earthing of security clips shall not be acceptable.

All earths shall be commoned.

(iv) Wiring Requirements

(a) The wiring requirements for lighting columns shall be in accordance with British Standards and manufacturers' written recommendations.

(v) Base Compartment Fixing Arrangements

(a) The base compartment fixing arrangements shall be as detailed in accordance with British Standards and manufacturers' recommendations.

(vii) Equipment Details

(a) The Operating Company shall insert below details of the equipment which it proposes to use in the Site Operations and shall submit the information to the Director as part of the Quality Management System including the Quality Plan.

APPENDIX 14/4: ELECTRICAL EQUIPMENT FOR ROAD LIGHTING (CONTINUED)

Clause	Item	Manufactuer	Catalogue or Type Number
1409	Phot-electric control units		
	Shorting Plug		
1410	Time Switches		
1411	Ballasts		
1412	Ignitors		
1413	Starters		
1414	Capacitors		
1415	Cut Outs		
1416	Fuse Holders		
	Fuse (Links)		
	MCBs		
1419	Wiring		

4. Feeder Pillars

(i) Feeder pillars shall be suitable for the purpose required and they shall conform as closely as possible to others on the Unit.

(a) The Operating Company shall insert below details of the feeder pillars which it proposes to use in the Site Operations and shall submit the information as part of the Quality Management System including the Quality Plan to the Director

Feeder Pillar Type	Manufacturer	Catalogue Number	IP Rating
Type 1			
Type 2			
Type 3			
Type 4			
Type 5			

APPENDIX 14/4: ELECTRICAL EQUIPMENT FOR ROAD LIGHTING (CONTINUED)

Protective coatings for feeder pillars shall be as referred to in Appendix 19/4.

5. Cables and Cable Joints

(i) Earthing

(a) A separate earth stud shall be installed as an integral part of the pillar structure with all earths within the pillar terminated on it.

This stud shall then be connected to the local earth at the pillar.

(b) Crimping tools shall be of the correct size for the termination.

(c) Earthing conductors when not crimped shall be terminated between 2 brass washers.

The terminal block shall be connected to the electricity company earth terminal and the main earthing conductor shall be in accordance with the following Table

Cross sectional areas of phase conductor	Minimum cross sectional area of corresponding protective conductor
Not exceeding 6mm²	6mm² (see Note 1)
10mm²	10mm²
16mm²	16mm²
25mm²	16mm²
35mm²	25mm²

Note 1 The protective conductor may have to be increased to 10mm2 to meet variations in the requirements of local electricity companies.

All bare earth conductors shall be sleeved with green and yellow PVC sheathing.

All earth connections shall be made between 2 brass washers.

At the end of every circuit an earth electrode shall be installed.

(i) Sealing of Cables

Cables shall be permanently sealed.

Cables that are to be temporarily sealed shall be made safe using PVC insulating tape and amalgam tape to ensure complete insulation from electric shock.

The Operating Company shall display warning notices and area protection.

(ii) Equipotential Bonding

Equipotential bonding using earth pit and earth electrode shall be carried out.

APPENDIX 14/4 : ELECTRICAL EQUIPMENT FOR ROAD LIGHTING (CONTINUED)

(iii) Cables

All cables shall be British Approvals Service for Cables approved.

The Operating Company shall insert below details of the equipment which it proposes to use and shall submit the information as part of the Quality Plan to the Director.

Cable Details	Manufacturer	Catalogue Number Reference Number

(v) Cable Joints

The Operating Company shall insert below details of the equipment which it proposes to use and shall submit the information as part of the Quality Management System including the Quality Plan to the Director.

Type of Cable Joints	Manufacturer	Catalogue Number Reference Number or Name of Cable Joint

APPENDIX 14/5: ELECTRICAL EQUIPMENT FOR TRAFFIC SIGNS

1. Sign Lighting Luminaire Types

External Sign Lighting Unit Affixed

Type EA1 2 x 8 Watt side by side Tubular Fluorescent Starterless Lamp – Silicone Coat

Type EA2 2 x 8 Watt end to end Tubular Fluorescent Starterless Lamp – Silicone Coat

Type EA3 2 x 20 Watt side by side Tubular Fluorescent Starterless Lamp – Silicone Coat

Type EA4 2 x 40 Watt side by side Tubular Fluorescent Starterless Lamp – Silicone Coat

Type EA5 2 x 50 Watt High Pressure Mercury Lamp with Phosphor Coating

Type EA6 2 x 80 Watt High Pressure Mercury Lamp with Phosphor Coating

Type EA7 2 x 125 Watt High Pressure Mercury Lamp with Phosphor Coating

Type EA8 2 x 250 Watt High Pressure Mercury Lamp with Phosphor Coating

External Sign Lighting with Free Standing Unit Complete with Adjustable Mounting Bracket

Type EFS1 2 x 50 Watt High Pressure Mercury Lamp with Phosphor Coating

Type EFS2 2 x 80 Watt High Pressure Mercury Lamp with Phosphor Coating

Type EFS3 2 x 125 Watt High Pressure Mercury Lamp with Phosphor Coating

Type EFS4 2 x 250 Watt High Pressure Mercury Lamp with Phosphor Coating

Upward Sign Lighting Unit

Type EG1 2 x 50 Watt High Pressure Mercury Lamp with Phosphor Coating

Type EG2 2 x 80 Watt High Pressure Mercury Lamp with Phosphor Coating

Type EG3 2 x 125 Watt High Pressure Mercury Lamp with Phosphor Coating

2. Control

All sign units and lit signs except internally illuminated bollards shall be controlled by photocell fixed to the unit.

3. Base Compartment Fixing Arrangement

The base compartment fixing arrangements shall be in accordance with British Standards and manufacturers' written recommendations.

APPENDIX 14/5 : ELECTRICAL EQUIPMENT FOR TRAFFIC SIGNS (CONTINUED)

4. Fuses

(i) The fuse ratings shall be as detailed below

Lamp Type	Fuse Rating (Single Lamp)	Fuse Rating (Double Lamp)
Sign Lighting		
Up to 80 Watts	4	4
Over 80 Watts	10	10
Bollards		2
Sign/Bollard Feeder fuses in lighting column		
Load up to 80 Watts	6	
Load over 80 Watts	16	

(ii) Ancillary equipment feeder pillars cables and cable joints shall be as referred to in Appendix 14/4.

APPENDIX 14/70: PURCHASE DELIVERY HANDLING AND STORAGE OF MATERIALS

1. The Operating Company shall maintain stock levels sufficient to ensure compliance for the replacement of equipment during Operations to comply with Clause 1471.

   The Operating Company shall include in its stock adequate numbers of columns with paint system as Appendix 19/3.

   For details of stock levels of materials refer to Annex 9.1/C

2. When the Operating Company replaces any faulty component the new component shall be either the same as that being replaced or an equivalent.

3. The Operating Company shall ensure all columns and luminaires replaced shall be of a similar and equivalent type to those of existing equipment and are of similar visual appearance.

4. The Operating Company shall store for 31 days all faulty columns and luminaires removed to allow inspection by the Director and the Performance Audit Group.

   Records of faulty equipment shall be held within the Operating Company's Quality Management System and be available for inspection by the Director and the Performance Audit Group at any time.

APPENDIX 14/71: LABOUR REQUIREMENTS

1. General

(i) The Operating Company shall appoint a Supervisor specifically for electrical Operations.

The Supervisor or his nominated deputy shall be on the Unit at all times when electrical Site Operations shall be proceeding and shall be readily available to deal with all related matters.

(ii) The Operating Company shall complete the form for competent persons detailed in Appendix 14/75.

The criteria for competent persons shall be as given in Electricity Council Engineering Recommendations G39 and shall be for the Supervisor Approved Electricians and Electricians.

Forms shall also be completed for any personnel engaged on column erection or routine and non routine maintenance Operations in connection with electrical equipment.

APPENDIX 14/73: CALL OUT REPORT

DATE WEATHER CONDITIONS

TIME CALLED OUT CALLED OUT BY

TRUNK ROAD/MOTORWAY LOCATION

DESCRIPTION OF WORK

To include equipment damaged
nature of emergency
registration of any vehicle involved
colour and type of vehicle involved
name and number of Police Officer at scene
photographs glued to reverse side of report
details of any liaison with electricity company
police station reference.

MATERIALS USED

To include stores issue number.

TIME ON SITE

TIME OF LEAVING SITE

ADDITIONAL TEAM TYPES AND DURATION

DESCRIPTION OF PLANT USED AND DURATION

NAME OF APPROVED ELECTRICIAN

SIGNATURE OF APPROVED ELECTRICIAN

NAME OF SUPERVISOR

SIGNATURE OF SUPERVISOR

APPENDIX 14/74: REPORT

ORDER NUMBER DATE OF ISSUE

TODAY'S DATE

WEATHER CONDITIONS

LOCATION TIME OF ARRIVAL ON SITE

DESCRIPTION OF WORK

To include accurate details of all Site Operations undertaken in order of the Site Operations carried out

results of tests or protective measures taken by the operatives

any difficulties and further action required

details as Clause 1402 times of isolation and energising of power supplies

details of any liaison with electricity companies.

MATERIALS USED

TIME OF LEAVING SITE

TYPE OF CLOSURE USED

DURATION OF CLOSURE

OUTSTANDING WORK

DESCRIPTION OF TEAM TYPES USED AND DURATION

NAME OF SUPERVISOR

SIGNATURE OF SUPERVISOR

APPENDIX 14/75: COMPETENT PERSONS AUTHORISATION CERTIFICATE

CERTIFICATE NUMBER

AREA COVERED BY THIS CERTIFICATE Motorways and Trunk Roads in the Unit

CATEGORY OF AUTHORISATION

Category 1

To supervise the erection of lighting columns and fittings in the vicinity of electricity company overhead lines.

Category 2

To carry out all electrical duties including the following

1. The testing of installations.
2. The wiring of installations to the outgoing side of the electricity company's cut-out.
3. The maintenance of installations.
4. The initial insertion removal or replacement of the electricity company's cut-out fuses subject to the company's discretion. (Public lighting fuses only.)

Category 3

To work in the vicinity of the electricity company's overhead lines and to withdraw and replace the electricity company's cut-out fuse carriers for

1. Lamp replacement and cleaning purposes.
2. Painting of structures.

NAME OF COMPETENT PERSON (BLOCK LETTERS) _____

CATEGORY OF AUTHORISATION_____

NAME AND ADDRESS OF OPERATING COMPANY_____

APPROVED BY (SGD)_____POSITION_____DATE _____

RECEIVED (SGD)_____DATE _____

THIS CERTIFICATE IS VALID UNTIL (DATE) _____

A copy of this Certificate shall be held by the Competent Person named above.

APPENDIX 14/76: LIAISON WITH ELECTRICITY COMPANIES

1. Emergency Call Out

   (i) The Operating Company shall if necessary seek assistance from the electricity supply company if required for making safe the electrical installation.

   (ii) The Operating Company shall liaise with the electricity supply company regarding the making safe disconnection and reconnection of power supplies.

2. Services

   (i) The Operating Company shall liaise with the electricity supply company in programming of Site Operations for disconnection and reconnection of new and existing power supplies.

   (ii) The Operating Company shall be responsible for completing all relevant documentation for the provision and disconnection of supplies.

3. The Operating Company shall comply with the requirements of Electricity Council Engineering Recommendations G39 at all times.

APPENDIX 17/1: SCHEDULE FOR THE SPECIFICATION OF DESIGNED CONCRETE

Sheet 1 - Structural concrete above ground

Requirement	Schedule		
Designed Concrete Reference	STR1	STR2	
Intended Working Life of Structure	120	120	
Nominal Cover to Reinforcement	#	#	
Applicable Exposure Classes (Excluding DC-class)	#	#	
DC-class (where appropriate)	N/A	N/A	
Compressive Strength Class of Concrete	C32/40	C40/50	
Minimum Cement Content (kg.m3)	360	380	
Maximum Free Water/Cement Ratio	0.4	0.4	
Required Group or Type and Class of Cement or Combination (where a DC-class has not been specified)	Group 5 CIIB-V CIIA	Group 4 CIAA-V CIIB-S	
Maximum Aggregate Size, mm	20	20	
Chloride Content Class	Cl0,30[b]	Cl0,10[a] Cl0,30[b]	
For Lightweight Concrete, the Density Class or Target Density			
For Heavyweight Concrete, the Target Density			
Consistence Class	#	#	
Special Type or Class of Cement or Combination			
Required Source/Special Type of Aggregate	Freeze/thaw resisting aggregates	Freeze/thaw resisting aggregates	
Maximum Cement Content (kg/m3) [See NG 1704.7]	380	400	
Required Admixture	#	#	

APPENDIX 17/1: SCHEDULE FOR THE SPECIFICATION OF DESIGNED CONCRETE

Sheet 1 - Structural concrete above ground

Requirement	Schedule		
Air Entrainment Required [YES/NO]	3.5% min	No	
Minimum or Maximum Temperature of Fresh Concrete ˚C	5/30	5/30	
Sampling and Testing Identity testing Type of test Testing rate	##	##	
Other Requirements UKAS or equivalent third party product conformity certification [YES/NO]	Yes	Yes	

The Operating Company shall determine this detail when selecting from the above table and inform the Overseeing Organisation.

Cross-reference shall be made to Appendix 1/5 and 1/6 as appropriate

a Prestressed or heat cured concrete

b Concrete with reinforcement or embedded metal

Note Designed concrete reference STR 1 shall be used for all reinforced concrete above foundation level

Designed concrete reference STR 2 may be used for reinforced concrete above ground level only with the prior approval of the Overseeing Organisation.

Designed concrete reference STR 2 may be used for prestressed or heat cured concrete.

However, the Operating Company may develop a designed concrete in accordance with BS 8500-1 and 2 and this Specification and submit to the Director for written consent.

APPENDIX 17/1: SCHEDULE FOR THE SPECIFICATION OF DESIGNED CONCRETE (CONTINUED)

Sheet 2 - Structural concrete in foundations

Requirement	Schedule				
Concrete Reference	FOU 1	FOU 2	FOU 3	FOU 4	FOU 5
Intended Working Life of Structure	120	120	120	120	120
Structural Performance Level	High	High	High	High	High
Nominal Cover to Reinforcement	#	#	#	#	#
DC-class (where appropriate)	DC-1	DC-2 DC-2z DC-3[b] DC-3-z	DC-3*[b] DC-3 **[b] DC-4[b] DC4z	DC-3[a] DC-4[a] DC4*[b] DC-4**[b] DC4-m[a]	DC-4m[b] DC-4m*[b] DC-4m**[b]
Compressive Strength Class of Concrete	C32/40	C32/40	C32/40	C32/40	C32/40
Minimum Cement or Combination Content (kg/m3)	360	360	380	400	400
Maximum Free Water/Cement Ratio	0.4	0.4	0.4	0.4	0.4
Required Group or Type and Class of Cement or Combination	Groups 1 & 2 CIIA-V CIIB-V+SR C1VB-V+SR CIIB-S CIIIA CIIIB+SR	Group 2 CIIB-V+SR C1VB-V+SR CIIIB+SR	Group 2 CIIB-V+SR C1VB-V+SR CIIIB+SR	Group 2 CIIB-V+SR C1VB-V+SR CIIIB+SR[a]	Group 3 SRPC

APPENDIX 17/1: SCHEDULE FOR THE SPECIFICATION OF DESIGNED CONCRETE (CONTINUED)

Sheet 2 - Structural concrete in foundations

Requirement	Schedule				
Maximum Aggregate Size	20mm	20mm	20mm	20mm	20mm
Chloride Content Class	Cl 0,30	Cl 0,30	Cl 0,30	Cl 0,30	Cl 0,20
For Lightweight Concrete, the Density Class or Target Density					
For Heavyweight Concrete, the Target Density					
Consistence Class	#	#	#	#	#
Special Type or Class of Cement or Combination	#	#	#	#	#
Required Source/Special Type of Aggregate	#	#	#	#	#
Maximum Cement Content (kg/m3) [See NG 1704.7]	380	380	400	420	420
Required Admixture					
Air Entrainment Required [YES/NO]	No	No	No	No	No
Minimum or Maximum Temperature of Fresh Concrete ˚C	5/30	5/30	5/30	5/30	5/30

APPENDIX 17/1: SCHEDULE FOR THE SPECIFICATION OF DESIGNED CONCRETE (CONTINUED)

Requirement	Schedule				
Sampling and Testing Identity testing Type of test Testing rate	##	##	##	##	##
Other Requirements UKAS or equivalent third party product conformity certification [YES/NO]	Yes	Yes	Yes	Yes	Yes

#	The Operating Company shall determine this detail when selecting from the above table and inform the Overseeing Organisation.
##	Cross-reference shall be made to Appendix 1/5 and 1/6 as appropriate.
a	Aggregate carbonate range A, DC-3, DC-4 and DC-4m to use only Combination CIIIB+SR
b	Aggregate carbonate range B,C only
Note	Designed concretes included in this Appendix are for use at the discretion of the Operating Company. However, the Operating Company may develop a designed concrete in accordance with BS 8500-1 and 2 and this Specification and submit to the Director for written consent.

APPENDIX 17/2: CONCRETE – IMPREGNATION SCHEDULE

Impregnation Treatment

Structure Reference	Drawing Reference	Area Definition Impregnation Treatment (Note 1)
To be completed by the Operating Company	To be completed by the Operating Company	Piers, columns, crossheads and abutments
		Bearing shelves, ballast walls and deck ends
		Structures in marine environments and columns and soffits over brackish water
		Concrete parapets and parapet plinths
		Deck beams and soffits
		Wing walls
		Retaining walls
		'M' beams

Notes

1. This list shall be a guide for selection by the Operating Company but shall not be construed as exhaustive.

   Other area definitions shall be inserted by the Operating Company.

2. Where an alternative to silane treatment shall be available the Operating Company shall submit proposals to the Director for written consent.

APPENDIX 17/4: CONCRETE – GENERAL

1. All high yield steel reinforcement shall be deformed type 2, as defined in BS5400, Part 4 (Clause 5.8.6.1).

2. All tying wire shall be stainless steel.

3. Welding of reinforcement shall only be permitted subject to written approval by the Overseeing Organisation.

APPENDIX 17/5: CONCRETE – BURIED CONCRETE

The following information shall be completed by the Operating Company for each Structure, or group of Structures, and applies only for buried concrete or partially buried concrete, ie. with one or more faces in contact with natural or disturbed ground or imported backfill.

