Pavement Renewals Exemplar Specification

May 2022

Rev 2

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Contents

Document History

Rev	Purpose Description	Originated	Reviewed	Authorised	Date
0	Tender Issue	MF	MS/MT	AP	6/1/22
1	Clauses 171AR and 172AR included. Appendix 7/5 removed	MS / MF	AN	AP	19/04/22
2	Clause 947 material removed - amendment to Appendix 1/5 and 7/1 Schedule 3. Appendix 7/18 removed.	MS / MF	AP	AP	06/05/22

PREAMBLE TO THE SPECIFICATION

1. The Specification referred to in the Tender 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 0/4: list of the Drawings;

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

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 contract specific 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 the 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 Works it shall be deemed not to apply.

10. Any Appendix referred to in the Specification that 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 Organisations 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 Organisation.

12. Other than where references to the Overseeing Organisation are made in the context of the Overseeing Organisation granting statutory or type approvals, roles and functions of the Overseeing Organisation shall be undertaken by the Project Manager. Where the Specification requires the provision of documentation to the Overseeing Organisation for statutory or type approval such documentation shall be provided to the Project Manager.

13. If the Specification is used in conjunction with a Contract under which the Contractor is responsible for the design of any part of the Permanent Works, the delegation of the roles and functions of the Overseeing Organisation as stated in paragraph 12 above shall be further 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 by the Contractor, such agreement, consent, approval shall be obtained from the Employer's Representative.

    (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 Organisations roles and functions have been ascribed by paragraph 12 above shall exercise such decisions in accordance with the Secretary of State's requirements stated in the Contract.

14. Where a duty on the Contractor is referred to in this Specification the duty is deemed to fall upon the appointed Specialist for that element of the Works as outlined in the scope of works contained in Volume 1 Scope of Works, Contract Data, Special Requirements and Site Information.

SPECIFICATION FOR HIGHWAYS WORKS

SCHEDULE OF PAGES AND RELEVANT PUBLICATION DATES

Series/Appendix	Page Number	Publication date
000	1 to 3	May 2014
000	6 to 7F	February 2016
000	4 to 5	July 2021
100	1 to 2, 4 to 9, 12 to 29F, WF1, N2 to N11F	May 2014
100	3, 10 to 11, N1	December 2014
200	1 to 3F	February 2016
300	1	May 2001
300	4	November 2002
300	2 to 3, 5 to 6F	May 2008
400	1, 9 to 11, 13, 17 to 20, 21, 23F	May 2017
400	2 to 8, 12,14 to 16, 22	March 2020
500	1 to 2, 4 to 39F, N1 to N2F	February 2020
500	3	March 2020
600	1 to 68, 70 to 77F, S1 to S4F, W1 to W4F, N1 to N5F	February 2016
600	69	February 2017
700	1 to 36F, N1 to N6F	February 2016
800	1, 3 to 31	February 2016
800	2, 32 to 38F	March 2020
900	1 to 83F, S1 to S3F, W1 to W2F, N1F	July 2021
1000	1 to 51F	January 2020
1100	1 to 16F	February 2021
1200	5	May 2001
1200	2 to 3, W1F	August 2003
1200	1, 14 to 16F	May 2004
1200	4, 9 to 11, 13	May 2005
1200	12	November 2006
1200	6 to 7, N1 to N4F	November 2007
1200	8	May 2008
1300	N2F	November 2003
1300	3 to 4	November 2004
1300	1, 5 to 10, 12F	November 2005
1300	2, 11 and N1	May 2006
1400	2, N1F	May 2001
1400	1, 3 to 9F	May 2006
1500	1 to 31F	February 2017
1600	1, 4 to 5, 9, 15, 17 to 18, 24 to 26, 29 to 31, 35, 38, 49F	March 1998
1600	2, 6 to 8, 10 to 14, 16, 19, 27 to 28, 32 to 34, 36 to 37, 39 to 42, 44 to 48	November 2003
1600	3, 20 to 23, 43	November 2005
1700	2, 4, 6 to 7, 19, 24 to 27, 30 to 34	December 2014
1700	1, 3, 5, 8 to 18, 20 to 23, 28 to 29, 35 to 39F	March 2020
1800	1 to 39F	April 2021
1900	1 to 35F, S1 to S2F	August 2014
2000	1, 3 to 4F	May 2001
2000	2	November 2004

2100	1 to 2F	February 2016
2300 2300	1 2 to 3F	March 1998 May 2001
2400 2400 2400	1, 4, 7F 2 3, 5 to 6	May 2005 May 2006 May 2008
2500 2500 2500 2500 2500 2500	1 2, 8, 11F 10 6 to 7, 9 5 3 to 4	May 2001 November 2003 November 2004 May 2005 May 2006 November 2006
2600 2600 2600 2600 2600	2 to 4 5 6 7 1, 8F	November 2003 November 2004 May 2005 November 2006 March 2020
3000 3000 3000 3000	4 to 7, 10, 12 to 17, 19, 22 to 27F 20 2 to 3 8 to 9, 11, 18, 21	May 2001 November 2004 May 2006 May 2008
5000 5000	1, 4 to 19F, S1F 2 to 3	May 2005 November 2008
5700	1 to 30F	February 2020
Appendix A	1 to 4F	May 2014
Appendix B	1 to 3F	May 2014
Appendix C	1 to 2F	May 2014
#Appendix D Appendix D (NI)	1F N1F	May 2014 May 2014
Appendix E	1F	May 2014
Appendix F	1 to 60F	July 2021
Appendix G	Not used	
Appendix H Appendix H Appendix H Appendix H	1 2 3 4 to 9F	May 2004 November 2005 November 2006 November 2008

APPENDIX 0/1 - CONTRACT-SPECIFIC ADDITIONAL, SUBSTITUTE AND CANCELLED CLAUSES, TABLES AND FIGURES INCLUDED IN THE CONTRACT

PART A: VOLUME 1 SPECIFICATION

Clause No (etc.)	Title	Written on Page No
171AR	Preliminaries: People, Facilities, Welfare Facilities, Equipment and Security	7
172AR	Mobile Elevating Work Platforms	12

SERIES 100 PRELIMINARIES

171 AR Preliminaries: People, Facilities, Welfare Facilities, Equipment and Security

1. Considerate Constructors

When instructed by the Client, the Contractor registers the Work Order under the Considerate Constructor Scheme operated by Construction Umbrella Bodies (Holdings) Limited, complies with the Considerate Constructor Scheme's Code of Practice and assists Construction Umbrella Bodies (Holdings) Limited to develop the Considerate Constructor Scheme so that it applies to contracts for works or services similar to those which the Contractor carries out under this Framework Agreement.

2. Project specific management and staff (in the working area only)

Descriptions for each of the roles in the schedule of rates are as follows:

Storeman (Non-operational)

Continually checks on site stock levels as appropriate. Manages the delivery of materials required for the works, and ensures goods are checked to ensure accuracy and are recorded in an accurate and timely manner. Ensures materials are ready as and when required by the Project Team. Keeps stores clean and tidy.

General Operatives and / or General Attendant Labour (Non-operational)

Undertakes general construction and a range of practical tasks on a construction site. This includes preparing the site ahead of construction work taking place and carrying out manual work whilst a project is in progress.

3. Work Order Value not exceeding £150,000

1. For Schemes with a Work Order value not exceeding £150,000 the Contractor shall provide appropriate facilities, welfare facilities, equipment and security for his own use only.
2. Mobile welfare vans shall house a sink and microwave, hot and cold water, cabin heater, interior LED lighting, a separate toilet / WC with cassette and electric flush and wash facility, with hard wearing anti-slip flooring. Welfare units shall be VOSA approved and HSE compliant and fully in accordance with Traffic Signs Manual Chapter 8 livery.

4. Work Order value exceeding £150,000

1. For Schemes with a Work Order value exceeding £150,000 OR more than one supplier, Site Establishment may be required to be provided by the Contractor. These facilities, welfare facilities, equipment and security shall be provided for the use of the Contractor, Overseeing Organisation and other organisations involved in the delivery of the scheme.
2. National Highways shall instruct the Contractor to provide the facilities, however on occasions another Supplier may be required to provide the facilities.
3. During the pricing stage the Principal Contractor will establish the total number of Full Time Equivalents (FTEs), in order that they can accurately calculate the required facilities, Welfare facilities, equipment and security.
4. When instructed, the Contractor shall be responsible for the supply, removal and maintenance of all facilities, welfare facilities, equipment, consumables, laydown / parking areas, compound fencing and security, for use by all the organisations involved in the delivery of a Scheme.

5. Duration of Time Facilities are Required

All facilities are to be provided for as long as necessary to Provide the Works.

6. Office and Equipment (for Contractors and the Overseeing Organisation)

1. Offices shall be at least equivalent to the statutory minimum per person (FTE) including workspace, storage space, circulation areas, kitchens and toilets. Individual cabins shall be 32ft long x 10ft wide.
2. Meeting Rooms shall be of a minimum of 12m^2 for up to 10 FTE, with 2 m^2 per FTE thereafter. Individual cabins shall be 32ft long x 10ft wide
3. All offices are to have locks with keys supplied, for each person using the office.
4. Office and welfare to be fully serviced with electricity (mains or generator) and water (mains or tank) facilities.
5. The following equipment shall be required per 10 FTE's:
    - five lockable filing cabinets
    - five lockable cupboards
    - Two A0 drawing racks
    - Ten 4-drawer lockable desks
    - Five chairs
    - Ten upholstered swivel chairs with arms
6. Two telephone lines with handsets are to be provided per 10 FTE's, including separate extensions. Payment for calls and facilities/line rental is to be included.

7. Broadband Fibre Optic or 4G Internet connection with wireless router, with the capacity to support up to eight users at a time carrying out their normal duties .
8. Networked printing and photocopying facilities (capable of up to A3 colour prints & copies).
9. Office ancillaries and consumables, e.g. print paper, pens, pencils, staplers with staples, tape, hole punches, lever arch files, note books, filing trays, as required.
10. Fire extinguishers and fire safety precautions shall be provided and maintained as required by the Fire Authority.
11. Heating and general requirements shall be in accordance with the Offices, Shops and Railway Premises Act 1963 and the Health and Safety at Work Act 1974. The offices shall be lined, weatherproof and insulated to achieve an overall U-value of 0.6.
12. All windows shall be fitted with external close boarded shutters which can be fastened and secured from inside. Roller blinds shall be fitted internally to all windows.
13. Boot cleaning facilities shall be provided outside the door.
14. Stairs to offices shall include landings, handrails and kickplates, shall be suitably secured to the site cabins, and adequately supported.
15. All offices shall have sufficient temporary bases and foundations where the ground bearing capacity necessitates and shall be sufficient to carry all loads (including live and weather loads) imposed by the site offices.

7. Welfare facilities

1. Welfare facilities shall be of:
    - 2 m^2 per person for messing facilities (split breaks may be assumed)
    - 1 m^2 per person for drying rooms
    - sufficient toilets and washbasins for those expected to use them
2. Chemical / Portaloo are only permitted when mains-connected facilities are not possible
3. All welfare facilities shall have suitable locks with a keys.
4. The welfare facilities shall be kept secure at all times.
5. All welfare facilities shall be cleaned daily.
6. Messing Facilities be clean, well-lit and ventilated and shall include:
    - A supply of hot and cold running water
    - A seating area for eating and drinking with means for making hot drinks e.g. kettle or vending machine
    - A means of heating food e.g. microwave / hotplate
    - A supply of clean drinking water either tap or bottled
    - Tea, coffee, sugar, milk, cutlery and crockery as required
7. Toilet facilities shall be clean, well-lit and ventilated facilities.
8. Toilet facilities shall include:
    - A supply of toilet paper, soap and a means for drying hands, e.g. paper towels or a hot air dryer
    - Separate facilities for men and women; where this is not possible, rooms with lockable doors shall be provided
    - Disabled toilets where required
    - For female employees, a means of disposing of sanitary dressings
    - Facilities with hot and cold running water
    - A basin large enough to wash hands and forearms
    - Showers where necessary e.g. for particularly dirty work.

9. Drying / Changing facilities shall be provided if the work activity involves wearing specialist clothing, i.e. wet-weather gear.
10. Drying / Changing facilities shall:
    - Be readily accessible
    - Contain - or connect directly to - washing facilities and a clothing storage area
    - Provide seating
    - Provide a means for securely hanging clothes up
    - Ensure the privacy of the user.
11. To minimise the risk of clean clothing coming into contact with contaminated, dirty or wet, work-soiled clothing, separate secure storage for clean clothing and contaminated work wear shall be provided. This separated storage area should allow wet clothing to be hung up to dry during the course of the working day and, consequently, should be well ventilated.
12. First aid rooms shall contain a first aid box with enough equipment to cope with the number of people on site.
13. All welfare facilities shall have sufficient temporary bases and foundations where the ground bearing capacity necessitates and shall be sufficient to carry all loads (including live and weather loads) imposed by the site offices.
14. Shelters shall be in accordance with the Smoke Free Regulations and any other applicable law and standards.

8. Car Parking

1. Car parking shall be of a minimum of size of 18 m² per 10 number FTE's requiring office accommodation including access roads / circulation space. An additional visitor space shall be provided of minimum size of 18 m²
2. A hardcore parking area shall be provided for all operatives with one parking space provided for every 3 operatives.

9. Signage

1. A Site Compound Scheme Information Board is to be erected at the site compound entrance. This design shall be in accordance with the Overseeing Organisation's guidance on visual identity and include the following information as a minimum:
    - Scheme title
    - Scheme description

10. Security

1. The Contractor shall take all reasonable measures to prevent trespass or unauthorised access to the works and theft from or malicious damage to the works.
2. The Contractor shall report details of any breach of security measures to the Overseeing organisation.
    - The report shall initially be oral immediately on becoming aware of an incident. Written confirmation of all such oral reports giving date, time and action taken shall be provided to the Overseeing Organisation within 24 hours after the initial oral report of any incident.
    - The Contractor shall maintain a log of all breaches of security which shall be available on request.

