**Appendix 2 – Specification (DRAFT)**

**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 0/5: Special national alterations of the Overseeing Organisation of Scotland, Wales or Northern Ireland.

Appendix 0/4 contains list of the Drawings.

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

**3** An Additional Clause as indicated by a suffix ‘A’ in Appendix 0/5 is an alternation originating from the Overseeing Organisation of Scotland, Wales or Northern Island. An Additional Clause as indicated by a suffix ‘AR’ in Appendix 0/1 is a contract specific alteration.

**4** An Substitute Clause as indicated by a suffix ‘S’ in Appendix 0/5 is an alternation originating from the Overseeing Organisation of Scotland, Wales or Northern Island. A Substitute Clause as indicated by a suffix ‘SR’ in Appendix 0/1 is a contract specific alteration.

**5** An Cancelled Clause as indicated by a suffix ‘C’ in Appendix 0/5 is an alternation originating from the Overseeing Organisation of Scotland, Wales or Northern Island. 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 contract specific Appendix shall be deemed to refer to the corresponding Substitute Clause number or contract specific Appendix listed in Appendix 0/1 or 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 which is not used shall be deemed not to apply.**11** Where a Clause in the Specification is prefixed by an # this indicates that this particular Clause has a substitute National Alteration for one or more of the Overseeing 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 Organisations.

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

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

**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 London Borough of Enfield.

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

**14** Where Standards and other documents are incorporated into the Contract by reference the respective edition used shall be that which is current on the Contract Reference Document Date unless otherwise stated in the Specification.

**Schedule of Pages and Relevant Publication Dates**

|  |  |  |
| --- | --- | --- |
| Series/Appendix | Page Number | Publication Date |
| 000 | 1 to 3  6 to 7F  4 to 5 | May 2014  February 2016  March 2020 |
| 100 | 1 to 2, 4 to 9, 12 to 29F, WF1, N2 to N11F  3, 10 to 11, N1 | May 2014  December 2014 |
| 200 | 1 to 3F | February 2016 |
| 300 | 1  4  2 to 3, 5 to 6F | May 2001  November 2002  May 2008 |
| 400 | 1, 9 to 11, 13, 17 to 21, 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  69 | February 2016  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 | 3, 5 to 7, 21 to 32 | May 2018 |
| 900 | 1 to 2, 4, 8 to 20, 33 to 79F | July 2019 |
| 1000 | 1 to 51F | January 2020 |
| 1100 | N1F  3  1 to 2, 4 to 6F | November 2006  August 2008  February 2017 |
| 1200 | 5  2 to 3, W1F  1, 14 to 16F  4, 9 to 11, 13  12  6 to 7, N1 to N4F  8 | May 2001  August 2003  May 2004  May 2005  November 2006  November 2007  May 2008 |
| 1300 | N2F  3 to 4  1, 5 to 10, 12F  2, 11 and N1 | November 2003  November 2004  November 2005  May 2006 |
| 1400 | 2, N1F  1, 3 to 9F | May 2001  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  2, 6 to 8, 10 to 14, 16, 19, 27 to 28, 32 to 34, 36, 37, 39 to 42, 44 to 48  3, 20 to 23, 43 | March 1998  November 2003  November 2005 |

**Schedule of Pages and Relevant Publication Dates (continued)**

|  |  |  |
| --- | --- | --- |
| 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 35F | August 2014 |
| 1900 | 1 to 35F, S1 to S2F | August 2014 |
| 2000 | 1, 3 to 4F  2 | May 2001  November 2004 |
| 2100 | 1 to 2F | February 2016 |
| 2300 | 1  2 to 3F | March 1998  May 2001 |
| 2400 | 1, 4, 7F  2  3, 5 to 6 | May 2005  May 2006  May 2008 |
| 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 | 2 to 4  5  6  7 | November 2003  November 2004  May 2005  November 2006 |
| 2600 | 1, 8F | March 2020 |
| 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 | 1, 4 to 19F, S1F  2 to 3 | May 2005  November 2008 |
| 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 |
| Appendix E | 1F | May 2014 |
| Appendix F | 1 to 60F | March 2020 |
| Appendix G | Not used |  |
| Appendix H | 1  2  3  4 to 9F | May 2004  November 2005  November 2006  November 2008 |

**APPENDIX 0/1 CONTRACT – SPECIFIC ADDITONAL, SUBSTITUTE AND CANCELLED CLAUSES, TABLES AND FIGURES INCLUDED IN THE CONTRACT.**

**List of Additional Clauses, Tables and Figures**

|  |  |
| --- | --- |
| **Clause No.** | **Title** |
| 127AR | Structures & Mechanism of Contract |
| 128AR | Care & Maintenance of Road Network |
| 129AR | Matters Affecting the Public |
| 130AR | Avoidance of Nuisance |
| 131AR | Maintaining Flow in Existing Sewers |
| 132AR | Works Affecting Watercourses |
| 133AR | 24 Hours a Day Communication System |
| 134AR | Identity Marks for Vehicles |
| 135AR | Contractor’s Representative |
| 136AR | Protection of Private Property |
| 137AR | Temporary Traffic Signals |
| 138AR | Safety on Site |
| 139AR | Order of the Works |
| 140AR | Storage of Materials & Plant on Road |
| 141AR | Advertisements & Graffiti |
| 142AR | Prevention of Fly Tipping |
| 143AR | Records |
| 144AR | Employment of Employer’s Staff |
| 145AR | Progress Meetings |
| 170AR | Statutory Authorities. Supply of Service |
| 171AR | Possession of Site |
| 172AR | Protection of Street Furniture, Fences, etc |
| 173AR | Protection of Trees |
| 174AR | Working Outside Normal Working Hours |
| 175AR | Sunday Working |
| 176AR | Supervision of Works |
| 177AR | Vehicles Parked on the Site and Notification to Residents |
| 180AR | Pelican/Toucan/Pedestrian Crossings |
| 270AR | Protection of Street Furniture |
| 271AR | Transfer of Waste |
| 770AR | Surface Removal |
| 771AR | Surface Regularity |
| 772AR | Cut-Back Material |
| 773AR | Joints |
| 970AR | Saw Cutting Existing Pavements |
| 971AR | Pavement Reinforcement Geogrids |
| 972AR | Pavement Reinforcement (Composite Geogrid) |
| 973AR | Pavement Reinforcement (Self-Adhesive Geogrid) |
| 974AR | Stone Mastic Asphalt TS 2010 Spec |
| 1070AR | Carriageway and Haunch Recycling |
| 1170AR | Natural Stone Kerb, Channel and Quadrant Units |
| 1171AR | Granite Kerbs |
| 1172AR | Natural Stone Setts |
| 1173AR | Reconstituted Stone Products |
| 1174AR | Precast Concrete Flags Artificial Stone & Natural Stone Paving |
| 1175AR | Handling Kerbs & Slab – Reducing the Risks of Musculoskeletal Disorders |
| 1176AR | Footway Crossovers |
| 2470AR | Brick Replacement and Re-Pointing |

**List of Substitute Clauses, Tables and Figures**

|  |  |
| --- | --- |
| **Clause No.** | **Title** |
| 110SR | Information Boards |
| 202SR | Existing Trees, Bushes and Hedges |
| 203SR | Explosives and Blasting |
| 303SR | Temporary Fencing |
| 607SR | Explosives and Blasting for Excavation |
| 1101.1SR | Precast Concrete Kerbs, Channels, Edgings & Quadrants |

**List of Cancelled Clauses, Tables and Figures**

|  |  |
| --- | --- |
| **Clause No.** | **Title** |
| 102CR | Vehicles for the Overseeing Organisation |
| 103CR | Communication System for the Overseeing Organisation |
| 120CR | Recovery Vehicles for Breakdowns |
| 125CR | Temporary Closed Circuit Television (CCTV) System for Monitoring Traffic |

**ADDITIONAL CLAUSES, TABLES AND FIGURES**

**SERIES 100 PRELIMINARIES**

**Clause 127 AR: Structures and Mechanisms of Contract**

1. **Working with Other Contractors:**

In circumstances where other contractors employed by the Employer are involved in the same scheme with the Contractor, the Contractor is required to take all possible steps to achieve a harmonious working relationship with all other contractors. In circumstances where other contractors employed by the Employer are within or near the Site with the Contractor, whether or not the other contractors are engaged upon the same scheme, the Contractor is required to co-operate with the others in exchanging information, which the Contractor and or they may need in connection with the Works or otherwise. The Engineer may require the Contractor, or any other contractor, to be the Lead Contractor. The Lead Contractor shall co-ordinate the work of all contractors on the Site, and where necessary other bodies including Statutory Undertakers. The Lead Contractor shall have powers to issue instructions on behalf of the Employer to other contractors conditioned to accept a Lead Contractor. Such instructions may be on matters affecting Site management, Site safety and programming and on no other matter. Where, exceptionally, the Lead Contractor is unable to achieve appropriate coordination of Parties he shall inform the Engineer.

2. **Role of Principal Contractor:**

The Contractor will take on the role of Principal Contractor unless otherwise instructed by the Engineer. The Principal Contractor shall be required to fulfil all CDM Regulations duties with respect to co-ordinating the work of all contractors on the site, and where necessary other bodies including statutory undertakers in a safe working environment. The Contractor shall have powers to issue instructions on behalf to other contractors conditioned to accept a Principal Contractor. Such instructions may be on matters affecting site management, site safety, programming and on no other matter. Where, exceptionally, the Principal Contractor is unable to achieve appropriate co-ordination of Parties he shall inform the Engineer.

**Clause 128AR: Care and Maintenance of Road Network**

1 **Highway Maintenance Functions:**

The Contractor shall, in accordance with any directions from the Engineer, afford facilities and make arrangements for the highway authority and its other contractors to continue to carry out normal maintenance functions. This shall include ground maintenance and street cleaning.

2 **Statutory Undertakers and Emergency Services:**

The Contractor shall, in accordance with any instructions from the Engineer, afford facilities and make arrangements for Statutory Undertakers to access their plant and mains in accordance with their rights under the New Roads and Street Works Act 1991. The Employer shall afford facilities to the Emergency Services in carrying out their statutory duties, including affording full access to any property in the vicinity of any Works and access to any fire hydrant.

3 **Damage or Soiling of the Highway:**

The Contractor shall take the utmost care to avoid damage to or soiling of any carriageways or footways in the vicinity of the Works whether by himself, his direct employees, his sub-contractors or his suppliers. In particular, the Contractor shall ensure that the wheels of all vehicles leaving any site are cleaned of all mud, earth etc. before running on the public highway. The Contractor shall not deposit any earth, rubbish or material or other debris on any carriageways or footways so as in the opinion of the Engineer unnecessarily to hinder, obstruct or annoy any person using or wishing to use the Network. The Contractor shall pay to the highway authority in full such costs as it may incur in repairing or cleansing any such damage or soiling or removing deposited items. Alternatively the Engineer may order the Contractor to execute such repairs cleansing or removal as the Engineer may consider necessary and such orders shall be carried out expeditiously.

4 **Network not to be Used as Depots:**

The Contractor shall not make use of the Network for depositing or storing plant or materials other than such plant, materials, tools and implements which from time to time may be required for immediate use on the Site.

5 **Highway Closures:**

The Contractor shall not close any part of any street or public way, or occupy any land for materials, without first obtaining the permission of the Engineer. Such permission will not be unreasonably withheld. The Contractor shall not continue to keep closed such portion of any street or public way or continue to occupy such land beyond the time for which such permission has been given. Closure of highway may be affected to facilitate the Contractor's programme subject to eight weeks' notice being given to the Engineer.

**Clause 129AR: Matters Affecting the Public**

1 **Access to Frontages of Properties:**

**The London Borough of Enfield** is characteristically a densely populated urban environment with substantial pockets of industrial and commercial development. Many residents are Council tenants, some in large estates including tower blocks. Many residents are from ethnic minorities including significant numbers who do not speak English.

It is inevitable that much of the activity envisaged within this Contract will take place in close proximity to residential properties and businesses. Works and services must therefore be carefully planned and programmed so as to fully take into account the needs of frontagers and others affected. The Contractor is required to engage with the residential and business communities such as to reduce inconvenience to a minimum.

The Contractor shall provide and maintain at all times safe and sufficient pedestrian and vehicular access to all properties in the vicinity of and adjacent to any Works.

2 **Notification to Residents Occupiers and Vehicle Owners:**

Certain works will unavoidably necessitate:

* clearing areas of carriageway of vehicles to facilitate the Contractor's operations
* working at one location for more than one day
* disrupting the access to any property, including residential and business

The Contractor shall be responsible for notifying residents, occupiers and vehicle owners, etc. at least 48 hours in advance of such disruption. Such notification shall be made by the use of standard letters prepared by the Contractor to the satisfaction of the Engineer which will require the insertion by the Contractor of the precise details of the proposed disruption. The Contractor must confirm to the Engineer prior to the commencement of the works that residents, occupiers and vehicle owners, etc. have been notified.

The costs required to comply with this Clause shall be covered by the prices quoted in the Preliminaries of the Schedule of Rates and Prices.

3 **Removal of Vehicles:**

On no account are vehicles to be moved by the Contractor without the permission of the owner or his/her authorised agent, unless in the presence of and with the permission of a Police Officer. In certain circumstances it may be possible for the Engineer to assist with removal of vehicles making use of the Employer's contractor for towing away vehicles.

**Clause 130AR: Avoidance of Nuisance**

1 **Traffic:**

Notwithstanding the provisions of Clause 129AR above, the Contractor shall at all times be under an obligation to minimise the effects of his operations on traffic. He shall in general seek to keep as short as possible operations within the highway, and shall seek to carry out such operations at times chosen so as to minimise disruption to traffic flows. He shall so arrange the transport of plant and materials that any additional traffic as arises shall be limited as far as is reasonably possible so as to cause no avoidable congestion or damage to the highway or neighbouring property.

2 **Contractor to use Appropriate Plant:**

All constructional plant shall be of such type and size as the Engineer may approve and shall not be unduly noisy. The Engineer may require the Contractor to suspend temporarily or permanently the use of any plant on the grounds that such is avoidably the cause of undue noise or exhaust pollution nuisance to neighbouring residents or businesses. In such circumstances the Contractor shall change the method of performing the Works at his own cost and shall have no claim against the Employer in this matter. All mechanical hand tools, all pneumatic tools, and all other plant and equipment shall be fitted with mufflers of an approved type. Prior approval of the Engineer will be required should the Contractor wish to use a vehicle-mounted type concrete breaker.

**Clause 131AR: Maintaining Flow in Existing Sewers**

Flow in the existing sewers shall be maintained at all times. The Contractor shall note that existing sewers may surcharge during storms. Any proposals involving a sewer connection or the diversion of flow in sewers, and any proposed measures to maintain the flow in sewers, shall under all circumstances be subject to the approval of the Engineer. The Contractor shall give to the Engineer a minimum of three days' notice prior to carrying out any work affecting existing sewers. Temporary measures for carrying surface water or foul sewage flows shall provide no less capacity than the pre-existing arrangement. The Contractor shall restore and make good any existing field drains, house drains or other drains, pipes sewers or other existing sewerage facilities interfered with and which are not to be abandoned.

**Clause 132AR: Works Affecting Watercourses**

The Contractor shall notify the Engineer in writing 14 days in advance of his intention to start any part of any Works affecting a watercourse.

The Contractor shall be responsible for maintaining watercourses within the Site in effective working condition at all times.

The Contractor shall take all practical measures, which shall be subject to the prior approval of the Engineer, to prevent the deposition of silt or other materials in, or the pollution of, any existing watercourse, lake, reservoir, borehole, aquifer or catchment area, arising from his operations.

**Clause 133AR: 24 Hours a Day Communications System**

The Contractor shall establish, maintain and operate, to the approval of the Engineer, a system of communications covering 24 hours of every day throughout the performance of the Contract. This system shall include for:-

1. telephone access to enable the Employer to make contact with the Contractor in the event of an emergency;
2. means of coordinating responses to emergencies;
3. means of communicating between the Employer and the Contractor as required by the Contract or in the interests of the proper and harmonious continuation or completion of activities within the Contract.

**Clause 134AR: Identity Marks for Vehicles**

All vehicles used by the Contractor and his sub-contractors in the execution of the Contract shall while in use bear on both sides and rear identity marks bearing the approved contract branding. The identity marks shall be maintained by the Contractor throughout the performance of the Contract.