<table>
<tr><td colspan="2">Structure Name or Location</td></tr>
<tr><td>(A separate appendix should be provided for each Structure or location with varying conditions or Design constraints – identical conditions and constraints may be grouped together in one appendix)</td><td rowspan="5">To be completed by the Operating Company</td></tr>
<tr><td>Aggressive Chemical Environment for Concrete Class for Site
(derived from Table A.2 of BS 8500-1)</td></tr>
<tr><td>Structural Performance Level
(High, normal or low)
(derived from Table 3 of BS 8500-1)</td></tr>
<tr><td>Design Chemical Class
(derived from the Aggressive Chemical Environment for Concrete class determined by assessment of ground conditions together with the Structural Performance Level and the concrete section thickness and adjusted as necessary by reference to the footnotes to Table A.4 of BS 8500-1 and NG 1704.11(i) for increase in concrete quality when used as an Additional Protective Measure; specification of ‘starred’ or ‘double’ starred’ DC classes)</td></tr>
<tr><td>Other Requirements and Design Constraints
(eg Limitations on drainage, Additional Protective Measures required and the like)</td></tr>
</table>

APPENDIX 17/70: SCHEDULE FOR THE SPECIFICATION OF DESIGNATED CONCRETE			
Requirement	Schedule		
Reference	RC30(B) Below Ground	RC30(A) Above Ground	
Intended Working Life of Structure	120	120	
Nominal Cover to Reinforcement	#	#	
Applicable Exposure Classes		#	
DC-class	DC-1[$]		
Compressive Strength Class of Concrete	C25/30	C25/30	
Minimum Cement Content (kg.m3)	280	280	
Maximum Free Water/Cement Ratio	0.6	0.6	
Required Group or Type and Class of Cement or Combination (where a DC-class has not been specified)	#	Group 4, 5, 6	
Maximum Aggregate Size, mm	20	20	
Chloride Content Class	Cl 0,30	Cl 0,30	
For Lightweight Concrete, the Density Class or Target Density			
For Heavyweight Concrete, the Target Density			
Consistence Class	#	#	
Special Type or Class of Cement or Combination			
Required Source/Special Type of Aggregate			
Maximum Cement Content (kg/m3) [See NG 1704.7]	300	300	
Required Admixture			
Air Entrainment Required [YES/NO]	NO	NO	
Minimum or Maximum Temperature of Fresh Concrete ˚C	5/30	5/30	

APPENDIX 17/70: SCHEDULE FOR THE SPECIFICATION OF DESIGNATED CONCRETE			
Requirement	Schedule		
Sampling and Testing	##	##	
Other Requirements	#	#	
#	The Operating Company shall determine this detail when selecting from the above table and inform the Overseeing Organisation.		
##	Cross-reference shall be made to Appendix 1/5 and 1/6 as appropriate.		
Notes 1	Structural performance level shall be 'High'.		
2	$ see tables A2, A4 and A5 of BS 8500 part 1 and BRE Special Digest 1.		
3	RC30 above ground shall comply with table A6 of BS 8500 part 1		

APPENDIX 19/1:(SPECIFICATION FOR HIGHWAY WORKS) FORM HA/P1 (NEW WORKS) PAINT SYSTEM SHEET

<table>
<tr><td colspan="5">1. CONTRACT TITLE:
STRUCTURE NO:
GRID REF:</td></tr>
<tr><td colspan="5">2. DATE OF ISSUE OF DOCUMENTS TO TENDERERS</td></tr>
<tr><td colspan="5">3. ENVIRONMENT AND ACCESSIBILITY:</td></tr>
<tr><td colspan="3">4. REQUIRED DURABILITY OF SYSTEM:
MAJOR MAINTENANCE after YEARS
MINOR MAINTENANCE from YEARS
NO MAINTENANCE up to YEARS
(Ref: NG 1911 Appendices 19/1 and 19/2 14(iii))</td><td colspan="2">5. COLOUR OF FINISH:</td></tr>
<tr><td colspan="5">6. PAINT SYSTEM TO BE APPLIED OVER:
AREA REF: …. AREA DESCRIPTION:
PROTECTIVE SYSTEM TYPE: (i.e. I, II etc):……...</td></tr>
<tr><td>7. DETAILS</td><td>1st Coat</td><td>2nd Coat</td><td>3rd Coat</td><td>4th Coat</td></tr>
<tr><td>Registered Description
Item No. and Colour
Date Registered
Brand Name and Manufacturer’s Ref. No.
Manufacturer’s Data Sheet No.
Where Applied
Minimum dry film thickness (mdft)
Maximum local dft (See Cl. 1914.7)
Estimated total volume of paint likely to be used. (litres)
‘A’ type testing required? (YES/NO)
(See Cl 1912.3)
‘B’ type testing required? (YES/NO)
(See Cl 1912.9)</td><td></td><td></td><td></td><td></td></tr>
<tr><td colspan="3">8. STRIPE COAT DESCRIPTION (Including Item No. and colour)
Shop:
Site:</td><td colspan="2">9. PAINT MANUFACTURER’S OFFICIAL STAMP:</td></tr>
<tr><td colspan="3">10. Mdft (μm)
NOTE. The minimum total dry film thickness of the paint system, neglecting primers and sealers under 30 microns, shall be 15% greater (to the nearest 25 microns) than the sum of the mdfts of the individual paint coats.</td><td colspan="2">11. APPROVED BY:

DATE</td></tr>
</table>

Note: The Operating Company shall complete the paint system sheet HA/P1 for protection of steelwork against corrosion for new works.

A separate form shall be provided for each Structure, including CCTV masts, cantilever masts, street lighting columns and bracket arms as appropriate.

APPENDIX 19/3:(SPECIFICATION FOR HIGHWAY WORKS) FORM HA/P2 PAINT DATA SHEET

Manufacturer **:** Item No **:**

Registered Description **:** Brand Name and Reference No **:**

Consistency and Method of Application **:** Weight per 5 Litres (kg) **:**

Specific gravity **:** Colour **:**

For two pack paints :

Base: Activator: Mixed Components:

Volume Solids % **:**

For two pack paints volume solids % for mixed paint **:**

VOC content g/l (mixed) **:**

Manufacturer's Minimum Dry Film Thickness Range

Recommended lower mdft **:**

Recommended upper mdft **:**

Full Application Instructions **:**

Flash Point **:**

		5°C	10°C	20°C	30°C
Drying Times (hours)	Surface Dry				
	Hard Dry				
Overcoating Times (hours)	Minimum				
	Maximum				
Pot Life (hours)					

Cleaning Solvent **:** Effect on Drying Times of **:**

Temperatures below 20°C **:**

Manufacturer's Application Restrictions,

e.g. for Temperatures or Humidity **:**

Manufacturer's General Recommendations **:**

Note: The Operating Company shall complete the paint system sheet HA/P2 for protection of steelwork against corrosion for new works.

APPENDIX 19/4SE: (SPECIFICATION FOR HIGHWAY WORKS) FORM SEDD/P3 PAINT SAMPLE DESPATCH LIST: SHEET 1

Contract Title :

Structure Name : Structure No:

Client Name :

Supervising Firm :

Supervising Firm's Representative Name: Tel No:

Address :

Painting Inspection Firm :

Samples Despatched From: (Note 1) Date Despatched:

Inspector's Name : Tel No:

Inspector's Signature :

SAMPLES: (Numbered A1, A2 etc. or B1, B2 etc.) (Note 2)					
Sample No.	Item No.	Manufacturer's Reference No.	Batch No	Colour BS 4800 reference (Note 3)	Sp.G. (note 4 & 5)

Paint Manufacturer :

APPENDIX 19/4SE: (SPECIFICATION FOR HIGHWAY WORKS)

Form Sedd/P3 Paint Sample Despatch List: Sheet 2

Procedures

To be followed closely before despatch of paints to Scientifics Ltd or an approved local paint testing firm

1. Check the specific gravity of each batch of paint;
2. Check the matching of finish colours to BS 4800;
3. Select the required sample, i.e.
   (i) 'A' sample – unopened tin
   (ii) 'B' sample – 500ml sample from painter's kettle or from nozzle of airless spray gun in the case of single pack coatings or if the check is to be done in situ otherwise for 2 pack coatings separate samples of the base and the activator must be dispatched to the testing laboratory;
4. List contract details in Section 1 of Form SEDD/P3;
5. List details of each set of samples in Section 1 of Form SEDD/P3 including the specific gravity of each sample;
6. Send Form HA/P1 Paint System Sheet with Form SEDD/P3 to the following addresses

   (i) Scientifics Ltd
   500 London Road
   Derby
   DE24 8BQ

   (ii) The Director
   Network Management
   Division
   Scottish Executive
   Victoria Quay
   Edinburgh EH6 6QQ

   (ii) or an approved local paint testing firm.
7. Operating Company to despatch samples to address (i) or (ii) above, It should be ensured that the Operating Company labels samples correctly, clips lids of tins down securely and sends the samples promptly.

   Samples shall be labelled with this Contract title, structure name, sample number, and additionally in the case of 'B' samples, item number, manufacturer's reference number, batch number and colour.

   Results will be notified by the Scottish Executive Road Network Management and Maintenance Division, as soon as they become available.

APPENDIX 19/4SE: (SPECIFICATION FOR HIGHWAY WORKS) (CONTINUED)

Form Sedd/P3 Paint Sample Despatch List: Sheet 2

Notes:

1. State whether from shop or site (give name and address)
2. Batch samples comprising unopened tins to be marked A1, A2, etc. Control samples in 0.5 litre tins to be marked B1, B2, etc. Samples No. to run consecutively, i.e. A1 and B1 onwards.
3. Colour reference to BS 4800 to be given, as stated on Form HA/P1 (Maintenance) Paint System Sheet, e.g. 18 B 25.
4. For 'A' samples specific gravity (Sp.G.) to be measured by Inspector from separate tins of the same batch. For 'B' samples Sp.G. to be measured by Inspector when taking samples. Samples will be rejected unless Sp.G. is filled in above by Inspector.
5. If Sp.G. differs appreciably from data sheet do not dispatch 'A' or 'B' samples.
6. The Operating Company shall complete the paint system sheet SEDD/P3 for protection of steelwork against corrosion for new works.

APPENDIX 20/1: WATERPROOFING FOR CONCRETE STRUCTURES

Repair and Replacement of Bridge Deck Waterproofing

Repair and Replacement of Bridge Deck Waterproofing shall be in accordance with Clause 2008

Where details of existing waterproofing systems to bridge decks shall be unknown the Operating Company shall carry out investigations to determine the system employed.

The integrity of the waterproofing membrane and bond to substrate shall be included in the investigation.

Some existing bridge decks may not have received waterproofing.

In such cases the deck shall be prepared to a U4 finish and receive waterproofing in accordance with Series 2000.

Deck surfaces that deviate from a U4 finish shall require further preparation and or additional material.

Typical Waterproofing systems that may be found on the Trunk Road Network shall include but not be limited to

Mastic Asphalt System

Proprietary membrane and sheet system

Proprietary sprayed waterproofing system

Non destructive integrity tests compatible with the waterproofing system shall be carried out.

Additional Preparation of Bridge Decks

Where the concrete deck deviates from a U4 finish further preparation shall be carried out to bring the surface finish up to a suitable standard for the application of waterproofing.

The application of an additional thin screed coating on the existing concrete deck shall generally not be considered appropriate other than for localised repairs.

Waterproofing with bituminous paint to buried faces of concrete structures

Material	Method of Application	Rate of Application	Number of coats
Bituminous paint	Brush or spray applied	0.55 litres / m^2 (first coat) 0.45 litres/m^2 (second coat)	2

APPENDIX 23/70: REPLACEMENT OF BRIDGE EXPANSION JOINTS AND SEALING OF JOINTS

Bridge Expansion Joints

The following types of bridge expansion joints are known to occur on the Trunk Road Network.

Type	Description
1	Buried joint under continuous surfacing
2	Asphaltic plug joint
3	Nosing joint with poured sealant
4	Nosing with preformed compression seal
5	Reinforced Elastometic
6	Elastomeric in metal runners
7	Maurer D80

This list shall not be deemed to be exhaustive and reference shall be made to BA26 and BD33 of the DMRB for all possible types that may be encountered.

A description of deck joint types and deck joint manufacturers details shall be as provided in Appendix B of the TRBDB for individual Structures where these shall be known.

APPENDIX 24/1: BRICKWORK, BLOCKWORK AND STONEWORK

1. Bricks shall be clay complying with Clause 2406

2. Sulphate resisting Portland cement shall be used in all mortar designations where located below non tidal open water.

   The Operating Company shall determine other locations where it shall be appropriate for Sulphate Resisting Portland cement to be employed.

   Mortar designation (i) shall be used with Class A Engineering brickwork.

   Mortar designation (ii) shall be used with Class B Engineering brickwork.

   Mortar designation (iii) shall be used with common brickwork, blockwork and stonework with joints more than 2 mm wide.

   Mortar designation (iv) shall be used with natural stone ashlar stonework with joints less than 2 mm wide.

3. Lime mortar shall be mixed using gauging boxes.

   The durability designation shall comply with Clause 2476AR and shall be selected by the Operating Company from table 24/3 of this Specification.

4. Natural building stone in repair work shall be of the same quality colour and type as adjacent sound stone and bedded jointed dressed and tooled to match.

5. Before building into the Site Operations the Operating Company shall compare and match samples of natural building stone with the existing sound stone.

6. Reconstructed stone shall be of the same quality colour and type as adjacent sound existing reconstructed stone.

7. Before building into the Site Operations the Operating Company shall compare and match samples of reconstructed stone with the existing sound reconstructed stone.

8. Pointing to repair work shall be finished to match the existing pointing of adjacent sound areas of pointing to brickwork, blockwork, reconstructed stonework and stonework.

9. In new work:

   Finished pointing shall generally be

   a) Bucket handle in brickwork, block-work and reconstructed stone

   b) Flush with the exposed face in natural ashlar stonework and stonework in arch rings and faces and

   c) Finished 5 mm from the exposed face of squared or un-squared coursed or un-coursed random rubble stonework

   Brickwork, stonework, blockwork and reconstructed stonework and other relevant details for new build shall be written consent by the Director.

APPENDIX 24/1: BRICKWORK, BLOCKWORK AND STONEWORK (CONTINUED)

10. The variation in depth, front to back of stones for natural stone face-work to cast concrete shall not exceed 25 mm.

11. The variation in depth, front to back of adjacent stones for natural stonework in composite walls shall not be less than 50 mm.

12. In coursed work the courses shall generally be horizontal.

13. For all works bricks stone blocks reconstructed stone and mortar materials shall be stored on pallets and kept dry.

14. Bonding for brickwork and blockwork in repairs shall match existing and for new works shall written consent by the Director.

APPENDIX 26/1:ANCILLARY CONCRETE

1. The Operating Company shall prepare an Appendix 26/1 where special requirements for Ancillary Concrete shall be required for example. sulphate-resisting cement and the like and in accordance with other provisions of this Contract.

   Prescribed concrete references and uses shall also be listed in Appendix 26/1.

APPENDIX 28/1 : REQUIREMENTS FOR WINTER MAINTENANCE OPERATIONS

Table 1 – Weather Forecast and Road Condition Status

This table sets out the forecast weather and road condition status codes used in table 2 of this Appendix 28/1.

Forecast Weather			
A	Road surface temperature ≤ plus 1°C.	G	Road surface temperature below minus 5º C following rain
B	Road surface temperature between plus 1º C and minus 2º C	H	Hoar frost
C	Road surface temperature between minus 2º C and minus 5º C	I	Freezing fog
D	Road surface temperature below minus 5º C	J	Freezing rain
E	Road surface temperature between plus 1º C and minus2º C following rain	K	Snow accumulations up to 30 mm
		L	Snow accumulations over 30 mm
F	Road surface temperature between minus 2º C and minus 5º C following rain	M	Hard packed snow/ice

Road Condition Status	
1	Road surface dry
2	Frost susceptible area/known surface water run-off
3	Road surface wet
4	Road surface temperatures ≤ plus 1° C and relative humidity ≤ 80%

APPENDIX 28/1 : REQUIREMENTS FOR WINTER MAINTENANCE OPERATIONS (CONTINUED)

Table 2 – Criteria for minimum precautionary treatment salt de-icing spreading rates

1. The criteria for minimum precautionary treatment and salt spreading rates in grammes per square metre are given in the following table

Forecast Weather	Road Conditions Status as referred to in Table 1 of this Appendix 28/1			
	1 **Dry Road Surface** **(grammes per square metre)**	**2** **Frost susceptible/ surface water run off area** **(grammes per square metre)**	**3** **Road Surface Wet** **(grammes per square metre)**	**4** **Road Surface Temperatures less than or equal to plus 1°C and relative humidity less than or equal to 80%**
A	0	20	0	0
B	0	10 to 20	10 to 20	Salt moisture content shall be 5% at relevant spread rates.
C	0	10 to 20	10 to 20	
D	0	20	20	
E	0	20	30	
F	0	30	40	
G	0	40	40	
H	10	20	20	
I	10	10	20	
J	40	40	40	
K	20	30	40	
L	40	40	40	
M	40	40	40	

APPENDIX 28/1 : REQUIREMENTS FOR WINTER MAINTENANCE OPERATIONS (CONTINUED)

Table 3 –Minimum requirements for Salt Spreading Rates for Snow and Ice Clearance

ROAD SURFACE CONDITION	AIR TEMP	TREATMENT			
		Spreading (grammes/square metres)		Ploughing	Blowing
		Salt			
Ice formed	less than or equal to minus 5°C and stable	20 to 40		No	No
Snow covering exceeds 30mm	less than or equal to minus 5°C and stable	20		Yes	No
Snow covering exceeds 30mm	less than or equal to minus 5°C and dropping	20 to 40		Yes Yes	Yes Yes
Snow accumulations due to prolonged falls	less than or equal to minus 5°C and stable	20 to 40		Yes (continuous)	Where applicable
Hard packed snow/ice less than 20mm thick	greater than or equal to minus 5°C	20 to 40 (successive treatments		No	No

This Table 3 shall be read in conjunction with sub clause 8 of Clause 2804AR of Part 1 of Schedule 9 of this Contract.

APPENDIX 28/1 : REQUIREMENTS FOR WINTER MAINTENANCE OPERATIONS (CONTINUED)

Table 4 –Minimum Spreading Rates for Ethylene Glycol for Precautionary Treatments

CONDITIONS FORECAST	SPREAD RATE (litres/metres^2)
Frost and Road Surface Temperature (RST) at or above -2°C	0.01
Frost and RST below –2°C or Snow or Freezing conditions after rain	0.01 (effective to - 4°C)

APPENDIX 30/1: GENERAL

1 The Operating Company shall give at least 48 hours' notice to the Director of the intention to commence any of the Operations listed in Sub-clause 3001.1 and including but not limited to any of the sites/designations listed below

(i) Sites of Special Scientific Interest

(ii) Special Areas of Conservation including candidate sites

(iii) Special Protection Areas including candidate sites

(iv) Ramsar sites

(v) Sites of Interest for Nature Conservation

(vi) Any site of Archaeological interest which may be affected by the Operations

The Operating Company shall also ensure that the appropriate advisory body (for example Scottish Natural Heritage, Scottish Environmental Protection Agency, Historic Scotland and the like) shall also be advised of the intended Operations prior to the Operations commencing on Site

2 The Operating Company shall comply with the requirements of Clause 170 in arranging access for Operations outside the Trunk Road boundary.

3 Pesticide record forms as detailed below shall be submitted to the Director on an annual basis as part of the annual report to be submitted in accordance with Part 5 of Schedule 7.

APPENDIX 30/1: GENERAL (CONTINUED)

LANDSCAPE WORKS PESTICIDE RECORD

Contract Reference number: Date of visit …/…/…

(minimum one record per day)

Contract Name: Name of Operating Company:

Operating Companys' telephone number:……..

Operations carried out	**Pesticide used**	**Location of operation**
Total weed control		
Selective herbicide		
Weed control in vicinity of any burn, ditch, or open water		
Weed control around planting		
Weed control to cultivated beds		
Other		

Names and qualifications of operatives on Site:

Supervisor……

……

Storeman…….…….…….

…….…….…….……...

Application by:…….……...

Signed for Operating Company:……..

Operating Company's observations on damage or any other incidents:

…….……

…….……

…….……

APPENDIX 30/1: GENERAL (CONTINUED)

4. The bird nesting season shall be generally accepted as being from the end of March to the end of July but shall be confirmed by the Operating Company after consultation with Scottish Natural Heritage.

   Evidence of this consultation shall be provided by the Operating Company to the Director prior to any Operations commencing on Site.

5. For all new planting and seeding Operations undertaken under this Contract the Operating Company shall provide inspection reports for the activities carried out under Clauses 3007 3009 and 3010.

   The reports shall identify the level of Operation activities undertaken for each Operation.

   The format of the form shall be as below or otherwise have the written consent of the Director.

   Inspection reports shall be submitted to the Director at the following intervals

   (a) In the case of activities carried out under Clause 3009

      (i) Six times per year in the first relevant 52 week period of the period of establishment maintenance

      (ii) Four times per year in the second relevant 52 week period of the period of establishment maintenance

      (iii) Three times per year in the third relevant 52 week period of the period of establishment maintenance, and for any remaining years as appropriate.

   (b) In the case of activities carried out under Clauses 3007 and 3010 at the frequencies stated in Part 1 of Schedule 7 for Detailed Inspections.