3. The Contractor shall maintain the level and modes of security provision in accordance with the following:

    - The Contractor shall appoint a Security Co-ordinator who shall make all arrangements necessary for site security. The Security Co-ordinator shall have one or more nominated deputies. The Contractor shall provide the Overseeing Organisation with the names of this co-ordinator and his nominated deputies and with telephone numbers or details of other means by which they or one of them can be contacted at any time. The Security Co-ordinator or his nominated deputy shall be on the Site at all times during working hours and shall be readily available to deal with matters related to site security.

    - Security fencing and gates shall be provided around the perimeter of the working areas. The precise location of the fencing and gates shall be agreed with the Overseeing Organisation on site.

    - The Contractor shall ensure that steps, ladders or other plant that could be used to gain access to the works are not left accessible outside working hours.

    - Outside of working hours scaffolding and steelwork accessible from ground level shall have security fencing erected around its perimeter to prevent unauthorised access.

    - The provision of these security measures does not relieve the Contractor of its obligations under the Contract.

    - The Contractor will ensure that security personnel are provided outside of working hours, i.e. during evenings and weekends.

    - The Contractor shall provide security cover from commencement of the Works until completion of the Works unless otherwise agreed with the Overseeing Organisation.

4. The Contractor shall maintain a register of both personnel working on the site and visitors to the site. This register shall be available to the Overseeing Organisation on request. The Contractor shall provide all personnel, including sub-contractors and other contractors and personnel of the Designer and Overseeing Organisation with suitable security passes which shall include photographs.
5. The Contractor shall provide visitors with temporary passes. Visitors shall only enter the site when in possession of a temporary pass and shall at all times be accompanied by a person holding a full security pass.
6. Tool stores and storage containers shall be a minimum 20ft length and be lockable.
7. Security control rooms / kiosks shall be a minimum of 1200 wide x 2400mm length x 2250mm high, with at least one sliding window, lockable door, fixed window, ceiling light and switch, plug socket and wall mounted heater.
8. Security systems / intruder alarms & fire alarms will be installed by registered installers and shall comply with all applicable British Standards.
9. CCTV systems shall have a minimum resolution of 1080p, 6no cameras and a minimum 14 day playback (either hard drive or cloud storage based).

11. Miscellaneous Equipment

1. N.B. – The specifications stated below are for pricing purposes only. All plant and equipment must be adequate for the works being undertaken specific to each site / Work Order and comply with all relevant standards and applicable law. The operation of any equipment must be in full compliance with health and safety standards and manufacturers' instructions with adequate maintenance and safe working practices in place. Operators and banksmen must be suitably trained and qualified.
2. Telehandlers shall have a minimum lift height of 6m and a minimum lifting capacity of 2500kg.
3. Mobile elevating work platform (MEWP), articulating boom lift, minimum reach height 10m.
4. Overhead power line avoidance including cable goalposts and height restriction warnings shall be in accordance with HSE document GS6.
5. Floodlights shall have LED light heads and have a minimum 3m lantern height and deliver a minimum of 40,000 lumens.
6. Aluminium steel adjustable site stairs shall have a double handrail on both sides, horizontal treads with lock mechanism with 880mm tread 680mm compliant with EN 12811.

172 AR Mobile Elevating Work Platforms

1. Where the Contractor utilises Mobile Elevating Work Platforms (MEWPs) to provide access to the Works for any purpose, the Contractor complies with the codes of practice including HSE General Information Sheet No 6, and other requirements.

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

None

APPENDIX 0/2 - CONTRACT-SPECIFIC MINOR ALTERATIONS TO EXISTING CLAUSES, TABLES AND FIGURES INCLUDED IN THE CONTRACT

PART A: VOLUME 1 SPECIFICATION

None

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

None

APPENDIX 0/3 - LIST OF NUMBERED APPENDICES REFERRED TO IN THE SPECIFICATION AND INCLUDED IN THE CONTRACT.

Appendix 0/3 is comprised of two lists, A and B, of Numbered Appendices as follows:

List 'A' is a complete list of the Numbered Appendices referred to in the Specification for Highway Works with those not adopted marked 'Not Used'. Those identifies by the letters T or C shall be completed by the Tenderer and / or Contractor respectively.

Guide to types of Numbered Appendices – who compiles/completes

(Co) Compiler compiles: Identified in the Notes for Guidance examples by the term "Sample" included in their title.

(Co/C) Compiler partially completes and Contractor completes and returns to Overseeing Organisation

(C) Contractor compiles and returns to Overseeing Organisation

(P) This indicates the Appendix is a national proforma and format must not be altered.

List 'B' gives the list of Contract specific Numbered Appendices devised for the Contract.

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

Appendix No.	Title	Completed By
INTRODUCTION		
0/1	Contract-specific Additional, Substitute and Cancelled Clauses, Tables and Figures Included in the Contract	Co
0/2	Contract-specific Minor Alterations to Existing Clauses, Tables and Figures Included in the Contract	Co
0/3	List of Numbered Appendices Referred to in the Specification and Included in the Contract	Co
0/4	List of Drawings Included in the Contract (As detailed in the Additional Work Order)	Co
0/5	Special National Alterations of the Overseeing Organisations of Wales	Not Used
PRELIMINARIES		
1/1	Temporary Accommodation and Equipment for the Overseeing Organisation	Co
1/2	Vehicles for the Overseeing Organisation	Not Used
1/3	Communication System for the Overseeing Organisation	Not Used
1/4	Working and Fabrication Drawings	Not Used
1/5	Testing to be Carried out by the Contractor	Co
1/6	Supply and Delivery of Samples to the Overseeing Organisation	Not Used
1/7	Site Extent and Limitations on Use	Co

1/8	Operatives for the Supervisor	Not Used
1/9	Control of Noise and Vibration	Co
1/10	Structures to be Designed by the Contractor	Not Used
1/11	Structural Elements and Other Features to be Designed by the Contractor	Not Used
1/12	Setting Out and Existing Ground Levels	Co
1/13	Programme of Works	Co
1/14	Payment Applications	Co
1/15	Accommodation Works	Not Used
1/16	Privately and Publicly Owned Services and Supplies	Co/C
1/17	Traffic Safety and Management	Not used
1/18	Temporary Diversions for Traffic	Not used
1/19	Routing of Vehicles	Not used
1/20	Recovery Vehicles for Breakdowns	Not used
1/21	Information Boards	Co
1/22	Progress Photographs	Co
1/23	Risks to Health and Safety from Materials or Substances	Co
1/24	Quality Management System	Co
1/25	Temporary closed circuit television (CCTV) system for the monitoring of traffic	Not used
1/26	Not used	Not Used
1/27	Temporary Automatic Speed Camera System for the Enforcement of Mandatory Speed Limits at Road Works (TASCAR) - Particular Requirements	Not used
1/71	Disposal of material	Not Used
SITE CLEARANCE		
2/1	List of Buildings, etc. to be Demolished or Partially Demolished	Co
2/2	Filling of Trenches and Pipes	Not Used
2/3	Retention of Material Arising from Site Clearance	Co
2/4	Explosives and Blasting	Not Used
2/5	Hazardous Materials	Co
2/6		Not Used
FENCING		
3/1	Fencing, Gates and Stiles	Not Used
ROAD RESTRAINT SYSTEMS (VEHICLE AND PEDESTRIAN)		
4/1	(05/04) Road Restraint Systems (Vehicle and Pedestrian)	Not Used
4/2	(05/04) 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	Not Used
DRAINAGE AND SERVICE DUCTS		
5/1	Drainage Requirements	Co
5/2	Service Duct Requirements	Not Used
5/3	Surface Water Channels and Drainage Channel Blocks	Not Used
5/4	Fin Drains and Narrow Filter Drains	Not Used
5/5	Combined Drainage and Kerb Systems	Not Used
5/6	Linear Drainage Channel Systems	Not Used

5/7	Thermoplastics Structural Wall Pipes and Fittings	Not Used
EARTHWORKS		
6/1	Requirements for Acceptability and Testing etc. of Earthworks Materials	Not Used
6/2	Requirements for Dealing with Class U1B and Class U2 Unacceptable Materials (11/04)	Co
6/3	Requirements for Excavation, Deposition, Compaction (Other than Dynamic Compaction)	Not Used
6/4	Requirements for Class 3 Material	Not Used
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	Not Used
6/8	Topsoiling	Not Used
6/9	Earthwork Environmental Bunds, Landscape Areas, Strengthened Embankments	Not Used
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	Not Used
6/14	Limiting Values for Pollution of Controlled Waters (11/06)	Not Used
6/15	Limiting Values for Harm to Human Health and the Environment (11/04)	Not Used
ROAD PAVEMENTS - GENERAL		
7/1	Permitted Pavement Options (Schedules 1, 2, 3, 4 and 5)	Co
7/2	Excavation, Trimming and Reinstatement of Existing Surfaces	Co
7/3	Surface Dressing - Performance Specification (Sheets 1, 2 and 3)	Not Used
7/4	Bond Coats, Tack Coats and Other Bituminous Sprays (Sheets 1, 2 and Binder Data Sheet)	Co
7/5	In Situ Recycling - The Remix and Repave Processes	Not Used
7/6	Breaking Up or Perforation of Existing Pavement	Co
7/7	Slurry Surfacing Incorporating Microsurfacing (Sheets 1 and 2)	Co/C
7/8	Not Used	Not Used
7/9	Cold-Milling (Planing) of Bituminous Bound Flexible Pavement	Co
7/10	Worksheet Pro Forma for Results of Testing for Constituent Materials in Recycled Aggregate and Recycled Concrete Aggregate (11/04)	Not Used
7/11	Overband and Inlaid Crack Sealing Systems	Co
7/12	Arrester Beds	Not Used
7/13	Saw-Cut and Seal Bituminous Overlays on Existing Jointed Concrete Pavements	Not Used
7/14	Preparation of Jointed Concrete Pavements Prior to Overlaying and Saw-Cut and Seal of the Bituminous Overlay (11/03)	Not Used
7/15	Saw-Cut, Crack and Seat Existing Jointed Reinforced Concrete Pavements (11/03)	Not Used

7/16	Cracking and Seating of Existing Jointed Unreinforced Concrete Pavements and CBM Bases	Not Used
7/17	Cracking Plant and Equipment Progress Record	Not Used
7/18	Site Specific Details and Requirements for Cold Recycled Bitumen Bound Material	Not Used
7/19	Back Analysis of Falling Weight Deflectometer (FWD) Measurements Made on Concrete Pavements Treated by Fractured Slab Techniques	Not Used
7/20	Not Used	Not Used
7/21	Surface Dressing - Recipe Specification (Sheets 1, 2 and Binder Data Sheet)	Not Used
7/22	Repairs to Potholes (11/03)	Co
ROAD PAVEMENTS - CONCRETE AND CEMENT BOUND MATERIALS		
10/1	Plant and Equipment for the Construction of Exposed Aggregate Concrete Surface	Not Used
KERBS, FOOTWAYS AND PAVED AREAS		
11/1	Kerbs, Footways and Paved Areas	Co
11/2	Access Steps	Not Used
TRAFFIC SIGNS		
12/1	Traffic Signs: General Part 1	Not Used
12/1*	Traffic Signs: General Part 2	Not Used
12/1*	Traffic Signs: General Part 3	Not Used
12/2	Traffic Signs: Marker Posts	Not Used
12/3	Traffic Signs: Road Markings and Studs	Not used
12/4	Traffic Signs: Cones, Cylinders, FTDs and Other Traffic Delineators	Not used
12/5	Traffic Signs: Traffic Signals	Not Used
12/6	Traffic Signs: Special Sign Requirements on Gantries	Not Used
12/70	Automatic Speed Camera System for the Enforcement of Mandatory Speed Limits	Not Used
ROAD LIGHTING COLUMNS AND BRACKETS, CCTV MASTS AND CANTILEVER MASTS (11/03)		
13/1	Information to be Provided When Specifying Lighting Columns and Brackets	Not Used
13/2	(Specification for Highway Works) Typical Lighting Column and Bracket Data Sheets 1 and 2	Not Used
13/3	Instructions for Completion of Lighting Column and Bracket Data Sheets	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 (11/03)	Not Used
13/8	(Specification for Highway Works) Typical Cantilever Masts Data Sheets 1 and 2 (11/03)	Not Used
13/9	Instructions for Completion of Cantilever Masts Data Sheets (11/03)	Not Used
ELECTRICAL WORK FOR ROAD LIGHTING AND TRAFFIC SIGNS		
14/1	Site Records	Not Used

14/2	Location of Lighting Units and Feeder Pillars	Not Used
14/3	Temporary Lighting	Co
14/4	Electrical Equipment for Road Lighting	Not Used
14/5	Electrical Equipment for Traffic Signs	Not Used
MOTORWAY COMMUNICATIONS		
15/1	Motorway Communications	Not used
15/2	Cable Duct Requirements	Not Used
PILING AND EMBEDDED RETAINING WALLS		
16/1	General Requirements for Piling and Embedded Retaining Walls	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	Not Used
STRUCTURAL CONCRETE		
17/1	Schedule for the Specification of Designed Concrete (05/06)	Not Used
17/2	Concrete - Impregnation Schedule	Not Used
17/3	Concrete - Surface Finishes	Not Used
17/4	Concrete - General	Not Used
17/5	Buried Concrete (05/02)	Not Used
17/6	Grouting and Duct Systems for Post-tensioned Tendons	Not Used
STRUCTURAL STEELWORK		
18/1	Requirements for Structural Steelwork	Not Used
PROTECTION OF STEELWORK AGAINST CORROSION		
19/1	(Specification for Highway Works) Form HA/P1 (New Works) Paint System Sheet	Not Used
19/2	Requirements for Other Work	Not Used
19/3	(Specification for Highway Works) Form HA/P2 Paint Data Sheet	Not Used
19/4	(Specification for Highway Works) Form HA/P3 Paint Sample Despatch List: Sheets 1 and 2	Not Used
19/5	General Requirements	Not Used
WATERPROOFING FOR CONCRETE STRUCTURES		