**Clause 135AR: Contractor's Representative**

**1. Attendance at Meetings**

The Contractor's agent as appointed under the terms of the Conditions of Contract shall attend regular monthly progress meetings on the Contract and as and when required by the Engineer.

**2. Availability during Normal Working Hours**

The Contractor's agent shall (either personally or by engaging Deputies) be available to deal with emergencies or other matters of a similar nature relating to the Works, as reasonably required by the Engineer, within a maximum period of 1 hour during normal working hours, and 2 hours outside normal working hours.

**Clause 136AR: Protection of Private Property**

The Contractor shall take all necessary precautions to protect private property from damage, i.e. forecourts, walls, gates, driveways etc., and will be held responsible for making good any damage whatsoever at his expense. The Contractor shall inspect the site prior to the commencement of his work and report to the Engineer any existing defects or damage to private property. The Contractor should at his own cost carry out such conditions surveys as he considers necessary to protect his own interest. The Contractor is also required to inform the Employer of any damages and any rectification work carried out within 3 days.

**Clause 137AR: Temporary Traffic Signals**

The temporary traffic signals may be operated by a generator only between the hours 8.00 am and 5.00 pm on Mondays to Saturdays and at no time on Sundays or Bank Holidays. Outside these hours traffic signals must be operated by the means of batteries with a reserve capacity of 24 hours from the time of the proposed expiry time. The Contractor shall provide an information board with a 24 hour per day call out number displayed at the temporary traffic signals.

**Clause 138AR:** **Safety on Site**

All improvement notices from the Engineer or any of his authorised representatives concerning health and safety of operatives or road users must be complied with as specified in the notice(s), within such a period as may be stated in the notice. Unless action is taken as directed, the Engineer may provide all such materials, plant and labour as are necessary, in his opinion, and all the costs of hiring carrying, placing, maintaining and arranging will be charged to the Contractor or be recovered from monies which become due to the Contractor. The Contractor is required to provide adequate protection to persons with sight and mobility disabilities.

**Clause 139AR:** **Order of the Works**

The Contractor shall, during the whole time that the works are in progress, keep the whole of the Site clean and in a tidy condition, and shall remove all debris to that Contractor's tip. Particular care should be taken to ensure that no materials enter the street gullies.

The Contractor should also ensure that no dust or clay is being deposited on the highway outside the limits of the work.

All water pumped from the trenches or other excavations shall be confined to proper channels and shall not be permitted to flow across roads, pavements or footways, to the inconvenience or danger of the public. The attention of the Contractor is drawn to the likelihood of damage occurring to surfacing by oil deposits from stationary and standing plant. Any such damage shall be made good at the Contractor's expense to the satisfaction of the Engineer.

Any potholes that form in the existing carriageway surfacing shall be made up with suitable material.

**Clause 140AR:** **Storage of Materials and Plant on Roads**

Because of the nature of the Works, material and plant shall not be stacked or deposited upon the road, save with the express agreement of the Engineer.

The short term storage of small items may be permitted only in those locations specifically indicated by the Engineer. Such materials shall be placed so as to cause the least interference possible to the public.

The Contractor shall accept full responsibility for any damage or accident cause by such stacking or depositing. Under no circumstances shall any materials be left on the carriageways or footways during the hours of darkness without adequate lighting.

**Clause 141AR:** **Advertisements and Graffiti**

No advertisement shall be placed on any temporary or permanent Works erected in connection with this Contract, other than those approved by the Engineer prior to commencement of the performance of the Contract.

Any unauthorised fly-posting or graffiti appearing on any buildings, hoardings, fencing etc on the site of the works when possession of the site is taken by the Contractor or afterwards, during the currency of the Contract, shall be removed as soon as possible after they are discovered.

**Clause 142AR:** **Prevention of Fly Tipping**

The Contractor shall effectively ensure that no earth, soil, rubble, rubbish or other waste material removed from the Site in connection with the Works by the Contractor's transport is deposited, dumped or fly-tipped in whole or in part on any land, street or premises whatsoever in or outside the London Borough of Enfield (except in the case of lawful disposal) without the previous consent, in writing, of the owner or occupier of the said land, street or premises.

The Contractor shall make his employees and any permitted or nominated sub-contractor fully aware that dumping or fly-tipping in any form or place is strictly prohibited and would render the Contractor liable to prosecution. The Contractor shall produce whenever required satisfactory evidence that each load carted away has been deposited only at an approved tip and the Contractor hereby agrees to give the Employer the name and address of any driver of any vehicle contravening this condition.

The Contractor shall report all instances of fly tipping and any resultant remedial measures at the Progress Meeting. The Contractor shall be responsible for the observance of this Clause by any permitted or nominated sub-contractors employed in the execution of the Works.

**Clause 143AR:** **Records**

The Contractor shall keep records, as required in the Contract or by the Engineer, available for inspection. Copies of records shall be supplied to the Engineer at such intervals and times as he may require.

**Clause 144AR:** **Employment of Employer's Staff**

No officer or employee in full or part time employment of the Employer shall be employed by the Contractor.

**Clause 145AR: Progress Meetings**

The Contractor shall attend all meetings convened by the Engineer and Others relating to the Contract. The Contractor shall, so far as he is reasonably able, ensure his appropriate representation at meetings with the Authority, Engineer or others on matters related to his Provision of the Service. In this context, “appropriate representation” shall be attendance by members of his staff with the requisite level of authority, competence and level of involvement in the contract to be able to contribute effectively to the meeting objective. Where his regular representative is unavailable to attend any meeting the Contractor shall ensure that a suitably briefed and competent deputy, of similar seniority, attends. The frequency, dates and venues of all meetings shall be set by the Engineer, in consultation with the Contractor. The Contractor’s attendance at meetings is expected to include, though not necessarily limited to those listed below:

|  |  |  |
| --- | --- | --- |
| **Meeting Type** | **Anticipated Frequency** | **Core attendees** |
| Strategic Board Meetings | Six Monthly throughout the contract | **Employer**  Engineer, Contract administrator  **Contractor**  Contract Manager and Contractor’s supervisory staff |
| Contract/Performance Meetings | Monthly throughout the contract | ***Employer***  Engineer, Contract administrator, Engineers representatives  ***Contractor***  *Contract Manager* and *Contractor’s* supervisory staff |
| Projects Progress Meetings (INFORMAL) | As agreed between the Engineers Representative and the Contract Supervisor | **Employer**  Engineers Representative,  ***Contractor***  *Contract S*upervisor |

The agendas for each type of meeting are expected to include, but not necessarily be limited to the following issues:

Strategic Board Meetings

* The general state of the relationship between the Parties;
* The *Contractor’s* overall performance against the Key Performance Indicators;
* Reviewing and setting Key Performance Indicators;
* Health and Safety
* Contract revisions
* Innovation opportunities;
* Opportunities for savings.

Contract/Performance Meetings

* The general state of the relationship between the Parties;
* The latest revision of the *Contractor’s* Plan;
* The *Contractor’s* performance against the Key Performance Indicators (monthly review);
* Variation Orders
* Health, Safety and Welfare issues;
* Risk Register issues;
* Potential innovations, continuous improvements, to be referred to the Strategic Board;
* Needs for shared training and joint workshops;
* Confirmation of progress with current Works *Orders*;
* Operational issues arising.
* Environmental issues, recycling, handling and reduction of waste.
* The latest revision of the *Contractor’s* Works Programme
* Discussion of technical issues arising;
* Proposed next actions and future workload.

Projects Progress Meetings

* Programme
* Progress of work to date.
* Technical Issues
* Resources / Materials

**Clause 170AR:** **Statutory Authorities. Supply of Service**

Where so required, the Contractor shall make arrangements with one or more of the Statutory Undertakers for the supply of Electricity, Gas, Water or Telephone Services for use in connection with the Contract. The Contractor shall pay all fees, charges and comply with all requirements laid down by respective Undertaker.

**Clause 171AR:** **Possession of Site**

The Contractor will not be deemed to have sole possession of the site and shall allow full facilities to other Contractors or Statutory Authorities engaged or employed on the site or adjacent sites.

**Clause 172AR:** **Protection of Street Furniture, Fences, etc**

All street furniture and signs, fences, lamp standards, walls, trees, shrubs, greens, footpaths and any other surfaces adjoining the footways or near the site shall he protected and any damage arising out of operations under this Contract shall be made good at the expense of the Contractor and to the satisfaction of the Engineer.

The Contractor is also required to inform the Employer of any damages and any rectification work carried out within 3 days.

**Clause 173AR:** **Protection of Trees**

The Contractor shall take every possible precaution to avoid damage to trees. The lopping of branches of trees essential to the progress of the work shall not be carried out by the Contractor. Arrangements will be made by the Engineer for this work to be carried out by Employer’s arboricultural contractor. Where the removal of other small trees and shrubs is unavoidable the approval of the Engineer shall first be obtained and the work carried out by the Contractor.

**Clause 174AR:** **Working Outside Normal Working Hours**

The Contractor shall not work outside normal working hours except with the permission of the Engineer, in writing. Under no circumstances are the Works to be carried out between 03.00 hrs - 08.00hrs. No breakers to be used between 23.00hrs - 08.00hrs.

Normal working hours within the Site shall be Monday to Friday between 0800 and 1800 hours and Saturday between 0800 and 1300 hours with no working on Sunday and Public Holidays.

In the event of working outside of normal hours the Contractor must notify the Engineer in writing at least 7 days prior to the Works. The Engineer will respond 3 days prior to commencement of the Works.

**Clause 175AR:** **Sunday Working**

The Engineer's permission, in writing, must be obtained prior to any Sunday working.

**Clause 176AR:** **Supervision of Works**

During the course of the Works the Contractor is to ensure that adequate Site supervision is provided. This will entail the Contractor's Agent being in attendance during the complete course of the Works unless otherwise agreed with the Engineer.

**Clause 177AR:** **Vehicles Parked on the Site and Notification to Residents**

Owing to the possibility of parked cars interfering with the proper execution of the Works, the Contractor shall on the previous day distribute to every household and attach to the windscreen of every car parked in each road, a standard form of notice to be supplied by the Engineer. The Contractor may place 'no waiting' cones to deter parking as part of his traffic management responsibilities.

The Contractor must confirm in writing to the Engineer prior to the commencement of the works that residents have been notified. Following the adequate notifications to the residents that works will be carried out and it is then proven necessary to temporarily remove a vehicle from the vicinity of the work. Removal of vehicles shall be carried out to Clause 134.3AR.

The cost of the Work required to comply with this Clause shall be covered by the prices quoted in the Preliminaries of the Schedule of Rates and Prices.

**Clause 178AR: Contractors Plan**

During Mobilisation the Contractor shall develop a Contractor’s Plan, and submit it to the Engineer for acceptance not less than two weeks before the Contract Commencement date. Any subsequent revisions shall be submitted not less than five working days before each scheduled monthly progress meeting between the Engineer and the Contractor. The plan shall be sufficiently detailed to fully inform the Engineer of the Contractor’s intentions for Providing the Service during the following month and shall indicate “hold points” as follows:

a) Contractor’s hold points: where no further work shall proceed without the written approval of a designated person of the Contractor’s management, who shall be named in the Plan;

b) Engineer points: where no further work shall proceed without the written acceptance of the Engineer.

The Contractor shall ensure that the information provided in each edition of the Plan includes:

a) the period of service which the Plan is targeted to describe;

b) detailed method statements for the services to be provided.

c) full details of the depot and facilities that he proposes to operate from in Providing the Service;

d) the timing of:

* the operations which the Contractor plans to carry out in order to Provide the Service, and
* any work to be undertaken by the Authority or Others and associated dates either agreed with them by the Contractor;

The Contractor shall also include in any Plan submitted for acceptance;

a) A current copy of the Contractor’s Health and Safety Plan;

b) current waste management plan, which describes precisely how the Contractor proposes to eliminate, reduce or manage the disposal of all arisings (including hazardous, noxious and clinical waste) generated as a consequence of Providing the Service and details of the waste disposal sites that he is intending to use;

c) Current details of the structure of the Contractor’s team, together with names, disciplines and CV’s of the Contractor’s key personnel;

d) Copies of current policy statements on Quality Management, Health and Safety and Staff Training. Statements shall be supported by details of Third Party Quality Accreditation (if held) and outline Quality Plans;

e) Current details of any Subcontractors engaged or proposed, the criteria used in their selection and their experience in the type of work to be undertaken on this contract;

f) Full details of exhaust emissions for all vehicles and motorised Equipment that he proposes to use in Providing the Service.

The minimum acceptable shall be compliant with the Euro 5 emission standards;

* Euro 5 emission standards for Cars and Vans

All Contractor’s heavy duty road vehicles and non-road diesel engines shall

meet the following emission standards at the Starting Date:

* Heavy duty road vehicles >3500 kg kerb weight – Euro 6 is the minimum acceptable standard. The Contractor should, if possible, ensure Euro 6 emission standard at the Commencement Date but, if not, ensure Euro 5 emission standard is confined to as few heavy duty vehicles as possible.
* **The Contractor should note that any charges related to the London ULEZ and LEZ zones for any vehicle they use with in the borough to deliver the services of the contract will be borne by them.**
* Non-road diesel engines between 19 and 36 kW – Stage IV European emission standards
* Non-road diesel engines between 37 and 560 kW – Stage 3B European emission standards.

**Clause 180AR:** **Pelican/Toucan/Pedestrian Crossings**

If any works are within 50 metres of pedestrian or pelican or toucan crossings this should be brought to the attention of the Engineer. After agreement with the Engineer the Contractor shall ensure that the signal/Belisha head is suitably covered and signs indicating that the crossing is temporarily out of use shall be provided on both approaches to the crossing.

**ADDITIONAL CLAUSES, TABLES AN FIGURES**

**SERIES 200 SITE CLEARANCE**

**Clause 270AR: Protection of Street Furniture**

Street furniture which is to remain in position shall be preserved undamaged and intact for the duration of the performance of the Contract. The Contractor shall ensure that existing traffic signs are not obscured in any way and shall obtain the prior acceptance of the Engineer for the temporary masking of, or alteration to, sign faces.

Where required by the Contract existing street furniture shall be carefully taken down or dismantled and the parts labelled if necessary and set aside or transported to the Contractor’s store for reuse, or, if surplus, transported to a destination nominated by the Contract or as directed by the Engineer. Post holes shall be filled with acceptable material which shall be well compacted and surrounding surface or pavements reinstated in materials to match the existing.

All due care shall be taken to protect street furniture whilst in store or set aside for reuse.

**Clause 271AR:** **Transfer of Waste**

When required by the Engineer, a signed transfer note copy as referred to in the "Waste Duty of Care: A Code of Practice March 2010" together with a written description of load signed by the authorised person of the accepting licensed tip, shall be submitted. The Contractor should also take full account of the Site Waste Management Plans Regulations 2008, the Environmental Protection (Duty of Care)(England)(Amendment) Regulations 2003 and Environmental Permitting (EP) Regulations 2008.

**ADDITIONAL CLAUSES, TABLES AND FIGURES**

**SERIES 700 ROAD PAVEMENTS GENERAL**

**Clause 770 AR: Surface Removal**

The planing off or removal of surface in any one road shall not be commenced more than two days before the resurfacing of that road commences unless specified otherwise by the Engineer.

**Clause 771 AR: Surface Regularity**

Surface regularity shall also be deemed to include areas where new material adjoins existing as in Clause 770.

**Clause 772 AR: Cut-Back Material**

Cut-Back material may only be used for emergency works when making safe the highway. It may not be used on permanent repairs or reinstatements without prior approval of the Engineer.

**Clause 773 AR: Joints**

The exposed joints shall be cut back to a vertical face of not less than the specified thickness, discarding all loosened material and painting the vertical face completely before any material is laid.

**ADDITIONAL CLAUSES, TABLES AND FIGURES**

**SERIES 900 ROAD PAVEMENTS – BITUMINOUS BOUND MATERIALS**

**Clause 970AR: Saw Cutting Existing Pavements**

1 Saw-cutting of existing pavements shall be carried in accordance with this Clause and the particular depth requirements of the instructing Works Order.

2 The position of all required saw-cuts shall either be as set out by the Contractor from information contained in the instructing Works Order or as marked either by, or in conjunction with, the Engineer. The precise location and extent of all saw-cuts shall be clearly and durably marked out on the pavement surface prior to the commencement of any cutting operations.

3 As soon as each saw-cut is complete, it and the adjacent carriageway surface shall be thoroughly cleaned of the slurry produced by sawing and of any other detritus.