APPENDIX 30/1: GENERAL (CONTINUED)

LANDSCAPE WORKS – INSPECTION REPORT

Contract reference Number: Date of visit .../.../…

Contract Name:

Name of Operating Company:

Operating Company's telephone number:

Operations carried out	**Location of Operations**

Names of operatives on Site:

……

……

……

……

……

……

Operating Company's observations on damage by others additional work required or general condition of the Operations and/or Works:

……

……

……

This maintenance visit has been satisfactorily completed.

SIGNED (for Operating Company)……

NAME IN CAPITALS……... DATE../../..

SIGNED (For Engineer)…….

NAME IN CAPITALS:……

APPENDIX 30/2: WEED CONTROL

1 The Operating Company shall control all injurious weed species which shall be defined for this Appendix as being those listed in sub-Clause 3002.1 with the addition of Oil Seed Rape and Rosebay Willowherb within or associated with the Unit and throughout all Annual Periods at sufficient frequency to restrict their growth and prevent their spread.

The Operating Company's programme of weed control shall ensure there shall be a significant reduction in the occurrences and extent of these species each successive year for the duration of this Contract wherever they occur.

In locations where effective weed control shall be possible and practicable by other means allowed within this Contract there shall be a presumption against the use of chemical herbicides.

2 The Operating Company shall apply contact, translocated or residual herbicide for total weed control at the following locations:

(i) All Structures, paved areas, kerbs, hardstandings, filter drains and gravel areas (including but not limited to gravelled central reservations).

The Operating Company shall apply herbicides at sufficient frequency to eliminate weed growth in these areas throughout the duration of this Contract.

3 The Operating Company shall apply non-residual translocated herbicide for the total elimination of vegetation during site preparation at the following locations:

(i) All areas prior to seeding or planting

(ii) All stockpiles of topsoil

4 The Operating Company shall use a translocated herbicide approved by the Scottish Environmental Protection Agency in or near water for the total control of vegetation in all filter drains and any other areas adjacent to water and requiring weed control.

The application shall be at sufficient frequency to eliminate weed growth throughout the duration of this Contract.

5 The Operating Company shall apply herbicide for the selective control of all weeds listed in paragraph 1 above in all non-hardened verges and central reserves, planted areas and other grassed areas throughout the Site including but not limited to embankments and cuttings.

The application shall be at sufficient frequency to restrict their growth and prevent their spread.

The Operating Company's programme of weed control shall ensure there shall be a significant reduction in the occurrences of these species each successive year for the duration of this Contract wherever they occur.

6 Where any of the weeds listed in paragraph 1 of this Appendix shall be controlled using herbicide, the application shall be by spot treatment in accordance with the manufacturer's written instructions unless otherwise consented to in writing by the Director.

Spot treatment shall typically be via controlled droplet application of a type appropriate to the herbicide being used the species being treated and the location.

APPENDIX 30/2: WEED CONTROL CONTINUED

7. Within wildflower areas or areas of nature conservation value the Operating Company shall eliminate any injurious weeds that cannot be effectively controlled by chemical means without causing damage to other vegetation by hand pulling in accordance with sub-Clauses 3002.8 and 3002.10 and at the frequency stated in paragraph 1 of this Appendix.

8 The Operating Company shall hand weed as necessary and at sufficient frequency to eliminate weed growth throughout the duration of this Contract in the following locations

(i) Ornamental shrub beds where the application of herbicide may cause damage

(ii) Hedgerow planting where herbicide application may cause damage

(iii) Around planting stations in existing woodland within the Operations and/or Works

(iv) Within plant protectors and tree/shrub shelters.

(v) Where necessary throughout or associated with the Unit for the control of Ragwort and Oil Seed Rape and

(vi) In areas densely populated with desirable broadleaved species or areas of wildflowers where the application of herbicide may cause damage.

9 The Operating Company shall cut weeds listed in paragraph 1 of this Appendix throughout or associated with the Unit that have become unsightly or a nuisance or to prevent such weeds becoming unsightly or a nuisance or to facilitate effective control by herbicide.

10 Any arisings from weed control operations shall be removed from Site and disposed of to a licensed disposal facility.

Where weed control operations result in the production of controlled waste products typically from Ragwort and Japanese Knotweed the arisings shall be placed in waterproof bags sealed and removed from the Site to a licensed disposal facility.

The Operating Company shall be responsible for removing the unsightly remnants of any dead or dying weeds at the appropriate time following herbicide application.

APPENDIX 30/3: CONTROL OF RABBITS AND DEER

1 The Operating Company shall carry out rabbit, hare and deer control in all areas of new planting or seeding undertaken under this Contract for the duration of the period of Establishment Maintenance.

For all other areas within or associated with the Unit the Operating Company shall undertake rabbit, hare and deer control when instructed by the Director.

No guns or snares shall be used for the control of rabbit hare and deer without the written consent of the Director.

The Operating Company shall be responsible for contacting adjacent landowners regarding their obligation to control infestations on their own land and thereafter to liaise as necessary to control co-ordination and report any further complaints in writing to the Director.

2 The Operating Company shall only cut areas of brambles and herbage that shall interfere with the control of rabbit or deer.

The arisings shall either be used to form habitat piles or chipped and spread around the Site in locations within the Site where the habitat piles and/or the chippings shall not be likely to become visually intrusive or interfere with access or maintenance.

No clearance of brambles or herbage shall be undertaken during the bird nesting season without the completion of a comprehensive bird survey by appropriately qualified ecologists and the submission of a corresponding report for the written consent of the Director.

3 The Director may inspect the Site with a representative of the Operating Company at any time to ensure effective control has been achieved.

4 For all areas of new planting or seeding Operations and/or Works the Operating Company shall maintain the planting enclosures free of rabbits rabbit burrows including exit/entry holes and deer for the duration of the period of Establishment Maintenance.

5 For all areas of new planting or seeding Operations and/or Works the Operating Company shall replace all plants damaged by rabbits hares and/or deer and maintain them for the entire duration of the period of Establishment Maintenance.

Plant replacements shall be undertaken in accordance with sub-Clause 3006.89

APPENDIX 30/4: GROUND PREPARATION

1 Prior to treatment with an appropriate herbicide, the Operating Company shall cut all areas to be planted or seeded to a height of between 50 – 75 mm, and remove the arisings from Site to a licensed disposal facility.

2 The Operating Company shall apply herbicide to all areas to be planted or seeded with the exception of areas in existing woodland and on rock faces.

3 Prior to spreading topsoil the Operating Company shall rip the sub-soil in all areas to be planted other than on rock faces.

The minimum depth of ripping shall be 450 mm unless otherwise consented to in writing by the Director.

4 The spacing between tine furrows used for ripping shall be 500mm.

5 All subsoil areas to be seeded or topsoil spread under this Contract shall comply with the requirements of sub-Clauses 3004.8 to 3004.11.

6 Stones brought to the surface during final preparation of soils shall be retained on Site and used to form habitat piles in locations where the habitat piles shall not be likely to become visually intrusive and shall not interfere with access or the maintenance of the Operations and/or Works.

All inorganic foreign matter shall be removed off the Site unless otherwise consented to in writing by the Director.

APPENDIX 30/5: GRASS SEEDING, WILDFLOWER SEEDING AND TURFING

1 Wildflower seeding shall be undertaken typically in early Spring or early Autumn and following best horticultural practice in accordance with the species involved.

2 Immediately prior to any sowing grass and wildflower seed hydraulic seeding or laying turf with the exception of rock faces and inaccessible areas the Operating Company shall reduce the upper 50mm of soil to a fine tilth by use of a chain harrow, rotovator or other suitable Constructional Plant.

3 Fertilisers and organic soil improvers may be used with the written consent of the Director to aid initial grass establishment in areas where this may be difficult to achieve.

The use of such additives shall not be permissible in areas of proposed wildflower seeding.

4 Grass and wildflower/grass seed mixtures shall be selected by the Operating Company and submitted to the Director for written consent prior to ordering.

The selection shall take account of the following criteria

(i) Intended works location – the choice of grass and/or wildflower species may vary depending on the relative location of the proposed Site.

(ii) Proximity to any areas of nature conservation interests – the Operating Company shall consult with Scottish Natural Heritage if the intended Site for seeding shall lie in or adjacent to an area of conservation interest.

(iii) Biodiversity interests – including the specification of wildflower species native to Scotland or the UK and of local provenance.

(iv) Deer interests – deer can often be attracted to the road side by the presence of new grass seeding and some areas shall be more likely to have regular deer activity near to the road.

The Operating Company may need to consider a choice of grass and wildflower seed that shall be less palatable to deer.

(v) Future maintenance requirements – the choice of seed type shall balance the need for good establishment with reduced long term maintenance, particularly in less accessible areas such as central reserves.

For wildflower/grass mixtures the ratio of grass seed to wildflowers shall be 80% to 20% respectively.

No single species of wildflower shall be less than 10% of the wildflower component with the exception of Ox Eye Daisy (Leucanthemnum vulgare) that, if specified, shall be limited to 3% of the wildflower component.

5 All seed shall be delivered to the Site in bags sealed by the supplier.

A label shall be attached to each bag giving details of species and percentage breakdown.

The same details shall also be enclosed within the bag.

Each bag shall be numbered differently and relate to the label and documents within the bag.

APPENDIX 30/5: GRASS SEEDING, WILDFLOWER SEEDING AND TURFING (CONTINUED)

The documents within the bag shall be submitted by the Operating Company to the Director.

6 The wild flower seeds shall be of UK native origin selected and procured in accordance with Appendix 1 of *'Cost Effective Landscape: Learning from Nature'*.

The Operating Company shall complete and submit to the Director the appropriate Wildflower Seed Provenance Certificates in the format shown in this Appendix..

7 The grass seed mixture shall be sown at a rate of not less than 20g/ m2 for side slopes of cuttings and embankments and 15g/ m2 elsewhere.

Wildflower/grass mix shall be sown at a rate of not less than 10 g/m2.

8 Hydraulic seeding shall be undertaken only with the prior written consent of the Director.

It shall typically be undertaken on areas such as rock and scree slopes but may be utilised elsewhere as appropriate.

Seeding rate of application for grass seed mix and wildflower/grass mix shall be the same as for conventional sowing.

9 The number of establishment cuts for all newly-established/sown grass shall be 4 for high frequency maintenance areas and 2 for all other grass areas.

APPENDIX 30/5: GRASS SEEDING, WILDFLOWER SEEDING AND TURFING (CONTINUED)

WILDFLOWER SEED PROVENANCE CERTIFICATE

CERTIFICATE A - Seed Harvested from the Nursery

Certificate No:…….

Species	Name of seed supplier	Name and location of the nursery from which the seed was harvested	Locations and dates of seed collection	Name of person(s) and company(s) responsible for collecting the seed	Any other relevant details or comments

We hereby certify that the wildflower seed incorporated in to Operations is as identified in the Specification Appendix 30/5, and the details provided with each individual bag of seed delivered to the Site.

Part (i). (in the event of the operations being sub-contracted by the Operating Company to be completed by the sub-contractor responsible for undertaking the planting operations).

SUB-CONTRACTOR

Firm:…….

Name:……

Position:……

Signed:……..……

Date: ../../..

Part (ii). (to be completed by the Operating Company, regardless of whether or not the planting operations have been sub-contracted).

OPERATING COMPANY

Firm:…….

Name:……

Position:……

Signed:……..……

Date: ../../..

APPENDIX 30/5: GRASS SEEDING, WILDFLOWER SEEDING AND TURFING (CONTINUED)

WILDFLOWER SEED PROVENANCE CERTIFICATE

CERTIFICATE B - Seed Collected Directly from the Wild

Certificate No:…….

Species	Name of seed supplier	Name and location of the nursery from which the seed was harvested	Locations and dates of seed collection	Name of person(s) and company(s) responsible for collecting the seed	Any other relevant details or comments

We hereby certify that the wildflower seed incorporated in to Operations is as identified in the Specification Appendix 30/5, and the details provided with each individual bag of seed delivered to the Site.

Part (i). (in the event of the operations being sub-contracted by the Operating Company to be completed by the sub-contractor responsible for undertaking the planting operations).

SUB-CONTRACTOR

Firm:…….

Name:……

Position:……

Signed:……..……

Date: ../../..

Part (ii). (to be completed by the Operating Company, regardless of whether or not the planting operations have been sub-contracted).

OPERATING COMPANY

Firm:…….

Name:……

Position:……

Signed:……..……

Date: ../../..

APPENDIX 30/6: PLANTING

1 All new plant stock to be used within the Unit shall conform to BS3936: Nursery Stock and BS4043: Recommendations for the Transplanting of Rootballed Trees with the exception that Holly *(Ilex aquifolium)* which shall be container grown to a minimum height of 500 mm and then cut back to 200 mm in height before delivery to the Site.

Plant stock types, planting densities and sizes shall be as Tables 30/2, 30/3, and 30/4.

Table 30/2 Extra Heavy Standard, Heavy Standard, Standard, Rootballed Conifers and Feathered Trees

Type	Girth at 1m Above Ground Level (centimetres (cm))	Clear Stem from Ground Level (metres (m))	Minimum Height from Ground Level (metres (m))	Maximum Height from Ground Level (metres)
Extra heavy standard	14 to 20	1.8	4.25	6.0
Heavy standard	12 to 14	1.8	3.5	4.25
Standard	8 to 10	1.8	2.5	3.0
Large rootballed conifers	-	-	1.5	1.75
Feathered Tree	-	-	1.2	1.8

Table 30/3 Whip transplants, Container Grown and Cell Grown Stock

Type	Minimum Age (years)	Minimum Height Above Ground Level (millimetres)	Minimum Container Size
Cell grown stock: Broadleaves Conifers	1.5	 250 180	175cc
Whip transplants	3.0	450	-
Container grown evergreens	3.0	200	2 litres or 1.5 litre rigid cell with internal grooves or ridges

APPENDIX 30/6: PLANTING (CONTINUED)

Table 30/4 Shrubs, Conifers, Hedge Plants, Climbers and Ground Cover Plants

Type	Minimum Density (plants/per square metre or as shown)	Minimum Age (years)	Column A Acceptable Height (millimetres)	Column B Minimum Height for Small/Slow Growing Plants not Readily Available to Sizes Shown in Column A (millimetres)	Minimum Volume (litres (l))
Hedge plants; Bare root Beech, Hawthorn	6 per linear metre double staggered row	3.0	400-600	-	-
Cell grown		1.5	200-400		
Other species as detailed on the drawings and Schedule of rates		Other as above			
Bare-root shrubs	As Ordered	3.0	300 to 600		-
Container grown shrubs and conifers	As Ordered	3.0	450 to 600	300 to 450	2 or 1.5 rigid cell with internal grooves or ridges
Container grown climbers	As Ordered	3.0	600 - 900	400 to 600	2
Ground cover plants	As Ordered	3.0	300 - 450	150 to 200	2
Marginal and aquatic plants	As Ordered	2.0	150 - 300	100 to 150	2

APPENDIX 30/6: PLANTING (CONTINUED)

2 Any planting Design shall be accompanied by written confirmation from the Operating Company (or sub-contractor/Landscape Architect, as appropriate) that, in respect of the planting proposed, the United Kingdom native plant species of trees, shrubs climbers and wildflower (seeds and plants) shall have been sourced from the highest available preference for selecting native seed sources contained within Appendix 1, Figure 5 of *Cost Effective Landscape : Learning from Nature.*

This confirmation shall be provided prior to the commencement of the landscape planting operations and shall consist of the completed Provenance Certificates in the format shown in this Appendix.

Where there shall be a choice of form of plant the highest preference shall be given to the most local provenance.

PROVENANCE CERTIFICATE

Certificate Number…….

1. We hereby certify that the provenance/origin of the United Kingdom native plant stock incorporated in the Operations shall be as identified in the Plant Schedule contained in Annex 1 of this Certificate.

2. The words and phrases herein, unless otherwise stated, have the same meaning as attributed to them in Cost Effective Landscape: Learning from Nature.(Scottish Office publication, February 1998).

PART A. *(in the event of the operations being sub-contracted by the Operating Company to be completed by the sub-contractor responsible for undertaking the planting operations).*

SUB-CONTRACTOR
Firm:…….
Name:……
Position:……
Signed:……..
Date: ../../..

PART B. *(to be completed by the Operating Company, regardless of whether or not the planting operations have been sub-contracted).*

OPERATING COMPANY
Name:……
Position:……
Signed:……..
Date: ../../..

APPENDIX 30/6: PLANTING (CONTINUED)

PROVENANCE CERTIFICATE

Certificate Number:…….

ANNEX 1: Plant Schedule

Botanical Name	Quantity	Form/Age	Height (Cm)	Zone Of Provenance And Location	Approximate Date Propagation Material Collected	Nursery(S) Where Plants Have Been Grown

APPENDIX 30/6: PLANTING (CONTINUED)

3 The Operating Company shall make special arrangements for the Director to inspect planting stock at the nursery if requested by the Director.

4 Tree pits shall be back-filled with Class 5A (site won) topsoil.

If imported topsoil shall be required, it shall be Class 5 B.

5 Planting compost may be used for the cultivation of intended planting areas where the soil structure shall be poor or nutrient deficient and shall be detrimental to the successful establishment of the planting.

Areas intended for the use of compost shall have the written consent of the Director prior to the incorporation of the compost.

6 Slow/Controlled Release Fertiliser with a Nitrogen: Phosphorus: Potassium: Magnesium ratio of 14:8:13:2 shall be incorporated into backfill of pits for Standard trees Heavy Standard trees and Extra Heavy Standard trees at the following rates respectively 20grams 40grams and 100grams and into the top 75 mm of planting bed soil in ornamental planting areas at the rate of 100grams per square metre.

Scattering fertiliser of any description on the surface of the ground around the plants shall not be permitted.

7 Root dips shall be applied to all bare root plants and shall be applied to all evergreen species in accordance with the manufacturers written instructions.

Root dips shall be applied at the following times

(i) Immediately after the plants have been dug- up in the nursery

(ii) On arrival at Site and

(iii) Immediately prior to planting if more than 3 days delay after arrival on Site

Anti-desiccant sprays shall be applied on arrival of the plants at Site and immediately prior to planting if more than 3 days delay after arrival on Site.

8 Planting of bare-rooted root-balled and cell grown trees shrubs non-aquatic perennials and wildflower plants shall take place during favourable weather and soil conditions, between the beginning of November and the end of March unless otherwise consented to in writing by the Director.

Bare-rooted or root-balled conifers and all evergreens shall be planted either during November or March.

9 Notch planting shall be into a T shaped opening of sufficient size for the roots of bare-rooted plants to be fully spread out or to accommodate a cell-grown plant without breaking the root plug.

The T-shaped opening shall be through an upturned turf which shall have been dug from the planting location or upturned ground where there shall be no turf.

For individual plants, turfs or upturned ground shall be 300 mm square and 200 mm deep for single row hedges strip of turf or upturned ground shall be 300 mm wide and 200 mm deep and for a double-row hedge, the strip shall be 600 mm wide and 200 mm deep.

APPENDIX 30/6: PLANTING (CONTINUED)

Surrounding ground shall be firmed back after planting.

10 Planting pits and trenches shall be in accordance with Table 30/1 below. Unwanted sub-soil arising from planting pits and trenches shall be retained on Site.

Wherever practicable, and deposited in new mounding.

TABLE 30/1:Planting Pits and Trenches

TYPE	DIMENSION OF EXCAVATION WxWxD mm	DEPTH OF CULTIVATION AT THE BASE OF PITS OR TRENCHES mm
Semi-mature trees	Measurement of root-ball plus 400 in each direction.	200
Extra heavy and Heavy standard trees	1800 x 1800 x750	200
Standard trees	1000 x 1000 x 500	200
Feathered trees	600 x 600 x 400	200
Whip trees, shrubs and climbers where pit planting shall be specified	300 x 300 x 350	150
Hedges	* x 600 x 350	150
Cell-grown plants where pit planting shall be specified and container grown plants.	100 greater than W and D of root-plug.	

* length of hedge

11 Where planting shall be undertaken in land without a topsoil depth of 350mm or greater trenches excavated in accordance with Table 30/1 shall be backfilled with Class 5A topsoil won from the Site or imported topsoil Class 5B as required to make up the required volume.