20/1	Waterproofing for Concrete Structures	Not used
BRIDGE BEARINGS		
21/1	Bridge Bearing Schedule	Not Used
NOT USED		
22/1	(05/04) Not Used	Not Used
BRIDGE EXPANSION JOINTS AND SEALING OF GAPS		
23/1	Bridge Deck Expansion Joints Schedule	Not Used
23/2	Sealing of Gaps Schedule (Other than in Bridge Deck Expansion Joints)	Not Used
BRICKWORK, BLOCKWORK AND STONEWORK		
24/1	Brickwork, Blockwork and Stonework	Not used
SPECIAL STRUCTURES		
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	Not Used
MISCELLANEOUS		
26/1	Ancillary Concrete	Co
26/2	Bedding Mortar	Co
26/3	Cored Thermoplastic Node Markers	Not Used
LANDSCAPE AND ECOLOGY		
30/1	General, sheets 1, 2 and 3	Not used
30/2	Weed Control	Not used
30/3	Control of Rabbits and Deer	Not Used
30/4	Ground Preparation	Not used
30/5	Grass Seeding, Wildflower Seeding and Turfing	Not Used
30/6	Planting, sheets 1 and 2	Not Used
30/7	Grass, Bulbs and Wildflower Maintenance	Not Used
30/8	Watering	Not Used
30/9	Establishment Maintenance for Planting	Not Used
30/10	Maintenance of Established Trees and Shrubs	Not Used
30/11	Management of Waterbodies	Not Used
30/12	Special Ecological Measures	Not used
MAINTENANCE PAINTING OF STEELWORK		
50/1	(Specification for Highway Works) Form HA/P1 (Maintenance) Paint System Sheet	Not Used
50/2	Requirements for Other Work	Not Used
50/3	(Specification for Highway Works) Form HA/P2 Paint Data Sheet	Not Used
50/4	(Specification for Highway Works) Form HA/P3 Paint Sample Despatch List: Sheets 1 and 2	Not Used
50/5	General Requirements	Not Used

APPENDIX 0/4 – LIST OF DRAWINGS INCLUDED IN THE CONTRACT

1. This shall be as detailed in the Additional Work Order

APPENDIX 1/1 – TEMPORARY ACCOMMODATION AND EQUIPMENT FOR THE OVERSEEING ORGANISATION

1. The nature of the works does not require any temporary accommodation or stores within the site area.

2. The Principal Contractor shall provide welfare facilities during the works in accordance with the requirements of Construction (Design and Management) Regulations 2015.

3. All stores of plant and materials shall be cleared from site at the end of each shift.

4. Testing equipment for tests which are necessary to ensure compliance with the specification shall be agreed with the Overseeing Organisation. It shall be noted that laboratory accreditation for tests becomes invalid where test equipment is defective, therefore the Contractor shall take prompt action to repair, replace and/or recalibrate any test equipment requiring such attention.

APPENDIX 1/5 – TESTING TO BE PERFORMED BY THE CONTRACTOR

1. Unless otherwise stated all sampling and testing in this Appendix shall be carried out by the Contractor to demonstrate compliance with the specification.

2. The Contractor shall inform the Supervisor in the eventualities of employing on site materials other than those specified in the appendices.

3. Tests specified in this Appendix will be necessary for any equivalent work, goods or material proposed by the Contractor.

4. (N) Indicates that a UKAS or equivalent accredited laboratory sampling and test report or certificate is required.

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

6. Where the tests are specified as 1 test per x m^3 (minimum 1 per shift) – the test 'per shift' only applies when the amount of materials imported during the shift is less than the test rate specified per m^3.

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

8. Field dry density measurements made using a nuclear density gauge are required to be calibrated prior to works and every 50 measurements using field sand replacements test or laboratory calibration box.

9. Where the quantity of material used in the works is less than any quantity described under 'frequency of testing' then the quantity described under 'frequency of testing' shall be read as the quantity used in the works.

10. The frequency of testing is given for general guidance and will be varied to suit materials known to be marginal and to reflect the uniformity of results obtained. Where tests are known to be marginal or if initial tests show them to be such, the frequency of tests should be increased. Conversely where material properties are consistently in excess of specified minimum requirements, or well below specified maximum limits, then the frequency of testing may be reduced – subject to confirmation with the Supervisor.

11. As part of the provision of samples and testing undertaken by the Contractor, the Contractor shall keep a daily record of samples of goods and materials taken by or on behalf of the Contractor for testing. Records shall be in sufficient detail to record the nature and the source of goods and materials, and shall identify the locations and means of selection and sampling. The Contractor shall provide a copy of the daily record for retention and use by the Supervisor.

12. If additional sampling and testing is required in excess of that specified in this Appendix 1/5 or elsewhere in the Specifications due to non-compliance; then the additional cost of additional sampling and testing shall be borne by the Contractor.

13. The Contractor Shall ensure the timely undertaking of all testing, submission of all results to the Overseeing Organisation and a daily basis list of all samples / tests taken that day.

Clause	Works, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
Series 700					
702	Surface regularity	Longitudinal regularity: Rolling straight-edge	300m	Required	See Appendix 7/1
		Transverse regularity: 3 m long straight-edge	Over the first 500m at intervals not exceeding 20m. Then, if results comply, every 100m.		
710	Constituent materials in recycled aggregate	Quality control	Checks are to be carried out by the Contractor in accordance with the procedure set down in 'Quality Control – Production of Recycled Aggregates' and with those in this Clause	Required	The quality control procedure should be in accordance with the 'Quality Control – Production of Recycled Aggregates' published by Waste and Resources Action Programme which is available from WRAP website, http://www.wrap.org.uk
					The results of all quality control checks shall be delivered promptly
711	Over banding and inlaid crack sealing systems			Required	Product Acceptance Scheme certification (or equivalent) applies along with the associated quality checks
Series 800					
801, 803	General requirements for unbound mixtures adjacent to cement bound materials, concrete pavements, structures or products	Water-soluble sulfate (WS) content (N)	1 per 400 tonnes or per location if less than 400 tonnes	Required	Unbound mixtures to be made and constructed to conform to BS EN 13285.
		Oxidisable sulfides (OS) content and total potential sulfate (TPS) content (N)	1 per 400 tonnes or per location if less than 400 tonnes		
	Unbound mixtures beneath surface of a road or paved central reserve	Frost heave (N)	1 per source		
		Grading and fines content	1 per week		
		Plastic index (N)			
		Resistance to fragmentation (N)	1 every 6 months per source for primary aggregates. Monthly per source		

Clause	Works, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
			for Recycled aggregates		
		Resistance to wear micro-Deval test	1 per source		
		Resistance to freezing and thawing (magnesium sulfate soundness) (N)			
		Water absorption (N)			
		Volume stability of blast furnace slags	1 per 400 tonnes or every 6 months		
		Volume stability of steel (BOF and EAF) slags			
		OMC/mc (N)	Initial and as required		
		Density (N)	As required		
		CBR (N)	1 per source then monthly		
821, 822, 823, 840	Cement and other Hydraulically Bound Mixtures (HBM)	Tests for control and checking of HBM	Test specified in Table 8/14 and Table 8/15	Required	
		Coefficient of linear expansion	As required		
		Tests for laboratory mixture design	Test specified in Clause 880		
882	Subgrade surface modulus	Surface modulus at construction for comparison with design surface modulus	Maximum 60m centres along each lane centre staggered to the mid-point in adjacent lanes	Required	Subgrade stiffness (882). A minimum of 10 tests for each prepared foundation area
Series 900					
901, 906, 909, 925, 929, 942, 943	Aggregates for bituminous material			Required	CE marked
	Resistance to fragmentation (hardness)	Resistance to fragmentation (N)	1 per source	Required	
	Resistance to freezing and thawing (durability)	Soundness (N)	1 per source		
		Water absorption (N)	1 per source		
	Cleanness	Sieve test (mass passing 0.063mm sieve) (N)	1 per week per source		
	Shape	Flakiness index (N)	1 per source		
	Blast furnace slag	Bulk density (N)	1 per source		
		Soundness (N)	1 per source		
		Dicalcium silicate disintegration (N)	1 per source		
		Iron disintegration (N)	1 per source		
	Steel slag	Bulk density (N)	1 per source		
		Volume stability (N)	1 per source		
	Coarse aggregate for surface courses	Resistance to polishing (PSV) (N)	1 per source		
		Resistance to surface abrasion (AAV) (N)	1 per source		
		Penetration (N)	1 per binder		CE marked
		Softening point (N)	1 per binder		

Clause	Works, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
	Binders for bituminous materials	*[Other BS EN tests]*			
903, 906, 909, 925, 929, 930, 937, 942, 943, 948	Bituminous mixtures	Grading (N)	For Audit Test purpose only	Required	CE marked
		Binder Content (N)			
		Delivery temperature	every load	Required	Laying records
		Rolling temperature	15m intervals		
908	Warm Mix Asphalt	General properties		Required	
915	Coated chippings	Grading (N)	1 per source	Required	CE marked
		Binder content (N)	1 per source		
		Flakiness index (N)	1 per source		
		Resistance to polishing (PSV) (N)	1 per source		
		Resistance to surface abrasion (AAV) (N)	1 per source		
		Hot sand test (N)	1 per source		
		Rate of spread			
918	Slurry surfacing incorporating microsurfacing				CE marked
	Binder	Product identification	1 per binder	Required	
		Vialit cohesion	1 per binder		
		Rate of spread	1 per week		
		Penetration at 25°C and 5°C (N)	1 per binder		
	Aggregates	Flakiness Index (N)	1 per source		
		Resistance to polishing (PSV) (N)	1 per source		
		Resistance to surface abrasion (AAV) (N)	1 per source		
		Grading (N)	1 per week		
	System				
920	Bond coats, tack coats and other bituminous sprays	Accuracy of spread	1 for each binder and sprayer per month	Required	Not more than 6 weeks prior to start of work and one per month
		Rate of spread	1 per week		
		Production identification	1 per binder		CE marked
		Vialit cohesion	1 per binder		
		Penetration at 25°C and 5°C (N)	1 per binder		

Clause	Works, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
921, 942, 943	Surface macrotexture	Volumetric Patch (N)BS EN 13036-1	For each 250 m: 10 individual measurements taken at approximately 5 m spacing along a diagonal line across the lane width		Average per 250 m and average per 1000 m section to comply Appendix 7/1, Schedule 5.
923	CAUTS	General properties			CE marked
924	High Friction Surfaces	Resistance to polishing (PSV) (N)	1 per source	Required	Acceptance scheme certificate
		Resistance to surface abrasion (AAV) (N)			
		Compaction	1 per section		Contractor to ensure compliance with Acceptance scheme certificate (or equivalent)
		Total quantities of each system component used, the measured area of the surface treated and the calculated coverage rate in kg/m2			Report to the Overseeing Organisation
929	Base and Binder Course Asphalt Concrete (Design Mixtures)	Density and in-situ air voids (N)	Continuous using calibrated indirect density gauge at 20 m intervals in alternate wheel-tracks	Required	As per 929.8.to 929.11
					Cores may be required in the event of not meeting requirements of continuous testing using indirect density gauge as per Clause 929.11.
		Permanent works - Refusal air void content	1 pair of cores per 500 m lane		929.3
		Air voids in wheel tracks (N)	2 cores from the wheel-tracks every 1,000m laid from each mixing plant		As per 929.12 and 929.13 and 929.16 to 929.18, in accordance with BS 594987.
		Air voids at unsupported edges (N)	2 cores every 250m laid, centered 100mm from the final joint position at any unsupported edge from each mixing plant		As per 929.14 to 929.18, in accordance with BS 594987.
		SATS Durability index	1 per aggregate source		CE marked
		Stiffness (N)	For each mixture		

Clause	Works, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
930	EME2	Permanent Works - In situ air void content (N)	20 m intervals in alternate wheel-tracks	Required	
		Air voids at unsupported edges (N)	A pair of cores every 250 metres		As per 930.16 and 930.17-
		Richness modulus (design)	1 per mixture		CE marked
		Duriez (design)			
		Deformation Resistance (design)			
		Stiffness (design)			
937	Stone Mastic asphalt (SMA) binder course and regulating course	Deformation resistance	For each mixture	Required	Type Test certification
		Air Voids			
		Binder drainage test (design)	For each mixture	Required	CE marked
942	Thin Surface Course System	General properties	Per mixture	Required	Product Acceptance Scheme or equivalent Applies. Submit certification and technical data.
		ITSR	Per mixture		As per clause 942.9
		System Installation Performance Trial	As per clause 942	As required	As per clause 942.23 and 942.30
		Performance Requirement – surface integrity	Visual Inspection at opening to traffic	Required	Good or excellent as defined in TRL 674
			Visual Inspection at 12 months after opening to traffic		
			Visual Inspection at 24 months after opening to traffic		
		Performance Requirement – surface macrotexture	Volumetric sand patch testing at opening to traffic		As per Table 9/12 and 9/13 in clause 942
			Volumetric sand patch testing at 12 months after opening to traffic		As per Table 9/14 in clause 942
			Volumetric sand patch testing at 24 months after opening to traffic		As per Table 9/14 in clause 942

Clause	Works, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
943	Hot Rolled asphalt surface course and binder course (performance related design mixtures)	Deformation resistance (Design – Trial Strip in accordance with BS 594987)	For each mixture	Required	
948	Ex Situ Cold Recycled Bound Material	Grading on aggregates stockpiles	Daily	Required	
		Moisture content on aggregates stockpiles	Daily		
		Inspection of binders	On receipt		
		Combined grading of the mixture	Daily (continual)		
		Moisture content of the mixture	Daily (continual)		
		Stiffness	Mixture from the plant or from site compacted to refusal. 1 set of 6 150mm diameter specimens every 1 km		
		Bulk density	Using an indirect density gauge in direct transmission mode, to a depth within 25 mm of the total layer thickness		
Series 1100					
1101	Precast concrete, kerbs, channels, edgings, and quadrants	Bending strength			
1102	In situ asphalt kerbs	Grading	1 test per 500 metres laid		
		Binder content			
		Skid resistance			
Series 2000					
2601	Bedding mortar materials			Required for each batch	certification in accordance with Clause 2601 is required
	Bedding mortar	Flow cone test	Each batch		Laboratory tests
		Flow between glass plates			
		Compressive strength			
		Expansion test			
		Water absorption			
		Elastic stability	1 per source		

Clause	Works, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
		Flow cone test Compressive strength	Each load		Site control tests

APPENDIX 1/7 – SITE EXTENT AND LIMITATIONS ON USE

Extent of the Site

1. The site shall be as defined on the scheme drawings, as detailed in the Additional Work Order, together with those areas necessary for the installation, maintenance and removal of Traffic Management systems and shall be limited to the public highway.