4 The depth of all saw-cuts shall be measured from the top surface of the pavement, to a tolerance of ± 2mm. If the saw-cut is too shallow it shall be re-cut until it is within tolerance. If the saw-cut is too deep the length of defective cut shall be excavated to the full depth of the cut and reinstated with equivalent material to a width of 150mm, unless otherwise instructed by the Engineer.

**Clause 971AR: PAVEMENT REINFORCEMENT (GEOGRID)**

1. The reinforcement may be a knitted, glass fibre strand grid with the following characteristics:

a) Tensile Strength 100kN/m across width x 100kN/m along length (based on component strand strengths)

b) Elongation at break 4% maximum (based on component strand strengths)

c) Melt point – 1000 Deg Centigrade

d) Minimum adhesion to base layer 2kg/m2 (see 3 below)

e) Product to be approved by the Overseeing Organisation.

1. The installation of the reinforcement shall be strictly in accordance with the manufacturer’s instructions and recommendations, and the RSTA Code of Practice for Geosynthetics and Steel Meshes. Generally:

a) The reinforcement shall be laid out under sufficient tension to eliminate ripples. Should ripples occur these must be removed by pulling the reinforcement tight or in extreme cases on tight radii, by cutting and laying flat with recommended overlaps.

b) Transverse and longitudinal joints must be lapped to the manufacturer’s minimum requirements.

c) The surface of the reinforcement shall be rolled with a rubber coated drum roller, or pneumatic tyred roller, one or two passes being sufficient to activate the adhesive or other means of fixing. Tyres must be kept clean particularly in hot weather and when using tack coat.

d) If unavoidable construction and emergency traffic may be allowed to run slowly on the reinforcement after rolling. However, it must be ensured that damage is not caused by vehicles turning or braking etc., and the reinforcement must be kept clean of mud dust and other materials. Damaged sections shall be removed and patched taking care to lap the full roll width

e) The reinforcement shall be placed on the new base course / binder course / regulating layer below the remaining courses as shown on the drawings.

f) Strips of roll width shall not be reduced below 0.75m. Thin widths shall be placed within the carriageway and not at edges.

g) Storage of the reinforcement must be in covered dry conditions free from dust and rolls shall be stacked appropriately to avoid misshaping.

h) The reinforcement must be laid and rolled over ironwork before cutting which shall be

achieved by the manufacturer’s recommended method.

1. The Overseeing Organisation shall be notified before the start of reinforcement laying which shall be carried out under the supervision of a technical representative of the product manufacturer.
2. Test for surface adhesion:

a) Cut 1m2 of clean dry reinforcement

b) Place on area to be paved and press down by walking on sample

c) Insert hook of spring balance under centre of sample

d) Raise balance to lift sample off pavement. Measure maximum load on spring balance as sample begins to lose adhesion

**Clause 972AR: PAVEMENT REINFORCEMENT (COMPOSITE GEOGRID)**

1 Asphalt reinforcement manufactured with glass fibre strands/rope/ punched and stretched polypropylene geogrid that is fixed to a fabric/ non-woven fabric that absorbs hot bitumen. Product to be approved by the Overseeing Organisation.

a) Tensile Strength 100kN/m across width x 100kN/m along length (based on component strand strengths)

b) Elongation at break 4% maximum (based on component strand strengths)

c) Melt point – 1000 Deg Centigrade

d) Minimum adhesion to base layer 2kg/m2 (see 3 below)

2 The installation of the reinforcement shall be strictly in accordance with the manufacturer’s instructions and recommendations, and the RSTA Code of Practice for Geosynthetics and Steel Meshes.

1. Bond Coat and Application

For composite grids with geosynthetics requiring a bond coat for installation,

(1) The bond coat holds the geosynthetic in position during the asphalt paving process.

(2) The bond coat forms a seal between the underlying surface and the overlaying asphalt. Where a backing fabric is present, the heat and compaction of the overlying asphalt will soften the bond coat causing it to thoroughly impregnate the fabric.

It is essential that the installer uses the correct type of bond coat and the correct rate of spread as specified by the product manufacturer and that the installer strictly adheres to these specifications.

The use of hot straight run bitumen is recommended by a number of manufacturers because an immediate and effective fixing is achieved and therefore paving over the geosynthetic may take place immediately reducing time on site.

The reinforcement shall be laid out on top of the bond coat whilst hot by mechanical means under sufficient tension to eliminate ripples. Should ripples occur these must be removed by pulling the reinforcement tight or in extreme cases on tight radii, by cutting and laying flat with recommended overlaps.

1. Transverse and longitudinal joints must be lapped to the manufacturer’s minimum requirements.
2. The surface of the reinforcement shall be rolled with a rubber coated drum roller, or pneumatic tyred roller, one or two passes being sufficient to ensure impregnation of the bond coat. Tyres must be kept clean particularly in hot weather and when using tack coat.
3. Construction and emergency traffic must be allowed to run slowly on the reinforcement after rolling. However, it must be ensured that damage is not caused by vehicles turning or braking etc., and the reinforcement must be kept clean of mud dust and other materials. Damaged sections shall be removed and patched taking care to lap the full roll width.
4. The reinforcement shall be placed on the new base course / binder course / regulating layer below the remaining courses as shown on the drawings.
5. Strips of roll width shall not be reduced below 0.75m. Thin widths shall be placed within the carriageway and not at edges.
6. Storage of the reinforcement must be in covered dry conditions free from dust and rolls shall be stacked appropriately to avoid misshaping.
7. The reinforcement must be laid and rolled over ironwork before cutting which shall be achieved by the manufacturer’s recommended method.
8. The Overseeing Organisation shall be notified before the start of reinforcement laying which shall be carried out under the supervision of a technical representative of the product manufacturer.

3 Test for surface adhesion:

1. Cut 1m2 of clean dry reinforcement
2. Place on area to be paved and press down by walking on sample
3. Insert hook of spring balance under centre of sample
4. Raise balance to lift sample off pavement. Measure maximum load on spring balance as sample begins to lose adhesion

**Clause 973AR: PAVEMENT REINFORCEMENT (SELF-ADHESIVE GEOGRID)**

1. The reinforcement may be a knitted, glass fibre strand grid coated with an elastomeric polymer with the following characteristics:
2. Tensile Strength 100kN/m across width x 100kN/m along length (based on component strand strengths)
3. Elongation at break 4% maximum (based on component strand strengths)
4. Melt point – 1000 Deg Centigrade
5. Minimum adhesion to base layer 2kg/m2 (see 3 below)

e) Product to be approved by the Overseeing Organisation.

1. The installation of the reinforcement shall be strictly in accordance with the manufacturer’s instructions and recommendations, and the RSTA Code of Practice for Geosynthetics and Steel Meshes.
2. Bond Coat and Application

For composite grids with geosynthetics requiring a bond coat for installation,

1. The bond coat holds the geosynthetic in position during the asphalt paving process.
2. The bond coat forms a seal between the underlying surface and the overlaying asphalt. Where a backing fabric is present, the heat and compaction of the overlying asphalt will soften the bond coat causing it to thoroughly impregnate the fabric.

It is essential that the installer uses the correct type of bond coat and the correct rate of spread as specified by the product manufacturer and that the installer strictly adheres to these specifications.

The use of hot straight run bitumen is recommended by a number of manufacturers because an immediate and effective fixing is achieved and therefore paving over the geosynthetic may take place immediately reducing time on site.

The reinforcement shall be laid out on top of the bond coat whilst hot by mechanical means under sufficient tension to eliminate ripples. Should ripples occur these must be removed by pulling the reinforcement tight or in extreme cases on tight radii, by cutting and laying flat with recommended overlaps.

1. Transverse and longitudinal joints must be lapped to the manufacturer’s minimum requirements.
2. The surface of the reinforcement shall be rolled with a rubber coated drum roller, or pneumatic tyred roller, one or two passes being sufficient to ensure impregnation of the bond coat. Tyres must be kept clean particularly in hot weather and when using tack coat.
3. Construction and emergency traffic must be allowed to run slowly on the reinforcement after rolling. However, it must be ensured that damage is not caused by vehicles turning or braking etc., and the reinforcement must be kept clean of mud dust and other materials. Damaged sections shall be removed and patched taking care to lap the full roll width.
4. The reinforcement shall be placed on the new binder course / regulating layer / concrete road base below the remaining courses as shown on the drawings.
5. Strips of roll width shall not be reduced below 0.75m. Thin widths shall be placed within the carriageway and not at edges.
6. Storage of the reinforcement must be in covered dry conditions free from dust and rolls shall be stacked appropriately to avoid misshaping.
7. The reinforcement must be laid and rolled over ironwork before cutting which shall be achieved by the manufacturer’s recommended method.
8. The Overseeing Organisation shall be notified before the start of reinforcement laying which shall be carried out under the supervision of a technical representative of the product manufacturer.

1. Test for surface adhesion:
2. Cut 1m2 of clean dry reinforcement

b) Place on area to be paved and press down by walking on sample

1. insert hook of spring balance under centre of sample
2. Raise balance to lift sample off pavement. Measure maximum load on spring balance as sample begins to lose adhesion

**Clause 974AR: Inlay Patching**

**Definition**

1. Inlay Patching is defined as the replacement of defective flexible pavement material with new flexible material, hand laid, to any depth not less than the surface course thickness nor greater than 150 mm to effect a permanent restoration of the stability and/or riding quality of the pavement. The definition specifically excludes the following: -

* the filling of depressions not involving the removal of existing pavement surfacing;
* the replacement or repair of base (roadbase) layer, sub-base layer, or sub-grade.

**General**

1. The material, to the limits marked out, shall be broken out or planed out one course at a time to the average depth of patch specified. The edges of the patch shall be sawn or planed to form straight vertical faces in sound material. The material shall be removed and the resulting cavity cleaned, ensuring that the bottom of the excavation is sound and flat.

**Cavity Treatment**

1. All vertical faces shall be completely painted with a thin uniform coating of 50 (40/60) or 85 (70/100) pen hot bitumen or cold applied thixotropic bitumen of similar grade.
2. A bond coat to Clause 920 shall be applied to the bottom of the excavation.

**Materials**

1. The materials for base (roadbase), binder course and surface course shall be as described in Appendix 7/1 manufactured, supplied, laid and compacted in accordance with the relevant Clauses of Series 700 and Series 900 of the Specification. The type and PSV of the material used in the surface course shall match that of the material in the surrounding area of the repair unless instructed otherwise by the Project Manager.

**Finish**

1. On completion, the surface of the patch and the adjacent pavement shall be cleaned.

**975AR: Overlay Patching**

**Definition**

1. Overlay Patching is defined as the overlaying of existing asphalt concrete pavement with new hand laid asphalt concrete surfacing material in rutted areas and localised depressions, to a depth not greater than 150 mm, to effect a permanent restoration of riding quality of the pavement.

**General**

1. At the limits marked out, a joint shall be formed to a vertical depth equal to the specified depth of the new material by cutting back the existing material to form vertical faces in sound material. The outer face shall be sawn. The width of the joint shall be ten times greater than the specified depth of the new material. The existing material shall be removed and the resulting cavity cleaned, ensuring that the bottom of the excavation is sound and flat.

**Cavity Treatment**

1. All vertical faces shall be completely painted with a thick uniform coating of 50 (40/60) or 85 (70/100) pen hot bitumen or cold applied thixotropic bitumen of a similar grade.
2. A bond coat to Clause 920 shall be applied to the bottom of the cavity and to the existing carriageway surface to be overlay patched.

**Material**

1. The materials shall be as described in Appendix 7/1 manufactured, supplied, laid and compacted in accordance with the relevant Clauses of Series 700 and Series 900 of the Specification. The type and PSV of the material used in the surface course shall match that of the material in the surrounding area of the repair unless instructed otherwise by the Project Manager.

**Finish**

1. On completion, the surface of the patch and the adjacent pavement shall be cleaned.

**Clause 974AR: Stone Mastic Asphalt TS2010 Spec**

1. Stone Mastic Asphalt specification to be as per Transport Scotland Interim Amendment No.35/15: TS2010 Surface Course Specification and Guidance update to HD36/06.

**ADDITIONAL CLAUSES, TABLES AND FIGURES**

**SERIES 1000 ROAD PAVEMENTS – CONCRETE AND CEMENT BOUND MATERIALS**

**1070 AR: Carriageway and Haunching Recycling**

1. The Contractor carries out in-situ recycling where instructed by the Employer. A site investigation including sampling & testing for the recycled layer shall be required to confirm the site suitability, mix design and stabilised layer thickness.
2. Sampling & Testing to be carried out in accordance with TRL & RSTA guidelines by a UKAS accredited laboratory with a minimum of 3No. samples taken from any one site or one sample per 500sm whichever is the greater. Testing shall comprise of but not be limited to the following for specification of mix design and layer thickness:
   * Plasticity Index (PI) to BS1377: Pt 2
   * Sulphate Content to BRE – SD1 2005 3rd Edition
   * Particle Size Distribution (PSD) to EN933 using TRL 611 envelope graphs
   * Compressive Strength to BS EN 12390-3: 2009 (for 3,4 & 5% CEM2)
   * Sub-Base and Sub-grade CBR to BS1377: Pt4 1990
3. Material to be stabilised shall be the pulverised road pavement and the underlying sub-base / sub-grade included within the depth of mixing. The material will be stabilised with a medium strength hydraulic cement based binder containing both OPC and PFA. The recycled layer shall be referred to as the structural course layer.
4. The contractor shall operate in accordance with the RSTA Code of Practice for In-situ Structural Road Recycling 2012. Method statements shall be submitted to demonstrate this.
5. The Contractor shall not carry out stabilisation when the shade temperature is below 3 degree C unless on a rising thermometer. Stabilisation shall not be carried out on frozen material or commence during periods of rain or when rain is imminent. When cement is used as a binder and spread on material likely to cause premature hydration of the cement, the Contractor shall process it immediately in accordance with Sub Clause 6 below.
6. Unless otherwise agreed by the Engineer, the material forming the layer to be stabilised shall be processed by pulverising and mixing in the binder by means of a sufficient number of passes of the approved mobile stabilising machine until 85% of the particles or lumps pass a BS 28mm sieve.
7. During processing with cement as a binder a controlled quantity of water shall be added uniformly through the mixing hood of the stabilising machine, but limited to that required to facilitate mixing, hydrate the cement and to enable satisfactory compaction to be achieved. Suitable control systems shall be used to monitor the process.
8. The stabilising machine shall be equipped with a device for controlling the depth of processing which shall be maintained at the correct setting at all times. Depth of mixing shall be measured from the compacted finished level surface of the road to the bottom of the cut. Depth of cut shall be measured every 1000m2 or less as necessary. A minimum overlap of 100mm shall be made between adjacent passes of the stabilising machine.
9. Each layer of processed material is to be compacted as soon as possible after the final pass of the stabilising machine. Compaction shall be completed within 2 hours following the mixing of the binder into the material to be stabilised when the binder is cement.
10. The compaction of each layer shall be carried out with an approved roller appropriate to the site conditions. When the Binder is cement Clauses 1040 and 1041 of SHW shall be used to measure compaction. Alternatively in situ densities measured by coring or nuclear density gauges shall be used to assess compaction against an agreed optimum density value. Generally a value of 95% will be used. The surface shall be graded to the required profile. Following compaction, the layer shall be finished with six passes of a smooth wheeled roller or pneumatic tyred roller.
11. On completion of compaction the surface shall be sealed using a sprayed membrane of K1-70 bitumen emulsion to BS EN 13808 complying with Clause 920 of the SHW, laid at rate to give a residual binder content of 0.2 l/m2. Where the surface is opened for traffic prior to overlay the bitumen emulsion shall be covered with a fine aggregate nominally 0/3 size from a source agreed with the Engineer. The rate of spread shall be sufficient to blind the surface and vary according to aggregate source typically being from 5.5 to 7.0 kg/m2.
12. For cement as a binder five no. 150mm cubes shall be made from each 500m2 of material laid, or such lesser area as the Engineer may determine. Cubes shall be compacted and cured in accordance with Clause 1040.
13. Where appropriate ex-situ recycling will be an allowable alternative. This will be subject to agreement with the Employer.
14. A mobile recycling plant may also be utilised to produce the recycled material subject to agreement of the technical details and logistics with Employer.
15. During any programme of recycling works sites shall be opened and completed consecutively rather than concurrently unless otherwise agreed with the Engineer.