12 Where planting shall be proposed to be planted in undisturbed land where there shall be existing topsoil of a depth of 300 mm or greater the ground shall be cultivated to a minimum depth of 300 mm and all live injurious weed roots and growth and all stones and other such arisings above 75 mm in any one dimension shall be removed to a licensed disposal facility.

Areas where topsoil has been spread to a depth of 300 mm or greater shall be cultivated in accordance with sub-Clause 3006.29 prior to planting.

13 Where a hedge shall be planted in undisturbed land where there shall be existing topsoil of a depth greater than 300 mm a 600 mm wide strip along the proposed hedgerows shall be cultivated in accordance with sub-Clause 3006.29.

APPENDIX 30/6: PLANTING (CONTINUED)

14 Pits and trenches for Transplants Feathered Trees Whip Trees Shrubs Climbers and Container-grown plants shall be back-filled with Class 5A topsoil won from the Site and lightly firmed prior to planting.

15 Root barriers shall only be required where the clearances required for underground services and drainage infrastructure affects the requirement of the planting.

The Operating Company shall be responsible for determining the location of any underground services in the vicinity of the proposed planting area and shall secure agreement with the relevant Statutory Undertaker(s) before employing root barriers to reduce standard clearances from their services and the like.

16 Semi-mature trees shall be planted as shown on HCD Drawing No. K5.

17 Backfill to tree pits shall comprise any Class 5A excavated topsoil and imported topsoil to Class 5B as required to fill the pit.

Controlled Release Fertiliser in accordance with sub-Clause 3006.15 shall be thoroughly mixed into the topsoil.

18 All newly planted standard heavy standard extra heavy standard and semi-mature trees shall be fully watered-in to field capacity on the same day as planting.

All container grown cell grown and root-balled plants shall be watered to field capacity immediately before planting.

19 A 75 mm diameter perforated flexible, plastic irrigation pipe shall be inserted around the root-balls of Extra Heavy Standards trees at a depth of 150 mm below the ground surface.

The pipe shall be of sufficient length to coil completely around the root system or root-ball and shall be provided with two ‘T’-piece connections with aeration caps, which shall be located opposite each other.

20 Individual plant protectors with of minimum 750 mm in height and a 80-100mm diameter shall be used to protect all cell grown stock whip trees, feathered trees of under 4 years in age and holly plants within hedgerows except for hedge plants.

Individual plant protectors a minimum of 750 mm in height and a minimum of 150 mm diameter shall be used to protect all shrubs climbers and container grown evergreens and container grown conifers.

Fagus species shall be protected by plant protectors with base ventilation.

Shelters shall be supported by timber stakes attached by releasable ratchet ties.

Stakes to be circular section “Pencilled,” and a minimum of 35 mm diameter in cross section or 35 x 35 mm square section, sharpened at one end.

Stakes shall be of sufficient length to adequately support the plant protector and remain stable in the ground for the full duration it is required for typically 3 – 5 years.

Previously used tree and shrub shelters in sound condition may be deemed accepted by the Director for re-use.

APPENDIX 30/6: PLANTING (CONTINUED)

21 Timber mulch shall be composted wood chips or bark free of fungi and diseases, methyl bromide contamination and foreign material.

It shall be matured for a minimum of 16 weeks naturally heated by the process of decomposition to temperatures exceeding 50 degrees centigrade for a minimum period of 14 days followed by a period of not less than 1 week of stabilisation.

22 Individual mulch mats shall be square or round and not less than 800 mm x 800 mm (or 800 mm diameter) or greater than 1000 mm x 1000 mm (or 1000 mm diameter) not less than 7 mm thick and biodegradable.

23 Sheet mulch shall be biodegradable and shall have a minimum thickness of 7mm.

It may be used in areas of amenity planting except for planting areas in rock cutting.

24 Edges of sheet mulch mats shall be secured by burying a strip 100mm wide around the edge of the mat vertically into the ground.

25 Sheet mulch used for hedges shall be laid in either of the methods specified in sub-Clause 3006.62

26 Unless otherwise the written consent by the Director the number of bulbs to be planted per m2 per species shall be as follows:

Bluebell	150	
Crocus	100	
Tulips	50	
Narcissus (large)	40	
Narcissus (medium)	60	
Narcissus (small)	100	for example Lent lily (Pseudonarcissus)

The depth of planting shall be in accordance with good horticultural practice.

27 The Operating Company shall insert marker posts to identify the boundary of each planting or wildflower seeding area which shall not otherwise be protected by fencing or other structures.

28 The Operating Company shall replace all plants which shall be missing have died or which in the opinion of the Director shall be failing to make satisfactory growth for the duration of the period of Establishment Maintenance.

29 All replacement Extra Heavy Standard, Heavy Standard and Standard trees and any Root-balled conifer stock shall be watered to field capacity following planting.

30 Unless otherwise instructed by the Director, all areas of new planting undertaken by the Operating Company shall be subject to a period of Establishment Maintenance for a minimum duration of three years.

APPENDIX 30/7: GRASS, BULBS AND WILDFLOWER MAINTENANCE

1 The Operating Company shall maintain all the grass and wildflower grass areas within the Unit in accordance with Clause 3007 and the categories recorded in the Landscape Inventory Drawing.

In the case of any areas not recorded in the Landscape Inventory Drawing the Operating Company shall agree the categories of these areas with the Director.

2 No grass cutting shall be carried out within 250 mm of unprotected trees and shrubs. Strimmers shall not be used for cutting grass within unprotected planted areas without the written consent of the Director.

3 Notwithstanding the other requirements of Clause 3007, the Operating Company shall cut all areas indicated within the Landscape Inventory Drawing as requiring high frequency cutting specifically in accordance with sub-Clauses 3007.9 – 3007.12 except that for subsequent cuts the frequency shall be increased to 14 times per year during the growing season.

4 Notwithstanding the other requirements of Clause 3007, the Operating Company shall cut all areas indicated within the Landscape Inventory Drawing as requiring medium frequency cutting specifically in accordance with sub-Clauses 3007.13 – 3007.16 except that for subsequent cuts the frequency shall be increased to 7 times per year during the growing season.

Unless otherwise stated in the Landscape Inventory Drawing Clause 3007 shall also apply to the following typical areas where they shall not be already subject to the high frequency regime

(i) The full boundary width of all Trunk Roads subject to a 30 mph or 40 mph speed restriction including but not limited to where applicable, a 100 metres stretch before and after the speed restriction.

(ii) Grassed areas on roundabouts within or associated with urban areas and settlements and the like.

(iii) Adjacent to all lay-bys and bus-stops to a maximum width of 5 metres from the back edge of the lay-by and including 25 metres from the end of the merge and diverge sections, tapering from the maximum 5 metres width behind the lay-by to tie-in with the 1.2 metres swathe cut at the edge of the carriageway.

5 Notwithstanding the other requirements of Clause 3007, the Operating Company shall cut all areas indicated within the Landscape Inventory Drawing as requiring low frequency cutting in specifically accordance with sub-Clause 3007.17 except that

(i) First cut after Winter/Spring. The areas shall be cut when the grass reaches a height of 150 – 200 mm to a height between 70 – 100 mm and the cuttings removed off site.

(ii) Subsequent cuts. The areas shall be cut to a height of between 80 – 100 mm, at least 3 times per year during the growing season, and the cuttings evenly dispersed. The height of the grass within these areas shall at no time exceed 300 mm.

APPENDIX 30/7: GRASS, BULBS AND WILDFLOWER MAINTENANCE (CONTINUED)

Unless otherwise stated in the Landscape Inventory Drawing the low frequency regime above shall also apply to the following typical areas where they shall not already be subject to the High Frequency or Medium Frequency regimes:

(a) A 1.2 metre swathe width measured from the back edge of the carriageway.

This width shall be increased accordingly where the remaining grass between the 1.2 metre area and any adjacent boundary (for example a wall, fence or area of planting) shall be less than 2 metres.

(b) Grassed central reservations – cuttings from these areas shall be removed from Site.

(c) Grassed areas within visibility splays.

(d) Any areas where a varying width swathe cut may be desirable, such as large grassed cutting slopes.

Such locations shall require to be consented to in writing by the Director and detailed by the Operating Company on the Landscape Inventory Drawing.

(e) Where there are footpaths remote from the carriageway edge where the grass between road and footpath receives a Low Frequency cut, the outside edge of the footpath shall be subject to the same regime for a maximum width of 1.0m.

6 Notwithstanding the other requirements of Clause 3007 the Operating Company shall cut all areas indicated within the Landscape Inventory Drawing as requiring minimal frequency cutting specifically in accordance with Clause 3007.18 except that the cut shall be undertaken in the late autumn and shall be to a height not exceeding 150mm.

These areas shall include all grassed areas not covered by any of the high, medium or low frequency regimes and shall typically include embankments cuttings ditches and the like.

Such areas shall normally require to be cut once during the Second Annual Period and once during the Fifth Annual Period.

Additional cuts within these areas may be instructed by the Director.

7 Visibility splays in front of road signs shall be cut in accordance with the requirements for low frequency areas in sub-Clause 3007.17.

The extent of cutting shall be in accordance with sub-Clause 3007.20.

8 Wildflower areas and areas of nature conservation value shall receive a topping cut in accordance with sub-Clause 3007.26 paragraph (iii) except that the cut shall be to a height of between 80 – 100 mm.

APPENDIX 30/7: GRASS, BULBS AND WILDFLOWER MAINTENANCE (CONTINUED)

In some areas the Director's consent may be sought for altering the requirement to a Biennial Cut in accordance with sub-Clause 3007.26 paragraph (iv) if the Operating Company's Landscape Architect believes it would be in the best nature conservation interest.

Such consented-to variations shall be included within the relevant Landscape Inventory Drawing.

9. Weed control shall be carried out by the Operating Company in accordance with Clause 3002.

APPENDIX 30/8: WATERING

1 The Operating Company shall water all new planting undertaken under this Contract in accordance with Clause 3008 at the frequency necessary to ensure satisfactory establishment and healthy growth for the duration of the period of Establishment Maintenance

2 Additional watering for trees, shrubs and/or grassed areas shall be undertaken by the Operating Company only when the subject of an Order from the Director.

APPENDIX 30/9: ESTABLISHMENT MAINTENANCE FOR PLANTING

1 All planting and planting areas shall be maintained by the Operating Company for the duration of the period of Establishment Maintenance in accordance with sub-Clauses 3009.2 to 3009.25.

The period of Establishment Maintenance shall be three years minimum or as written consent by the Director.

2 Stakes, tubes, guards and their ties shall be removed from plants where they shall no longer be required and in any event before the end of the period of Establishment Maintenance.

They shall be offered to the Director for re-use.

Where the Director declines the offer the Operating Company shall dispose of them to a licenced disposal facility.

3 Where new planting shall be undertaken, and where no mulch mats have been used the Operating Company shall apply a translocated herbicide to plant circles of all individual trees and shrubs, and clumps of planting where applicable in accordance with Clause 3001 and sub-Clause 3002.2 whilst protecting the trees and shrubs from the herbicide.

The Operation shall include the clearance of vegetation by hand from within the shelters and guards.

This part of the Operation shall be carried out twice (in early Spring and in October) during the first year of the three year period of Establishment Maintenance and once (in early Spring) during the second year of the period of Establishment Maintenance.

4 Where mulch shall have been used in individual plant circles or overall planting beds it shall be inspected by the Operating Company once per year in March for the duration of the period of Establishment Maintenance.

If the mulch depth shall be less than an even 75 mm new mulch to sub-Clause 3006.55 shall be laid to restore the 75 mm depth.

5 Mulch mats and sheet mulch shall be inspected three times per year and re-secured or replaced in accordance with sub-Clause 3009.13.

6 All new beds of ornamental planting shall be visited monthly during the growing season with the required maintenance Operations undertaken in accordance with sub-Clause 3009.16.

7 The soil in ornamental planting beds where the bed shall not be mulched shall be cultivated in accordance with sub-Clause 3009.19.

8 The base of all new hedge planting and an area of 300 mm width on either side shall be kept weed free for the first two years of the period of establishing maintenance in accordance with sub-Clause 3009.20. During the same period the hedge shall be pruned once each year, between 1 September and 31 January, to encourage the formation of a vigorous, compact and uniform hedge. The current year's growth of prominent new shoots shall be reduced in length by 1/3.

APPENDIX 30/9: ESTABLISHMENT MAINTENANCE FOR PLANTING (CONTINUED)

9 All new planting of individual trees, as defined by sub-Clause 3009.24, shall be maintained for the three year period of Establishment Maintenance in accordance with sub-Clause 3009.25.

APPENDIX 30/10: MAINTENANCE OF ESTABLISHED TREES AND SHRUBS

1. All areas of established planting/vegetation to be maintained each year throughout the period of this Contract shall be as shown within the Landscape Inventory Drawings.

   The established tree and shrub planting has been categorised in Table 30/5 of this Appendix:

TABLE 30/5 – Maintenance Requirements

Item/element	Description/definition	Typical annual maintenance requirements	Frequency of operation
Hedges	Distinct linear planting strips within the road corridor (usually marking boundary lines) which are intended to be formally shaped and maintained.	Trimming/cutting/pruning/removal of arisings …..	Once per year
		Possible occasional works required	
		Laying…….	When the subject of an Order
		Gapping-up……	When the subject of an Order
		Checking/topping-up mulch……..	Once per year if required
		Weeding…….	Hedges under 5 years old to be kept weed free
Shrubs	*Sub-divided into*:	(i). *High maintenance*	
	(a). Ornamental shrubs - planted as a visual element of the road corridor – usually associated with settlements and urban roundabouts.	Weeding……..	Monthly during growing season
		Pruning/cutting back/ removal/ disposal of arisings……	Once per year
		Checking/topping-up mulch….	Once per year if required
	Required operations/ frequencies for this category are adjusted according to the level of maintenance required (high, medium and low). The level of maintenance relates to the level of the adjacent grass cutting so that high maintenance shrub treatment is undertaken in areas of high frequency grass cutting; Medium	Gapping-up……..	Once per year if required- replacement subject to an Order
		(ii). *Medium maintenance*	
		Weeding……..	Three times during growing season
		Pruning/cutting back/ removal/ disposal of arisings……	Once per year

APPENDIX 30/10: MAINTENANCE OF ESTABLISHED TREES AND SHRUBS (CONTINUED)

TABLE 30/5 – Maintenance Requirements (continued)

Item/element	Description/definition	Typical annual maintenance requirements	Frequency of operation
	maintenance shrub treatment is undertaken in areas of medium frequency grass cutting and; Low maintenance shrub treatment is undertaken in areas of low frequency grass cutting.	Checking/topping-up mulch….	Once per year if required
		Gapping-up……..	Once per year if required- replacement subject to an Order
		(iii) Low maintenance	
		Weeding……..	Twice during growing season
		Pruning/cutting back/ removal/ disposal of arisings……	Once every two years
	(b). Woodland shrubs - generally native major and minor shrub species (excluding gorse and broom) informally planted or developing along the road corridor up to a height of approximately 3.5m.	Pruning	When the subject of an Order
		Cutting back	When the subject of an Order
Woodland	*Sub-divided into*:		
	(a). New woodland - (under 5 years) a newly planted or self-seeded area of predominantly tree species with the potential of developing into a mature wooded area.	Weeding……..	Twice during growing season when ordered.
		Pruning/cutting back/ removal/disposal of arisings ……..	When the subject of an Order
		Checking and adjusting any stakes/shelters/ties……	Once per year when ordered.
		Removing any stakes/shelters/ties……	When the subject of an Order
		Re-firming plants	Once per year when ordered
		Replacement planting	When the subject of an Order.

APPENDIX 30/10: MAINTENANCE OF ESTABLISHED TREES AND SHRUBS (CONTINUED)

TABLE 30/5 – Maintenance Requirements (continued)

Item/element	Description/definition	Typical annual maintenance requirements	Frequency of operation
	(b). Establishing woodland - (between 5 - 10 years) a developing area of tree species with or without woodland shrubs and with the potential of developing into a mature wooded area.	Weeding…….	Once per year
		Pruning/cutting back/ removal/disposal of arisings ……	When the subject of an Order
		Thinning/coppicing……	When the subject of an Order
		Clearing/felling……..	When the subject of an Order
	(c). Maturing Woodland - (over 10 years) an established area of dense tree cover, whether single or mixed species/varieties and with or without a woodland shrub layer.	Pruning/cutting back/ removal/disposal of arisings……	When the subject of an Order
		Thinning/coppicing…….	When the subject of an Order
		Clearing/felling……	When the subject of an Order
Scrub	An area of un-desired, self-seeded vegetation, predominantly (but not exclusively) gorse, broom, birch and/or bramble, up to a height of approx. 2.5m.	Cutting back …….	When the subject of an Order.
		Clearing……	When the subject of an Order.
		Removal/disposal of arisings…….	When the subject of an Order.
Individual trees	Lone trees, or where there is no interlocking canopy with the nearest neighbours, and sporadic trees where there is a loose arrangement of established trees with occasional interlocking canopies.	Pruning/cutting back…….	When the subject of an Order.
		Removal/treatment of arisings……...	When the subject of an Order.
		Checking and adjusting any stakes/ shelters/ties…….	Once per year.
		Removing any stakes/ shelters/ ties…….	When the subject of an Order.
		Re-firming plants……..	Once per year.
		Replacement planting……	When the subject of an Order.

APPENDIX 30/10: MAINTENANCE OF ESTABLISHED TREES AND SHRUBS (CONTINUED)

2. Trees and shrubs shall receive weed control treatment by the Operating Company in accordance with Clause 3002 at the frequencies stated in Clause 1 of this Appendix 30/10.

   Any grass and weed growth within ornamental shrub beds shall be removed by hand or by chemical means.

3. For the purposes of this Appendix individual trees shall be defined as feathered, standard and extra heavy trees growing within the trunk road boundary and shall include lone trees where there is no interlocking canopy with the nearest neighbours, and sporadic trees where there is a loose arrangement of established trees with occasional interlocking canopies.

4. Healthy arisings from pruning, cutting or felling of woody plants shall be treated in accordance with sub-Clause 3010.4 paragraphs (ii), (iv), (vi), (vii) and (viii).

   Treatment in accordance with sub-Clause 3010.4 paragraph (ii) shall take place only where there shall be sufficient area within the Trunk Road to spread the chippings out of sight from the road and to a maximum depth of 25mm.

   This treatment shall not be permitted where it shall be likely that the chippings shall affect the growth of desired grass and/or plant species.

   Chippings shall not be spread on sloping ground where they may inhibit vegetation growth which would otherwise help stabilise the slope.

   Where arisings shall be treated in accordance with sub-Clause 3010.4 paragraph (viii) the locations selected within the Site area shall not be visible from view from the road.

   If this shall not be possible in the general locality of the operations the arisings shall be removed from Site to a licensed disposal facility.

5. (i). Species grown for coloured stems shall be cut in accordance with sub-Clause 3010.8 paragraph (i). The cutting frequency shall be every two years.

   (ii). Overgrown shrubs within all Ornamental Shrub areas shall treated in accordance with sub-Clause 3010.8 paragraph (vii).

6. The frequency and timing of hedge cutting shall be as stated in the table in Paragraph 1 of this Appendix 30/10.

7. If any hedge laying shall be required it shall be undertaken in an appropriate style in order to reflect the adjacent or local appearance.

8. Where any significant gap shall exist in a hedge after it has been laid or cut, the Operating Company shall make recommendations to the Director for the appropriate plants to fill the gap including but not limited to species size, planting density and pattern.

9. Any crown lifting or reshaping shall be the subject of an Order.

10. Except in Emergencies any felling or sectional felling shall be the subject of an Order.

APPENDIX 30/10: MAINTENANCE OF ESTABLISHED TREES AND SHRUBS (CONTINUED)

11. The height at which the stump shall be cut shall be as close to the ground as possible or where the tree shall be growing in a hedge or fence line the stump shall be left level with the top of the hedge or fence.

12. Any root removal, either by stump grinding, stump grubbing or stump killing herbicide shall be subject to a specific order from the Director.