2. At the approval of the Overseeing Organisation, the extent of the Site shall be temporarily extended to cover any traffic lane, hardstrip, hard shoulder, hard standing, verge and central reserve solely for the following:

   (a) For the erection, maintenance and removal of temporary traffic signs necessitated by the Contractors traffic management proposals in carrying out the works, and for advance warning of the works. Such signs shall be removed as the works progresses when they become no longer applicable to the works;
   (b) For the installation of temporary and permanent road markings in advance of the works area.

Limitations on the Use of the Site

1. The Contractor's use of any area of the site will be limited by the requirements of Clause 117 Traffic Safety and Management and the following conditions:

   a) All parts of the Site outside the limit of the Works that are used or occupied by the Contractors shall be restored to their original condition on completion of the Works. Such restoration shall include any necessary reinstatement, re-soiling, seeding or planting;

   b) No principal offices, messes or stores shall be sited within the trunk road or other highway boundaries without the prior approval of the Overseeing Organisation.

   c) No equipment, plant, materials or other items will be permitted to remain on areas which are not part of the site as defined in this Appendix with the exceptions of items needed to control traffic which are only to be placed in positions agreed with the Overseeing Organisation;

   d) The Contractor is not permitted to use the verge for any reason unless prior authorisation is gained from the Project Manager or Environmental Co-ordinator in writing, this is due to the verge not having an Ecological or Environmental Assessment;

   e) The Contractor shall take all due care to avoid damage to the grass verges and drainage system and shall provide railway sleeper or other substantial protection whenever they require plant or vehicles to cross these features. Any damaged areas of verge shall be reinstated with topsoil and seeded in accordance with the specification;

f) The Contractors, their agents, servants or workmen shall not erect nor allow their sub-Contractors, their agents, servants or workmen to erect within the Site any advertisement without the prior written approval of the Overseeing Organisation. Shall any advertisement be erected without such approval, the Overseeing Organisation shall have power to order in writing the Contractors to remove it forthwith;
g) The Contractor shall afford all reasonable access to authorised authorities or Statutory Bodies who may be employed in the execution of works on or near the site including working areas, or any contract which the Employer may enter into in connection with or ancillary to the Works

h) No area of the carriageway shall be utilised for parking of vehicles used by or on behalf of the Contractor outside the coned off areas. The Contractor shall not obstruct any lane, road junction vehicular or pedestrian access that has not been closed to traffic;

i) Any vehicle stationary in the area of the traffic management taper must be fitted with a crash cushion or protected by a vehicle fitted with a crash cushion;

j) Temporary storage of materials for temporary or permanent works beneath canopies of trees is not permitted;

k) No material shall be disposed of by burning in the area of the works;

l) The Contractor shall take measures to prevent spillage of oil, fuel, herbicide and other substances detrimental to trees shrubs and other vegetation;

m) Reference shall be made to Appendix 1/23 where substances and materials are to be stored within the extent of the site.

n) Shall the Contractor wish to extend the Site boundaries, they must obtain written approval from the Overseeing Organisation.

o) The Contractor shall take all necessary steps to avoid creating a dust nuisance. If the Contractor is not dealing adequately with the control of dust, the Contractor may be instructed to halt their Works or carry out such additional measures as the Overseeing Organisation considers necessary, at the Contractor's expense.

p) The Contractor may be required to suspend operations at any time to allow the passage of emergency vehicles through the works and shall maintain a 3.0m minimum width through the work zone at all times for emergency vehicle access.

q) The Contractor may be required to suspend operations at any time to allow the passage of wide or high load vehicles through the works.

r) The Contractor shall at all times keep the area of the Works in a safe, clean and passable state. The Contractor shall clear away all waste or surplus material on the site as the works proceed.

s) Particular care shall be taken to ensure that existing street furniture to remain is not damaged during the Works. Any such items damaged by the Contractor shall be replaced at the Contractor's expense to the satisfaction of the Overseeing Organisation.

APPENDIX 1/9 – CONTROL OF NOISE AND VIBRATION

Noise

1. The Contractor shall make available at the request of the Overseeing Organisation noise-monitoring equipment fit for measuring the noise levels identified in this appendix, using the methods set out in Annex E of BS 5228–1:2009. Maximum sound level is the highest value indicated on a sound level meter which meets the requirements of BS EN 61672-1:2003 Class 1 or 2 set to SLOW response and frequency weighting A.

2. The Contractor shall liaise with the Local Authority whose area the Works are in and decide whether to seek formal consent to his proposed method of working and to the steps he proposes to minimise noise.

3. Without in any way limiting the liabilities and obligations imposed upon the Contractor elsewhere in the Contract, the Contractor shall carry out the Works in such a manner so as to minimise at all times the levels of site-generated noise.

4. The Contractor may be given permission by the Overseeing Organisation to carry out works which exceed the noise levels in the Schedule, provided that 7 days' notice of the date and timing of these works is given to the Overseeing Organisation and the Contractor demonstrates that they intend to take all reasonable measures to mitigate the noise nuisance. After consultations with the Local Authority and any other interested bodies a decision will be given within 7 days of receipt of the notice.

5. The Best Practicable Means, as described in Section 79(9) of the Environmental Protection Act 1990, to reduce noise to a minimum shall be employed at all times. Procedures for noise control and the assessment of site noise shall be in accordance with BS 5228, Part 1:2009. Without prejudice to the generality of the Contractor's obligation under Conditions of Contract the Contractor shall comply in particular with the following requirements:

   (a) Control of noise at source by suitable selection of plant, use of enclosures etc. All vehicles and mechanical plant used for the purpose of the works shall be fitted with effective exhaust silencers and shall be maintained in good and efficient working order so that extraneous noise from mechanical vibrations, squeaking, hissing, etc. shall be reduced to a minimum. 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 by the manufacturers;
   (b) The Contractor shall remove from the works any item of plant which in the opinion of the Overseeing Organisation is ineffectively silenced.
      (i) Careful siting/orientation of plant;

(ii) Minimising reversing (and therefore the sounding of audible reversing alarms) at all times;
(iii) Vehicles and plant shall be shut down or throttled down to a minimum in the intervening periods between work;
(iv) Ensuring that all staff and operatives are briefed on the requirement to minimise nuisance from site activities.
(v) The Contractor shall furnish such information as may be required by the Overseeing Organisation in relation to noise levels emitted by plant or equipment used or installed on the site or which the Contractor intends to use or install on the site.
(vi) The Contractor shall afford all reasonable facilities and access to enable the Overseeing Organisation or any person authorised by the Contractor to carry out such site noise monitoring as may be required.
(vii) The name and address of any persons other than the Contractor who it is intended will carry out works on the Site shall be notified to the Supervisor before the commencement of any works.
(viii) Compliance with these conditions will not constitute protection from proceedings instituted under Sections 80 and 82 of the Environmental Protection Act, 1990, (whereby a Local Authority or any occupier of premises may institute summary proceedings).
(ix) Where practical noisy operations shall be considered for their affect upon the public and measures taken to programme these into the earlier part of the works reducing the overall noise in the later part of the works.
(x) Static machines shall be sited as far away as practicable from inhabited buildings.
(xi) The following types of plant shall not be permitted to be used on Site:
(a) Vibrating rollers with a mass/metre width in excess of 2900 kg;
(b) Dropping weight compactors; and,
(c) Impulsive piling.

Vibration

1. The Contractor shall employ the best practical means to minimise intermittent/transient and continuous vibration produced by his operations and shall have regard to the recommendations of BS 5228 Part 2 and BS 6472.

2. No structure outside the site boundary shall experience vibrational amplitudes and resultant peak particle velocities arising from site operations greater than the limits. Maximum amplitude (mm) = 0.025. Maximum resultant peak particle velocity (mm/sec) = 5.0 (continuous), 10.0 (intermittent).

APPENDIX 1/12 – SETTING OUT AND EXISTING GROUND LEVELS

General

1. For setting out details refer to the scheme specific contract drawings as listed in Appendix 0/4.

2. The Contractor shall establish a suitable method of level control which must be approved by the Overseeing Organisation prior to work starting. This method of level control must be suitable to determine the thickness of all planed areas, and all new laid materials.

Setting Out Requirements

1. Setting out information supplied to the Contractor comprises:

2. Specific requirements for setting out:

   (i) The Contractor shall establish and maintain the chainage system, in accordance with the Contract Drawings, throughout the whole length of the works at 10m intervals for the duration of the works;
   (ii) The chainage marks shall act as block-up points for level control to match new surfacing to existing levels on adjacent lanes in accordance with the general requirements defined in Schedule 2 of Appendix 7/1;
   (iii) The chainage shall be marked on site so as not to be eradicated by planing. The size and location of markings shall be agreed with the Overseeing Organisation;
   (iv) For junctions or roundabouts, the Contractor is to submit matt pattern drawings to the Overseeing Organisation 14 days in advance of the works to ensure the existing crown lines are maintained;
   (v) Any site and line marking paints that may be used in the works shall be lead-free and shall not use chlorofluorocarbons.

Horizontal and vertical alignment

1. The finished level of the carriageway is to match the existing.

2. The proposed horizontal and vertical alignments shall be as existing or as per the scheme specific contract drawings as listed in Appendix 0/4.

Road markings and Studs

1. For setting out of Road Markings and Studs refer to the scheme specific contract drawings as listed in Appendix 0/4 and HCD drawings as listed in Appendix 0/4.

2. The contractor shall reference prior to planing operations:

   (i) Changes in the type of road markings.
   (ii) Road stud locations.

3. The Road Markings are shown on the scheme specific contract drawings as listed in Appendix 0/4. Details given within Appendix 12/3 are indicative only. The Contractor shall survey the existing layout prior to planning operations.

Detector Loops

1. For setting out of Detector Loop sites refer to Appendix 15/1, the scheme specific contract drawings as listed in Appendix 0/4 and HCD's.

APPENDIX 1/13 – PROGRAMME OF WORKS

General

1. The Contractor shall provide a detailed Scheme schedule in accordance with Section 500 of the Scope.. The format required shall be as detailed in the Additional Work Order.

2. The Contractor shall adhere to the timing and order of activities identified on the detailed Scheme schedule .

3. The schedule of constraints will be provided within the scheme information

4. The Contractor shall supply to the Overseeing Organisation a copy of the weather forecast applicable to the planned pavement works in accordance with the timescales set out below. The weather forecasts shall confirm the expected precipitation periods and temperature. The Contractor at the same time shall confirm his intention to either proceed with the works or postpone the works.

Evening of the week that the works are to be carried out:	Final notification time to proceed with or cancel the Works to be provided to the Overseeing Organisation by
Monday	By noon on that day
Tuesday	By noon on that day
Wednesday	By noon on that day
Thursday	By noon on that day
Friday / Saturday / Sunday	By noon on Friday

Schedule of Constraints:

1. The following list of constraints shall be considered when determining the detailed Scheme schedule:

   a) Hold liaison meetings with local organisations prior to start of works
   b) Reference to be made to working hours and permitted noise specified in Appendix 1/9
   c) Bank holiday periods are non-working periods. During these periods no works will be permitted, and full existing carriageway widths and number of lanes shall be maintained to allow free flow of traffic, unless approved by the Planning Manager
   d) Noise control requirements set out in Appendix 1/9
   e) Restrictions relating to use of site indicated in Appendix 1/7
   f) Conform to the Traffic Safety and Management requirements set out by the Scheme Delivery Framework Contractor
   g) Comply with the Special Requirements in the vicinity of Statutory Undertakers plant
   h) Comply with the requirement of Road Space booking for the works
   i) Any other restraint within the Works Information

APPENDIX 1/14 – PAYMENT APPLICATIONS

1. Where the contract uses Bills of Quantities the compiler shall include the following:

   The payment applications submitted to the Overseeing Organisation in accordance with the Conditions of Contract by the Contractor shall, whenever dealing with matters covered by the Bills of Quantities, be set out under Part and Section headings similar to those in the Bills of Quantities and shall separately identify each item and specify quantity, unit, rate and value. Items not described in Bills of Quantities but appropriate for inclusion as measured work shall be shown at the end of the relevant section or under section headings as appropriate indicating quantity, unit rate and value. In respect of all other matters referred to in the Conditions of Contract the Contractor shall separately show in the statement quantities, units and rates of goods and/or materials and also details of any other matters to which he considers himself entitled. The Contractor shall allow the Overseeing Organisation to inspect invoices for goods or materials included in the statement as may be required.