**ADDITIONAL CLAUSES, TABLES AND FIGURES**

**SERIES 1100 KERBS, FOOTWAYS AND PAVED AREAS**

**Clause 1170AR: Natural Stone Kerb, Channel and Quadrant Units**

1 Natural stone kerb, channel and quadrant units shall be reused wherever this is viable, and supplemented by recycled components, from a source approved by the Engineer, as necessary. They shall be unbroken and undamaged and shall be cleaned on all faces, back to parent stone, before being re-laid.

2 New natural stone kerb, channel and quadrant units shall be worked in accordance with the requirements of BS EN 1343:2012. The dimensions and finish shall be as instructed by the Engineer in the instructing Works Order.

3 All natural stone kerb, channel and quadrant units shall be laid and bedded in accordance with the requirements of Clause 1101.

**Clause 1171AR: Granite Kerbs**

**Re-use of Existing Granite Kerbs**

1 Damaged granite kerbs shall either have the damaged section cut away or be discarded. Kerbs to be re-used shall have any damaged ends cut off. Cuts shall initially be sawn all round to a minimum depth of 25mm.

2 Where a Works Order requires existing kerbs to be re-dressed or re-shaped, the finished kerbs shall comply with BS EN 1343:2012, Standard Dressing B as “Fair Picked”. Re-dressing shall consist of removing up to 5mm of the existing surface. Re-shaping shall consist of removing up to 25mm of the existing surface and shall include re-dressing.

3 When re-dressed kerbs are used, those of the same width shall be grouped together so as to maintain a continuous line at the back of the kerbs as far as possible. In the case of curved kerbs, only those re-dressed to the radius needed to maintain a smooth curve at the channel shall be used.

4 Ramp/taper kerbs shall be approximately 600mm long for pedestrian and footway crossovers. The ends of such kerbs shall be dressed so as to minimise the joint widths.

5Joints shall be pointed in Class 1 mortar.

**Clause 1172AR: Natural Stone Setts**

1 Natural stone setts shall be reused wherever this is viable, and supplemented by recycled setts, from a source approved by the Engineer, as necessary. They shall be unbroken and undamaged and shall be cleaned on all faces, back to parent stone, before being re-laid.

2 New natural stone setts shall be worked in accordance with the requirements of BS EN 1342:2012. The dimensions and finish shall be as stated in the instructing Works Order.

**Bedding**

3 The setts shall be laid on a 50mm thick bedding of 1:3 cement : sand mortar (proportions by volume) using fine aggregate BS EN 12620:2013 Designation 0/4mm.

**Laying**

4 Setts to be laid in vehicle running areas shall be laid in parallel courses with the longest edge dimension approximately at right angles to the direction of vehicular traffic to the required cross falls identified in the design. Setts to be laid in channels shall be laid in parallel courses with the longest edge dimension approximately parallel to the direction of vehicular traffic.

5 Adjacent setts shall be selected and laid, with due regard to tolerances, so that the surface joints do not exceed 15mm.

6 Any sett with a pronounced taper shall be laid on its larger face dimension.

7 After laying, the setts shall be rammed down to a firm seating in the bedding and to give a level surface. Vibro-laying techniques may be used.

**Joint Filling**

8 Joints shall be filled and pointed, with a 5mm depression.

**Trafficking**

9 Natural stone sett paving shall not be trafficked for three days after joint filling or seven days after laying concrete slab beneath.

# Clause 1173AR: Precast Concrete Flags Artificial Stone and Natural Stone Paving

1 Precast concrete flags, artificial stone and natural stone paving should be bedded down to line and level using a pavior’s maul and checked to ensure the flags do not rock after bedding. Any rocking flags should be lifted and re-bed as necessary.

2 The item in the Schedule of Rates and Prices for laying of precast concrete flags, artificial stone and natural stone paving shall include for cutting to radius corners, irregular frontage lines, trees, street furniture etc. in accordance with BS 7533-4, and for the replacement of up to 63mm thick and up to 50mm wide, Class 1 mortar to Clause 2404, the sand being sharp sand, at the back of the footway, around street furniture etc., trowelled to a smooth finish.

3 The rates are also to include for raising or lowering of, size up to and including 0.5m2, the level of any type of utility cover and frame on any size brick or precast concrete chamber 50mm or less.

4 The Contractor shall, before starting work in any area of existing precast concrete flag, artificial stone, or natural stone paved footway, notify the Engineer of the number of units in that area that require replacement.

5 The Contractor shall carefully lift all paving units that are to be re-used and set them aside. The Contractor shall stack any that are not permanently re-laid on day of lifting into neat and secure piles and take them to store as instructed. The Contractor shall not be entitled to any payment in respect of paving units that are broken or damaged in lifting or relaying except where he can demonstrate that such damage is unavoidable.

**Clause 1174AR: Handling Kerbs and Slabs – Reducing the Risks of Musculoskeletal Disorders**

1 The Employer’s designers will endeavour to eliminate, or at least reduce, the need for manual handling of kerbs and heavy slabs through good design practice. If the Contractor considers that any design that he is instructed to construct can be amended to further reduce the need for manual handling of heavy slabs or kerbs, he shall bring the matter to the immediate attention of the Engineer.

2 The Contractor shall assess and plan kerb and slab handling processes to ensure that goods are handled using mechanical means only. Manual handling will only be permitted with the express permission of the Engineer.. Such assessments shall include consideration of:

* maximising the efficiency of laying operations;
* ensuring safe storage and secure transport arrangements;
* avoiding double handling by laying from delivery rather than “laying out ready to lay”;
* the most appropriate type of handling equipment for the job in hand;
* the type and extent of operative training required;
* the possible use of alternative materials or processes.

3 Where manual handling of kerbs and heavy slabs is unavoidable, the Contractor shall ensure that devices to permit shared lifting are used wherever possible and that only properly trained personnel carry out such work. This will only be permitted with the express permission of the Engineer.

1. The Contractor may be permitted to use lightweight kerbs, subject to the Engineer’s acceptance of his proposal.

**ADDITIONAL CLAUSES, TABLES AND FIGURES**

**SERIES 2700 Accommodation Works, Works for Statutory Undertakers**

**Clause 2701AR: Coring Operations**

1. All sampling and testing shall be carried out by a laboratory holding current UKAS accreditation covering the specified method of sampling & testing.
2. The contractor shall set up appropriate signing and guarding at each core location in accordance with Chapter 8 of the traffic signs manual and the code of practise for Safety at Street Works and Road Works.
3. Prior to drilling or coring the contractor shall carry out a risk assessment including the identification and location of underground services.
4. The extraction process must be in accordance with the principles of BS12697 – Part 27:2017. The coring machine must be maintained perpendicular to the surface and any dust must be suppressed using appropriate methods.
5. Cores must be extracted from the hole and removed from the core barrel with care so that no material is lost or the core damaged or distorted in any way.
6. Cores should be placed in individual sealed pre-labelled containers with relevant details recorded on a “sample detail form”. If the core breaks up on extraction all recovered material should be placed in the sample container.
7. All core holes should be reinstated in accordance with the Specification of Reinstatement of Openings in Highways - S11.6 and the site left in a clean and tidy condition. All arisings must be cleared from site.
8. Core reports to include full description of construction, layer thicknesses, bond between layers, location of core and other general notes on make-up etc.
9. Tar/ WAC testing shall be for PAH16 + Corene provided in a format similar to below
10. Leachate testing to be carried out in accordance with BS EN 12457-2 (10:1)

**Clause 2702AR: Ground Penetrating Radar Survey**

1. All surveying and subsequent processing shall be carried out by an appropriately qualified and experienced contractor to PAS 128: 2014
2. The contractor shall set up appropriate signing and guarding at each site in accordance with Chapter 8 of the traffic signs manual and the code of practise for Safety at Street Works and Road Works.
3. Survey methodology to be used for detection shall be M3P in accordance with PAS 128: 2014 Table 2 due to the typically dense nature of utility apparatus in residential roads.
4. Quality level of survey output to PAS 128: 2104 table 1 to be QL-B1P or similar for the foregoing carriageway recycling operation to safely take place.
5. All survey data to be post processed and CAD works carried out to provide a detailed plan in .dwg format.

**SUBSTITUTE CLAUSES, TABLES AND FIGURESSERIES 100 PRELIMINARIES110SR: Information Boards**

The Contractor shall on commencement of the Works, provide and erect Information Boards at the location specified in the Works order and to the specification given in the contact specific Appendix 1/21. The Contractor shall clean and maintain them and dismantle and remove them on the completion of the work.

The design, content and layout of information boards and any other project publicity material including any and all Overseeing Organisation logos and branding shall be in accordance with policy requirements of the Overseeing Organisation, the contract employer and the highway authority and in accordance with contract specific Appendix 1/21.

**SERIES 200 SITE CLEARANCEClause 202SR: Existing Trees, Bushes and Hedges**

**Existing Trees**

No trees, bushes or hedges shall be trimmed, cut down, uprooted or damaged in any way, except as stated in the instructing Works Order. Where any existing trees are to be removed under the contract for the construction of the Works the Contractor shall, before commencing any clearing in the areas concerned, clearly mark such trees under the direction of the Engineer's Representative. No other trees shall be felled and care shall be taken to avoid damaging the remaining trees during any felling or other operations. The Contractor shall not lop or cut back any other trees near the Works. The Engineer will arrange for any trimming of trees which he may consider necessary to enable the Contractor to carry out his operations.

The remaining trees on or adjacent to the Works shall be protected by a substantial timber protective fence; any existing protective surrounds to trees on the site shall be preserved unless otherwise directed by the Engineer. No spoil or materials of any kind shall be piled against any tree and the Contractor shall take care that overhanging branches are not damaged by plant operating near them or by passing vehicles and that all precautions necessary are taken to ensure that no damage is sustained by tree roots. The Contractor shall follow the guidelines set out in Volume 4, NJUG Guidelines for the Planning, Installation & Maintenance of Utility Apparatus in Proximity to Trees (Issue 2 or current issue).

**Protection of Growing Plants**

Existing and newly planted hedges, shrubs, trees and grassed areas and the like shall be protected from damage resulting from the Contractor's operations. Upon completion of the Works they shall be handed over in good condition, clean and free from all rubbish to the satisfaction of the Engineer. Should any damage be caused, the Contractor shall, as directed by the Engineer, renew or replant without cost to the Employer.

Existing trees, bushes and hedges shall only be cut back in accordance with the requirements stated in the instructing Works Order and Clause 3010. For the purposes of this sub-clause, trees shall be defined as a woody plant greater than 2m in height and a bush shall be defined as a woody plant of 2m height or less.

**Clause 203SR: Explosives and Blasting**The use of blasting for site clearance shall not be permitted at any location.

**SERIES 300 FENCING303SR: Temporary Fencing**1 Temporary fencing shall be either:-

Type A - “Heras 151 Temporary Fencing System” fencing or equivalent,

Further details of “Heras” fencing are available from:Heras Readyfence Service South EastUnit B1Castle RoadEurolink Industrial EstateSittingbourneKentME10 3RL01795 423261www.herasreadyfence.co.uk

Type B – Lightweight interlocking Stacca Barrier or equivalent

1. The *Contractor* shall, as necessary, erect, re-erect and maintain and subsequently take down and remove, temporary fencing of all types.

**Type A** temporary fencing shall be used to protect the works off highway, and there shall be no additional payment for supplying, erecting, re-erecting, maintaining, and removing this fencing, unless specifically instructed in a Works order for providing temporary fencing only with no other associated works.

**Type B** temporary fencing shall be used to protect the works on highway, and there shall be no additional payment for supplying, erecting, re-erecting, maintaining, and removing this fencing, unless specifically instructed in a Works order for providing temporary fencing only with no other associated works.

**SERIES 600 EARTHWORKS**

**Substitute Clauses, Tables and Figures**

**Clause 607SR: Explosives and Blasting for Excavation**

1. The use of blasting for excavation shall not be permitted at any location, under any circumstances.

**SERIES 1100 KERBS, FOOTWAYS AND PAVED AREAS**

**Substitute Clauses, Tables and Figures**

**Clause1101.1SR: Precast Concrete Kerbs, Channels, Edgings, and Quadrants**

Precast concrete kerbs, channels, edgings and quadrants shall be hydraulically pressed complying with BS EN 1340:2003. They shall be laid and bedded in accordance with BS 7533-6:1999 on concrete pavement slab, mortar bed, road base or on a Grade C20 or mix ST4 concrete foundations whilst it is still plastic or after it has set. All units shall be backed with Grade C20 or mix ST4 concrete. Where full length kerbs cannot be laid, no length smaller than half a kerb length shall be used.

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

**Series 000 Introduction**

002 Terms and Abbreviations

**Series 100 Preliminaries**

101 Temporary Accommodation and Equipment for the Overseeing Organisation

107 Site Extent and Limitations on Use

110 Information Boards

116 Privately and Publicly Owned Services or Supplies

117 Traffic Safety and Management

118 Temporary Diversions of Traffic

**Series 200 Site Clearance**

201 Clearing

**Series 500 Drainage and Service Ducts**

509 Testing and Cleaning

**Series 600 Earthworks**

601 Classification, Definitions and Uses of Earthworks Materials

602 General Requirements

613 Sub-formation and Capping

**Series 700 Road Pavements - General**

709 Cold-milling (Planing) of Bituminous Bound Flexible Pavement

**Series 900 Road Pavements – Bituminous Bound Materials**

922 Surface Dressing: Design, Application and End Product Performance

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

**SERIES 000 INTRODUCTION**

002 Delete the second paragraph of sub-clause 1 and replace with:

“The term Overseeing Organisation means the London Borough of Enfield, as represented by the *Authorised Officer* or others responsible for the administration of this contract.”

002 Insert, as sub-clause 4:

“Unless specifically stated otherwise any product or service that is described as having ‘received type approval by the Overseeing Organisation’ in the Specification and associated documents, such type approval shall be deemed to be that given by the Highways Agency and, as such, shall be acceptable for use in the Works.”

“If the Contractor proposes to use a product or service that does not have such type approval he shall submit, with adequate notice, sufficient details of his proposed alternatives to the Overseeing Organisation to allow proper consideration of its acceptability.“

**SERIES 100 PRELIMINARIES**

101 Delete sub-clause 2 and replace with:

“Any temporary accommodation requested in any Works Order shall be ready for occupation on the date stated in Works Order”.

107 Delete the word “Site” and replace with “Sites”.

110 Delete: "four weeks" and insert: "two weeks". Insert at end of clause: "The Information Boards shall carry the name, address and telephone number of the Contractor, a brief description of the Works being executed under the particular Order, the anticipated duration of the Works and the name and address of the **London Borough of Enfield** as Employer under the Contract.”

116 Delete sub-clause 4 and replace with:

“The Contractor shall closely liaise with statutory undertakers prior to undertaking any excavation in the highway and comply with the guidance contained in:

‘Avoidance of Danger From Overhead Electrical Lines’ (GS6) published by the Health and Safety Executive.

‘Avoiding Danger From Underground Services’ (HSG47) published by the Health and Safety Executive.”

116 After sub clause 116.5 insert new sub-clause:

116.6 "The Contractor shall immediately report to the Engineer of any damage done to any underground plant, equipment, apparatus or work and, subject to the full implementation of safety measures and precautions. Where so ordered by the Engineer and without cost to the Employer, the Contractor shall effect the repairs without delay.

Should the authority or owner of the damaged plant, equipment, apparatus or works carry out the repair, the Contractor shall supply immediately any facilities or assistance necessary and repay to the authority or owner the full cost of the remedial work."

117 After sub-clause 117.32 add the following:

**“Generally”**

117.48 The extent and duration of excavation of any temporary obstruction shall be kept to a minimum. Excavated material shall not be allowed to obstruct the carriageway.

117.49 All signs shall be sited in accordance with the Traffic Signs Manual unless otherwise directed so that they are clearly visible to approaching traffic. Signs erected on the footway shall have clear headroom of not less than 2.13 metres.

117.50 Signs whose messages no longer apply shall be covered or removed as soon as the hazard to which they refer no longer exists.

117.51 Stocks of equipment, temporary buildings and the like shall on no account be permitted to obstruct sight lines.

**After Dark**

117.52 All traffic signs on roadwork sites shall be reflectorised. In addition, where vehicle headlamps are not normally used, the signs shall be provided with direct lighting.

117.53 Continuously-operated yellow warning lamps supplemented by traffic cones shall be used to delineate the Works. Yellow lamps shall be checked daily including weekends.