13. Thinning and coppicing shall be carried out in areas of establishing and maturing woodland where identified as being required through the Operating Company's regular inspections and following an Order.

14. Scrub control shall be undertaken where identified as being required through the Operating Company's regular inspections and following an Order.

15. Tree and shrub species to be controlled shall typically have a stem diameter of between 0 – 75 mm and a height of between 0.75 – 2.5 metres.

16. Where scrub control shall be subject to an Order the specified species shall be cut down to 50 mm above ground level and the plants allowed to re-grow.

    The Operating Company shall then apply a translocated herbicide during the period of active growth in accordance with Clause 3001.

    This regrowth treatment shall be likely to be in the year following initial cutting.

17. Tree size shall be categorised using the following method:

    (i) Key factors relating to tree size/habit

        (a) Height of tree - measured in metres from ground level to the apex of the crown.

        (b) Mean Crown Spread - calculated by adding the measurements in metres of the spread of the tree's crown along the north-south and east-west axes and dividing by two.

        (c) The measurements referred to in paragraphs (a) and (b) of this sub-Clause shall be taken to the nearest whole metre.

        (d) Branch Density Factor shall be taken as follows: 1.00 for Normal Branch Density 1.25 for Heavy Branch Density

    For all evaluation and other purposes in connection with the Contract individual tree species should be classified as having Normal or Heavy Branch Density in accordance with Table 30/6 of this Appendix which reflects average circumstances.

APPENDIX 30/10: MAINTENANCE OF ESTABLISHED TREES AND SHRUBS (CONTINUED)

TABLE 30/6 – Branch Density Classification of Individual Tree Species

Normal Branch Density	Heavy Branch Density
Acer species	Carpinus betulus and cultivars
Aesculus species	Crataegus species
Alnus species	Chamaecyparis species
Betula species	Malus species
Castanea species	Populus alba 'Fastigiata'
Fagus species	Populus nigra 'Italica'
Fraxinus species	Prunus 'Amanagowa'
Juglans species	Prunus cerasifera 'Nigra'
Pinus species	Prunus padus and cultivars
Platanus species	Quercus ilex
Populus alba	Quercus robur 'Fastigiata'
Populus nigra	Sorbus species
Populus tremula	Tilia species
Populus balsamifera	Taxus baccata
Prunus avium and cultivars	
Prunus 'Kanzan'	
Pyrus species	
Quercus robur	
Quercus cerris	
Quercus rubra	
Robinia pseudoacacia	
Salix species	
Larix species	

(ii) Formula to calculate Tree Size Factor:

Tree Size Factor = Height x Mean Crown Spread x Branch Density Factor

(iii) Tree Size Category

APPENDIX 30/10: MAINTENANCE OF ESTABLISHED TREES AND SHRUBS (CONTINUED)

Tree Size Factors shall be classified into the following categories which take into account how proportionate increases in tree size affect tree surgery

Tree Size Category	Tree Size Factor
A	0 to 34
B	35-70
C	71-125
D	126-200
E	201-340
F	341-450
G	451-650

APPENDIX 30/11: MANAGEMENT OF WATERBODIES

1 The Operating Company shall maintain all water bodies within the Unit in accordance with Clause 3011.

2 The Operating Company shall inspect all water bodies and associated inlets and outlets within and associated with the Unit in accordance with the requirements of Part 1 of Schedule 7.

3 The Operating Company shall be responsible for monitoring the depth of silt within all water bodies throughout and associated with the Unit at the frequency specified in sub-Clause 3011.7and shall report their condition to the Director.

4 The Operating Company shall eliminate injurious weeds as listed in Clause 3002 growing within or immediately adjacent to water bodies.

5 Where silt shall be affecting the intended operation of a water body or shall be deemed to have the potential to affect the intended operation of a water body the silt shall be removed in accordance with sub-Clause 3011.8.

This operation shall be subject to an Order.

The Operating Company shall be responsible for consulting with the Scottish Environmental Protection Agency and any other relevant body prior to undertaking any Operations affecting a water body.

6 All new marginal plants planted as part of the Operations or as part of a Works Contract shall be maintained by the Operating Company for the duration of the period of Establishment Maintenance with any failed or defective plants replaced in accordance with sub-Clause 3006.6 -90 inclusive.

All existing marginal vegetation shall be inspected twice annually in early February and October and their condition reported to the Director.

APPENDIX 30/12: SPECIAL ECOLOGICAL MEASURES

1 In February and October each year the Operating Company shall inspect all fencing tunnels underpasses and all other provisions for wildlife as listed in the Inventory of Wildlife Mitigation Measures in accordance with sub-Clause 3012.5 and for the duration of this Contract.

2 In February and October the Operating Company shall inspect and maintain all wildlife reflectors within or associated with the Unit in accordance with sub-Clause 3012.7.

3 The Operating Company shall consult and comply with Scottish Natural Heritage in respect of any Operations likely to impact or affect any protected species or area.

4 The Operating Company shall obtain all necessary wildlife licences required for the effective maintenance and management of the Unit including but not limited to any new operations to be undertaken through this Contract.

APPENDIX 32/1 : EMERGENCY RESPONSE

1. Emergency Response Time

   (i) The response time for attendance at an Emergency shall be defined as the time taken from receipt of notification of the Emergency by the Operating Company to commencement of appropriate action at the Site of the incident.

   (ii) Response times shall always be as short as practicable but in any event shall not exceed the maximum times stated in Table 1.

Table 1 Response Times for Emergencies

Road Type	Response Time	
	Maximum initial response time	
	07.00 to 19.00	19.00 to 07.00
Motorways and Dual Carriageways	1 hour	1½ hours
Other Trunk Roads	1½ hours	2 hours
All Trunk Roads	Maximum secondary response time	
	4 hours at all times	
	Maximum contingency response time	
	24 hours at all times	

APPENDIX 32/1 : EMERGENCY RESPONSE

INITIAL RESPONSE EQUIPMENT AND MATERIAL STOCK

(As carried on each Incident Support Unit Vehicle)

Sub Appendix A

Description	Quantity	Description	Quantity
CONSUMABLES			
Draw Cord	3 m	Face Dust Masks	12
2 Stroke oil	5 sachets	Paper Towels	1 pk
Rigger Gloves	5 pair	De-icer	1 tin
Lube Oil Spray	1 no. 400ml tin	Animal Carcass Bags	10
Helmets	2	Handwipes	1 box
Fuel Container	5 litre	Absorbent Granules	6 no. bags
Fence Nails & Staples	1 box		
TOOLS & PPE			
Drain Rods	1 set	Punner	1
Claw hammer	1	Pickaxe	1
Pointing Trowel	1	Chainsaw PPE	1 set
Manhole Lifting Keys	1 set	Chainsaw	1
Handsaw	1	Bow Saw	1
Wire Brush	1	Foam Ear Plugs	5 sets
Floating Trowel	1	Safety Goggles	2
Stihl Saw	1	Paper Coveralls	4 pair
Stone Cutting Discs	6	Torches	2
Metal Cutting Discs	6	Batteries	24
Shovels	2	14lb Sledge hammer	1
Stiff Brush	1	Stilsons	1 set
Soft Brush	1	Fence Rails	7 no.
Spirit Level	1	Chespale Temporary Fence	1 roll
TM EQUIPMENT			
75O mm Cones	30	610 Arrows	2
Cone Lights	30	Road Closed	4
Cone Light Batteries	24	Floods	4
Men at Work Signs	2	Diverted Traffic	5
Road Narrows	2	Traffic Lights Inoperable	4

SECONDARY RESPONSE – EMERGENCY PLANT

NON-ELECTRICAL EMERGENCY

SUB APPENDIX B

TYPE OF PLANT	NOMINATED DEPOTS	EQUIPMENT
TRAFFIC MANAGEMENT VEHICLE	TANNOCHSIDE KILBARCHAN AYR	C/W CONES AND SIGNS
LORRY MOUNTED HIAB	TANNOCHSIDE KILBARCHAN	C/W MINIMUM 1.5 TONNE
SPECIALIST SAFETY BARRIER	TANNOCHSIDE	
SUCTION SWEEPER	KILBARCHAN	C/W FULL WIDTH BRUSH AND CHANNEL ATTACHMENT
GULLY EMPTIER	KILBARCHAN	C/W HP WATER JETTING FACILITY
16 TONNE GVW LORRY	TANNOCHSIDE KILBARCHAN AYR	C/W TOWING BRACKET AND SNOW PLOUGH FITTINGS
FRONT LOADING SHOVEL (JCB TYPE)	TANNOCHSIDE KILBARCHAN AYR WAYSIDE, DUMFRIES NEWTON STEWART	C/W BACK HOE, 4 IN 1 BUCKET AND FORKS
BRICK / MASONRY SAWS	TANNOCHSIDE KILBARCHAN AYR WAYSIDE, DUMFRIES NEWTON STEWART	C/W METAL CUTTING BLADES
CRASH CUSHION	TANNOCHSIDE KILBARCHAN AYR	

ELECTRICAL EMERGENCY

TYPE OF PLANT	NOMINATED DEPOTS	EQUIPMENT
1.5 TONNE VEHICLE	TANNOCHSIDE KILBARCHAN AYR NEWTON STEWART	
PLATFORM WAGON	TANNOCHSIDE KILBARCHAN	
LORRY HI AB	TANNOCHSIDE KILBARCHAN	

SECONDARY RESPONSE – EMERGENCY EQUIPMENT

SUB APPENDIX C

TYPE OF EQUIPMENT	NOMINATED DEPOT	EQUIPMENT
WARNING AND DIVERSION SIGNS	TANNOCHSIDE KILBARCHAN AYR WAYSIDE, DUMFRIES NEWTON STEWART	SUFFICIENT FOR 200LM OF LANE CLOSURE
TRAFFIC CONES, LAMPS AND TAPE	TANNOCHSIDE KILBARCHAN AYR WAYSIDE, DUMFRIES NEWTON STEWART	
TEMPORARY PEDESTRIAN FENCING	TANNOCHSIDE KILBARCHAN	400 METRES
CHAIN SAWS	TANNOCHSIDE KILBARCHAN AYR WAYSIDE, DUMFRIES NEWTON STEWART	
DISC CUTTER / MASONRY SAWS	TANNOCHSIDE KILBARCHAN AYR WAYSIDE, DUMFRIES NEWTON STEWART	C/W METAL BLADES
DRAIN RODS AND MANHOLE KEYS	TANNOCHSIDE KILBARCHAN AYR WAYSIDE, DUMFRIES NEWTON STEWART	
FLOOD LIGHTS AND GENERATOR	TANNOCHSIDE KILBARCHAN AYR WAYSIDE, DUMFRIES NEWTON STEWART	
50MM PUMP WITH HOSES	TANNOCHSIDE KILBARCHAN AYR WAYSIDE, DUMFRIES NEWTON STEWART	

SECONDARY RESPONSE – EMERGENCY MATERIAL STOCK

SUB APPENDIX D

The following shall be minimum quantities of Material Stock to be held at respective Depots.

Type of Material	Minimum Quantity to be Held in Stock	Wayside, Dumfries	Ayr	Kilbarchan	Tside	Newton Stewart
GENERAL						
Sandbags (Rot Proof)	100 no	100	100	100	100	100
Sand	5 tonnes	5	5	5	5	5
Liquid for removing oil from carriageways	2 gallons	2	2	2	2	2
Oil absorbent granules (20kg Bags)	10 bags	10	10	10	10	10
5 KG BAGS BITUMINOUS INSTANT REPAIR MATERIAL	5 bags	5	5	5	5	5
25KG BAGS BITUMINOUS INSTANT REPAIR MATERIAL	5 bags	5	5	5	5	5
25kg bags Bitucrete or equivalent	10 bags	10	10	10	10	10
50kg bags cement	1 tonne	1	1	1	1	1
FENCING						
Corrugated beams for tensioned safety fencing	50	-	-	-	50	-
Corrugated beams for untensioned safety fence	25	-	-	-	25	-
Adjuster beams for tensioned safety fence	5	-	-	-	5	-
Angled beams for tensioned safety fence	5	-	-	-	5	-
4.8 metre lengths open box safety fence beam	50	-	-	-	50	-
2.4 metre lengths open box safety fence beam	5	-	-	-	5	-
End beam for open box safety fence beam	5	-	-	-	5	-
Z-posts (driven type) for use in central reserve on corrugated beams	100	-	-	-	100	-
Z-POSTS (DRIVEN TYPE) FOR USE IN VERGES ON CORRUGATED BEAMS	100	-	-	-	100	-
Z-posts for concrete footings on corrugated beams	100	-	-	-	100	-
Z-posts (driven type) for use in central reserve on open box beam	100	-	-	-	100	-
Z-posts (driven type) for use in verges on open box beam	50	-	-	-	50	-
Z-posts for concrete footings on open box beam	50	-	-	-	50	-
Z-posts (driven type) in central reserve on wire rope	50	-	-	-	50	-
Z-posts for concrete footing on wire rope	50	-	-	-	50	-
Nuts, bolts, washers and sockets to suit above quantities of safety fence materials	Lap bolt 2000 Shear bolt 500	-	-	-	2000500	-
Boundary fence rails BS 1722 Part 7 SPR 13/4	25 no	-	-	-	25	-
Boundary fence posts BS 1722 Part 7 SPR 13/4	25 no	-	-	-	25	-
10 metre rolls of cleft chestnut pale fencing	5 no	-	-	-	5	-
25 metre rolls of sheet netting	5 no	-	-	-	5	-
25 metre rolls of galvanised barbed wire	1 no	-	-	-	1	-
25 metre rolls of galvanised 2.5mm diameter plain wire	1	-	-	-	1	-
50mm * 2.765mm diameter galvanised nails	2 boxes	-	-	-	2	-
100mm * 4.5mm diameter galvanised nails	2 boxes	-	-	-	2	-
SIGNS		-	-	-		-
Type 1 Marker Posts	50	-	-	-	50	-
Type 2 Marker Posts	20	-	-	-	20	-
Type 8b Marker Posts	20	-	-	-	20	-
Marker post numerals (20 of each 0 to 9)	20 of each	-	-	-	20 of each	-

Marker post telephone symbols	20	-	-	-	20	-
"Road Closed" Signs	10	-	-	-	10	-
"Diverted Traffic" Signs (variable arrow)	10	-	-	-	10	-
DRAINAGE						
Gully grating GA2-456	5	5	5	5	5	5
Plastic Gully pots.	5	5	5	5	5	5
Medium duty manhole cover MB2-60	5	5	5	5	5	5
Heavy Duty manhole cover MA-60	5	5	5	5	5	5

SUB APPENDIX E

CONTINGENCY RESPONSE – LABOUR, PLANT, EQUIPMENT AND MATERIALS

Contingency Emergency Response Resources shall be available from elsewhere within the Amey Group and from our Local Authority and Supply Chain partners, as was recently demonstrated by operations associated with the G8 Conference.

In our near vicinity, we have in excess of 400 additional Operatives who are potentially available from Amey Infrastructure Services (STRU South East Unit), Amey Roads (North Lanarkshire), Dumfries and Galloway Council and Amey infrastructure Services (Cumbria County Council).

A comprehensive range of Plant, Equipment and Materials shall be available from these sources and elsewhere from our well-established supply chain.

NON-ELECTRICAL EMERGENCY

TYPE OF PLANT	NOMINATED DEPOTS	EQUIPMENT
TRAFFIC MANAGEMENT VEHICLE	BURGHMUIR GILMERTON ARNL - BLAIRLINN	C/W CONES AND SIGNS
LORRY MOUNTED HIAB	GILMERTON ARNL – BARGEDDIE ARNL – BLAIRLINN CASTLE DOUGLAS STRANRAER	C/W MINIMUM 1.5 TONNE
SPECIALIST SAFETY BARRIER	GILMERTON ARNL- BLAIRLINN	
SUCTION SWEEPER	BURGHMUIR CASTLE DOUGLAS	C/W FULL WIDTH BRUSH AND CHANNEL ATTACHMENT
GULLY EMPTIER	BURGHMUIR CARLISLE ARNL – BARGEDDIE ARNL – BLAIRLINN CASTLE DOUGLAS STRANRAER	C/W HP WATER JETTING FACILITY
16 TONNE GVW LORRY	CARLISLE ARNL – BARGEDDIE ARNL – BLAIRLINN CASTLE DOUGLAS STRANRAER	C/W TOWING BRACKET AND SNOW PLOUGH FITTINGS
FRONT LOADING SHOVEL (JCB TYPE)	CARLISLE ARNL – BARGEDDIE ARNL – BLAIRLINN CASTLE DOUGLAS	C/W BACK HOE, 4 IN 1 BUCKET AND FORKS

	STRANRAER	
BRICK / MASONRY SAWS	GILMERTON CARLISLE ARNL – BARGEDDIE ARNL – BLAIRLINN CASTLE DOUGLAS STRANRAER	C/W METAL CUTTING BLADES
CRASH CUSHION	BURGHMUIR GILMERTON	

ELECTRICAL EMERGENCY

TYPE OF PLANT	NOMINATED DEPOTS	EQUIPMENT
1.5 TONNE VEHICLE	CARLISLE ARNL – BARGEDDIE ARNL – BLAIRLINN CASTLE DOUGLAS STRANRAER	
PLATFORM WAGON	BURGHMUIR ARNL – BARGEDDIE ARNL – BLAIRLINN STRANRAER	
LORRY HI AB	GILMERTON ARNL – BARGEDDIE ARNL – BLAIRLINN CASTLE DOUGLAS STRANRAER	

APPENDIX 32/1: EMERGENCY RESPONSE - 2. EMERGENCY RESPONSE RESOURCES

TABLE 2.1 RESOURCES FOR EMERGENCY RESPONSE OPERATIONS

Location of Depot	Initial Emergency Response Resources (within response times stated in Table 1)				Secondary Emergency Response Resources (within 4 hours of notification)				Contingency Emergency Response Resources (see part 3 of Schedule 7)			
	Labour	Plant	Equipment	Materials	Labour	Plant	Equipment	Materials	Labour	Plant	Equipment	Materials
	Resources identified from the risk assessments undertaken in accordance with sub-paragraph (i) of paragraph 2.2 pf Part 3 of Schedule 7.											
Tannochside	2 x Operatives	Ford Transit High Roof Van or equivalent (ISU)	See App. "A"	See App. "A"	1 x Electrician (ARNL) + 12 to 70 Operatives	1.5 tonne Pickup Truck + See App. "B"	See App. "C"	See App. "D"	**See App "E" and Note Below**	**See App "E" and Note Below**	**See App "E" and Note Below**	**See App "E" and Note Below**
Kilbarchan	2 x Operatives	Ford Transit High Roof Van or equivalent (ISU)	See App. "A"	See App. "A"	1 x Electrician (ARNL) + 6 to 36 Operatives	1.5 tonne Pickup Truck + See App. "B"	See App. "C"	See App. "D"	**See App "E" and Note Below**	**See App "E" and Note Below**	**See App "E" and Note Below**	**See App "E" and Note Below**
Ayr	2 x Operatives	Ford Transit High Roof Van or equivalent (ISU)	See App. "A"	See App. "A"	1 x Electrician (ARNL) + 6 to 25 Operatives	1.5 tonne Pickup Truck + See App. "B"	See App. "C"	See App. "D"	**See App "E" and Note Below**	**See App "E" and Note Below**	**See App "E" and Note Below**	**See App "E" and Note Below**
Wayside, Dumfries (D & G)	2 x Operatives (DLO)	3.5 tonne GVW Pickup Truck (ISU)	See App. "A"	See App. "A"	1 x Electrician (DLO) + 6 to 23 Operatives (DLO)	1.5 tonne Pickup Truck + See App. "B"	See App. "C"	See App. "D"	**See App "E" and Note Below**	**See App "E" and Note Below**	**See App "E" and Note Below**	**See App "E" and Note Below**
Newton Stewart (D & G)	2 x Operatives (DLO)	3.5 tonne GVW Pickup Truck (ISU)	See App. "A"	See App. "A"	1 x Electrician (ARNL) + 6 to 23 Operatives (DLO)	1.5 tonne Pickup Truck + See App. "B"	See App. "C"	See App. "D"	**See App "E" and Note Below**	**See App "E" and Note Below**	**See App "E" and Note Below**	**See App "E" and Note Below**
Bargeddie (Amey Roads North Lanarkshire – ARNL)	-	-	-	-	-	-	-	-	20 x Electrician + 40 x Operatives	See App "1"	See App "C" and * below	See App "D" and * below
Blairlinn (Amey Roads North Lanarkshire – ARNL)	-	-	-	-	-	-	-	-	2 x Electrician + 80 x Operatives	See App "1"	See App "C" and * below	See App "D" and * below
Burghmuir (SE Unit)	-	-	-	-	-	-	-	-	29 Operatives	See App "1"	See App "C" and * below	See App "D" and * below
Gilmerton (SE Unit)	-	-	-	-	-	-	-	-	17 x Electrician + 41 x Operatives	See App "1"	See App "C" and * below	See App "D" and * below
Castle Douglas (D&G)	-	-	-	-	-	-	-	-	20 x Operatives	See App "1"	See App "C" and * below	See App "D" and * below

Stranraer (D&G)	-	-	-	-	-	-	-	-	1 x Electrician + 20 x Operatives	See App "1"	See App "C" and * below	See App "D" and * below
Carlisle (Cumbria CC)	-	-	-	-	-	-	-	-	24 x Operatives	See App "1"	See App "C" and * below	See App "D" and * below

Notes

The Secondary labour provisions shall be undertaken within the ranges indicated, with an emphasis towards the greater numbers, where appropriate and ongoing demands permit.