2. Where the contract uses Activity Schedules the Compiler shall include the following:

   The payment applications submitted to the Overseeing Organisation in accordance with the Conditions of Contract by the Contractor shall, whenever dealing with matters covered by Activity Schedules, be set out under group headings similar to those in the Activity Schedules and shall separately identify each activity and specify activity price, percentage completed and value (either 0% or 100% of activity price)

APPENDIX 1/16 – PRIVATELY AND PUBLICLY OWNED SERVICES OR SUPPLIES

General

1. This Appendix contains details of services and supplies affected by the Works, details of preliminary arrangements that have been made with Statutory Undertakers and others for the alteration of services and supplies affected by the Works, and details of any orders already placed.

2. The Contractor shall make arrangements with the Statutory Undertakers and others concerned, for the co-ordination of his work with all work which needs to be done by them or their Contractors concurrently with the Works. Compliance with the periods of notice given in this Appendix does not relieve the Contractor of his obligations.

3. Private services to individual properties have not generally been listed or shown on the Drawings. The Contractor shall make arrangements with the Statutory Undertakers and others concerned for the phasing of all necessary disconnections and diversions of private services affected by the Works.

4. The Contractor shall remove disconnected apparatus only with the prior consent of the Authority concerned.

Specific Site Requirements

1. The Contractor shall establish the location, depth and size of all services affected by the Works. Initially the location and line shall be established from the service drawings and confirmed using electronic location equipment. The Contractor shall excavate hand dug trial holes prior to excavations being carried out with excavators or machines of any description. The Contractor shall also use electronic location equipment to sweep areas where excavation is to be carried out on areas that appear to have no services or statutory equipment within them.

Overhead Cables

1. Work below Overhead cables shall be carried out in accordance with the requirements of GS6.
2. If Overhead cables cross the carriageway within the scheme limits, they are indicated on all scheme drawings. The Contractor shall provide method statements indicating safe working practices in these areas.

Gas Pipelines

1. All gas pipelines discovered on the statutory undertaker search are shown on the statutory undertaker's drawings. All medium and high pressure gas pipelines have been highlighted on the drawings. The contractor shall contact the relevant gas authority prior

to work commencing to gain approval to continue with the works. This approval shall then be given to the Overseeing Organisation in writing.

Drawings

1. The Statutory Undertakers services information provided to the Contractor is included on the preconstruction information (PCI) pack as detailed in the Additional Work Order.

Contacts

1. The names, addresses and telephone numbers of the authorities serving the locality will be provided to the Contractor in the PCI pack.

APPENDIX 1/21 – INFORMATION BOARDS

General

1. Scheme information boards, where required, are to be designed, installed, maintained and removed by the Contractor.

2. A minimum of 2 weeks prior to the start of work on site the Contractor shall erect signing, on each approach to the site, advising of the Works.

3. These signs shall be to Traffic Signs Regulations and General Directions 2016, diagram 7003.1 or similar as approved by the Overseeing Organisation, amended to read National Highways and include the National Highways logo.

4. The exact location at which the signs are to be erected shall be agreed with the Overseeing Organisation.

APPENDIX 1/22 – PROGRESS PHOTOGRAPHS

Location	Type and format	No. of photographs and Distance Between Photographs or Specific Aspects Required	Aerial/ Ground	Frequency Required/ Interval	Remarks

APPENDIX 1/23 – RISKS TO HEALTH AND SAFETY

Restrictions in Relation to Traffic Management Measures

1. The Contractor shall consider the need for extra safety zones in additional to the mandatory safety zones when unloading and loading materials/ or spoil off/onto Lorries, so as to avoid spillages into the mandatory safety zone.

2. The Contractor shall consider the need for extra lane closures in addition to the mandatory safety zones during off peak working so as to provide greater segregation between the workforce and the travelling public.

3. Risk assessments shall be carried out by the Contractor when considering 1.1 & 1.2 above. The findings of the risk assessments shall be included in the Health and Safety Plan.

Restriction of Working Practices.

1. The Contractor shall ensure that his operatives and site staff comply with the following with the respect to the restriction of working practices;

   a) Food and Environment Protection Act 1985 (FEPA);
   b) Control of Pesticides Regulations 1986;
   c) Health and Safety at Work etc. Act 1974 (HASAW etc 1974);
   d) Control of Substances Hazardous to Health Act 1999 (COSHH);
   e) Suitable training shall be given to operatives and staff in the use of substances hazardous to health during the performance of their duties;
   f) A Certificate of Competence is required in respect of (v), which may be requested by the Overseeing Organisation so as to demonstrate the competency of the operative;
   g) Management of Health and Safety at Work Regulations 1999.

Measures to be taken to Protect Members of the Public.

1. The general public shall be protected from exposure to the following materials until they have set, cured or are no longer considered harmful;

   a) Bituminous joint sealer;
   b) Solvent based curing agents;
   c) Bituminous pavement materials;
   d) Dust from cutting pipes (concrete or clay);

2. Access shall be restricted until materials are cured.

3. Consideration shall be given to wind, strength, temperature and traffic speed when assessing the foregoing.

4. Care shall be given to avoid distracting passing motorists with the glare from work lights, contractors vehicles or welding operations.

Existing Watercourses, Drains and Sewers.

1. The Contractors attention is drawn to the possible hazard of waterborne diseases, for example Leptospirosis (Weil's disease).

2. The Contractor shall ensure the following;

   a) The implementation of the 'Card' system to alert the Health Services that the operative has been exposed to work in watercourses, drains and sewers;
   b) That all operatives and staff have received the appropriate inoculation;
   c) That all operatives and staff on site, whether the Contractor's personnel or those working for other bodies have access to a full and high standard of facility for personal hygiene;
   d) The use of personal protective equipment and proper cleaning and maintenance of the same particularly to avoid exposing the skin to the hazard;
   e) hat all operatives and staff have had suitable training and been informed of the substances that they are liable to come into contact with, and risk to health that could result from such contact.

Monitoring to be Undertaken by the Contractor

1. No specific monitoring will be required but the Contractor shall consider Section 3 above and his general obligation under the COSHH Regulations and take action to eliminate or reduce problems that occur due to their site operations.

2. If during operations, the Overseeing Organisation considers that dust or other materials are being allowed to enter live traffic lanes, he shall have the unqualified power to suspend the work until he is satisfied that the Contractor has taken all necessary action to contain the offending dust or other materials.

3. The Contractor is required to keep records of all materials taken from the Site and must record the location of tips and the nature of the material deposited in them from the Site. These records shall be available for inspection by the Overseeing Organisation on demand.

APPENDIX 1/24 – QUALITY MANAGEMENT SYSTEM

1. The Contractor shall institute and operate a quality management system complying with BS EN ISO 9001:2000 and Clause 104 and with requirements in Appendix 4 of the Framework Information. The quality management system shall be described in a Quality Plan that shall be submitted to the Overseeing Organisation for acceptance.

   The Quality Plan shall cover the following items:

   a) Contractor's organisation and management

   b) Contractor's method statements and construction procedures

   c) Contractor's construction quality control

   d) Supplier's Quality Plans (for each of the quality management schemes listed at Appendix A)

   e) Contractor's quality statement

   f) Tender commitments register

2. Quality Plans shall conform with the requirements tabulated in this Appendix, as follows:

CONTRACTOR'S ORGANISATION AND MANAGEMENT

This section of the Quality Plan shall include:

a) Definition of the Contract and its documentation.

b) The organisation of the Contract, including the line of command and communication between parties involved in the Contract.

c) Names, roles, responsibilities and authority of principals and key personnel.

d) Control of liaison and meetings with third parties.

e) Identification of the Contractor's own staff responsible for overseeing each major activity.

f) Supply Chain Management

g) The main Contractor's control of sub-contracts.

h) Document control.

i) Programme for submission of method statements and Suppliers' Quality Plans.

The Quality Plan shall identify procedures (which may be a part of the Contractor's general procedures) that cover the topics listed below. Copies of these procedures shall be made available to the Overseeing Organisation on request.

j) The quality of plans for sub-contractors and suppliers of work, goods and materials which are the subject of quality management schemes.

k) Procedure for the preparation, review and adjustment of programmes for the effective progression of the Works and the recording of this.

l) Control and approval of purchases of materials.
m) Control of off-site activities (where appropriate).
n) Procedures for the regular review and recording by the Contractor of the quality of the Works.
o) Control of personnel selection, based on their care, skill and experience.
p) Management review/audits to monitor and exercise adequate control over the implementation of the quality plan.
q) Any other relevant item.

CONTRACTOR'S METHOD STATEMENTS AND CONSTRUCTION PROCEDURES

This section of the Quality Plan shall include:

1. Detailed method statements for each major activity whether directly controlled or subcontracted.

   The method statements shall identify hold points and invoke:

   a) works instructions

   b) quality control procedures

   c) compliance testing/inspection requirements

   d) and work acceptance procedures for all activities that might affect the quality of the permanent and temporary works.

2. Identify the relevant construction procedures in the Contractor's own Quality Management System (and provide copies on request).

CONTRACTOR'S CONSTRUCTION QUALITY CONTROL

This section of the Quality Plan shall include:

a) Statement of the Contractor's organisation for quality control. The quality plan shall identify procedures (which may be a part of the Contractor's general procedures) that cover the topics listed below. Copies of these procedures shall be made available to the Overseeing Organisation on request.

b) Arrangements for “receiving” and “in-process” testing.

c) Control of test laboratories.

d) Control of test, measuring and inspection equipment.

e) Document control.

f) Procedure for monitoring and recording the inspection, test and approval status of the constructed/installed work.

g) Procedures for tests and inspections for the purpose of the Contractor certifying that prior to covering up, each part of the Works are complete and conforms to the Contract.

h) Procedure for the review of work submitted for review but not accepted as conforming to the Contract.

i) Procedure for the collation of quality records as identified in BS EN ISO 9002, and provision or copies when requested by the Overseeing Organisation.

SUPPLIERS’ QUALITY PLANS

The Quality Plan shall include:

a) Definition of the product or service to be provided.

b) The organisation of the Supplier describing the line of command and stating the name of the senior manager responsible for the contracted Work and the name of the Supplier’s on-site management representative. Contact addresses, telephone numbers, etc., shall be provided.

c) * Identification of the relevant parts of the Supplier’s quality system relevant to the product or service being provided. (Copies to be provided to the Overseeing Organisation on request.)

d) The control of personnel selection (at works and on site), including special requirements for skilled personnel e.g. certification of welders, training of operatives, experience requirements etc.

Specific procedures for the following:

e) Receipt and examination of certificates of conformity and test results for purchased products.

f) Product identification and traceability.

g) Handling, storage, packaging and delivery to Site and storage and handling on Site.

h) Quality records.

Items marked * Where available and appropriate, copies of the Supplier's quality system/general procedures may be acceptable.

3. Items i) and iii) of the Quality Plan shall be submitted to the Overseeing Organisation for its acceptance not later than 21 days after award of the Contract.

The Contractor shall submit other parts of the Quality Plan prior to the commencement of any related work or activity and to a timetable included in item i).

APPENDIX 2/1 – LIST OF BUILDINGS ETC. TO BE DEMOLISHED OR PARTIALLY DEMOLISHED

GENERAL

1. Site clearance requirements are shown on the scheme specific contact drawings as listed in Appendix 0/4 and the schedules below.

2. If previously unidentified hazardous materials are suspected to be present work is to be stopped immediately and the National Highways Environment Manager contacted.

SITE CLEARANCE SCHEDULES

1. Material to be disposed of at a licensed off-site facility for recycling. See Appendices 6/2, 7/2 and 7/9.

APPENDIX 2/3 – RETENTION OF MATERIAL ARISING FROM SITE CLEARANCE

1. Bituminous materials to be disposed of in a Suitably licensed recycling facility.
2. Concrete materials to be disposed of in a Suitably licensed recycling facility.

APPENDIX 2/5 – HAZARDOUS MATERIALS

GENERAL

1. It is not anticipated that hazardous materials will be present on the site. However, if hazardous materials are encountered the Contractor shall immediately cease work and cordon the area off to protect his employees, the site staff and the general public from any further possible contact.

2. Hazardous material shall be considered in all risk assessments and method statements.

3. No provisions have been included for hazardous waste, if hazardous material is identified within the Scheme extent this will require disposal at a suitably licenced facility.

4. Once the area where the hazardous material has been located is made safe, the Contractor shall submit his proposals to the Overseeing Organisation for the safe disposal of the material.

5. The Overseeing Organisation will only give their approval when they are satisfied that the Contractors proposals provide a safe method of working for the removal and disposal of the hazardous material.

6. Any information given within the contract documentation is for guidance only and does not relieve the Contractor of his responsibilities to check for the presence of any such materials and take appropriate precautions.

7. Asbestos may be present in materials on and around bridges and will need to be taken into consideration for the proposed works. If hazardous materials are encountered the Contractor shall immediately cease work and cordon the area off to protect his employees, the site staff and the general public from any further possible contact.

8. The Contractors attention is also drawn to the possibility of waterborne diseases being transmitted to a member of his workforce, or any other person on the site, via the waters of the onsite drainage systems.

KNOWN OR ASSUMED HAZARDOUS MATERIALS

1. The Contractor shall prior to commencement of the Works, provide the Overseeing Organisation with COSHH assessments.

2. The Contractor should have a Waste Management Plan in place to improve the environmental performance, meet regulatory controls and reduce rising costs of disposing of waste.