117.54 High-intensity flashing amber beacons may be used sparingly on the approaches to roadwork sites to draw attention to the hazard.

**Pedestrians**

117.55 Obstructions and excavations shall be adequately fenced and guarded at all times for the protection of all persons whose use of the highway is reasonably foreseeable. The barriers shall be continuous and at least 900 mm in height. After dark they shall be supplemented by yellow lamps. Where footways are obstructed, diversions with handrails shall be provided.

**Visually Impaired**

117.56 Special precautions shall be taken to safeguard visually impaired persons from the dangers of street obstructions and excavations. Particular attention shall be given to positioning barriers. The whole obstruction or excavation shall be completely guarded and fenced and the barriers shall be easily detectable using a guide cane.

118 After sub-clause 118.7 insert:

118.8 Pedestrian access to public transport services and proper facilities for bus queues shall be provided and maintained at all times. Routes for pedestrians shall be clearly defined and signposted, free from hazards and obstructions, and faced as directed by the Engineer.

The surfaces shall be firm, clean and even. Wherever practicable, routes shall be of the shortest length having regard to the circumstances, and the width shall be not less than as existing, or 2 metres, whichever is the lesser. Changes of level shall be effected by ramps of gradient not steeper than 1 in 10.

118.9 Wherever changes of level occur between temporary and permanent carriageways they shall be affected by ramps of gradient not steeper than 1 to 20.

118.10 Where temporary bridging is used it shall, where reasonably practicable, be constructed with the deck flush with the adjacent road surface. It shall be designed in accordance with BS 5400 Part 2:2006 and the relevant DFT’s BE’s and BD’s. The members of the bridge deck shall be designed to carry, in addition to their own weight, full Department of Transport loading for Highway Bridges: Type HA loading in accordance with BS 5400 Part 2:2006. The bridge deck shall have a surface of material to be approved by the Engineer and shall have a clear width of 3 metres for each line of traffic it is intended to carry. All temporary bridging shall be fitted with sound-deadening packing and surfacing to the approval of the Engineer. ‘Bailey’ bridging of a classification equal to the above requirements may be used subject to the approval of the Engineer.

**SERIES 200: SITE CLEARANCE**

201 Delete sub-clause 1 and replace with:

“The Contractor shall not demolish, break up and remove any buildings, structures or superficial obstructions on the Site, except those described in the instructing Works Order. He shall clear each part of the Site, and undertake any partial demolition of structures, only at the times and to the extent indicated in the instructing Works Order. The Contractor shall ensure that all individual trees, shrubs and other features are suitably identified, protected and preserved.

The use of Equipment shall be restricted, and physically prevented where possible, within the crown spread of existing trees to prevent damage to trunks and branches. Where the Engineer accepts that it is essential to remove branches above a highway, the Contractor shall ensure that such work shall be carried out in accordance with recommendations made by the Employer’s arboriculturist.

Materials shall not be stored within the crown spread or within three metres (whichever is smallest) of the trunk of a tree to prevent damage to branches and trunks, compaction of the root systems and contamination of the soil and sub-soil.

Careful consideration shall be given to the protection of trees, and shall take place in consultation with the Employers’ arboriculturist prior to work starting on Site. Temporary protection may be required during construction works, and permanent protection may also be necessary.

For temporary protection, the trunk of young trees shall be wrapped with Hessian, and older trees shall be protected by using softwood slats tied with nylon straps around the tree trunk. Temporary protection shall be removed immediately after completion of the construction works.

Where permanent protection to the tree is necessary to prevent damage caused by vehicles, the use of barriers including tree grilles, fencing and bollards shall be carefully considered. Each element shall be carefully selected in relation to other materials used to contribute to the streetscape, and the proposed protection shall be subject to an independent safety audit.

Excavation within the crown spread of existing trees shall be by hand, when instructed by the Engineer. As a general guide, the depth of excavations shall be limited as follows:

|  |  |
| --- | --- |
| Distance from Trunk | Max. Depth of Excavation |
| <400mm | No excavation |
| 400-600mm | 100mm |
| 600-800mm | 160mm |
| 800-1000mm | 180mm |
| >1000mm | 255mm |

Should any trees, shrubs and other planting features and planting areas that should have been preserved be accidentally killed, removed or damaged by the Contractor during the course of the work, they shall be replaced by the Contractor with plants of the same species and equal in size to those killed, removed or damaged, all in accordance with Series 3000; or made good by arboricultural work in accordance with Clause 3010, or as directed by the Engineer; or replaced or made good to the satisfaction of the Engineer.”

201 Delete sub-clause 2 and replace with:

“Where the Works involve the cutting of an existing fence, hedge or wall, the severance shall be made good unless otherwise described in the instructing Works Order; either by the continuation of the fence, hedge or wall in a different direction, or by its termination. In the case of a strained wire or chain link fence a straining post shall be installed and the fence re-strained.”

**SERIES 500: DRAINAGE AND SERVICE DUCTS**

509 Delete sub-clause 509.3 and insert new sub-clause 509.3:

The pipeline water test shall be commenced as soon as practicable after laying, but the drain shall have been filled with water for one hour before test readings are taken.

A test pressure of 1.2 metres head of water above the soffit of the drain shall be applied at the high end but not more than 2.4 metres at the low end. The loss of water over a period of 30 minutes shall be measured by adding water from a measuring vessel at regular intervals of 10 minutes and noting the water level in the standpipe. The quantity of water added for drains up to 525 mm nominal bore shall not exceed 0.1 litres per hour per l00 m per 1 mm of nominal bore of the drain. Steeply graded drains shall be tested in stages where the maximum head specified above would be exceeded if the whole section were tested at once, and the results shall be averaged for each separate length of drain.

If any defects are discovered as a result of these tests and inspection, the Contractor shall take up the pipes and relay and rejoin them to the satisfaction of the Engineer.

The above tests shall be re-applied after the backfilling has been completed. In the event of ANY SECTION OF THE WORK NOT PASSING THIS FURTHER TEST, the Contractor shall carry out the necessary repairs to the satisfaction of the Engineer.

The maximum allowable rate of infiltration into pipelines of nominal bore greater than 300 mm after backfilling has been completed and dewatering plant removed, shall not exceed 0.2 litres per hour per 100 metres per millimetre of internal diameter of sewer.

In addition, all point leaks shall be stopped. The Engineer shall determine the time for which the infiltration is measured to determine the rate of infiltration.

**SERIES 600: EARTHWORKS**

601 Add sub-clause 602.1 (ii) (b)

fly-tipped material.

601 Delete all references to “the Site” and replace with “any Site”.

602 Delete all references to “the Site” and replace with “any Site”.

613 Delete all references to “the Site” and replace with “any Site”.

**SERIES 700: ROAD PAVEMENTS – GENERAL**

709 Insert, as sub-clause 12:

“Where, during milling operations, cobbled paving or other surface that cannot be satisfactorily milled are encountered within the milling depth, the Contractor shall reduce the depth of milling sufficiently to skim over the exposed surface and shall ensure that all loose material is removed from the surface of the cobbles prior to the application of any bituminous overlay, including any tack or bond coating. The Contractor shall also notify the Engineer, as soon as reasonably practical, of the nature, depth and extent of the exposed surface. The Contractor shall then adjust the levels and thicknesses of overlaying materials in accordance with instructions issued by the Engineer. Where it is necessary for the expeditious execution of the Works for the Contractor to overlay the exposed surface in the absence of any inspection by the Engineer, the Contractor shall ensure that he can subsequently produce suitable photographs, measurements and other records to enable the Engineer to validate the work that the Contractor has undertaken.”

**SERIES 900: ROAD PAVEMENTS – BITUMINOUS BOUND MATERIALS**

922.1 Delete “specified in contract specific appendix 7/3 and the schedule of constraints on site availability in Appendix 1/13”

922.2 insert as sub-clause (v)

Apply surface dressing to road surfaces complying with the National Highways Sector Scheme for Quality Management in Highway Works, Scheme 13 for the Supply and Application of Surface Treatments to Road Surfaces: and RSTA Code of Practice for Surface Dressing 2014.

922.5 Delete “as stated in Appendix 7/3”

Insert as sub-clause 5.1

Modified binders shall have a British Board of Agrément HAPAS Roads

and Bridges Certificate. In the event that no such Certificates have been issued, then in the interim, only modified binders undergoing BBA assessment shall be considered for approval by the Project Manager. The Conventional binder shall be bitumen emulsion complying with BS 434: Part 1, Type KI-70.

922.11 Insert as sub clause 11.1

Properties adjacent to proposed surface dressing sites on urban roads shall receive notice of the proposed works not less than 24 hours and not greater than 72 hours before

commencement. The initial notice shall be by leaflet posted through letterboxes. The leaflet will include a general description of the process together with a request to remove parked cars and a warning about bitumen adhering to soles of shoes. Further notices shall be given when sweeping or remarking operations are to be carried out. The Contractor shall obtain approval from the Engineer for the design and content of all such leaflets and notices prior to distribution.

922.11 Insert as sub-clause 11.2

The Contractor shall take measures to ensure that vehicles are not parked on proposed surface dressing sites.

922.12 Delete sub-Clause 12 and insert: “Traffic Safety and Management shall be strictly in accordance with the requirements of Series 100 and any site specific additional requirements specified by the Engineer.”

922.15 Delete the 2nd sentence.

922.16 Delete “or as specified in Appendix 7/3”.

922.19 Delete the last sentence.

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

This is a complete list of the Numbered Appendices referred to in the **Specification for Highway Works** as modified for this Contract.

| Status | **App No.** | | Title |
| --- | --- | --- | --- |
|  |  | | **INTRODUCTION** |
|  | 0/1 | | Contract-Specific Additional, Substitute and Cancelled Clauses, Tables and Figures Included in the Contract |
|  | 0/2 | | Contract-specific Minor Alterations to Existing Clauses, Tables and Figures Included in the Contract |
|  | 0/3 | | List of Numbered Appendices Referred to in the Specification and Included in the Contract |
|  | 0/4 | | List of Drawings Included in the Contract |
| Not used | 0/5 | | Special National Alterations of the Overseeing Organisations of Scotland/Wales/Northern Ireland |
|  |  | | PRELIMINARIES |
| Not Used | 1/1 | | Temporary Accommodation and Equipment for the Overseeing Organisation |
| Not used | 1/2 | | Vehicles for the Overseeing Organisation |
| Not used | 1/3 | | Radio Communication System for the Overseeing Organisation |
|  | 1/4 | | Working and Fabrication Drawings |
|  | 1/5 | | Testing to be Carried out by the Contractor |
|  | 1/6 | | Supply and Delivery of Samples to the Overseeing Organisation |
|  | 1/7 | | Site Extent and Limitations on Use |
|  | 1/8 | | Operatives for the Overseeing Organisation |
|  | 1/9 | | Control of Noise and Vibration |
| Not used | 1/10 | | Permanent Works to be Designed by the Contractor |
| Not used | 1/11 | | Temporary Works Design |
|  | 1/12 | | Setting Out and Existing Ground Levels |
|  | 1/13 | | Programme of Works |
|  | 1/14 | | Payment Applications |
|  | 1/15 | | Accommodation Works |
|  | 1/16 | | Privately and Publicly Owned Services & Supplies |
|  | 1/17 | | Traffic Safety and Management |
| Not used | 1/18 | | Temporary Highways for Traffic |
|  | 1/19 | | Routeing of Vehicles |
| Not used | 1/20 | | Recovery Vehicles and Operation for Breakdowns |
|  | 1/21 | | Information Boards |
| Not Used | 1/22 | | Progress Photographs |
|  | 1/23 | | Risks to Health and Safety |
| Not used  Not used | 1/24  1/25  1/27 | | Quality Management System  Temporary Closed Circuit Television (CCTV) System for the Monitoring of Traffic  Temporary Automatic Speed Camera System for the Enforcement of Mandatory Speed Limits at Road Works (TASCAR) |
|  | |  |  |
|  | |  | SITE CLEARANCE |
|  | | 2/1 | List of Buildings, etc. to be Demolished or Partially Demolished |
|  | | 2/2 | Filling of Trenches & Pipes |
|  | | 2/3 | Retention of Materials Arising from Site Clearance |
|  | | 2/4 | Explosives & Blasting |
|  | | 2/5 | Hazardous Materials |
|  | |  | **FENCING** |
| Not Used | | 3/1 | Fences, Gates and Stiles |
|  | |  | **ROAD RESTRAINT SYSTEMS (VEHICLE AND PEDESTRIAN)** |
|  | | 4/1 | Road Restraint Systems (Vehicle And Pedestrian) |
| Not Used | | 4/2 | Information Required to Demonstrate Compliance of Road Restraint Systems to BS EN 1317-1, BS EN 1317-2, BS EN 1317-3 and DD Env 1317-4:2002 |
|  | |  | DRAINAGE AND SERVICE DUCTS |
|  | | 5/1 | Drainage Requirements |
|  | | 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  Not Used | | 5/7  5/8 | Thermoplastics Structural Wall Pipes and Fittings  Maintenance Plans for Soakaways (02/20) |
|  | |  | EARTHWORKS |
|  | | 6/1 | Requirements for Acceptability and Testing etc. of Earthworks Materials |
|  | | 6/2 | Requirements for Dealing with Class U1B and Class U2 Unacceptable Material (11/04) |
| Not Used | | 6/3 | Requirements for Excavation, Deposition, Compaction (Other than Dynamic Compaction) |
| Not used | | 6/4 | Requirements for Class 3 Material |
| Not used  Not Used  Not used  Not used  Not Used  Not Used  Not used  Not used | | 6/5  6/6  6/7  6/8  6/9  6/10  6/11  6/12  6/13  6/14  6/15 | Geotextiles Used to Separate Earthworks Materials  Fill to Structures & Fill Above Structural Foundations  Sub-formation & Capping & Preparation & Surface Treatment of Formation  Topsoiling  Earthwork Environmental Bunds, Landscape areas, Strengthened Embankments  Ground Anchorages, Crib Walling and Gabions  Swallow Holes & Other Naturally Occurring Cavities & Disused Mine Workings  Instrumentation & Monitoring  Ground Improvement  Limiting Values for Pollution of Controlled Waters (11/06)  Limiting Values for Harm to Human Health and the Environment (11/04) |