Contingency Emergency Response Resources shall be available from elsewhere within the Amey Group and from our Local Authority and Supply Chain partners, as was recently demonstrated by the "G8 Conference" operation. In our near vicinity, we have in excess of 400 additional operatives who are potentially available from Amey Infrastructure Services (STRU South East Unit), Amey Roads (North Lanarkshire), Dumfries and Galloway Council and Amey Infrastructure Services (Cumbria C.C.), along with a comprehensive range of Plant, Equipment and Materials from both these sources and those of our well established supply chain.

* Specific stocks of equipment and materials are held at each of our contingency emergency response depots. At these depots we can provide assurance that considerable equipment and material stocks will be made available to contribute towards supporting any required emergency response. The equipment and material quantities listed in Appendices C and D respectively are indicative of the quantities held at each of our contingency emergency response depots. Full details shall be included in our fully developed Emergency Response Plan.

APPENDIX 33/1 : STRUCTURAL INVESTIGATIONS TEST REQUIREMENTS

1. The following types of Test may be required

(i) Site Surveys/Tests

(a) half cell potential survey

(b) cover survey

(c) delamination /soundness survey

(d) exposing reinforcement

(e) depth of carbonation

(f) resistivity measurement

(g) initial surface absorption

(h) ultrasonic pulse velocity survey and

(i) borescope or endoscope survey

(ii) Chemical Tests

(a) acid soluble chloride content

(b) water soluble chloride content

(c) cement content/sulphate content/mix proportion

(d) water/cement ratio

(e) alkali content and

(f) alkali silica reaction samples

(iii) Physical Tests

(a) visual examination of cores

(b) density and compressive strength

(c) permeability

(d) aggregate grading

(e) petrographic examination and

(f) micro cracking assessment.

(g) electron microscope examination

2. Details of Site Tests

(i) Potential Measurements

Potential measurements shall be carried out in the following manner

Half cell measurements shall be taken at 500mm x 500mm grid centres to areas proposed by the Operating Company and consented to in writing by the Director.

APPENDIX 33/1: STRUCTURAL INVESTIGATIONS TEST REQUIREMENTS (CONTINUED)

The equipment shall be saturated copper sulphate (or suitable equivalent) half cell placed on the concrete surface and connected via a high-impedance voltmeter to the reinforcement.

The tests shall be carried out in accordance with the American Society for Testing and Materials C876-80. Two readings shall be taken at each node of the grid and the mean value used

(a) Where the readings differ by more than 20 mV a third reading shall be taken and the mean of the two closest readings used.

Ambient conditions and concrete surface temperature shall be recorded together with details of the type of half cell and its most recent calibration check.

(b) Excavation to expose reinforcement for electrical connections shall be made good in accordance with the requirements of Series 1700

(c) Where appropriate permanent connections shall be made to the reinforcement to facilitate future monitoring of changes in potential

(d) The results shall be presented as a grid of values marked on projected plans or elevations of the areas measured at a scale of 150.

Potential contours shall also be plotted with colour coding at a scale of 150 with a contour interval of 50 mV.

Colour block diagrams shall not be an acceptable alternative to colour contours.

(ii) Cover Survey

Cover surveys shall be carried out using an instrument complying with the requirements of and in the manner described in BS 1881 Part 204.

The lowest cover detected in each grid rectangle shall be recorded.

(iii) Delamination/Soundness Survey

Delamination/soundness surveys shall be carried out in the following manner:

(a) A visual survey shall be carried out and concrete Defects such as spalling cracking crazing honeycombing surface deterioration and staining together with patching or remedial Site Operations shall be recorded

(b) Parts of the concrete which shall be suspected of being delaminated shall be tested by sounding with a light hammer.

The affected area shall be recorded and the results presented with the final report.

Photographic records of typical Defects shall be taken for the report.

(iv) Exposing Bars

Reinforcing bars shall be exposed in areas to be proposed by the Operating Company and consented to in writing by the Director when the results of the potential tests shall be made available.

APPENDIX 33/1: STRUCTURAL INVESTIGATIONS TEST REQUIREMENTS (CONTINUED)

The cut-out shall not be greater than 100mm diameter.

The cover to the bars and the condition of the reinforcement shall be recorded.

A photograph shall be taken of each bar and calliper measurements taken to establish the residual cross sectional area.

The removal of concrete shall be carried out carefully such that no damage shall be caused to the reinforcement and over break shall be minimised.

(v) Carbonation Tests

Tests for depth of carbonation using a phenolphthalein indicator as detailed in Building Research Establishment Information paper IP/ 6/81 shall be carried out on core samples drill holes and where concrete is broken out either to examine the bars or connect the potential measuring apparatus to the reinforcement.

(vi) Resistivity Survey

Resistivity measurements shall be taken at locations and orientations usually where the half cell potential test has indicated that corrosion of reinforcing steel is most likely.

The test procedure shall be similar to that used for measuring soil resistivity using four electrodes temporarily attached to the concrete across which measurements of voltage and current shall be taken.

Details of the proposed testing equipment and method shall be proposed by the Operating Company and consented to in writing by the Director prior to commencing the tests.

(vii) Initial Surface Absorption

Initial surface absorption test shall be carried out in accordance with BS 1881 Part 5.

(viii) Ultrasonic Pulse Velocity Survey

Ultrasonic pulse velocity surveys shall be carried out using equipment and procedures complying with BS 1881 Part 203.

The purpose of this testing is the detection of Defects and estimation of the depth of surface cracks using semi-direct or indirect transmission at grid centres not exceeding 150mm.

The testing shall be carried out by well qualified personnel with previous experience in the interpretation of the survey results.

A water-soluble non-staining couplant shall be used and subsequently removed by power washing.

(ix) Borescope Survey

A borescope and suitably experienced operative shall be made available on Site to carry out borescope investigation in holes.

APPENDIX 33/1: STRUCTURAL INVESTIGATIONS TEST REQUIREMENTS (CONTINUED)

The borescope shall be of a type and with sufficient length to be suitable for the purpose intended.

The borescope shall also be fitted with a measuring graticule and a camera attachment. Photographs shall be taken of typical Defects.

(x) Endoscope Survey

An endoscope and suitably experienced operative shall be made available to carry out an endoscope survey.

The endoscope shall be of a type and with sufficient length of fibrescope to be suitable for the purpose intended.

The endoscope shall be fitted with a camera attachment and photographs shall be taken of typical Defects.

3. Chemical Tests

(i) Chloride content acid and water soluble tests shall be carried out in the following manner:

(a) Dust samples shall be removed from reinforced concrete members using a 20 to 25mm diameter drill bit and the dust collected by a method described in TRRL Contractor Report 32 or other suitable method.

(b) Dust samples from the chloride drillings shall be taken at different depths into the concrete and shall be collected and stored in different containers for each depth range clearly labelled with the location depth range date and name of operator.

The depth ranges shall be 0 to 30mm 30 to 60mm 60 to 90mm 90 to 120mm.

Sufficient dust shall be collected at each depth range to enable both acid soluble and water soluble analysis to be carried out.

(c) Chloride content shall be determined in accordance with BS 1881 Part 124.

Samples from each depth range from each set of drillings shall be analysed for the "total" chloride content using the acid extraction method.

One sample from the 90 to 120mm depth range for each set of drillings shall be analysed for the "free" chloride content using the water extraction method.

Where the sample from the 90 to 120mm depth range shall be insufficient or unsuitable the "free" chloride analysis may be carried out on a sample obtained from one of the other depth ranges from the same set.

APPENDIX 33/1: STRUCTURAL INVESTIGATIONS TEST REQUIREMENTS (CONTINUED)

(d) Results shall be given in terms of chloride ion by % cement content.

The average cement and sulfate content shall be measured from the analysis of 10% of the drilling samples.

The location of the drillings shall be determined when the potential measurement plots shall be available.

The exact position shall be determined to avoid reinforcing steel by locating the steel with a cover meter.

(ii) Cement Content Sulphate Content Mix Proportions Water/Cement Ratio and Alkali Content testing shall be determined in accordance with BS 1881 Part 124 on samples obtained from cores.

(iii) Alkali Silica Reaction Samples shall be carried out in the following manner

(a) Cores shall be drilled at locations proposed by the Operating Company and consented to in writing by the Director.

The cores shall be 75mm diameter drilled to a depth of 400mm.

Intact cores at least 300mm long shall be required

(b) Samples taken from the cores shall be tested for susceptibility of the coarse and fine aggregates to alkali silica reaction

(c) The equivalent sodium oxide content shall also be determined for each core. Petrographic examination shall also be carried out as described in this Appendix and

(d) If alkali silica reaction is suspected the Operating Company may propose for the written consent of the Director that the cores be subject to accelerated expansion tests in accordance with Appendix H of the report on "The Diagnosis of Alkali Silica Reaction" published by the British Cement Association in 1988 reprinted 1992 (The Palmer Report) measurements to be continued up to 1 year with interim reports at 3 monthly intervals.

4. Physical Tests

(i) Examination of cores density and compressive strength tests shall be carried out in accordance with BS 1881 Part 120.

Visual examinations shall be carried out on all core samples before preparing the samples for testing.

Density and compressive strength tests shall be carried out on 100mm diameter cores

(ii) Permeability shall be determined by means of the capillary absorption test in accordance with BS 1881 Part 5 on samples from cores

(iii) Aggregate Grading shall be determined in accordance with BS 1881 Part 124 on samples obtained from cores.

(iv) Petrographic Examination shall be carried out in the following manner

APPENDIX 33/1: STRUCTURAL INVESTIGATIONS TEST REQUIREMENTS (CONTINUED)

(a) Petrographic examination shall be carried out in accordance with American Society for Testing and Materials C856-77 on sections obtained from 75mm diameter cores

(b) The sections shall be obtained from the cores taken for expansion tests for alkali-silica reaction and

(c) Constituent materials shall be identified and a description of the specimen given together with a photograph typically at a magnification of 50X Constituent materials shall be identified and a description of the specimen given together with a photograph typically at a magnification of 50X

(v) Microcracking Assessment shall be carried out in the following manner:

Selected core samples shall be cleaned of any extraneous debris and air dried in the laboratory.

They shall then be sprayed with a fluorescent penetrant solution (a dispersion of fluorescent particles in an organic liquid).

When the excess solution has drained from the surface the core samples shall be viewed under ultra-violet light.

(vi) Electron Microscope Examination shall be carried out in the following manner

Where examination of a sample for microcracking alkali silica reaction susceptibility petrographic analysis or any other purpose indicates that some form of deleterious reaction may be present in the concrete the Overseeing Organisation may instruct examination by electron microscope.

Where the Overseeing Organisation requires examination the following procedure shall be adopted

Appropriate pieces of the sample which may take the form of thin sections finely ground sections off cuts or freshly broken surfaces shall be explored with the electron microscope to confirm the presence of the constituents or products of deleterious reactions and to identify them wherever possible.

A written report shall be submitted with electron micrographs (typically at a magnification of 3500 to 5000X) and results of analysis of the matrix with the microprobe.

Report Requirements

1. Interim Reports shall comply with the following

(i) An interim report shall be submitted for each part of a Structure to be investigated within one week of completion of Site testing showing the results of all surveys and tests carried out on Site.

Copies of field measurements with suitable explanatory notes shall be adequate.

(ii) Chloride content analysis shall be presented within fourteen days of sampling.

(iii) Three copies of each interim report shall be required.

APPENDIX 33/1: STRUCTURAL INVESTIGATIONS TEST REQUIREMENTS (CONTINUED)

2. Final Reports shall comply with the following:

(i) Irrespective of size which shall dictate the number of volumes the Final Report shall be submitted in two sections.

(ii) Section 1 of the final report shall be submitted within three weeks of completion of Site work and shall contain the following information where applicable

(a) A description of the testing programme and tests carried out a presentation of the results in the form outlined below and a summary of the results

(b) The results shall be presented as follows plotted to a scale of 150 unless otherwise instructed

half cell potential/ cover	(i)	tabular
	(ii)	colour coded contour plans/elevations to indicate chloride content distribution of results with a contour interval of 50 mV.
delamination/ soundness	(i)	plan/elevation marked with suspect areas
	(ii)	colour print of major Defects
Petrographic	(i)	colour prints of each section
	(ii)	detailed description of section with particular reference or otherwise to alkali silica reaction
ultrasonic pulse	(i)	typical graphs/computer output to demonstrate velocity and interpretation of results
	(ii)	plans/elevations/cross sections to show Defects detected
electron microscope	(i)	electron micrographs
	(ii)	detailed description of section together with results of microprobe analysis
borescope	(i)	developed elevations of internal surface of holes examined
	(ii)	enlarged colour prints of typical Defects

endoscope	(i)	plans/elevations/cross sections to show location of fibroscope and direction of view for photographs
	(ii)	enlarged colour prints of typical Defects and other photographs

APPENDIX 33/1: STRUCTURAL INVESTIGATIONS TEST REQUIREMENTS (CONTINUED)

All results shall be presented in tabular form and histograms shall be produced where appropriate.

(iii) Section 2 of the final report shall contain a written discussion and interpretation of the results of the survey and testing with recommendations in writing to the Director for remedial work.

(iv) A draft copy of the final report shall be submitted for the written consent of the Director before production of the final report.

3. Addendum Reports shall comply with the following

(i) The results of the alkali silica reaction expansion test shall be reported on a 3 monthly basis.

An Addendum Report shall be produced to cover all the expansion test results.

APPENDIX 50/1: (SPECIFICATION FOR HIGHWAY WORKS) FORM HA/P1 (MAINTENANCE) PAINT SYSTEM SHEET

<table>
<tr><td colspan="10">1. CONTRACT TITLE:
STRUCTURE NO:
GRID REF:</td></tr>
<tr><td colspan="10">2. DATE OF ISSUE OF DOCUMENTS TO TENDERERS:</td></tr>
<tr><td colspan="10">3. ENVIRONMENT AND ACCESSIBILITY:</td></tr>
<tr><td colspan="10">4. EXISTING PROTECTIVE SYSTEM(S):
Metal coatings:
Paint coatings:
Average total thickness (microns):</td></tr>
<tr><td colspan="5">5. REQUIRED DURABILITY OF SYSTEM:
NO MAINTENANCE ……YEARS
MINOR MAINTENANCE ……YEARS
MAJOR MAINTENANCE……YEARS
(Ref: NG.5008 Appendices 50/1 and 50/2 note (iii))</td><td colspan="5">6. COLOUR OF FINISH:</td></tr>
<tr><td colspan="3">7. BILLED AREA</td><td colspan="4"></td><td colspan="3" rowspan="4">8. PROTECTIVE SYSTEM TYPE: (i.e. I (M), II (M), III (M), etc):</td></tr>
<tr><td colspan="3">REF: AREA DESCRIPTION:</td><td colspan="4">SURFACE PREPARATION METHOD</td></tr>
<tr><td colspan="3"></td><td colspan="4"></td></tr>
<tr><td colspan="3"></td><td colspan="4"></td></tr>
<tr><td colspan="3"></td><td colspan="4"></td></tr>
<tr><td rowspan="3">9. PAINT COAT SUMMARY

COAT & ITEM NO.</td><td colspan="9">CONDITION OF SURFACES OF EXISTING SYSTEM AFTER SURFACE PREPARATION</td></tr>
<tr><td colspan="2">Condition:

Area Ref.</td><td colspan="2">Condition:

Area Ref.</td><td colspan="2">Condition:

Area Ref.</td><td colspan="2">Condition:

Area Ref.</td></tr>
<tr><td>mdft</td><td>B or AS</td><td>mdft</td><td>B or AS</td><td>mdft</td><td>B or AS</td><td>mdft</td><td>B or AS</td></tr>
<tr><td>1st Coat: Item ....</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>2nd Coat: Item ....</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>3rd Coat: Item ....</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>4th Coat: Item ....</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>MINIMUM TOTAL DFT TO BE OBTAINED</td><td colspan="2"></td><td colspan="2"></td><td colspan="2"></td><td colspan="2"></td></tr>
</table>

APPENDIX 50/1: (SPECIFICATION FOR HIGHWAY WORKS) FORM HA/P1 (MAINTENANCE) PAINT SYSTEM SHEET (CONTINUED)

10. DETAILS				
	1st Coat	2nd Coat	3rd Coat	4th Coat
Registered Description Item No. and Colour Date Registered Brand Name and Manufacturer's ref. No. Manufacturer's Data Sheet No. Minimum dry film thickness (mdft) (μm) Maxaximum local dft (See sub–Clause 5012.6) (μm) Estimated total volume of paint likely to be used. (litres) 'A' type testing required? (YES/NO) (See sub–Clause 5009.3) 'B' type testing required? (YES/NO) (See sub–Clause 5009.10)				
11. STRIPE COAT(S) DESCRIPTION (Including Item No. and colour)				
12. PATCH COAT(S) DESCRIPTION (Including Item No. and colour)				
13. ADDITIONAL INFORMATION (By Paint Manufacturer)				
14. PAINT MANUFACTURER'S OFFICIAL STAMP:				
15. Mdft (μm) NOTE. The minimum total dry film thickness (mdft) of the paint system, neglecting primers and sealers under 30 microns, shall be 15% greater (to the nearest 25 microns) than the sum of the mdfts of the individual paint coats			16. APPROVED BY: DATE	

APPENDIX 50/1: (SPECIFICATION FOR HIGHWAY WORKS) FORM HA/P1 (MAINTENANCE) PAINT SYSTEM SHEET (CONTINUED)

Note:

1. The Operating Company shall complete the paint system sheet HA/P1 for maintenance painting of steelwork.

   A separate form should be provided for each structure, including CCTV masts, cantilever masts, street lighting columns and bracket arms if appropriate.

2. The compiler shall refer to the notes under the example appendix 50/1 in the Notes for Guidance on the Specification of Highway Works and National Alterations of the Overseeing Organisation of Scotland.

APPENDIX 50/3: (SPECIFICATION FOR HIGHWAY WORKS) FORM HA/P2 PAINT DATA SHEET

HA Registration Date :

Manufacturer :

Item No. :

Registered Description :

Brand Name and Reference No. :

Consistency and Method of Application :

Weight per 5 Litres (kg) :

Specific gravity: Colour :

For two pack paints :

Base: Activator: Mixed components:

Volume Solids % :

For two pack paints volume solids % for mixed paint:

VOC content g/l (mixed) :

Manufacturer's Minimum Dry Film Thickness Range

Recommended lower mdft :

Recommended upper mdft :

Full Application Instructions :

Mix ratio :

Flash Point :

Temperature		5°C	10°C	20°C	30°C
Drying Times (hours)	Surface Dry				
	Hard Dry				
Overcoating Times (hours)	Minimum				
	Maximum				
Pot Life (hours)					

Cleaning Solvent/thinner :

State effects on Drying Times of

APPENDIX 50/3: (SPECIFICATION FOR HIGHWAY WORKS) FORM HA/P2 PAINT DATA SHEET (CONTINUED)

Temperatures below 20°C :

Manufacturer's Application Restrictions,

e.g. for Temperatures or Humidity :

Manufacturer's General

Recommendations :

Note:

The Operating Company shall complete the paint system sheet HA/P2 for maintenance painting of steelwork.