3. Tar Bound Materials

Tar is a hazardous material and any arisings from planned milling/disturbance of tar containing asphalt layers have Health & Safety and cost issues, depending upon the concentration levels. When Core logs have confirmed the presence of Tar Bound Materials, the Contractor is responsible for handling, transporting and disposal. The following restrictions apply:

a. Arisings with Total PAH over 25mg/kg shall not be recycled into hot mix asphalt (County Surveyors Society, 2008).

b. Arisings materials with Total PAH over 1000 mg/kg and benzo(a)pyrene levels above 100 mg/kg are not permitted to be recycled into unbound applications (County Surveyors Society, 2008).

c. The acceptable threshold values of Total PAH and Benzo(a)pyrene are 1000 mg/kg and 100 mg/kg respectively. Above these limits material is classified as hazardous waste if disposed of (Bradshaw, 2005). In addition, the Environment Agency considers that if benzo[a]pyrene is present at a concentration of 50 mg/kg or more in asphalt arising's (excluding any other waste material), the waste should be classified as hazardous and denoted by the European waste code (EWC) 17 03 01 (bituminous mixtures containing coal tar) (ADEPT, 2013).

APPENDIX 5/1 – DRAINAGE REQUIRMENTS

GULLYS AND GULLY GRATINGS

1. The scope of this specification for drainage (Series 500) comprises minor adjustments to covers and frames, and gully replacements if required. More extensive repairs or other works shall be covered by an additional specification and design as agreed with the Overseeing Organisation.
2. Details of chamber covers; gratings and frames shall be as in Clause 507.9; details for special duty covers for use in carriageways shall be as in Clause 507.11; Polished Skid Resistance Value (PSRV) for chamber covers shall be as in Clause 507.9.
3. The classes and sizes of cast iron and steel gully gratings shall be as in Clause 508.6.
4. Requirements for gully grating shall be as in sub-clause 508.7. The compiler shall provide details if the requirements are different from the requirements of sub-clause 508.7.
5. Requirements for setting existing covers and gratings to level shall be as in sub-clauses 507.18 and 508.10. The compiler shall provide details if the requirements are different from the requirements of sub-clauses 507.18 and 508.10.
6. Whether gullies are to be trapped, untrapped or sumpless shall be as in Clause 508.1; details of in-situ concrete gullies shall be as in Clause 508.3.
7. Gully gratings and chamber tops shall be adjusted as required in accordance, and damaged covers and gratings shall be replaced. Replacements shall be of the same clear opening and load rating as existing: covers in the carriageway wheel path shall be replaced with E600 load rated covers regardless. Replacement gratings shall have the same or greater hydraulic performance as existing gullies.
8. Broken or damaged gullies shall be replaced in accordance with the Highway Construction Details. The gully type shall match the existing, either sumpless or have a sump.

APPENDIX 6/2 – REQUIREMENTS FOR DEALING WITH CLASS U2 UNACCEPTABLE MATERIAL

KNOWN CLASS U1 AND U2 MATERIALS

1. Class U1 material expected to be encountered within the Works is expected to be the bituminous surfacing materials, all bituminous and cement bound materials shall be classified as hard material.

2. It is not anticipated that Class U2 materials will be encountered during the Works.

3. All bituminous material that is excavated during the removal of the pavement deemed as unacceptable and surplus materials (other than those classified as Class U2 materials as defined in Clause 601.3 of the Specification) to be removed from site shall be classified as controlled waste and the Contractor will be required to dispose of such materials in accordance with the Environmental Protection Act 1990. The duty of care imposed by the Act shall apply to the Contractor as producer of the waste. This shall also apply to any subcontractor employed by the Contractor.

4. All waste material haulage must be undertaken by a carrier registered to transport controlled waste and each load must be accompanied by a transfer note and transported in sheeted wagons.

5. All waste must be deposited at an approved or licensed site capable of taking the waste in question. The contractor should contact the Overseeing Organisation to check the availability and location of appropriate waste disposal facilities.

6. It is not anticipated that liquid wastes, leachates or significant groundwater will be encountered during the Works. If such wastes are encountered, then the Overseeing Organisation shall be notified immediately. A suitable regime of chemical contamination testing will then be established by the Overseeing Organisation to enable the liquids to be classified and disposed of in an appropriate manner.

APPENDIX 7/1 – PERMITTED PAVEMENT OPTIONS

INTRODUCTORY NOTES

1. The works detailed in this specification include the sites listed in Schedule 1.
2. The information in this Specification Series shall be read in conjunction with the Pavement Drawing Series as detailed in the Additional Work Order.
3. At transitions between different pavement constructions and site categories (defined by their general character and traffic behaviour) the Contractor shall lay the surfacing with the highest PSV over the length of the transition.
4. All pavements shall be laid using paving techniques that minimise the number of cold joints.
5. All pavements shall be laid in accordance with MCHW Volume1.
6. The compacted layer thickness of asphalt binder course and base shall comply with BS594987:2015+A1:2017.
7. The presence of buried services is to be confirmed prior to the start of any works.
8. Surface drainage must be made continuous; therefore, caution should be taken when there is a new construction adjacent to an old construction.
9. For the reconstruction works, the Contractor shall determine the construction subgrade surface modulus in accordance with SHW Clause 882. The in-situ subgrade surface modulus shall be equal or higher than the design subgrade surface modulus assumed in Schedule 3. Where the construction subgrade surface modulus is found to be lower than the design subgrade surface modulus, then action shall be taken by either effecting improvement of the subgrade (see CD225) or by reviewing the design subgrade surface modulus with a view to redesign using the lower value.

SCHEDULE 1A – PERMITTED PAVEMENT OPTIONS

Drawing ref.	Site ref./ Location/ Chainage			Lane	Design traffic	Site cat (CS 228)	Cv/ln/day	Min PSV/ Max AAV	Permitted pavement option

SCHEDULE 1B – FOUNDATION OPTIONS

Drawing ref.	Site ref./ Location/ Chainage			Foundation Class	Construction type	Design option	Subbase	
							Material	Layer thickness
				FC3	Reconstruction	Restricted	See schedule 3B	
				FC2	Reconstruction	Restricted	See schedule 3B	

SCHEDULE 2 – GENERAL REQUIREMENTS

Schedule 2: General Requirements –		
Grid for checking surface levels of pavement courses (SHW 702.4)	Longitudinal dimension	10m
	Transverse dimension	2m
Surface Regularity [702.5, Table 7/2]	Category of Road	A (≥50 km/h) or B (<50 km/h)
Interval for measurement of longitudinal regularity (SHW 702.7)		300m
Interval for measurement of transverse regularity (SHW 702.8)		20 m intervals over the first 500 m, then at 100 m intervals. Following any non-conformances, spacing shall revert to 20 m until a consistent surface finish is achieved.
Measurement of surface macro-texture is required		Yes
Average		As per Clause 921 or 942 for TSCS
Minimum - Maximum		As per Clause 918 or 942 for SSIM

A General Notes to Schedule 2:

A1 Application of bond coats:

- Bond coats shall be applied prior to the laying of a new asphalt layer on any bound substrate in accordance with the requirements of BS 594987.

A2 Formation of all joints

- Transverse joints shall be offset back with preceding layers by a minimum of 1000 mm.
- Longitudinal joints shall be in accordance with clauses 903.29 – 903.41.
- As per Clause 903.7, before work commences, the contractor shall submit a method statement to the Overseeing Organisation including:

  (i) laying and compaction procedures for each layer – including paving speed and paved width; size, type and number of rollers; number of roller passes; and laying and compaction temperatures.

  (ii) the joint formation procedures for each layer – including the location of longitudinal and transverse joints; and the method(s) of treating upstanding edges.

B. Temporary Works to Schedule 2:

B1 Any sections of temporary carriageway shall be capable of accommodating Heavy Goods Vehicles (HGVs).

B2 Temporary Transverse Ramps are to be constructed from sacrificial material by the Contractor where the level changes between the Proposed and Existing road levels.

SCHEDULE 3 – PERMITTED CONSTRUCTION MATERIALS

A) PAVEMENT PERMITTED CONSTRUCTION MATERIALS

Pavement Layer	**P1** (HFS Surface treatment)		**P2** (CAUTS Surface treatment)	
	Material Ref.	**Thickness (mm)**	**Material Ref.**	**Thickness (mm)**
Surface treatment	HFS	5	CAUTS	15
Surface Course	SC1	20-50	-	-
Pavement Layer	**P3** (SSIM Surface treatment)			
	Material Ref.	**Thickness (mm)**		
Surface treatment	SSIM	**-**		
Pavement Layer	**P4** (Resurfacing TSCS)		**P5** (Resurfacing HRA)	
	Material Ref.	**Thickness (mm)**	**Material Ref.**	**Thickness (mm)**
Surface Course	SC1	20-50	SC2	45-50
Pavement Layer	**P6** (Inlay TSCS)		**P7** (Inlay HRA)	
	Material Ref.	**Thickness (mm)**	**Material Ref.**	**Thickness (mm)**
Surface Course	SC1	50	SC2	50

Binder Course	BC1	60	BC1	60
Total Asphalt Thickness	**110 mm**		**110 mm**	
Pavement Layer	**P8 (Reconstruction Flexible for 80 msa)**		**P9 (Reconstruction Flexible for 80 msa)**	
	Material Ref.	**Thickness (mm)**	**Material Ref.**	**Thickness (mm)**
Surface Course	SC1	50	SC1	50
Binder Course	BC1	60	BC2	60
Base Course	BA1	210*	BA2	160*
Total Asphalt Thickness	**320**		**270**	
Foundation	Foundation Class 3 as per CD 225 (see Foundation options F1 to F5 in B)			
* Construction in multiple layers with compacted layer thickness in accordance with BS 594987				
Pavement Layer	**P10 (Reconstruction Flexible for 50 msa)**		**P11 (Reconstruction CRBM for 30 msa)**	
	Material Ref.	**Thickness (mm)**	**Material Ref.**	**Thickness (mm)**
Surface Course	SC1	50	SC1	50
Binder Course	BC1	60	BC1	50
Base Course	BA1	200*	BA7	250
Total Asphalt Thickness	**310**		**350**	
Foundation	Foundation Class 3 as per CD 225 (see Foundation options F1 to F5 in B)		Foundation Class 2 (see Foundation option F6 in B)	
* Construction in 2 layers with layer thickness selected in accordance with BS 594987				

Pavement Layer	**P12 (Reconstruction Composite for 80 msa)**		**P13 (Reconstruction Composite for 80 msa)**	
	Material Ref.	**Thickness (mm)**	**Material Ref.**	**Thickness (mm)**
Surface Course	SC1	50	SC1	50
Binder Course	BC1	60	BC1	60
Base Course	BA1	70	BA1	70
	BA3	240	BA4	200

Total Asphalt Thickness	**180**	**180**
Foundation	Foundation Class 3 as per CD 225 (see Foundation options F1 to F5 in B)	

Pavement Layer	**P14 (Reconstruction Composite for 80 msa)**		**P15 (Pedestrian-only footways and cycle-only cycleways)**	
	Material Ref.	**Thickness (mm)**	**Material Ref.**	**Thickness (mm)**
Surface Course	SC1	50	SC3	20
Binder Course	BC1	60	BC3	50
Base Course	BA1	70	-	-
	BA5	170		
Total Asphalt Thickness	**180**		**70**	
Foundation	Foundation Class 3 as per CD 225 (see Foundation options F1 to F5 in B)		SB1	100 *

* Based on a subgrade surface modulus >30 MPa

Pavement Layer	**P16 (Light-vehicle footways/ cycleways)**		**P17 (Heavy-vehicle footways /cycleways)**	
	Material Ref.	**Thickness (mm)**	**Material Ref.**	**Thickness (mm)**
Surface Course	SC3	20	SC3	30
Binder Course	BC3	50	-	-
Base Course	-	-	BA6	90
Total Asphalt Thickness	**70**		**120**	
Foundation	SB1	225 *	SB1	320 ** / 210**

* Based on a subgrade surface modulus between >30 MPa
** Based on a subgrade surface modulus between 30 MPa and 35 MPa
*** Based on a subgrade surface modulus >35 MPa

C. General Notes to Schedule 3:

C1 Layby construction materials:

- Laybys shall have the same general build-up as the adjacent carriageway, with the bituminous materials replaced with fuel resistant asphalt (FRA), with the FRA manufacturer advising on particular requirements for proprietary products.