| Status | **App No.** | | Title |
| --- | --- | --- | --- |
|  | |  | ROAD PAVEMENTS – GENERAL |
|  | | 7/1 | Permitted Pavement Options (Schedules 1, 2, 3, 4 & 5) |
|  | | 7/2 | Excavation, Trimming and Reinstatement of Existing Surfaces |
|  | | 7/3 | Surface Dressing – Performance Specification (Sheets 1, 2 & 3) |
|  | | 7/4 | Bond Coats, Tack Coats and Other Bituminous Sprays (Sheets 1, 2 & Binder Data Sheet) |
| Not used | | 7/5 | In Situ Recycling: The Remix and Repave Processes |
| Not used | | 7/6 | Breaking Up or Perforation of Existing Pavement |
| Not used | | 7/7 | Slurry Surfacing Incorporating Microsurfacing (Sheets 1, 2 & 3) |
| Not used | | 7/8 | Not Used |
|  | | 7/9 | Cold-Milling (Planing) of Bituminous Bound Flexible Pavement |
| Not used | | 7/10 | Not Used |
|  | | 7/11 | Overband and Inlaid Crack Sealing Systems |
| Not used | | 7/12 | Arrester Beds |
|  | | 7/13 | Saw-Cut Crack and Seal Bituminous Overlays on Existing Jointed Concrete Pavements |
|  | | 7/14 | Preparation of Jointed Concrete Pavements Prior to Overlaying and Saw-Cut and Seal of Bituminous Overlay |
| Not used | | 7/15 | Saw-Cut, Crack and Seat Existing Jointed Reinforced Concrete Pavements |
| Not used | | 7/16 | Cracking and Seating of Jointed Unreinforced Concrete Pavements and CBM Bases |
| Not used | | 7/17 | Cracking Plant and Equipment Progress Record |
|  | | 7/18 | Site Specific Details and Requirements for Cold Recycled Bitumen Bound Material |
|  | | 7/19 | Site Specific Details and Requirements for Recycled Cement Bound Material |
| 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 | Repair to Potholes |
|  | |  | **ROAD PAVEMENTS – CONCRETE AND CEMENT BOUND MATERIALS** |
| Not used | | 10/1 | Plant and Equipment for the Construction of Exposed Aggregate Concrete Surface |
|  | |  | **KERBS, FOOTWAYS AND PAVED AREAS** |
|  | | 11/1 | Kerbs, Footways and Paved Areas |
| Not used | | 11/2 | Access Steps |
|  | |  | TRAFFIC SIGNS |
| Not used | | 12/1 | Traffic Signs: General |
| Not used | | 12/2 | Traffic Signs: Marker Posts |
|  | | 12/3 | Traffic Signs: Road Markings and Studs |
| Not used | | 12/4 | Traffic Signs: Cones, Cylinders, FTD’s and Other Traffic Delineators |
| Not used | | 12/5 | Traffic Signs: Traffic Signals |
| Not used | | 12/6 | Traffic Signs: Special Sign Requirements on Gantries |
|  | |  | **ROAD LIGHTING COLUMNS AND BRACKETS, CCTV MASTS AND CANTILEVER MASTS** |
| Not used | | 13/1# | Information to be Provided When Specifying Lighting Columns and Brackets |
| Not used | | 13/2 | (Specification for Highway Works) Typical Lighting Column & Bracket Data Sheets 1 & 2 |
| Not used | | 13/3 | Instructions for Completion of Column & 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 Mast Data Sheets |
| Not used | | 13/7 | Information to be provided when specifying cantilever masts |
| Not used | | 13/8 | (Specification for Highway Works) Typical cantilever masts data sheets 1 and 2 |
| Not used | | 13/9 | Instructions for completion of cantilever masts data sheets |
|  | |  | **ELECTRICAL WORK FOR ROAD LIGHTING AND TRAFFIC SIGNS** |
| Not used | | 14/1 | Site Records |
| Not used | | 14/2 | Location of Lighting Units and Feeder Pillars |
| Not used | | 14/3 | Temporary Lighting |
| Not used | | 14/4 | Electrical Equipment for Road Lighting |
| Not used | | 14/5 | Electrical Equipment for Traffic Signs |
|  | |  | MOTORWAY COMMUNICATIONS |
| Not used | | 15/1 | Motorway Communications |
| Not used | | 15/2 | Cable Duct Requirements |
|  | |  | **PILING AND EMBEDDED RETAINING WALLS** |
| Not used | | 16/1 | General Requirements for Piling and Embedded Retaining Walls |
| Not used | | 16/2 | Precast Reinforced and Prestressed Concrete Piles and Precast Reinforced Concrete Segmental Piles |
| Not used | | 16/3 | Bored Cast-in-Place Piles |
| Not used | | 16/4 | Bored Piles Constructed Using Continuous Flight Augers and Concrete or Grout Injection through Hollow Auger Stems |
| Not used | | 16/5 | Driven Cast-in-Place Piles |
| Not used | | 16/6 | Steel Bearing Piles |
| Not used | | 16/7 | Reduction of Friction on Piles |
| Not used | | 16/8 | Non-Destructive Methods for Testing Piles |
| Not used | | 16/9 | Static Load Testing of Piles |
| Not used | | 16/10 | Diaphragm Walls |
| Not used | | 16/11 | Hard/Hard Secant Pile Walls |
| Not used | | 16/12 | Hard/Soft Secant Pile Walls |
| Not used | | 16/13 | Contiguous Bored Pile Walls |
| Not used | | 16/14 | King Post Walls |
| Not used | | 16/15 | Steel Sheet Piles |
| Not used | | 16/16 | Integrity Testing of Wall Elements |
| Not used | | 16/17 | Instrumentation for Piles and Embedded Walls |
| Not used | | 16/18 | Support Fluid |
|  | |  | **STRUCTURAL CONCRETE** |
| Not used | | 17/1 | Schedule for the Specification of Designed Concrete |
| Not used | | 17/2 | Concrete – Surface Protection Systems (03/20) |
| Not used | | 17/3 | Concrete – Surface Finishes |
| Not used | | 17/4 | Concrete – General |
| Not used | | 17/5 | Buried Concrete |
| Not used | | 17/6 | Grouting and Duct Systems for Post-tensioned Tendon |
| Not used | | 17/7 | Precast concrete products |
| Not used | | 17/8 | Post-installed Anchors and Reinforcing Bar Connections (03/20) |
|  | |  | **STRUCTURAL STEELWORK** |
| Not used | | 18/1 | Requirements for Structural Steelwork |
|  | |  | **PROTECTION OF STEELWORK AGAINST CORROSION** |
| Not used | | 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 |
|  | |  | **WATERPROOFING FOR STRUCTURES** |
| Not used | | 20/1 | Waterproofing for Concrete Structures |
|  | |  | **BRIDGE BEARINGS** |
| Not used | | 21/1 | Bridge Bearing Schedule |
| Not used | | 22/1 | Not Used |
|  | |  | **BRIDGE EXPANSION JOINTS AND SEALING OF GAPS** |
| Not used | | 23/1 | Bridge Deck Expansion Joint Schedule |
| Not used | | 23/2 | Sealing of Gaps Schedule (Other than in Bridge Deck Expansion Joints) |
|  | |  | **BRICKWORK, BLOCKWORK AND STONEWORK** |
| Not used | | 24/1 | Brickwork, Blockwork and Stonework |
|  | |  | **SPECIAL STRUCTURES** |
| Not used | | 25/1 | Requirements for Corrugated Steel Buried Structures |
| Not used | | 25/2 | Requirements for Reinforced Soil and Anchored Earth Structures |
| Not used | | 25/3 | Requirements for Pocket -Type and Grouted Cavity Reinforced Brickwork Retaining Wall Structures |
| Not used | | 25/4 | Environmental Barriers |
| Not used | | 25/5 | Requirements for Buried Rigid Pipes for Drainage Structures |
|  | |  | **MISCELLANEOUS** |
| Not used | | 26/1 | Ancillary Concrete |
| Not used | | 26/2 | Bedding Mortar |
| Not used | | 26/3 | Cored Thermoplastic Node Markers |
|  | | 26/4to | Not Used |
|  | | 26/7 |  |
| Not used | | 26/8 | Foamed Concrete for Structures (03/20) |
|  | |  |  |
|  | |  | **LANDSCAPE AND ECOLOGY** |
| Not used | | 30/1 | General, Sheets 1 and 2 |
| Not used | | 30/2 | Weed Control |
| Not used | | 30/3 | Control of Rabbits and Deer |
| Not used | | 30/4 | Ground Preparation |
|  | | 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 |
|  | |  | **MAINTENANCE PAINTING OF STEELWORK** |
| Not used | | 50/1 | (Specification for Highway Works) Form HA/P1 (Maintenance) Paint System Sheet |
| Not used | | 50/2 | Requirements for Other Work |
| Not used | | 50/3 | (Specification for Highway Works) Form HA/P2 Paint Data Sheet |
| Not used | | 50/4# | (Specification for Highway Works) Form HA/P3 Paint Sample Despatch List: Sheets 1 and 2 |
| Not used | | 50/5 | General Requirements |

**APPENDIX 0/4: LIST OF DRAWINGS INCLUDED IN THE CONTRACT**

**1** Contract-specific Drawings Supplied to Each Tenderer

|  |  |
| --- | --- |
| **Drawing No.** | **Title** |
| LBE/HR&RC/001 | INFORMATION BOARD – TYPE 1 |
| LBE/HR&RC/002 | GULLY DETAIL TYPE 1 |
| LBE/HR&RC/003 | GULLY DETAIL TYPE 2 |
| LBE/HR&RC/004 | GULLY DETAIL TYPE 3 |
| LBE/HR&RC/005 | ASPHALT SPEED HUMP |
| LBE/HR&RC/006 | ASPHALT SPEED CUSHION |
| LBE/HR&RC/007 | ASPHALT SPEED TABLE |

(ii) Inspected by Tenderers

No drawings are to be made available for inspection by tenderers

(iii) Brought Into the Contract by Reference

|  |  |  |  |
| --- | --- | --- | --- |
| **Drawing No.** | **Title** | **Date** | **Aspect/Alternative required if not whole drawing** |
| All | The drawings included with volume 3 of the Manual of Contract Documents for Highway Works | | |
| All | The drawing included within “Sewers for Adoption, 7th Edition” as published by Water UK / Wrc plc | | |

**APPENDIX 1/4: WORKING AND FABRICATION DRAWINGS**

|  |  |  |
| --- | --- | --- |
| Series | **Description of work** | **Minimum period for submission** |
| 100 | Traffic management proposals, for a particular activity, when requested by the Overseeing Organisation in accordance with Appendix 1/17 | Not less than two weeks before the commencement of the activity in question. |

**APPENDIX 1/5: TESTING TO BE CARRIED OUT BY THE CONTRACTOR**

**1** Tests comparable to those specified in this Appendix will be necessary for any equivalent work, goods, or materials proposed by the *Contractor* (see sub-Clause 105.6).**2** 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.

**3** Unless otherwise scheduled under Clause 2602 samples of concrete complying with that Clause are not required.

**4** (N) indicates that a UKAS sampling and test report or certificate is required.

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Clause** | **Work, Goods or Material** | | | | **Test** | | **Frequency of Testing** | | **Test Certificate** | **Comments** |
| **Series 300** | | | | | | | | | | |
| 306 | | Permanent fencing | | |  | |  | Required | | Quality management scheme applies |
|  | | Concrete components | Cover to reinforcement | | 1per consignment (maximum 1 per 100 components)  (BS 1722) |
| 308 | | Gates and stiles | | |  | |  | Required | | Quality management scheme applies |
|  | | Reinforced concrete posts | Cover to reinforcement | | 1per consignment (maximum 1 per 100 components)  (BS 3470) |
| 308 & 311 | | Preservation of timber | | | Full sapwood penetration | | As required in sub-Clause 3.11.2(v) | Required | | Quality management scheme applies |
| **Series 400** | | | | | | | | | | |
| 411 | | | Pedestrian Parapets and Guardrails | | |  | Manufacturer’s tests: yield/proof strength of material, ultimate strength and the extension at break |  | | (N) |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Series 500** | | | | | | |
| 501 | Pipes for drainage and service ducts | |  | 1 per consignment | Required | Production certification scheme applies. |
|  |  | Vitrified clay |  |  | Required |  |
| PVC-U |
| 507 | Chambers | |  |  | Required |  |
|  | Precast concrete |  | Product certification scheme applies |
| Manhole steps |  |  |
| Steel fitments |
| Covers, grates and frames |  | Product certification scheme applies |
|  |  | Cover bolts |  |  |  | Quality Management scheme applies |
| 508 | Gullies and pipe junctions | |  |  | Required | Quality Management scheme applies |
|  | Precast concrete |  |
| Clay |  |
| 516 | Combined drainage and kerb systems | | Load test | A minimum of 1 test and not less than 1 test per 1000m for each type and source | Required | Certification that the systems comply with Clause 516 is required |
| 517 | Linear drainage systems | | Load test | A minimum of 1 test and not less than 1 test per 1000m for each type and source | Required | Certification that the systems comply with Clause 517 is required |
| **Series 600** | | | | | | |
| 601, 631 to 637, 640 | Class 5B topsoil | | Grading | 1 per consignment | Required |  |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Series 700** | | | | | | | | | | | | | | |
| 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 the requirements of this Clause | Required | The results of all quality control checks shall be delivered promptly to the Engineer on request | |
| 711 | | | | | Over-banding and inlaid crack sealing systems | | | |  | |  | Required | BBA certification (or equivalent) applies | |
| **Series 800** | | | | | | | | | | | | | | |
| 801, 803, 804, 805 | | | | | Subbase mixtures beneath surface of a road or paved central reserve | | | | Grading and fines content | |  | Required | Results of routine control tests from the factory production control system shall be delivered promptly to the Engineer on request | |
| Plastic Index (N) | |
|  | | | | OMC/mc (N) | |
| Water absorption (N) | |
| **Series 900** | | | | | | | | | | | | | | |
| 901,  925, 937, 938 & 943 | Aggregates for bituminous materials | | | | |  | | | |  | | Required | National quality management sector schemes apply | |
| 901,  925, 937, 938 & 943 | Binders for bituminous materials | | | | |  | | | |  | | Required.  Modified binders should have a BBA HAPAS Road and Bridges Certificate. Where no such certification is available, only binders being assessed by BBA will be considered for approval | National quality management sector schemes apply | |
| 903 to 912, 914  916, 925,  926, 930,  932 to 938, 942, 943, 946 to 948 | Bituminous mixtures | | | | | Grading (N) | | | |  | |  | National quality management sector schemes apply | |
| Binder content (N) | | | |
| 911 | | Rolled asphalt surface course (design mix) | | | | |  | | |  | | Required | National quality management sector schemes apply | |
| 919SR, 922, 923, 939 | | Surface Dressing | | | | |  | | |  | |  | National quality management sector schemes apply | |
|  | | Binder | | | | | Binder spray bar jet test | | | One per site/per day | | Required | See Clause 919SR para 14 | |
|  | |  | | | | | Product identification | | | 1 per product per  source annually | | Required | See Clause 919SR para 11 | |
|  | |  | | | | | Vialit cohesion (N) | | | 1 per product per  source annually | | Required | See Clause 919SR para 14 | |
|  | |  | | | | | Accuracy of spread RN 39 para 7 | | | 1 for each binder  sprayer per week | | Required | See Clause 919SR para 14 | |
|  | |  | | | | | Rate of spread | | | 2 for each binder  sprayer per week | | Required | See Clause 919SR para 12 | |
|  | |  | | | | | Penetration at 25ºC and  5ºC (N) | | | Every batch | |  | For cut back binders as supplied, manufacturer’s  QA viscosity test results  may be submitted | |
|  | |  | | | | | Binder Viscosity RN 39,  BS 434 | | | 1 for each binder  sprayer per week | |  |  | |
|  | |  | | | | | Bitumen Content BS 434 | | | 1 for each binder  sprayer per week | |  |  | |
|  | | Chippings | | | | | Resistance to (PSV)  polishing (N) | | | 3 per source annually | | Required | See Clause 919SR para 15 | |
|  | |  | | | | | Resistance to abrasion  (AAV) (N) | | | 3 per source annually | | Required | Within 12 months of the date of the Tender, and See  Clause 919SR para 15 | |
|  | |  | | | | | Grading (N) | | | 1 per 200 tonnes or 2 per stockpile per  source if less than  200t . | | Required | See Clause 919SR para 15. Where compliance less than  70% 1 test to be carried per  60t. | |
|  | |  | | | | | Binder content (N) | | | 1 per 200 tonnes | | Required | Coated chippings only | |
|  | |  | | | | | Flakiness index (N) | | | 1 per 200 tonnes | | Required | See Clause 919SR para 15 | |
|  | |  | | | | | Flakiness Rating (6mm  chippings) | | | 1 per stockpile per  source | |  | See Clause 919SR para 15 | |
|  | |  | | | | | % uncrushed material (gravel) | | | 1 per stockpile per  source | |  | See Clause 919SR para 15 | |
|  | | Chippings cont… | | | | | Accuracy of spread (N) | | | 1 for each chipping  spreader for every  change of chipping  size or source | | Required | Initial test not more than 6  weeks prior to start of work.  See Clause 919SR para 18 | |
|  | |  | | | | | Rate of spread | | | Every 500 linear  metres initially | | Required | See Clause 919SR para 16 | |
|  | | System | | | | | TAIT or BBA/HAPAS | | |  | | Required |  | |
|  | | Rollers | | | | | Spray bars working | | |  | | Required |  | |
| 924 | | High friction surfaces | | | | | Quality control checks | | |  | | Required | BBA certification (or equivalent) applies | |
| System coverage | | |
| 937 | | Stone mastic asphalt (SMA) binder course and regulating course | | | | |  | | |  | | Required | National quality management sector schemes apply | |
| 942 | | Thin surface course systems | | | | |  | | |  | | Required | National quality management sector schemes apply.  BBA certification (or equivalent) applies | |
| 943 | | Rolled asphalt surface course (performance- related design mix) | | | | |  | | |  | | Required | National quality management sector schemes apply | |
| 944 | | Performance- specified base | | | | |  | | |  | | Required | National quality management sector schemes apply | |
| **Series 1000** | | | | | | | | | | | | | | |
| 1001  1030 1044 | | Cement | | | | | |  | | |  | Required | Quality management and product certification schemes apply | |
| Aggregates | | | | | |  | | |  | Required | Results of routine control tests from the factory production control system shall be delivered    promptly to the Engineer on request | |
| **Series 1200** | | | | | | | | | | | | | | |
| 1202 | | | Permanent traffic signs | | | | |  | | |  | Required | Certification that the traffic sign is capable of passing the tests in BS 873: Part 1 is required | |
| 1210 | | | Holding down bolts and anchorages of permanent bollards | | | | |  | | |  | Required | Certification that the holding down bolts and anchorages capable of complying with the performance requirements of BS 873: Part 3 is required | |
| 1212 | | | Road markings | | | | | As stated in BS EN 1824 | | |  | Required | National quality management sector scheme applies. | |
| 1214 | | | Temporary cones, cylinders, FTD’s and other delineators | | | | |  | | |  | Required | Certification that at least 1 in 500 of any batch of cones, cylinders, FTD’s and other delineators have passed the tests in Clause 1214 as appropriate is required | |
| **Series 1700** | | | | | | | | | | | | | | |
| 1702, 1704 | | | | Cement types as stated in sub- Clause 1702.1 | | | | |  | |  | Required monthly for each type of cement | Quality management and product certification schemes apply | |
| 1712 | | | | Reinforcement | | | | |  | |  | Required monthly for each type of cement | Product certification schemes applies | |
| **Series 2400** | | | | | | | | | | | | | | |
| 2401 | | | | Masonry cement | | | | |  | |  | Required | | Quality management schemes apply |
| **Series 2600** | | | | | | | | | | | | | | |
| 2604 | | | | | Plastic coating to fencing posts, gates and ancillaries | | | |  | |  | Certification by powder manufacturer and coating applicator is required | | Quality management schemes apply |

Tests comparable to those specified in this Appendix will be necessary for any equivalent work, goods, or materials proposed by the Contractor (see sub-Clause 105.6).