APPENDIX 50/4SE:(SPECIFICATION FOR HIGHWAY WORKS) FORM SEDD/P3 PAINT SAMPLE DESPATCH LIST: SHEET 1

Contract Title :

Structure Name : Structure No:

Client Name : (Overseeing Organisation or other company)

Supervising Firm :

Supervising Firm's Representative Name: Tel No:

Address : Fax No:

Painting Inspection Firm :

Samples Despatched From: (Note 1) Date Despatched:

Inspector's Name : Tel No:

Inspector's Signature :

SAMPLES: (Numbered A1, A2 etc. or B1, B2 etc.) (Note 2)					
Sample No.	Item No.	Manufacturer's Reference No.	Batch No	Colour BS 4800 reference (Note 3)	Sp.G. (Notes 4 & 5)

Paint Manufacturer :

APPENDIX 50/4SE: (SPECIFICATION FOR HIGHWAY WORKS) FORM SEDD/P3 PAINT SAMPLE DESPATCH LIST: SHEET 2

PROCEDURES

To be followed closely before despatch of paints to Scientifics Ltd or an approved local paint testing firm

1. Check the specific gravity of each batch of paint;
2. Check the matching of finish colours to BS 4800;
3. Select the required sample, i.e.
   (i) 'A' sample – unopened tin
   (ii) 'B' sample – 500ml sample from painter's kettle or from nozzle of airless spray gun in the case of single pack coatings or if the check is to be done in situ otherwise for 2 pack coatings separate samples of the base and the activator must be dispatched to the testing laboratory;
4. List Contract details and details of each set of samples, including the specific gravity of each sample in Sheet 1 SEDD/P3;
5. Send Form HA/P1 Paint System Sheet with Form SEDD/P3 to the following addresses:-

   (i) Scientifics Ltd
   500 London Road
   Derby
   DE24 8BQ

   (ii) The Director
   Network Management Division
   Scottish Executive
   Victoria Quay
   Edinburgh
   EH6 6QQ

   (iii) or an approved local paint testing firm.
6. Operating Company to despatch samples to address (i) or (ii) in this Appendix.

   The Operating Company shall ensure samples shall be labelled correctly, clips lids of tins down securely and sends the samples promptly.

   Samples shall be labelled with this Contract title, structure name, sample number, and additionally in the case of 'B' samples, item number, manufacturer's reference number, batch number and colour.

   Results shall be notified by the Scottish Executive Road Network Management and Maintenance Division, as soon as they become available.

APPENDIX 50/4SE: (SPECIFICATION FOR HIGHWAY WORKS) FORM SEDD/P3 PAINT SAMPLE DESPATCH LIST: SHEET 2

Note

1. State whether from shop or site (give name and address)
2. Batch samples comprising unopened tins to be marked A1, A2, etc. Control samples in 0.5 litre tins to be marked B1, B2, etc. Samples No. to run consecutively, i.e. A1 and B1 onwards.
3. Colour reference to BS 4800 to be given, as stated on Form HA/P1 (Maintenance) Paint System Sheet, e.g. 18 B 25.
4. For 'A' samples specific gravity (Sp.G.) to be measured by Inspector from separate tins of the same batch. For 'B' samples Sp.G. to be measured by Inspector when taking samples. Samples will be rejected unless Sp.G. is filled in above by Inspector.
5. If Sp.G. differs appreciably from data sheet do not dispatch 'A' or 'B' samples.
6. Do not use this form and send samples if the client is not the Scottish Executive, e.g. for a local authority contract.
7. The Operating Company shall complete the paint system sheet SEDD/P3 for maintenance painting of steelwork.

APPENDIX 62/1: REQUIREMENTS FOR PROFESSIONAL SERVICES

Requirements for Professional Services Staff

Management

1 - Scheme Manager

Role

The role of a Scheme Manager shall be the overall management and direction of the Operating Company's key personnel with overall responsibility to the Scottish Ministers for their activities and deliverables.

Qualifications

The Scheme Manager shall be a Chartered Civil Engineer with at least fifteen years experience (ten of these since becoming chartered) relevant to the provision and performance of this Contract.

Key Tasks

The key tasks of a Scheme Manager shall be to

(i) manage the relationship between the Operating Company's key personnel and the Director, and to ensure that the Scottish Ministers' requirements shall be satisfied

(ii) ensure that the Operating Company's key personnel fulfil their responsibilities with the required degree of skill care and diligence and to ensure that the necessary Operating Company's key personnel and resources shall be properly deployed to meet the Scottish Ministers' requirements

(iii) ensure that the Operating Company's key personnel seek continuous improvement in their processes and effectiveness

(iv) manage this Contract in accordance with the Quality Management System including the Quality Plan

(v) seek and utilise the Director's feedback on their assessment of performance of the Operating Company's key personnel

(vi) ensure that liaison shall be maintained between the respective senior management of the Scottish Ministers, the Operating Company and any sub-consultants

(vii) monitor and report to the Director on the performance of the Operations against the

(a) time

(b) budget and

(c) quality

targets of this Contract and Orders and

(viii) ensure that Operating Company's key personnel shall be conversant with and understand the relevant Operations required under the provisions of this Contract.

Specific tasks knowledge and experience required

The specific tasks knowledge and experience of a Scheme Manager shall be

(i) to present Scheme proposals at value for money workshops and presentations to senior management of the Scottish Executive Transport Group

APPENDIX 62/1: REQUIREMENTS FOR PROFESSIONAL SERVICES (Continued)

(ii) Trunk Road promotion and the relevant Legislation in particular the Roads (Scotland) Act 1984

(iii) Scottish Executive procedures for the preparation and publication of the relevant statutory road and compulsory purchase orders

(iv) Public Local Inquiry procedures (the Scheme Manager shall have direct experience in appearing as a witness on behalf of the Promoter at Public Local Inquiries)

(v) design and specification of major road Schemes ("employer's design" and "design and build") using the DMRB and associated documents including but not limited to the documents referred to in Part 1 of Schedule 6 of this Contract and if the subject of an Order the Scottish Executive's Alternative Tendering Initiative

(vi) preparation of contract documents for Schemes using the approved forms of procurement referred to in Part 1 of Schedule 6 of this Contract

(vii) monitoring and control of programming and financial aspects of Schemes

(viii) implementation of the relevant environmental Legislation and its requirements for Trunk Road Schemes

(ix) to assist the Operating Company Representative in presenting Scheme proposals at value for money workshops and presentations to senior management of the Scottish Executive Enterprise, Transport and Lifelong Learning Department Transport Group. The Scheme Manager shall also be required to take the lead in explaining proposals to the general public and other interested/affected parties at public exhibitions and during the course of public consultations during Scheme preparation and

(x) possess a high standard of presentational and communication skills.

Engineering

2 - Senior Project Engineer

Role

(i) The role of a Senior Project Engineer shall be the day to day management and direction of the Operating Company's key personnel with responsibility to the Scheme Manager for their activities and deliverables.

Qualifications

A Senior Project Engineer shall be a Chartered or near Chartered Civil Engineer with at least ten years experience relevant to the provision and performance of this Contract.

Key Tasks

The key tasks of a Senior Project Engineer shall be to

(i) assist the Scheme Manager in the performance of the Scheme Manager's duties under this Contract

(ii) liaise with the Director and implement the requirements of this Contract as set out in this Contract and as amended from time to time by the Scottish Ministers

APPENDIX 62/1: REQUIREMENTS FOR PROFESSIONAL SERVICES (Continued)

(iii) manage the Operating Company's key personnel in order that the requirements of this Contract shall be achieved on time, within budget and to the quality required by the Quality Management System including the Quality Plan

(iv) ensure that the implications of all current Legislation shall be incorporated in the deliverables under this Contract

(v) ensure that all Design Operations shall be carried out to the relevant standards as specified in this Contract

(vi) supervise the procurement of such Operations which require to be sourced externally and

(vii) actively promote the concept of a "Design team" within the Operating Company's key personnel.

Specific tasks knowledge and experience required

The specific tasks knowledge and experience required of a Senior Project Engineer shall be

(i) preparation of draft orders and negotiation with affected parties objectors or otherwise

(ii) the procedural and legislative background to the promotion of road and compulsory purchase orders and the procedural aspects and requirements of Public Local Inquiries and in particular the effects that this shall have on Scheme programming or preparation of Operations

(iii) consulting individuals and organisations affected by Trunk Road Schemes

(iv) the Design and specification of Trunk Roads including the preparation of contract documents for "Employer's Design" and "Design and build" Schemes

(v) traffic modelling (including microscopic modelling)

(vi) environmental and economic assessment

(vii) computer aided roads Design

(viii) practical working knowledge and experience of the Design Manual for Road and Bridges and associated documents and the Manual of Contract Documents for Highway Works

(ix) preparation of documentation for ground investigation including the preparation of

  (a) orders

  (b) briefs

  (c) statements of intent

  (d) reports and otherwise and

  (e) topographical survey contracts

(x) procurement of

  (a) ground

  (b) topographic and

  (c) other investigation contracts

APPENDIX 62/1: REQUIREMENTS FOR PROFESSIONAL SERVICES (Continued)

including but not limited to

(a) tender procedures

(b) tender assessment and

(c) reporting

(xi) translating Design requirements into employer's requirements for any such contracts

(xii) preparation of contract documents

(xiii) carrying out of Scottish Ministers tender procedures (including the documentation as referred to in Part 1 of Schedule 6 of this Contract and if subject of an Order the use of the Alternative Tendering Initiative)

(xiv) assessment and reporting for both "employer's Design" and "Design and build" form of contract

(xv) knowledge of current advertising procedures of the Official Journal of the European Union (OJEU) or otherwise

(xvi) experience of financial control and programme management of Trunk Road Schemes and otherwise and

(xvii) knowledge of the relevant environmental Legislation and the impact that its requirements shall have on the activities or programming of Schemes.

3 - Structural Engineer

Role

A Structural Engineer shall be responsible to the Senior Project Engineer for the production of all Design procedural or other Operations required to secure the preparation or promotion of Schemes.

Qualifications

A Structural Engineer shall

(i) be a Chartered Civil or Structural Engineer with several years' experience in the design and specification of road structures to the Design Manual for Roads and Bridges

(ii) have extensive experience in the production of outline preliminary and detailed Designs and of the assessment of contractor's design proposals and

(iii) have experience in the drafting of the Structural elements of contract documents for both "employer's Design" and "Design and build" contracts.

Key Tasks

(i) The key tasks of a Structural Engineer shall be to provide expert advice support and recommendations on any Structural matters associated with all Design operation or maintenance relating to the Scottish Trunk Road network from time to time as or when required by the Scheme Manager or the Director or as required in the provision or performance of this Contract.

APPENDIX 62/1: REQUIREMENTS FOR PROFESSIONAL SERVICES (Continued)

4 - Roads Engineer

Role

A Roads Engineer shall

(i) be responsible to the Senior Project Engineer for the production of all Design procedural or other Operations required to secure the preparation or promotion of Schemes

(ii) prepare or promote Schemes

(iii) produce road Designs incorporating environmental mitigation measures

(iv) prepare statutory orders

(v) procure external surveys or services or otherwise and

(vi) ensure the Trunk Roads Design obligations with respect to this Contract shall be delivered by the Operating Company.

Qualifications

A Roads Engineer shall

(i) be a Civil Engineer chartered or working towards chartered status with extensive experience of roads Design and specification to the Design Manual for Roads Bridges and the Manual of Contract Documents for Highway Works

(ii) have experience in traffic modelling and all aspects of computer aided roads Design

(iii) have experience in the preparation and publication of draft road and compulsory purchase orders

(iv) have knowledge and experience of Scottish Ministers' procedures and

(v) have experience in preparing contract documents for road Schemes including but not limited to "Employer's Requirements" for "Employer's Design" and "Design and build" contracts for major road Schemes.

Key Tasks

The key tasks of a Roads Engineer shall be to

(i) assist the Senior Project Engineer in the performance of the Senior Project Engineer's duties under this Contract

(ii) liaise with the Director as required by the Director

(iii) supervise junior staff engaged in Design or preparation activities

(iv) provide expert advice support and recommendations on any matters associated with all Design operation or maintenance relating to the Scottish Trunk Road network from time to time as or when required by the Scheme Manager or the Scottish Ministers or as required in the provision or performance of this Contract

(v) ensure that all Design Operations shall be undertaken in accordance with current standards as specified in this Contract

(vi) ensure compliance with Scottish Ministers' procedures

(vii) procure services that require to be sourced externally and

(viii) contribute to the concept of the "Design team".

APPENDIX 62/1: REQUIREMENTS FOR PROFESSIONAL SERVICES (Continued)

Specific tasks knowledge and experience required

The specific tasks knowledge and experience required of a Roads Engineer shall be

(i) to assist in the preparation of draft orders and negotiation with affected parties and objectors

(ii) to assist in the procedural and legislative background to the promotion of road and compulsory purchase orders and the procedural aspects and requirements of Public Local Inquiries, in particular the effects that this shall have on Scheme programming and preparation of Operations

(iii) to assist in consulting individuals and organisations affected by Trunk Road Schemes

(iv) the Design and specification of Trunk Roads including the preparation of contract documents for "employer's Design" and "Design and build" Schemes

(v) the Design and specification of Operations Works Contracts and works

(vi) the Design and specification of Accident Investigation and Prevention Schemes including the preparation of route accident reduction plans

(vii) traffic modelling (including microscopic modelling), environmental and economic assessment, and computer aided roads Design

(viii) practical working knowledge of the DMRB and associated documents and the Specification for Highway Works

(ix) preparation of documentation for ground investigation (including the preparation of orders, briefs, statements of intent and reports and otherwise) and topographical survey contracts

(x) procurement of ground, topographic and other investigation contracts including but not limited to tender procedures, tender assessment and reporting

(xi) translating Design requirements into employer's requirements

(xii) preparation of contract documents, carrying out of Scottish Ministers' tender procedures (including use of the documentation as referred to in Part 1 of Schedule 6 of this Contract and if subject of an Order the use of the Alternative Tendering Initiative) assessment and reporting for both "employer's Design" and "Design and build" form of contract

(xiii) knowledge of advertising procedures of the Official Journal of the European Union (OJEU)

(xiv) experience of financial control and programme management of Trunk Road Schemes and

(xv) knowledge of the relevant environmental Legislation and the impact which its requirements shall have on the activities and programming of Schemes.

5 - Graduate Engineer

Role

The role of a Graduate Engineer shall be to assist and support the Operating Company Engineer(s) in the delivery of their tasks.

APPENDIX 62/1: REQUIREMENTS FOR PROFESSIONAL SERVICES (Continued)

Qualifications

A Graduate Engineer shall possess a BSc or equivalent in Civil or Structural Engineering with at least two years experience relevant to the provision and performance of this Contract.

Key Tasks

The key tasks of a Graduate Engineer shall be to

(i) liaise with the Operating Company's key personnel to ensure issues arising from Operations shall be fully understood or implemented in accordance with the requirements of this Contract

(ii) develop and carry out Designs and document preparation in accordance with this Contract

(iii) develop and manage technical studies and investigations

(iv) assist in preparing deliverables from the Operating Company including but not limited to

- (a) reports
- (b) Design
- (c) tender documents including but not limited to
  - (i) drawings
  - (ii) calculations
  - (iii) specifications
  - (iv) bills of quantities
  - (v) Hold Points and
  - (vi) otherwise
- (d) surveys and otherwise and
- (e) to manage information distribution to and from the Operating Company.

6 - Technician

Role

The role of a Technician shall be to Support the Operating Company's technical team.

Qualifications

A Technician shall be a Technician Engineer or equivalent with at least two years experience relevant to the provision and performance of this Contract.

Key Tasks

The key tasks of a Technician shall be

(i) to liaise with colleagues on technical issues

(ii) to liaise with colleagues to ensure issues arising from Operations shall be fully understood or implemented in accordance with the requirements of this Contract

APPENDIX 62/1: REQUIREMENTS FOR PROFESSIONAL SERVICES (Continued)

(iii) to develop Designs and document preparation in accordance with this Contract

(iv) to assist in preparing deliverables from the Operating Company including but not limited to

- (a) reports
- (b) design
- (c) tender documents including but not limited to
  - (i) drawings
  - (ii) calculations
  - (iii) specifications
  - (iv) bills of quantities
  - (v) Hold Points
  - (vi) schedules and otherwise
- (d) surveys and otherwise
- (e) managing information distribution to and from the Operating Company.

Traffic Management and Economics

7 - Principal Traffic Measurement and Economics Specialist

Role

The role of shall be to provide expert advice support and recommendations on any matters associated with traffic measurement, analysis and verification related to this Contract.

Qualifications

A Principal Traffic Measurement and Economics Specialist shall be a Chartered Engineer or equivalent with at least 15 years experience relevant to the provision and performance of this Contract.

Key Tasks

Key tasks of a Principal Traffic Measurement and Economics Specialist shall be to

(i) undertake sufficient checks on the traffic measurement data

(ii) liaise with the Scheme Manager on issues arising from traffic measurement and analysis and

(iii) liaise with the Operating Company's key personnel to ensure issues arising from traffic measurement and analysis shall be fully understood or implemented in accordance with the requirements of this Contract.

APPENDIX 62/1: REQUIREMENTS FOR PROFESSIONAL SERVICES (Continued)

8 - Senior Traffic Measurement and Economics Specialist

Role

The role of a Senior Traffic Measurement and Economics Specialist shall be to provide expert advice support and recommendations on any matters associated with traffic measurement analysis and verification related to this Contract.

Qualifications

A Senior Traffic Measurement and Economics Specialist shall be a Chartered Engineer or equivalent with at least 10 years experience relevant to the provision and performance of this Contract.

Key Tasks

The key tasks of a Senior Traffic Measurement and Economics Specialist shall be to

(i) undertake sufficient checks on the traffic measurement data

(ii) liaise with the Scheme Manager on issues arising from traffic measurement and analysis and

(iii) liaise with the Operating Company's key personnel to ensure issues arising from traffic measurement and analysis shall be fully understood or implemented in accordance with the requirement of this Contract.

9 - Traffic Measurement and Economics Specialist

Role

The role of a Traffic Measurement and Economics Specialist shall be to provide expert advice support and recommendations on any matters associated with traffic measurement, analysis and verification related to this Contract.

Qualifications

Traffic Measurement and Economics Specialist shall be a Chartered Engineer or equivalent with at least 5 years experience relevant to the provision and performance of this Contract.

Key Tasks

Key tasks of a Traffic Measurement and Economics Specialist shall be to

(i) undertake sufficient checks on the traffic measurement data

(ii) liaise with the Scheme Manager on issues arising from traffic measurement and analysis and

(iii) liaise with the Operating Company's key personnel to ensure issues arising from traffic measurement and analysis shall be fully understood or implemented in accordance with the requirements of this Contract.

APPENDIX 62/1: REQUIREMENTS FOR PROFESSIONAL SERVICES (Continued)

10 - Junior Traffic Measurement and Economics Specialist

Role

The role of a Junior Traffic Measurement and Economics Specialist shall be to provide advice support and recommendations on any matters associated with traffic measurement, analysis and verification related to this Contract.

Qualifications

A Junior Traffic Measurement and Economics Specialist shall be an Engineer or equivalent with at least 1 years experience relevant to the provision and performance of this Contract.