B) FOUNDATION PERMITTED CONSTRUCTION MATERIALS

Restricted Foundation Design	**F1 (FC3 with Design subgrade surface modulus 30 MPa)**		**F2 (FC3 with Design subgrade surface modulus 30 MPa)**		**F3 (FC3 with Design subgrade surface modulus 60 MPa)**	
	Material Ref.	**Thickness (mm)**	**Material Ref.**	**Thickness (mm)**	**Material Ref.**	**Thickness (mm)**
Subbase	SB3	370	SB4	260	SB3	260
Restricted Foundation Design	**F4 (FC3 with Design subgrade surface modulus >50 MPa)**		**F5 (FC3 with Design subgrade surface modulus >95 MPa)**		**F6 (FC2 with Design subgrade surface modulus 50 MPa)**	
	Material Ref.	**Thickness (mm)**	**Material Ref.**	**Thickness (mm)**	**Material Ref.**	**Thickness (mm)**
Subbase	SB4	200	SB3	200	SB1 or SB2	280

SCHEDULE 4 – GENRAL REQUIREMENTS FOR CONSTRUCTION MATERIALS

Clause	**Details**	**Requirement**
801.2	Limiting distance for deposition of unbound mixtures, referred to in sub clause 801.2, in vicinity of concrete or cement bound materials, if different from 500 mm	500 mm
801.3	Limiting distance for deposition of unbound mixtures, referred to in sub clause 801.3, in vicinity of metallic, if different from 500 mm	500 mm
801.7	Depth up to which materials below finished road level shall not be frost susceptible.	450 mm
802.4	Allowable compacted thickness of unbound layers	In accordance with 802.4
802.14	Allowable compacted thickness of unbound layers in trafficking trial area	In accordance with 802.14
817	Method statement	In accordance with 817
817	Demonstration area	Required in accordance with 817
818.1	Whether induced transverse cracks are required; and the specified spacing of induced transverse cracks.	Yes
818.3	Whether induced longitudinal cracks are required; and the specified location of induced longitudinal cracks	Yes
882	Determination of the construction subgrade surface modulus	In accordance with 882
883	Demonstration area for performance foundation designs	In accordance with 883
884	Permanent works performance assessment for performance foundations	In accordance with 884
885	Top of foundation performance assessment	In accordance with 885
901.6	Requirements for resistance to fragmentation	In accordance with 901.6
901.7	Requirements for resistance to freezing and thawing	In accordance with 901.7

901.8	Requirements for cleanliness	In accordance with 901.8
902.2	Requirements for reclaimed asphalt	In accordance with 902.2
903.29	Requirements for positioning longitudinal joints	In accordance with 903.29
903.36	Requirements for treating cold upstanding edges.	In accordance with 903.36
903.38	Requirements for assessment of compaction at joints in base courses and binder courses.	In accordance with 903.38
903.40	Requirement for sealant to be applied to the top surface of all base and binder course joints.	In accordance with 903.40
903.43	The PSV requirement of any temporary running surface	In accordance with 903.43
925.2	TIAT is required for SSIM	In accordance with NG 918.3 and BS EN 12273

SCHEDULE 5 – REQUIREMENTS FOR CONSTRUCTION MATERIALS

Material Ref.	Clause	Description	Details Required	Requirement
HFS	924	High Friction Surfacing	Type Classification	In accordance with Table NG9/4
			Required declared PSV and maximum AAV category	See Schedule 1
CAUTS	923	Cold Applied Ultra-Thin Surfacing (CAUTS)	Traffic count in cv/l/d	See Schedule 1
			Site Category and Site Stress Level Classification	Select from Clause 923.8 and Table 9/4
			Initial texture depth	In accordance with Table 9/3 [921.2]:
			Whether surface macrotexture measurement is required	Yes
			Interval and frequency of macrotexture measurements	10 per 250m
			Required declared PSV category and maximum AAV category	See Schedule 1
			Road/Tyre noise level	0
			Minimum and maximum layer thickness	As per the Acceptance Scheme certificate
			Surface Macrotexture Performance Guarantee	2 years
			Surfacing Integrity Performance Guarantee	5 years
SSIM	918	Slurry Surfacing incorporating Microsurfacing (SSIM)	Required declared PSV and maximum AAV category	See appendix 7/7
			Binder recovery	In accordance with Clause 955
			Bond coat	In accordance with Clause 920

			Permitted road surface temperature range at application	4°C to 40°C
			Initial texture depth	In accordance with Table 9/3 [921.2]:
			Surface Macrotexture Performance Guarantee	2 years for trunk roads (including motorways); 1 year for all other roads
			End of Performance Guarantee texture depth	In accordance with Table NG 9/1
			Whether surface macrotexture measurement is required	Yes
			Interval and frequency of macrotexture measurements	10 per 250m
SC1	942, 908	Thin Surface Course System (Warm mix)	Maximum permitted upper (D) aggregate size	6/10/14 mm [1]
			Minimum declared PSV and Maximum AAV of coarse aggregate	See Schedule 1
			Is a polymer modified bond coat required	Yes
			Road/tyre noise level	3
			Resistance to permanent deformation	Level 1, 2 or 3 as appropriate
			Compacted layer thickness	as shown in Schedule 3
			Is Macrotexture measurement required	Yes
			Interval and frequency of macrotexture measurements	10 per 250m
			Initial texture depth	In accordance with Table 9/12
			Requirements for Surface Macrotexture – Performance Guarantee	Retained texture depth after 2 years
			Surface Integrity Performance Guarantee of surface course system	5 years from date of opening to

			Maximum production temperature	As per Table 9/1A (908.5)
			Water sensitivity	ITSRmin80
SC2	943	Hot Rolled Asphalt Surface Course (Performance Related Design Mixtures)	Mixture Designation:	HRA 35/14 F surf PMB des
			Composition	PD6691 Table C.1
			Resistance to permanent deformation classification	Class 2
			Resistance to permanent deformation to be monitored in the permanent works	No
	915	Chippings	Required declared Minimum PSV and Maximum AAV for coarse aggregate:	As Schedule 1 to this Appendix 7/1
			Required coated chipping:	14/20 mm
SC3	909	6 mm Dense Asphalt Concrete Surface Course	Mixture designation	AC 6 dense surf 70/100 or 100/150
BC1	929, 908	Binder Course Asphalt Concrete (Design Mixture) (Warm mix)	Mixture designation	AC20 dense bin 40/60 des
			Void content at refusal to be monitored in the permanent works	Yes
			Resistance to permanent deformation classification	Class 2
			Resistance to permanent deformation to be monitored in the permanent works	No
			Maximum production temperature	As per Table 9/1A (908.5)
			Water sensitivity	ITSR 80%
BC2	930, 908	EME2 Binder Course Asphalt Concrete (Warm mix)	Mixture designation	AC 10 EME2 bin 10/20 or 15/25 des
			Maximum production temperature	As per Table 9/1A (908)
			In-situ air void content	As detailed in Clause 930.12.
			Water sensitivity	i/C_{min75} (930.21)

BC3	906, 908	Dense Binder Course Asphalt Concrete with Paving Grade Bitumen (Recipe Mixtures) (Warm mix)	Mixture designation	AC 20 dense bin 40/60 rec
			Maximum production temperature	As per Table 9/1A (908.5)
BA1	929, 908	Dense Base Asphalt Concrete (Design Mixture) (Warm mix)	Mixture designation	AC32 dense base 40/60 des
			Void content at refusal to be monitored in the permanent works	Yes
			Resistance to permanent deformation classification	Class 2
			Resistance to permanent deformation to be monitored in the permanent works	No
			Maximum production temperature	As per Table 9/1A (908.5)
			Water sensitivity	ITSRmin80
BA2	930, 908	EME2 Base Course Asphalt Concrete (Warm mix)	Mixture designation	AC 14 EME2 base 10/20 or 15/25 des
			Maximum production temperature	As per Table 9/1A (908)
			In-situ air void content	As detailed in Clause 930.12.
			Water sensitivity	i/C_{min75} (930.21)
BA3	822, 830, 835	HBGM 1 (CBGM 1, FABGM 1, SBGM 1 and HRBBGM 1)	Laboratory mechanical performance category	C8/10, T3
BA4	822, 830, 835	HBGM 1 (CBGM 1, FABGM 1, SBGM 1 and HRBBGM 1)	Laboratory mechanical performance category	C12/16, T4
BA5	822, 830, 835	HBGM 1 (CBGM 1, FABGM 1, SBGM 1 and HRBBGM 1)	Laboratory mechanical performance category	C15/20, T5
BA6	906	Dense Base Course Asphalt Concrete with Paving Grade Bitumen (Recipe Mixtures)	Mixture designation	AC 32 dense base 40/60 rec

BA7	948	Ex Situ Cold Recycled Bound Material	Material family	QVE
			Indirect Tensile Stiffness modulus	Zone B3 (3100MPa)
			Trafficking trial needed	Yes
SB1	803	Type 1 unbound mixture	Mixtures containing crushed gravel	Permitted subject to assessment using a trafficking trial in accordance with Cl802.12
			When used for realigning or widening existing pavement, the permeability shall be equal to or greater than the existing material to provide continuity of existing foundation drainage.	In accordance with 803
SB2	807	Type 4 (asphalt arisings) unbound mixture	Trafficking trial required	Yes
SB3	821 or 840	HBGM 5 or HSS	Laboratory mechanical performance category	C3/4
SB4	821 or 840	HBGM 5 or HSS	Laboratory mechanical performance category	C8/10
Reg	937	Stone Mastic Asphalt (SMA) Regulating Course	Mixture designation:	SMA 6 reg 40/60 SMA 10 reg 40/60 SMA 14 reg 40/60 [3]
			Resistance to permanent deformation (937.4):	Class 2 [2]
			Whether resistance to permanent deformation is to be monitored in the permanent works (937.6)	Yes

Notes:

[1] For Roundabouts, Bends < 250m radius and junctions where turning radius movements <250m. the maximum aggregate size is 10mm. In all other cases the maximum aggregate size is 14mm. The aggregate size should be selected depending on the layer thickness, in accordance with Table 9/11 from MCHW Series 900.

[3] Aggregate size shall be selected depending on the regulating layer thickness, which shall be in accordance with the permitted laying thicknesses in BS 594987. It is not good practice to leave a

very thin layer of material and it is not possible to regulate to 0 mm. If regulating layer has to be less than 15mm, it can be compacted to 15mm and then planed to the desired thickness. SMA 6 regulating can be laid 15-40mm; and SMA 10 regulating can be laid 20-50mm; SMA 14 regulating can be laid 30-60mm.

SCHEDULE 6: THIN SURFACE COURSE SYSTEMS: INFORMATION TO BE PROVIDED BY THE CONTRACTOR

The Contractor shall provide the following information to the Overseeing Organisation prior to commencement of the works:

i. The declaration of performance for the thin surface course system.

ii. The declaration of performance for the aggregate(s) used in the thin surface course system.

iii. The Installation Method Statement as required in sub-Clause 942.12.

iv. SIPT documentation as required in sub-Clause 942.29.

v. If regulating material is to be used, evidence of its deformation resistance either independently or in combination with the Thin Surface Course System [942.14].

SCHEDULE 7: BINDER DATA REQUIREMENTS

The following data shall be provided to the Overseeing Organisation for modified binders. The data should not be more than 12 months old. A table in which the binder data may be recorded is given at the end of this section.

For work carried out for National Highways, a copy of the results should be handed to the Overseeing Organisation, to be forwarded to: Pavement Engineering Team at National Highways, Woodlands, Manton Lane, Manton Industrial Estate, Bedford MK41 7LW.

I. Binder Samples

Bituminous binders shall be sampled according to BS 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.

II. Penetration

Binder penetration at 25°C (BS EN 1426), 100g 5 seconds, and at 5°C, 200g 60 seconds, for the binder as supplied, after hardening in the Rolling Thin Film Oven Test (RTFOT) in accordance with BS EN 12607-1, and after RTFOT and Ageing in the Pressure Ageing Vessel at 85°C (PAV85) in accordance with BS EN 14769.

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 (□) determined in accordance with BS EN 14770 for binder as supplied, after RTFOT, and after RTFOT and PAV85 Ageing in accordance with BS EN 14769.

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 accordance with BS EN 13399. 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. Manufacturers of pre-blended modified binders shall state what precautions are necessary to ensure that adequate homogeneity is maintained during storage.

V. Photomicrograph
A typical photomicrograph of the modified binder and binder using 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. A photomicrograph is intended only to indicate the presence of a polymer modifier in the binder and should not be used as an indicator of performance. Guidance on the interpretation of photomicrographs is given in BS EN 13632 Visualisation of polymer dispersion in polymer modified bitumen.

VI. Cohesion
Vialit Pendulum cohesion test curve of the binder, in accordance with BS EN 13588 for the binder as supplied, after RTFOT, and after RTFOT and PAV85 Ageing in accordance with BS EN 14769.

VII. FRAASS Brittle Point
FRAASS brittle point measured using BS EN 12593 shall be provided on the binder as supplied, after RTFOT, and after RTFOT and PAV85 Ageing in accordance with BS EN 14769.

Summary of binder data (to be completed by contractor):

Manufacturer of Binder:			
Product name:			
Batch ref:			
Binder type:			
Binder source:			
Softening point difference in storage stability test			
Test	Supplied binder	After RTFOT	After RTFOT and PAV85
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 maximum peak value J/cm2	#	#	#
Product identification test	#	#	#
Complex shear (stiffness) modulus (G*) and phase angle (δ) data.			
Fraass brittle point			
Other properties the Contractor considers useful			

Where indicated with # the Contractor shall attach a graphical output to this schedule.

SCHEDULE 8: MIXTURE DATA REQUIREMENTS

The following data should be provided to the Overseeing Organisation for materials designed in accordance with Clause 901.17 and Clause 929 in respect of the proposed mixture.

For work carried out for the National Highways, a copy of the results should be handed to the Overseeing Organisation, to be forwarded to: Pavement Engineering Team at National Highways, Woodlands, Manton Lane, Manton Industrial Estate, Bedford, MK41 7LW.

I. Saturation Ageing Tensile Stiffness (SATS) Durability Index.

APPENDIX 7/2 – EXCAVATION, TRIMMING AND REINSTATEMENT OF EXISTING SURFACES

Locations of the existing pavement to be excavated are shown in the drawings.

Scheme Specific Clauses

- The cut edges shall be neat, vertical and in straight lines. Immediately before bituminous layers are reinstated, the edges of the existing material shall be cleaned of all loose material and be coated with an appropriate hot bituminous binder, or equivalent material, in accordance with MCHW Clause 903.
- See Appendix 7/9 for cold milling/planing of Bituminous Bound Flexible Pavement. Cold milling/planing shall be carried out in accordance with Clause 709.
- After milling, the milled surface shall be assessed for surface regularity as specified in Schedule 2 of Appendix 7/1.
- After milling, the milled surface shall be visually inspected and any lenses of existing surfacing material remaining shall be removed and the milled surface shall be thoroughly swept to ensure removal of all debris. If any crack or damaged joint is apparent in the substrate, a sealing system shall be applied (refer to Appendix 7/11).
- Prior to overlay, existing surfaces shall be prepared in accordance with BS 594987.