2 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.

3 Unless otherwise scheduled under Clause 2602 samples of concrete complying with that Clause are not required.

4 (N) indicates that a UKAS sampling and test report or certificate is required.

**APPENDIX 1/6: SUPPLY AND DELIVERY OF SAMPLES TO THE OVERSEEING ORGANISATION**

**1** The *Contractor* shall, when instructed in any *Works Order* , arrange and report upon the testing of any material used for that scheme. The level of testing shall be no greater than the suggested levels contained within Volume 2 of the Specification for Highway Works. The Overseeing Organisation’s instruction to carry out such testing shall be a variation order, and payment shall be made accordingly. The precise requirements for such testing shall be as stated in the instructing *Works Order*  and may include, but not necessarily be limited to, the materials listed in the following table.

| **Clause** | **Material to be Tested** |
| --- | --- |
| 609 & 621 | Geotextiles |
| 601, 631 to 637, 640 | Class 1C, 6F4, 6F5, 6N, 6P, 7A and 7B fill material |
| 710 | Recycled aggregates |
| 801, 803, 804 & 805 | Subbase and subbase mixtures |
| 809 | Slag bound materials |
| 903 to 912, 914, 916, 925, 926, 930, 932 to 938, 942, 943, 946 to 948 | Bituminous mixtures |
| 929 | Base and binder course macadams |
| 915, 925 | Coated Chippings |
| 1707 | Concrete cubes |
| 1708 | Fresh concrete |
| 1710 | Concrete packing |
|  | Mortar packing |
|  | Epoxy resin bounding agent |
| 2003 | Additional bituminous protection |
| 2004 | Tar |
|  | Cut back bitumen |

**APPENDIX 1/7: SITE EXTENT AND LIMITATIONS ON USE**

**1 Extent of site**

The extent of each scheme will be defined on project specific drawings.

In addition, the Contractor will be allowed access to erect and dismantle traffic management signs and equipment as required by Chapter 8 of the Traffic Signs Manual 2006.

The ‘Network’ area of the London Borough of Enfield is approximately 8,200 hectares in size, plus Housing estates managed by Enfield council outside of Enfield, and works can be on any site within this area, including roads, footways, bridle-ways, cycle-ways, bus lanes, car parks, playgrounds, schools, public buildings, housing estates, industrial estates, culverts, bridges, ditches and Network Rail land.

**2 Limitations on the Use of Sites**

Occupation of the SiteThe *Contractor* shall work within the Normally Permitted Working Hours stated in Clause 174AR of the Specification for this contract and any time other constraints that apply or are stated in the instructing *Works Order* . The *Contractor* shall, at all times, limit his occupation of any Site to a reasonable minimum to carry out safely the work that he has been instructed to do.Noise and VibrationThe *Contractor* shall, other than in accordance with a specific instruction or permission given by the Overseeing Organisation and the Employer’s Environmental Protection & Safety Team, work within the *Authority’s* requirements in respect of the control of noise and vibration, as stated in Clause 109 and Appendix 1/9 and on any particular *Works Order* .Public Safety and Traffic ManagementThe *Contractor* shall, other than in accordance with a specific instruction or permission given by the Overseeing Organisation, work within the requirements in respect of public safety and traffic management, stated in this Service Information as well as the requirements in respect of health and safety planning stated in Appendix 1/17 of this Specification.Petroleum and GasNo petroleum spirit within the meaning of the Petroleum Consolidation Act 1928 shall be stored on Site without the prior written consent of the Overseeing Organisation. Such consent shall not be given unless the Contractor has provided copies of all relevant licenses to the Overseeing Organisation. No acetylene, oxygen, propane or other gas cylinders shall be stored on Site without the prior written consent of the Overseeing Organisation. The *Contractor’s* arrangements for the safe storage of petroleum and gases shall be fully described in the Health and Safety Plan and the *Contractor* shall ensure that such arrangements are adhered to at all times.Service CoversThe *Contractor* shall ensure that access to apparatus owned and operated by Statutory Undertakers is not unreasonably obstructed at any time.Further Limitations at Individual SitesThe *Contractor* shall comply with any further reasonable limitations stated on any particular *Works Order* .The Contractor will also ensure that materials are not stored or plant left standing within 1.2 metres of a live carriageway and that site lines for entrances, exits, or bends are not obstructed. The Engineer shall be the sole judge of what comprises an obstruction and may on occasion require materials to be kept further than 1.2 metres away from the live carriageway where he/she considers a hazard may otherwise be created.

All driveways and accesses to factories, shops, businesses and houses must be maintained.

Provisions must be made for pedestrians as outlined in Appendix 1/17.

# The Contractor’s working area on the footway and carriageway will be limited to a maximum length of 150m at any one time, where practicable.

**Temporary Fencing**

The Contractor shall, erect, re-erect, maintain and subsequently take down and remove, Type A or Type B temporary fencing (see Substitute Clause 303SR) as required by location.

**The Preambles to the Schedule of Rates has been extended to include for Type A and Type B temporary fencing.**

Unless specifically instructed in a Works order for providing temporary fencing where there no other associated works are being carried out, then Type A and Type B temporary fencing shall not be measured and valued separately.

**APPENDIX 1/8: OPERATIVES FOR THE OVERSEEING ORGANISATION**

1 General(i) All operatives shall be equipped with appropriate Personal Protective Equipment by the *Contractor*;(ii) All operatives shall be capable of taking initiative and operating under reduced supervision after initial instruction.

2 Schedule of Operatives

|  |  |  |
| --- | --- | --- |
| OPERATIVE REQUIRED | NUMBER | PERIOD REQUIRED |
| Traffic Management Banksman  Survey / General Assistant | As instructed in any *Works Order*  As instructed in any *Works Order* | As instructed in any *Works Order*  As instructed in any *Works Order* |

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

1. Without in any way limiting the liabilities or obligations imposed upon the Contractor elsewhere in the Contract, the Contractor should be aware of the requirements and recommendations of The Control of Pollution Act 1974, with particular reference to the control of noise on construction sites (Part Ill, Section 60 and 61), the Control of Noise (Code of Practice for Construction Sites (Order 1975 (Statutory Instrument 1975 No. 2115) and BS 5228-2:2009 + A1:2014 Code of Practice for Noise Control on Construction and Demolition Sites.

In particular, BEST PRACTICABLE MEANS as defined in Section 72 of the Control of Pollution Act 1974 shall be employed at all times to reduce noise TO A MINIMUM. Best Practicable means should include, but not be limited to, the following:-

1. 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 effective order so that extraneous noise from mechanical vibration, creaking, squeaking, etc. shall be reduced to a minimum.
2. All compressors and generators 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 manufacturer.
3. Machines in intermittent use shall be shut down when not in use or throttled down to a minimum as necessary.
4. Noise from construction activities shall not be audible outside the nearest or worst affected occupied premises outside the hours specified in the following table. In particular, none of the activities, or mechanical plant listed below shall be undertaken or used:-

Mechanical breakers, compressors, saws etc.

Mechanical excavation, sawing, etc.

2. The Contractor shall furnish such information as may be requested by the Engineer or the Local Authority Environmental Health officer in relation to noise levels emitted by constructional plant installed on the Site, or which the Contractor intends to install on the Site, and shall afford all reasonable facilities to enable them to carry out such site investigations as may be necessary.

1. Noise from construction activity, shall not give rise to noise levels in excess of those given in the following Table at the facade of the nearest or worse affected occupied premises. Noise levels shall be monitored by the method set out in Appendix E of BS 5228-2:2009 + A1:2014 Appendix G of B5228-1:2009 + A1:2014.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Period** | Hours | No. of Hours | Noise dB(A) Leq.  (2) | Peak Noise dB(A) (1) |
| Monday – Friday  (excl. Public Holidays) | 08.00 – 18.00 | 10 | 75 | 85 |
| Saturdays | 08.00 – 13.00 | 5 | 75 | 85 |

or 3dB (A) above the ambient equivalent noise level with no construction works in

progress whichever is the higher.

**NOTE:**

1. Peak Noise Levels refer to levels recorded on a BS EN 60651:1994 Type 1 precision sound level meter set to slow response.
2. Leq. Noise values are the values applicable to the equivalent continuous sound level value, over the relevant period, measured at points as stated in the Contract.
3. A noise control station shall be any position determined by the Engineer.
4. The ambient equivalent continuous noise level Leq. is the noise level to which people in the neighbourhood are normally exposed and which does not originate from the site, as defined in BS 5228-1:2009+A1:2014.

4. The Engineer may agree to or specify that works shall be carried out outside the periods and hours specified in the table above and in such circumstances, the Contractor shall discuss with the Employer’s Environmental Health Officer, the proposed works and methods and plant intended to be used in order to agree satisfactory arrangements for minimising noise levels.

5. The Contractor may be given permission to carry out Works which give rise to noise levels exceeding those in the above Table provided that at least seven days’ notice of the exact date and time of these works is given to the Engineer in writing, together with the measures proposed by the Contractor to alleviate the discomfort caused by his works on affected occupants of adjacent buildings.

6. In the event of the Local Authority serving notice on the Contractor imposing noise levels or restricting working hours to a greater extent that those set out above, the Contractor shall immediately consult the Engineer as to whether the matter shall be made the subject of an Appeal as provided under the Act. This provision shall not apply to the protection of persons on Site against noise which is wholly the responsibility of the Contractor.

7. The foregoing requirements may be waived in any emergency situation or where safety would be otherwise at risk, provided that the Contractor makes every effort to ensure that the work in question is completed as quickly and quietly as possible and with minimal disturbance to people living or working nearby.

**Vibration Control**

8. The Contractor shall select and utilize methods of working and items of plant so that the maximum ground vibrations do not exceed a peak particle velocity of 1 nm per second at any occupied property and 31 nm per second at any other property.

9. In exceptional circumstances the Contractor may apply to the Engineer for consent to carry out works which he considers will exceed the specified limit of ground vibration. The procedure for submitting and processing the application will be as specified for obtaining consent to exceed the specified noise levels.

**Dust and Air Pollution**

10. The Contractor will take all necessary measures to avoid creating a dust nuisance.

Measures to prevent dust will include the following practices:-

1. The enclosure of material stockpiles at all times and damping down of dusty materials using water sprays during dry weather.
2. The hard surfacing of heavily used areas which will be kept clean by brushing and water spraying regularly.
3. Control of cutting or grinding of materials on site. Water-feed facilities shall be used.
4. The complete sheeting of the sides of all vehicles carrying spoil and other dusty materials.
5. Materials should be stored away from the site boundary wherever possible.
6. Completed earthworks to be sealed as soon as reasonably possible.

The effectiveness of these measures shall be monitored frequently by the Contractor and reviewed at progress meetings.

The Local Authority will be kept informed of the ongoing situation.

11. The Contractor shall take all necessary precautions to prevent the occurrence of smoke emissions or fumes from site plant or stored oils for safety reasons and to prevent such emissions or fumes drifting into residential areas. In particular, plant should be well maintained and measures taken to ensure that they are not left on for long periods when not directly in use.

**APPENDIX 1/12: SETTING OUT AND EXISTING GROUND LEVELS**

1 The location and levels of all ground markers and bench marks will either be as indicated in the scheme information / Works Order or as agreed on site.

2 The *Contractor* shall, in accordance with the setting out information included in the instructing *Works Order* , set out, mark and maintain until they are no longer required, all reference lines, templates, bench marks and markers, permanent or temporary, necessary for the setting out and checking of the Works. If any setting out information provided to the *Contractor* is unclear, unworkable or not understood, the *Contractor* shall bring this to the immediate attention of the Overseeing Organisation who will clarify or correct the information as is appropriate. 3 The *Contractor* shall not commence any general site clearance before the Overseeing Organisation has checked and accepted the setting out of the Site boundaries.4The *Contractor* shall not commence any construction work before the Overseeing Organisation has checked and accepted the *Contractor’s* setting out of the works. 5 The Overseeing Organisation’s acceptance of the *Contractor’s* setting out does not relieve the *Contractor* of any of his responsibilities under this contract.6 If any bench marks or permanent ground markers become displaced during the project then the Contractor shall re-establish them immediately and provide the Overseeing Organisation with the amended position and level details.

**APPENDIX 1/13: CONTRACTOR’S PROGRAMME**

1. The Contractor may have to prepare an ICC Conditions of Contract Term Version Clause 14 programme of works depending on the size and nature of the project, in accordance with the Contract, showing:
2. The scheme starting date
3. The scheme completion date
4. Planned scheme completion
5. The order and timing of operations which the Contractor plans to do in order to complete the scheme in the form of the Critical Path Network (activity-on-node) or a time based cascade (or linked-bar) chart produced as a result of the Critical Path analysis. The level of detail provided shall be appropriate to each stage of the Works and all activities and constraints. Each activity shall be given a short title and reference number and its immediate predecessor and successor activities identified, together with the nature of the links and any lead or lag delays. In addition to the above mentioned Network or Chart, the Contractor shall provide all data necessary to enable the Engineer to duplicate the Contractor’s Network or Chart.
6. His provisions for:
   * Float
   * Time risk allowances
   * Health and safety requirements
   * The general constraints set out in this contract and this Appendix
   * Any specific constraints identified in the instructing Works Order.
7. The dates when, in accordance with the works programme, the Contractor will need:

* Access to the Site
* Acceptances
* Plant, material, and other things to be provided by the Employer and
* Information for Others.

1. For each operation, a statement of how the Contractor plans to do the work identifying the principal equipment and other resources which he plans to use.
2. In constructing the Critical Path Network of the Programme of Works, the Contractor shall comply with the following ‘Rules of Construction’:
3. Circular-loop linkages between any two activities must be avoided;
4. The units of time used for activity duration’s and lags may be hours, days, weeks, months or years. Duration’s and lags must be measured in whole numbers of these units. No other units may be used;
5. Any grouping-together of activities must be represented by a ‘heading’ activity, below which these grouped activities must be ‘embedded’ in such a way that the ‘heading’ activity acquires the overall duration of the ‘grouped’ activities;
6. Activities start and end dates may be ‘scheduled’, ‘actual’, ‘early’, ‘late’ or ‘must’ dates. No other date types may be used;
7. When time ‘lags’ are introduced between activities, the calendar under which the lag operates must be an overall ‘project’ calendar, and not a calendar particular to any resource or activity. All lags, therefore, will operate on the same calendar.

Any other data, without which a true representation of the Contractor’s Programme of Works cannot be created, must also be provided.

The Contractor shall be responsible for all permits / notices associated with their works.