Key Tasks

Key tasks of a Junior Traffic Measurement and Economics Specialist shall be to

(i) undertake sufficient checks on the traffic measurement data

(ii) liaise with the Scheme Manager on issues arising from traffic measurement and analysis and

(iii) liaise with the Operating Company's key personnel to ensure issues arising from traffic measurement and analysis shall be understood or implemented in accordance with the requirements of this Contract.

Geotechnical

11 - Principal Geotechnical Specialist

Role

The role of a Principal Geotechnical Specialist shall be to provide expert advice support and recommendations on any matters associated with

(i) geotechnical surveys

(ii) analysis and

(iii) verification

related to this Contract.

Qualifications

A Principal Geotechnical Specialist shall be a Chartered Engineer or equivalent with at least 15 years experience relevant to the provision and performance of this Contract.

Key Tasks

Key tasks of a Principal Geotechnical Specialist shall be to

(i) undertake sufficient checks on the geotechnical surveys and analysis

(ii) develop and manage geotechnical studies and ground investigations

(iii) prepare geotechnical deliverables

(iv) liaise with the Scheme Manager on issues arising from geotechnical measurement, analysis and reporting and

(v) liaise with the Operating Company's key personnel to ensure issues arising from

APPENDIX 62/1: REQUIREMENTS FOR PROFESSIONAL SERVICES (Continued)

(a) geotechnical measurement

(b) analysis and

(c) reporting

shall be fully understood or implemented in accordance with the requirements of this Contract.

12 - Senior Geotechnical Specialist

Role

The role of a Senior Geotechnical Specialist shall be to provide expert advice, support and recommendations on any matters associated with

(i) geotechnical surveys

(ii) analysis and

(iii) verification

related to this Contract.

Qualifications

A Senior Geotechnical Specialist shall be a Chartered Engineer or equivalent with at least 10 years experience relevant to the provision and performance of this Contract.

Key Tasks

Key tasks of a Senior Geotechnical Specialist shall be to

(i) undertake sufficient checks on the geotechnical surveys and analysis

(ii) develop and manage geotechnical studies and ground investigations

(iii) prepare geotechnical deliverables

(iv) liaise with the Scheme Manager on issues arising from

(a) geotechnical measurement

(b) analysis and

(c) reporting

and

(v) liaise with the Operating Company's key personnel to ensure issues arising from

(a) geotechnical measurement

(b) analysis and

(c) reporting

shall be fully understood or implemented in accordance with the requirements of this Contract.

APPENDIX 62/1: REQUIREMENTS FOR PROFESSIONAL SERVICES (Continued)

13 - Geotechnical Specialist

Role

The role of a Geotechnical Specialist shall be to provide expert advice support and recommendations on any matters associated with

(i) geotechnical surveys

(ii) analysis and

(iii) verification

related to this Contract.

Qualifications

A Geotechnical Specialist shall be a Chartered Engineer or equivalent with at least 5 years experience relevant to the provision and performance of this Contract.

Key Tasks

Key tasks of a Geotechnical Specialist shall be to

(i) undertake sufficient checks on the geotechnical surveys and analysis.

(ii) develop and manage geotechnical studies and ground investigations

(iii) prepare geotechnical deliverables

(iv) liaise with the Scheme Manager on issues arising from

  (a) geotechnical measurement

  (b) analysis and

  (c) reporting

  and

(v) liaise with the Operating Company's key personnel to ensure issues arising from

  (a) geotechnical measurement

  (b) analysis and

  (c) reporting

  shall be fully understood or implemented in accordance with the requirements of this Contract.

14 - Junior Geotechnical Specialist

Role

The role of a Junior Geotechnical Specialist shall be to provide expert advice support and recommendations on any matters associated with

(i) geotechnical surveys

(ii) analysis and

(iii) verification

APPENDIX 62/1: REQUIREMENTS FOR PROFESSIONAL SERVICES (Continued)

(iv) related to this Contract.

Qualifications

A Junior Geotechnical Specialist shall be a Chartered Engineer or equivalent with at least 1 years experience relevant to the provision and performance of this Contract.

Key Tasks

Key tasks of a Junior Geotechnical Specialist shall be to

(i) undertake sufficient checks on the geotechnical surveys and analysis

(ii) develop and manage geotechnical studies and ground investigations

(iii) prepare geotechnical deliverables

(iv) liaise with the Scheme Manager on issues arising from

(a) geotechnical measurement

(b) analysis and

(c) reporting

and

(v) liaise with the Operating Company's key personnel to ensure issues arising from

(a) geotechnical measurement

(b) analysis and

(c) reporting

shall be fully understood or implemented in accordance with the requirements of this Contract.

Topographical

15 - Principal Topographical Specialist

Role

The role of a Principal Topographical Specialist shall be to provide expert advice support and recommendations on any matters associated with topographical surveys analysis and verification related to this Contract.

Qualifications

A Principal Topographical Specialist shall be a Chartered Engineer or equivalent with at least 15 years experience relevant to the provision and performance of this Contract.

Key Tasks

Key tasks of a Principal Topographical Specialist shall be to

(i) undertake sufficient checks on the topographical surveys analysis

(ii) develop and manage topographical studies and

(iii) prepare topographical survey deliverables.

(iv) liaise with the Scheme Manager on issues arising from

APPENDIX 62/1: REQUIREMENTS FOR PROFESSIONAL SERVICES (Continued)

(a) topographical

(b) surveys

(c) measurement

(d) analysis and

(e) reporting

and

(v) liaise with the Operating Company's key personnel to ensure issues arising from

(a) topographical surveys

(b) measurement

(c) analysis and

(d) reporting

shall be fully understood or implemented in accordance with the requirements of this Contract.

16 - Senior Topographical Specialist

Role

The role of a Senior Topographical Specialist shall be to provide expert advice support and recommendations on any matters associated with topographical surveys analysis and verification related to this Contract.

Qualifications

A Senior Topographical Specialist shall be a Chartered Engineer or equivalent with at least 10 years experience relevant to the provision and performance of this Contract.

Key Tasks

Key tasks of a Senior Topographical Specialist shall be to

(i) undertake sufficient checks on the topographical surveys analysis

(ii) develop and manage topographical studies

(iii) prepare topographical survey deliverables

(iv) liaise with the Scheme Manager on issues arising from

(a) topographical surveys

(b) measurement

(c) analysis and

(d) reporting

and

(v) liaise with the Operating Company's key personnel to ensure issues arising from

(a) topographical surveys

APPENDIX 62/1: REQUIREMENTS FOR PROFESSIONAL SERVICES (Continued)

(b) measurement

(c) analysis and

(d) reporting

shall be fully understood or implemented in accordance with the requirements of this Contract.

17 - Topographical Specialist

Role

The role of a Topographical Specialist shall be to provide expert advice support and recommendations on any matters associated with topographical surveys analysis and verification related to this Contract.

Qualifications

A Topographical Specialist shall be Chartered Engineer or equivalent with at least 5 years experience relevant to the provision and performance of this Contract.

Key Tasks

Key tasks of a Topographical Specialist shall be

(i) undertake sufficient checks on the topographical surveys analysis

(ii) develop and manage topographical studies

(iii) prepare topographical survey deliverables

(iv) liaise with the Scheme Manager on issues arising from

(a) topographical surveys

(b) measurement

(c) analysis and

(d) reporting

and

(v) liaise with the Operating Company's key personnel to ensure issues arising from

(a) topographical surveys

(b) measurement

(c) analysis and

(d) reporting

shall be fully understood or implemented in accordance with the requirements of this Contract.

APPENDIX 62/1: REQUIREMENTS FOR PROFESSIONAL SERVICES (Continued)

18 - Junior Topographical Specialist

Role

The role of a Junior Topographical Specialist shall be to provide expert advice, support and recommendations on any matters associated with topographical surveys, analysis and verification related to this Contract.

Qualifications

A Junior Topographical Specialist shall be a Chartered Engineer or equivalent with at least 1 years experience relevant to the provision and performance of this Contract.

Key Tasks

Key tasks of a Junior Topographical Specialist shall be to

(i) undertake sufficient checks on the topographical surveys analysis.

(ii) develop and manage topographical studies.

(iii) prepare topographical survey deliverables.

(iv) liaise with the Scheme Manager on issues arising from

(a) topographical surveys

(b) measurement

(c) analysis and

(d) reporting

and

(v) liaise with the Operating Company's key personnel to ensure issues arising from

(a) topographical surveys

(b) measurement

(c) analysis and

(d) reporting

shall be fully understood or implemented in accordance with the requirements of this Contract.

Environmental

19 - Principal Environmental Specialist

Role

The role of a Principal Environmental Specialist shall be to ensure that the environmental obligations with respect to any

(i) Legislation

(ii) Order or

(iii) Scheme

(iv) shall be met

APPENDIX 62/1: REQUIREMENTS FOR PROFESSIONAL SERVICES (Continued)

Qualifications

A Principal Environmental Specialist shall possess recognised professional qualifications relevant to the environment with at least 15 years relevant experience relevant to the provision and performance of this Contract.

Key Tasks

Key tasks of a Principal Environmental Specialist shall be to

(i) provide expert advice support and recommendations on any matters associated with the Design operation or maintenance of the Scottish Trunk Road network that have environmental impact implications from time to time as or when required by the Scheme Manager or the Director or as required in the provision and performance of this Contract

(ii) develop and manage environmental studies

(iii) undertake sufficient checks on the environmental studies

(iv) prepare environmental study deliverables

(v) liaise with the Scheme Manager on issues arising from

(a) environmental studies

(b) measurement

(c) analysis and

(d) reporting

and

(v) liaise with the Operating Company's key personnel to ensure issues arising from

(a) environmental studies

(b) measurement

(c) analysis and

(d) reporting

shall be fully understood or implemented in accordance with the requirements of this Contract.

20 - Senior Environmental Specialist

Role

The role of Senior Environmental Specialist shall be to ensure that the environmental obligations with respect to any

(i) Legislation

(ii) Order or

(iii) Scheme

(iv) shall be met.

APPENDIX 62/1: REQUIREMENTS FOR PROFESSIONAL SERVICES (Continued)

Qualifications

A Senior Environmental Specialist shall possess recognised professional qualifications relevant to the environment with at least 10 years relevant experience relevant to the provision and performance of this Contract.

Key Tasks

Key tasks of a Senior Environmental Specialist shall be to

(i) provide expert advice support and recommendations on any matters associated with the Design operation or maintenance of the Scottish Trunk Road network that have environmental impact implications from time to time as or when required by the Scheme Manager or the Director or as required in the provision or performance of this Contract

(ii) develop and manage environmental studies

(iii) undertake sufficient checks on the environmental studies

(iv) prepare environmental study deliverables

(v) liaise with the Scheme Manager on issues arising from

(a) environmental studies

(b) measurement

(c) analysis or

(d) reporting

and

(vi) liaise with the Operating Company's key personnel to ensure issues arising from

(a) environmental studies

(b) measurement

(c) analysis or

(d) reporting

shall be fully understood or implemented in accordance with the requirements of this Contract.

21 - Environmental Specialist

Role

The role of an Environmental Specialist shall be to ensure that the environmental obligations with respect to any

(i) Legislation

(ii) Order or

(iii) Scheme

shall be met.

APPENDIX 62/1: REQUIREMENTS FOR PROFESSIONAL SERVICES (Continued)

Qualifications

An Environmental Specialist shall possess recognised professional qualifications relevant to the environment with at least 5 years relevant experience in the provision and performance relevant to this Contract.

Key Tasks

Key tasks of an Environmental Specialist shall be to

(i) provide expert advice support and recommendations on any matters associated with the Design operation or maintenance of the Scottish Trunk Road network that have environmental impact implications from time to time as or when required by the Scheme Manager or the Director or as required in the provision or performance of this Contract

(ii) develop and manage environmental studies

(iii) undertake sufficient checks on the environmental studies

(iv) prepare environmental study deliverables

(v) liaise with the Scheme Manager on issues arising from

  (a) environmental studies

  (b) measurement

  (c) analysis or

  (d) reporting

  and

(vi) liaise with the Operating Company's key personnel to ensure issues arising from

  (a) environmental studies

  (b) measurement

  (c) analysis or

  (d) reporting

  shall be fully understood or implemented in accordance with the requirements of this Contract.

22 - Junior Environmental Specialist

Role

The role of a Junior Environmental Specialist shall be to ensure that the environmental obligations with respect to any

(i) Legislation

(ii) Order or

(iii) Scheme

shall be met.

APPENDIX 62/1: REQUIREMENTS FOR PROFESSIONAL SERVICES (Continued)

Qualifications

A Junior Environmental Specialist shall possess recognised professional qualifications relevant to the environment with at least 1 years relevant experience relevant to the provision or performance of this Contract.

Key Tasks

Key tasks of a Junior Environmental Specialist shall be to

(i) provide expert advice support and recommendations on any matters associated with the Design operation or maintenance of the Scottish Trunk Road network that have environmental impact implications from time to time as or when required by the Scheme Manager or the Director or as required in the provision or performance of this Contract

(ii) develop and manage environmental studies

(iii) undertake sufficient checks on the environmental studies

(iv) prepare environmental study deliverables

(v) liaise with the Scheme Manager on issues arising from

(a) environmental studies

(b) measurement

(c) analysis or

(d) reporting

and

(v) liaise with the Operating Company's key personnel to ensure issues arising from

environmental studies

measurement

analysis or

reporting

shall be fully understood or implemented in accordance with the requirements of this Contract.

Landscaping

23 - Principal Landscaping Specialist (Landscape Architect)

Role

The role of a Principal Landscaping Specialist (Landscape Architect) shall be to ensure that the landscaping obligations with respect to any

(i) Legislation

(ii) Order or

(iii) Scheme

shall be delivered.

APPENDIX 62/1: REQUIREMENTS FOR PROFESSIONAL SERVICES (Continued)

Qualifications

A Principal Landscaping Specialist (Landscape Architect) shall possess recognised professional qualifications relevant to landscaping with at least 15 years relevant experience in the provision and performance relevant to this Contract.

Key Tasks

Key tasks of a Principal Landscaping Specialist (Landscape Architect) shall be to

(i) provide expert advice support and recommendations on any matters associated with the Design or maintenance of landscaping on the Scottish Trunk Road network from time to time as or when required by the Operating Company Representative or the Director or as required in the provision or performance of this Contract

(ii) develop and manage the

- (a) Landscape Action Plan
- (b) landscaping studies and
- (c) reporting.

(iii) undertake sufficient checks on the

Landscape Action Plan

landscaping studies and

reporting

(iv) prepare the

- (a) Landscape Action Plan
- (b) landscaping study and
- (c) reporting deliverables

(v) liaise with the Scheme Manager on issues arising from

- (a) landscaping studies
- (b) measurement
- (c) analysis or
- (d) reporting

and

(vi) liaise with the Operating Company's key personnel to ensure issues arising from

- (a) landscaping studies
- (b) measurement
- (c) analysis or
- (d) reporting

shall be fully understood or implemented in accordance with the requirements of this Contract.

APPENDIX 62/1: REQUIREMENTS FOR PROFESSIONAL SERVICES (Continued)

24 - Senior Landscaping Specialist

Role

The role of a Senior Landscape Specialist shall be to ensure that the landscaping obligations with respect to any

(i) Legislation

(ii) Order or

(iii) Scheme

shall be delivered.

Qualifications

A Senior Landscape Specialist shall possess recognised professional qualifications relevant to landscaping with at least 10 years relevant experience in the provision and performance relevant to this Contract.

Key Tasks

Key tasks of a Senior Landscape Specialist shall be to

(i) provide expert advice support and recommendations on any matters associated with the Design or maintenance of landscaping on the Scottish Trunk Road network from time to time as or when required by the Operating Company Representative or the Director or as required in the provision or performance of this Contract

(ii) develop and manage landscaping studies and reporting.

(iii) undertake sufficient checks on the landscaping studies and reporting.

(iv) prepare landscaping study or reporting deliverables.

(v) liaise with the Scheme Manager on issues arising from

  (a) landscaping studies

  (b) measurement

  (c) analysis or

  (d) reporting

  and

(vi) liaise with the Operating Company's key personnel to ensure issues arising from

  (a) landscaping studies

  (b) measurement

  (c) analysis or

  (d) reporting

  shall be fully understood or implemented in accordance with the requirements of this Contract.

APPENDIX 62/1: REQUIREMENTS FOR PROFESSIONAL SERVICES (Continued)

25 - Landscaping Specialist

Role

The role of a Landscaping Specialist shall be to ensure the landscaping obligations with respect to any

(i) Legislation

(ii) Order or

(iii) Scheme

shall be delivered.

Qualifications

Landscaping Specialist shall possess recognised professional qualifications relevant to landscaping with at least 10 years relevant experience in the provision or performance relevant to this Contract.

Key Tasks

Key tasks of a Landscaping Specialist shall be to

(i) provide expert advice support and recommendations on any matters associated with the Design or maintenance of landscaping on the Scottish Trunk Road network from time to time as or when required by the Operating Company Representative or the Director or as required in the provision or performance of this Contract

(ii) develop and manage landscaping studies and reporting.

(iii) undertake sufficient checks on the landscaping studies and reporting.

(iv) prepare landscaping study and reporting deliverables.

(v) liaise with the Scheme Manager on issues arising from

  (a) landscaping studies

  (b) measurement

  (c) analysis or

  (d) reporting

  and

(vi) liaise with the Operating Company's key personnel to ensure issues arising from

  (a) landscaping studies

  (b) measurement

  (c) analysis or

  (d) reporting

  shall be fully understood or implemented in accordance with the requirements of this Contract.

APPENDIX 62/1: REQUIREMENTS FOR PROFESSIONAL SERVICES (Continued)

26 - Junior Landscaping Specialist

Role

The role of a Junior Landscaping Specialist shall be to ensure that the landscaping obligations with respect to any

(i) Legislation

(ii) Order or

(iii) Scheme

shall be delivered.

Qualifications

A Junior Landscaping Specialist shall possess recognised professional qualifications relevant to landscaping with at least 1 years relevant experience in the provision or performance relevant to this Contract.

Key Tasks

Key tasks of a Junior Landscaping Specialist shall be to

(i) provide expert advice support and recommendations on any matters associated with the Design or maintenance of landscaping on the Scottish Trunk Road network from time to time as or when required by the Operating Company Representative or the Director or as required in the provision or performance of this Contract

(ii) develop and manage landscaping studies and reporting

(iii) undertake sufficient checks on the landscaping studies and reporting

(iv) prepare landscaping study and reporting deliverables

(v) liaise with the Scheme Manager on issues arising from

  (a) landscaping studies

  (b) measurement

  (c) analysis or

  (d) reporting

  and

(vi) liaise with the Operating Company's key personnel to ensure issues arising from

  (a) landscaping studies

  (b) measurement

  (c) analysis or

  (d) reporting

  shall be fully understood or implemented in accordance with the requirements of this Contract.

APPENDIX 64/70 TIME BAND ADJUSTMENTS

1 Normal Working hours

For the purposes of Time Band Adjustments the Operating Company's normal working hours within or associated with the Unit (Time Band Reference 1) shall be deemed to be 0700 to 1900 hours Monday to Friday inclusive excluding Public Holidays.

Time Band Adjustments shall be as given in Table 64/1.

Time Band Reference	Period	
1	Monday to Friday (inclusive)	0700 to 1900 inclusive
2	Monday pm to Tuesday am	1900 to 0700 inclusive
	Tuesday pm to Wednesday am	
	Wednesday pm to Thursday am	
	Thursday pm to Friday am	
3	Friday pm to Monday am	1900 to 0700 inclusive
4	Public Holiday	1900x to †0700 inclusive
x previous day to Public Holiday		
† following day to Public Holiday		

Table 64/1 – Time Band Adjustments

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SCOTTISH MINISTERS' REQUIREMENTS

SCHEDULE 9 PART 1

SPECIFICATION FOR MAINTENANCE OPERATIONS

ANNEX 9.1/A – STANDARD DRAWINGS

SCOTTISH MINISTERS' REQUIREMENTS
SCHEDULE 9 PART 1
SPECIFICATION FOR MAINTENANCE OPERATIONS

ANNEX 9.1/A – STANDARD DRAWINGS

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