APPENDIX 7/4 – BOND COATS, TACK COATS AND OTHER BITUMINOUS SPRAYS

Scheme Specific Clauses

- **Sheet 1:Information to be provided by the compiler**

  Locations of areas of bond coats and other bituminous sprays are to coincide with the Pavement Treatments identified in the drawings.

  All carriageway areas which are to be overlaid with new bituminous materials shall be treated with bond coat prior to the laying surfacing materials in accordance with clause 920 and BS 594987 unless the system has specific requirements.

  All ironwork and kerbing are to be painted on the vertical faces in accordance with MCHW 903.22, to the level of the proposed finished surface level, prior to laying new material.

  Bond Coat (use of a Tack Coat is not permitted)

  The preparation for and application of bond coat shall be as per Clause 920, or the installation method statement for the thin surface course system.

  Rate of Spread

  The rate of spread shall comply with BS 594987:2015+A1:2017 unless the system has specific requirements.

  Limitations

  (i) The bond coat shall be allowed to break before it is overlaid.
  (ii) Trafficking of bond coat shall be restricted to plant and equipment used for laying the subsequent layer.

- **Sheet 2: Information to be provided by the Contractor**

  The Contractor shall provide the following information with his tender, or prior to the commencement of the work:

Information to be provided by the contractor	Requirement
Product or products the contractor proposes to use together with their data sheet, product identification data, and cohesivity data as specified. (920.2, 920.3, 9204, 920.5).	The contractor shall fill out the **Binder Data Sheet** (below) for each product they propose to use.
BS EN ISO 9001 Certificate.	For each product, the Contractor shall supply 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.
Spraying equipment proposed, and a test certificate (920.7, 920.9).	Spray equipment to meet the requirements in 920.7 and 920.9. Contractor to supply a copy of the test certificate of proposed equipment to the Overseeing Organisation.
Source or sources of proposed blinding material (920.12).	Not applicable.
Contingency plans in the event of any breakdown.	Contractor to insert details.
The results of any other tests or other data the Contractor considers would assist the Overseeing Organisation in assessing the technical merit of the treatment.	Contractor to supply this information to the Overseeing Organisation. Including, but not limited to: (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 (where applicable). The data supplied should not be more than 6 months old.

Binder Data Sheet:

Binder Data Sheet - Appendix 7/4 (08/08)	**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 955	Aged in accordance with Clause 955
Penetration at 25°C 0,1 mm (100 g and 5 secs)		
Penetration at 5°C 0,1 mm (100 g and 5 secs)		
Vialit pendulum cohesion (BS EN 13588) maximum peak value J/cm²	The Contractor shall attach a report and graphical output to this schedule as specified in BS EN 13588.	The Contractor shall attach a report and graphical output to this schedule as specified in BS EN 13588.
Product identification test. The provisional data for identification and ageing is optional for unmodified bituminous emulsions to BS EN 12591 and for bitumen to BS EN 12591 and cutback bitumen to BS EN 13924-1. Complex shear (stiffness) modulus (G*) and phase angle (δ) data. See BS EN 14770.	The Contractor shall attach a report and graphical output to this schedule as specified in BS EN 14770.	The Contractor shall attach a report and graphical output to this schedule as specified in BS EN 14770.
Other properties the Contractor considers useful: 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 dampness; etc. Temperature max: Temperature min:		

APPENDIX 7/6 – BREAKING UP OR PERFORATION OF EXISTING PAVEMENT

The areas of redundant pavement and paving which are required to be broken up or perforated shall be dealt with in accordance with the Site Waste Management Plan (SWMP).

Breaking up shall mean that the whole of the paved surface shall be broken, for the full depth of the bituminous or bound construction.

Perforation shall mean that not less than 10 per cent of the paved surface shall be broken for the full depth of the bituminous or bound construction. The perforations shall be evenly distributed such that they are spaced no greater than 1000 mm apart to allow free drainage.

Perforations and breaking up of existing pavement shall avoid damaging existing drainage and utilities.

Breaking up Information

Refer to the drawings for existing pavement that cannot be retained

APPENDIX 7/7 – SLURRY SURFACING INCORPORATING MICROSURFACING

Scheme Specific Clauses

- **Sheet 1:Information to be provided by the compiler**

  Site information:

  Treatment location including plan where appropriate, e.g. road no., name, OS grid reference of start and finish, road lane.

  Traffic count, including total and commercial vehicle count require for each lane.

  Traffic speed, including 85 percentile and site speed limit.

  Category of site, the letter category in accordance with DMRB 7.5.1 CD 236

  Description of the existing surface, including macrotexture, existing defects, variability, etc.

  Slurry information:

  Thickness of Slurry Surfacing. This is not normally required, nominally 15mm for microsurfacing.

  Guarantee period, where it differentiates from Appendix 7/1, schedule 5.

  Minimum declared PSV of coarse aggregate, in accordance with DMRB 7.5.1 CD 236, Table 3.3a.

  Maximum AAV of coarse aggregate, in accordance with DMRB 7.5.1 CD 236, Table 3.13.

  Preparation and masking requirements, including bond coat, longitudinal joints, spreading conditions, etc.

  Definition of colour, if required.

  Application information:

  Surface finish required for footways, if not through transverse brushing.

  Maximum texture depth after 4 weeks trafficking. This is only required where tyre-road noise emission is a problem, normally 3mm Sand Patch texture depth.

  Maximum percentage decrease in macrotexture initially measured and at the end of the guarantee period, normally 40%.

  Category of area defects (% area affected) acceptable, in accordance with Table NG 9/2.

  Category of linear defects (m per 100m) acceptable, in accordance with Table NG 9/3.

  Class of longitudinal regularity, in accordance with Table NG 9/6 and Table NG 9/7.

- **Sheet 2:Information to be provided by the Contractor**

  Materials information:

  The declaration of performance for the slurry surfacing in accordance with BS EN 12237.

  Design Proposal for Slurry Surfacing for each location and target binder content with tolerances.

  Estimated Design Life of the Slurry Surfacing for each location.

  Proposed performance categories of the coarse aggregate together with statements of properties including target grading, declared PSV, and AAV.

  Proposed performance categories of the fine aggregate including target grading and other constituents together with statements of properties.

  Proposed binder declaration of performance.

  Construction information:

  A method statement for each site or group of similar sites showing how it is proposed to carry out the works in conformance with the specification. Contractors will be expected to commit enough resources to carry out the proposed design: the type and age of the Slurry Surfacing Machine should be detailed.

  Proposals for traffic control and aftercare for each site, and reaction times for:

  (i) Carrying out remedial measures.
  (ii) Sweeping.
  (iii) Site visits with the Overseeing Organisation.

  Contingency plans in the event of any breakdown of plant or failure of the Slurry Surfacing.

  An ‘As Built Manual’, as specified in 918.29, not more than 30 days after completion of the work.

  If available, any other data provided in order to assist the Overseeing Organisation to assess the technical merits of the Design Proposal.

APPENDIX 7/9 – COLD-MILLING (PLANING) OF BITUMINOUS BOUND FLEXIBLE PAVEMENT

1. Cold milling of the existing pavement shall be carried out in accordance with Appendix 7/2 to accommodate the pavement design outlined in Schedule 1 of Appendix 7/1 and the drawings.
2. Any surplus material and debris shall be dealt with in accordance with the Site Waste Management Plan (SWMP).
3. Sweeping prior to cold milling is not required unless the Contractor deems it necessary in order to facilitate recycling of the cold milled material arisings.
4. Existing tar binder is identified in Schedule 1 of Appendix 7/1.
5. Any disturbance in the milled surface caused by the milling operation shall be rectified prior to overlay.

Cold- Milling Information

Cross reference	Cold milling must be carried out as required to accommodate the pavement design shown in the drawings from Appendix 0/4.
If cold milling is not to be constant depth, details of planing profile to be provided (709.1)	As per Appendix 0/4.
Requirements for electronically sweeping the carriageway to identify any buried ironwork (709.11)	All areas to be milled shall be electronically swept due to constraints on programme and length of works along scheme.
Inlay treatments.	See Schedule 1 for indicative areas of existing pavement to be milled to receive the inlay treatment. As a minimum, unless specified otherwise, the existing surface course shall be fully removed, then: • at underbridges: subject to confirmation that the remainder (below the surface course) existing materials are acceptable and can be retained, then no further milling is

	required except to facilitate construction. • at locations for the inlay treatments: the existing pavement can generally be retained without structural treatment, i.e. no further milling is required except to facilitate construction. Refer to the drawings for specific requirements.

APPENDIX 7/11 – OVERBAND AND INLAID CRACK SEALING SYSTEMS

1. Crack and joint sealing systems shall comply with Clause 711.
2. Crack and joint sealing systems shall have current Acceptance Scheme Certificate, or equivalent.
3. Grade F - Flexible systems shall be used except for inlaid joint repairs and longitudinal crack repairs which may be situated in the wheel tracks (including in temporary works) where Grade H shall be used.
4. Hot or cold applied systems may be used, subject to manufacturer's recommendation on application under the prevailing weather conditions.
5. Treatments shall be black in colour.
6. When the treated course is the surface course, the minimum PSV for chippings applied to the repair systems shall be 68; otherwise as stated in Schedule 1.
7. When the treated course is the surface course, the initial skid resistance shall be >60 SRV as measured by the pendulum tester using the narrow slider in accordance with BS EN 13036-4.
8. Installation and Quality Control Procedures for all systems shall be in accordance with the approved Certificate for each system and the current Method Statement agreed by the Overseeing Organisation. The results of all quality control checks carried out on site by the Contractor and quality assurance information shall be compiled in accordance with the requirements of the Acceptance Scheme Certificate or equivalent certificate.
9. Preparation shall be in accordance with the installation method statement and shall include cleaning and removal of debris and contamination with a hot air lance. The substrate shall be dried fully prior to application of crack and/or joint treatment.
10. Depending on the width(a) of the crack / joint the appropriate Sealing System shall be agreed with the Overseeing Organisation.

- Crack and/or joint up to 5 mm wide (including no damaged joints): Overbanding(c) sealing systems, using a surface applied band up to 40 mm wide, using a fluid product(b) that penetrates the crack / joint.
- Crack and/or joint between 5 mm and 20 mm: Fill and Overbanding(c) Systems for repairing and sealing, by infilling the open crack / joint and then applying a surface mounted sealing band up to 200 mm wide.
- Crack and/or joint widths over 20 mm: Inlaid Crack/Joint repairs - Rout or plane out over the crack(s) and/or joint and reinstate the pavement surface flush with its original profile by infilling the void. The depth for inlaid crack and/or joint repairs shall be 20 mm to 40 mm as appropriate to seal and repair the crack or joint, and a maximum of 600 mm width. If a wider inlay is needed a patch shall be used. The selected sealing system shall be able to accommodate the anticipated depth of treatment as defined in the PRODUCT ACCEPTANCE SCHEME certificate (or equivalent). In areas subject to milling operations,

where a crack would extend in the pavement below the specified milling depth, a crack sealing operation selected from the above options shall be undertaken.

- Where frequent cracking is evident and/or the inlay should be wider than 600 mm to cover the cracks/joint, then patching works shall be carried out as agreed with the Overseeing Organisation.

The following information shall be provided by the contractor:

- Confirmation from the Certificate Holder that the installer is approved for installation of their proposed system.
- A copy of the Method Statement in line with the Acceptance Scheme Certificate or equivalent certificate for the chosen system.
- A copy of the material data sheets and/or company COSHH sheets.
- The results of all quality control checks carried out on site by the Contractor and quality assurance information compiled in accordance with the requirements of the Acceptance Scheme Certificate or equivalent, including results from surveillance visits shall be made available to the Overseeing Organisation upon request.

Notes:
(a) Crack width assessment shall include spalled material.
(b) This system shall be used after removal of white lines if the surface is damaged.
(c) The ‘overbanding’ activity identified for treatment of cracks or joints up to 20mm wide can be omitted where a new asphalt layer is being provided above AND this incorporates a bond coat, e.g. where cracking is identified in the binder course following planing/milling to remove the existing surface course, and where the proposed new Thin Surface Course System (TSCS) incorporates a bond coat, then there is no requirement for overbanding to seal the surface of the binder course as the bond coat to be applied as part of the TSCS will achieve this.

APPENDIX 7/22 – REPAIRS TO POTHOLES

General

- All loose material shall be removed before filling the hole.
- All standing water shall be removed before filling the hole.
- The filling material shall be compacted by a suitable means.
- The surface of the compacted material shall be level with that of the adjacent road.

Road Stud Holes

- Fill road stud socket with 6 mm bituminous instant road repair material or equivalent.

Holes in Paved Areas

- For holes less than 0.5 m^2 – fill with 6 mm bituminous instant road repair material or equivalent.
- For holes greater than 0.5 m^2 – fill with 6 mm nominal size dense bitumen macadam surface course.
- Holes shall be backfilled with materials compacted to refusal with a circular headed vibrating hammer in layers not exceeding 75 mm thick.

APPENDIX 11/1 – KERBS, FOOTWAYS, CYCLEWAYS AND PAVED AREAS

Permitted Kerb options

1. Kerbs that have been disturbed during the works shall be re-installed in accordance with Series 1100. If the kerbs are defective, these shall be replaced “like for like” unless otherwise agreed with the Overseeing Organisation.

Footways and cycleways

1. See Appendix 7/1 for permitted pavement constructions and materials.

APPENDIX 14/3 – TEMPORARY LIGHTING

1. Temporary lighting shall be agreed with the Overseeing Organisation and it shall be in accordance with Clause 1405.

APPENDIX 26/1 – ANCILLARY CONCRETE

APPENDIX 26/2 – BEDDING MORTAR

1. Compressive strength requirements shall be as in Clause 2601.1(i). The compiler shall provide details if the requirements are different from the requirements of Clause 2601.1(i).