1. The Contractor shall, whenever programming any part of the Works, take all constraints into account including, but not limited to:
2. The six-week notification period required for operations that may affect the Transport for London Road Network (TLRN);
3. The working time and noise constraints;
4. Any constraints associated with consultations or works affecting privately and publicly owned services and supplies, whether undertaken by the Contractor or other;
5. Any permits or possessions required;
6. Any notice requirements associated with public safety and traffic management measures;
7. Any restrictions arising from the use of substances hazardous to health;
8. Any trials and demonstrations to be undertaken in advance of the main works;
9. Any time and weather condition limitations associated with the application of surface treatments, and their effect on the need to reopen parts of the network to traffic at peak periods;
10. Maintaining access to all businesses, residents and other persons such as customers, postmen, delivery men, etc. who necessarily require pedestrian and vehicular access at any time.

4. The Contractor shall also prepare a monthly programme, showing their proposals for scheduling all of the projects for which they have received Works Orders in a format acceptable to the Overseeing Organisation, and submit the current edition at Progress meetings held at the monthly Contract/Performance Meeting.

**APPENDIX 1/14: PAYMENT APPLICATIONS**

**1** The Contractor shall submit an individual application for payment for each Works Order with the Works Order reference clearly stated.

**2** Whenever dealing with matters covered by the Schedule of Rates and Prices, be set out under Part and Section headings similar to those in the Schedule of Rates and Prices and shall separately identify each item and specify quantity, unit, rate and value. Items not described in Schedule of Rates and Prices 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 Clause 60(1) 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.

**3** In accordance with Clause 60 (1) of the Conditions of Contract the Contractor shall submit a monthly payment statement showing each works order, and including the following :-

Works Order reference

Scheme Name

Scheme Engineer / Team

Order value

Current payments to date

Estimated or Final valuation

Status of approval

**APPENDIX 1/15: ACCOMMODATION WORKS**

**1** The *Contractor* shall undertake the Accommodation Works as stated in the instructing *Works Order*.**2** The *Contractor* shall not work on any property that does not belong to the Employer without the Employer’s prior written instruction to do so.

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

**1** Copies of information regarding the location of, and requirements relating to Statutory Undertaker’s apparatus, will be included in the instructing *Works Order*  for each scheme which involves excavation below existing level.

**2** The Contractor shall, however, treat all apparatus location information as preliminary and shall make his own arrangements with the Statutory Undertakers to ensure that all of their apparatus is accurately located before commencing any work on site.

**3**. 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.

**4** Private Services to individual properties will not generally be 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 diversion of private services affected by the Works.

**5** Disconnected apparatus can be removed by Contractor only with the prior approval of the Authority concerned.

**6** The Contractor is reminded that much of the public utility industry is now privatised and that the number of companies is constantly changing, as are the names and contact details of existing ones. The list included at the end of this Appendix is the most up to date that the Employer can provide, but no guarantee of its accuracy can be given or should be implied.

**7** **Damage to Plant, Services etc.**

The Contractor shall immediately report to the Engineer and owner, any damage done to any underground plant, equipment, apparatus or works, and subject to the full implementation of safety measures and precautions, and where so required and without cost to the Employer, effect the repairs without delay.

Should the authority or owner of the damaged plant, equipment, apparatus or works, carry out the repairs, the Contractor shall supply immediately any facilities or assistance necessary and repay to the authority or owner the full cost of the remedial work.

**8** **Diversion and Protection of Services**

The Contractor shall take any and all measures reasonably required by any Public or Statutory Authority for the full protection of its mains, pipes, cables and other apparatus during the progress of the Works, and shall construct and provide to the satisfaction of the Authority concerned, all works necessary for the prevention of damage or interruption of services. If, in the execution of works, by reason of any subsidence or any act of neglect or default of the Contractor, any damage to any apparatus or any interruption of any service is caused, the Contractor shall bear and pay the cost reasonably incurred by the Authority involved in making good such damage, and shall make full compensation to the Authority for any loss sustained by reason of such interruption. Where necessary the Contractor will obtain details of Statutory Undertakers' mains, pipes etc and the Contractor may by prior arrangement with the Engineer inspect them before or during the execution of work.

The Contractor shall, at all times during the progress of the works, afford facilities to properly accredited agents of any Public or Statutory Authority, as may be necessary for inspecting, reporting, maintaining, removing renewing or altering such apparatus in connection with the construction of the Works or for any routing purposes.

If it is necessary that a statutory authority raises its own cover and frame or should elect to do so, the Contractor must make all arrangements with the Statutory Authority for this to be done. The Employer is not responsible for any costs resulting from delay to the Contractor as a result of a Statutory Authority not carrying out their works as agreed.

**9 Authorities Serving the Locality**

A list of authorities serving the locality is indicated below:

Thames Water 08459 200800

Affinity Water 0845 155 2066

Cadent Gas 0800 688 588 or 0800 111999

BT Openreach FREEFONE “Dial before you Dig” or

0800 917 3993 opt 1

Fulcrum Pipelines Ltd 0845 641 3010

UK Power Networks 0800 028 0709

GTC 01359 245 415

NATIONAL GRID- transmissions 0800 688 588 or 0800 40 40 90

Virgin Media 0800 888 3117

TFL DTO 0207 343 5207

Environment Agency 03708 506506

Bouygues E & S Limited 01707 630 701

**APPENDIX 1/17: TRAFFIC SAFETY AND MANAGEMENT**

* + - 1. The Contractor shall submit Provisional Advanced Authorisations and Permit Applications in accordance with the London Permit Scheme, Traffic Management Act 2004 and the New Roads and Street Works Act 1991. Permit applications shall be made electronically via an Electronic Transfer of Notices (EToN) system. The Contractor shall check and reply to all comments and ensure all transactions have been sent successfully.

2. The Contractor shall submit formal applications for any statutory temporary traffic regulation orders or notices required to be published in connection with the works. These applications shall be on the prescribed form and sent to both [traffic@enfield.gov.uk](mailto:traffic@enfield.gov.uk) and [nrswa@enfield.gov.uk](mailto:nrswa@enfield.gov.uk). All planned work requiring a traffic order shall be undertaken by full traffic order. Notices shall only be used in emergency situations. The contractor shall also supply sufficient information to enable L.B. Enfield to seek TMAN Works approval from TfL where TLRN and Strategic Roads are affected.

3. The following timeframes are required to process applications.

Transport for London TMAN Notice 3 months

Temporary traffic orders (incl amendments) 6 weeks

Provisional Advanced Authorisation (PAA) 3 months

Permits application (Major or Standard) 10 days

For works classed in the Traffic Management Act 2004 as Immediate (Urgent or Emergency), the Contractor shall submit a permit application within two hours of commencing work.

4. In furtherance of permit and TRO applications, the contractor will be responsible for site meetings with Street Works Inspectors and Project Engineers and the submission of traffic management drawings showing traffic management layout proposals, including:

a) Proposed positioning of temporary traffic signals

b) Proposed width of lanes

c) Proposed working areas and safety zones

d) Proposed signage

1. Proposals for maintaining access to commercial and private frontages
2. Diversion routes

5. The Contractor shall not commence any work until all traffic safety measures necessitated by the work are fully operational. The Contractor shall adhere to all permit requirements and conditions, including restrictions and compliance on traffic sensitive streets. Fixed Penalty Notices for breaches of permit conditions may be issued.

6. The Contractor shall provide, erect, maintain reposition, cover and uncover,

keep clean and legible at all times and finally remove such traffic signs, road markings, lamps, barriers and traffic control signals and such other measures as may be necessitated by the construction of the Works in accordance with current statutory regulations, including the following: -

“Safety at Street Works and Road Works” published jointly by the Department for Transport, the Highway Authorities and Utilities Committee and the Health and Safety Executive: and “Chapter 8 of the Traffic Signs Manual”.

7. The traffic signs, lamps, barriers and traffic control signals shall be in accordance with the requirements of the "Traffic Signs Regulations and General Directions" current at the date of the execution of the work

8. Where the circumstances of any particular case are not covered by the recommendations or result in the restriction of permitted movements by any class of traffic (pedestrian and vehicles) the Contractor shall submit proposals for dealing with such situations to the Engineer for approval. Compliance with this clause shall not relieve the Contractor of any of his other obligations and liabilities under the Contract and statutory regulations.

9. Pedestrian access to all premises and public transport shall be maintained at all times or closed / restricted by arrangement with the affected party. Where a bus stop has to be temporarily suspended, the Contractor shall make all arrangements with TfL Buses.

10. All works areas shall be guarded for their full extent with a continuous rigid fence or barrier in accordance with 303SR Temporary Fencing.

11. Routes for pedestrians shall be clearly defined and signposted and kept free from hazards and obstructions at all times. The surfaces shall be formed in bound materials. and maintained at all times in good condition.

12. On roads where one footway is to be closed, warning and direction signs showing a suitable crossing place to the other footway shall be provided. If no suitable dropped kerbs are available a temporary ramp shall be provided at each side of the carriageway. Suitable steps shall be taken by the Contractor to prevent vehicles from parking at crossing points.

13. Storage, welfare facilities, equipment, plant and materials shall be located to ensure that they do not cause unreasonable obstruction or impair visibility and the Contractor shall ensure that only vehicles which are essential for providing the service are allowed to enter any Site.

**APPENDIX 1/19: ROUTEING OF VEHICLES**

1. Construction traffic should be routed so as to avoid residential areas as much as is possible.

Construction traffic should be so routed as to avoid using school roads during school hours.

**APPENDIX 1/21: INFORMATION BOARDS**

1 **Information Board Type 1 (Drawing Number LBE/HR&RC/001)**

Information boards shall be manufactured from polycarbonate or a more durable material, with a Class 1 retroreflective sign face and may be mounted on steel A-frames.

The signs shall be sited so that the information is clearly visible to the road users to which they apply, but so that they do not confuse others. The Contractor shall immediately remove these signs upon substantial completion of the works to which they refer.

1. **VMS Information Board**

VMS Information Boards to be provided for those sites as instructed in the instructing works order.

The signs shall be sited so that the information is clearly visible to the road users to which they apply, but so that they do not confuse others, and so as not to obstruct any footway, traffic sign or signal or visibility to/from any side turning or vehicular entrance. The Contractor shall immediately remove these signs upon substantial completion of the works to which they refer.

Signs to display 4 rows of 12 characters per slide. Number of slides to be stated in the instructing works order.

**APPENDIX 1/23: RISKS TO HEALTH AND SAFETY FROM MATERIALS AND SUBSTANCES**

**1**. The Overseeing Organisation will issue pre construction information with the *Works Order*  with the relevant information as appropriate.

The *Contractor* must plan, manage and co-ordinate work during the construction phase taking account of the information contained in the pre-construction information.**2** The *Contractor* may be required to work as Contractor on a site already occupied by a Principal Contractor. The *Contractor* shall comply with the Principal Contractors Health and Safety requirements for working on their site, and provide any necessary information they require to comply with the CDM Regulations.

# APPENDIX 1/24: QUALITY MANAGEMENT SYSTEM

The Contractor must operate a comprehensive and effective quality management system which shall include BS EN ISO 9000:2000 quality assurance certification or incorporate its principles;

# APPENDIX 2/1: LIST OF BUILDINGS, ETC, TO BE DEMOLISHED OR PARTIALLY DEMOLISHED

Where site clearance work is required in any Works Order, the specific requirements shall be as stated in the instructing Works Order. Such work may, typically, include:

1. the specific requirements for, and extent of, site clearance works;
2. any particular precautions to be taken during site clearance;
3. requirements for the filling of any voids;
4. treatment of any adjoining properties, walls, hedges, fences, and the like;
5. identification of any known hazardous materials, cross-referenced to Appendix 2/5 and the Health and Safety Plan.

**APPENDIX 2/2 : FILLING OF TRENCHES AND PIPES**

1.The Engineer may amend the requirements of sub-clause 201.3 in any Works Order. Such requirements may include:

* `backfilling of trenches under existing carriageways with ST4 concrete to 100mm below the top of the existing surfacing;
* backfilling of trenches under new carriageways with granular Type 1 subbase to formation level;
* backfilling of trenches under new and existing footways with Granular subbase Type 1 to formation level. All other trench backfilling shall comply with the requirements specified in Clause 505 or as otherwise stated in the instructing works order;
* the removal of pipes, services, road lighting cables, etc, that are in excess of 1m below formation, including excavation and subsequent backfilling of trenches in accordance with the requirements of Clause 505 or as otherwise stated in the instructing Works Order;
* the protection of pipes, services, etc, as stated in the instructing Works Order, that are within 1m of formation;

**2.** If the Contractor allows material, which on excavation is suitable for reuse, to become unsuitable and it is in this condition where required for backfilling, he shall make good by running it to spoil and replacing with other suitable material to Clause 803, 804 or 1030.

**3**.Where the ground surface in the line of the trench consists of topsoil and the backfill is required to be brought up to ground level, the final layer shall be topsoil of the same thickness as previously.

**4**.Refilling of trenches shall not commence until the concrete surrounding the ducts or other works therein has hardened sufficiently to prevent it being damaged and until the works in the trench have been accepted by the Engineer.

**5.** Backfilling material shall be deposited in layers not exceeding 150mm in thickness, each layer being separately and thoroughly compacted using power hammers or vibrating plate compactors. Each layer shall be accepted by the Engineer before the next layer is placed.

**APPENDIX 2/3: RETENTION OF MATERIALS ARISING FROM SITE CLEARANCE**

**1** The Employer is eager to minimise construction waste and to recycle materials wherever this is viable. **2** The Overseeing Organisation shall instruct the *Contractor* as to which goods and materials, arising from site clearance, are to be retained and either stored on site or at the *Contractor’s* depot for future reuse in subsequent works. The *Contractor* shall remove all other goods and materials to tip.

**3** The goods and materials that the Contractor can generally expect to be reused include those listed below. (Rates for setting these aside for reuse, removing them to store, or disposing of them to tip, are included in the Schedule of Rates and Prices.

* Precast concrete slab paving
* Stone flag paving
* Brick paving
* Cobble paving
* Granite sett paving
* Block paving
* Precast concrete kerbs
* Granite kerbs
* Precast concrete channels
* Precast concrete edgings
* Pedestrian guard railing
* Permanent bollards (any non-electrical type)
* Chamber covers and frames
* Gully gratings and frames
* Linear drainage channel systems
* Rubber Speed Cushion
* Non-illuminated traffic signs and posts
* Internally illuminated traffic signs and posts
* Externally illuminated traffic signs and posts
* Internally illuminated bollards

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

No explosives shall be used in connection with any Works Order on the Contract.

**APPENDIX 2/5: HAZARDOUS MATERIALS**

**1** The Overseeing Organisation will include, with the pre-construction information for each *Works Order* , any information that he has with regard to any hazardous materials that are known to exist on any part of the Site.**2** The *Contractor* shall notify the Overseeing Organisation immediately upon the discovery of any substances that he considers to be hazardous to the health and safety of any of his staff, or member of the public. The Overseeing Organisation will issue instructions as to how such materials are to be handled and the *Contractor* shall act in accordance with them.

# APPENDIX 4/1: ROAD RESTRAIN SYSTEMS (VEHICLE AND PEDESTRIAN)

**1.** The location, extent and other requirements for pedestrian guardrail shall be as stated in the instructing Works Order. The preferred types of guardrail are as follows:

The ”Visimax” & “Visimax X” guardrail type is manufactured by Hugh Logan Engineering, or equivalent. Further information about this product is available from:

Hugh Logan Engineering

Oak House

Ransom Business Park

Southwell Road West

Mansfield

Nottinghamshire

NG21 0HJ

Tel. 01623 629295

**APPENDIX 5/1: DRAINAGE REQUIREMENTS**

**All drainage works are to be constructed to the details in ‘Sewers For Adoption, 7th Edition’ as published by Water UK / WRc plc, 2012 or subsequent revisions.**

1. **Trenches**

Backfilling of trenches under new and existing carriageways is to be carried out with type 1 sub-base to formation level in the case of new carriageway and to the top of the existing roadbase in the case of existing carriageway.

1. **Gullies and Gully Connections**

Gullies shall be one of the following types, unless specified otherwise in the works order:

Gully Type: Precast Concrete trapped gully LBE HR&RC/02

HDPE trapped “yard” gully LBE/HR&RC/03

Precast concrete trapped side entry gully LBE/HR&RC/04

The gully connections shall be formed with clay pipes and fittings to BS 65 and shall be British Standard Surface Water standard. The pipes shall be bedded on and surrounded with 150mm wet lean concrete grade ST4.

The grating and frame shall be set on two courses of brickwork on top of the gully pot. The brickwork shall be 215mm thick Class B engineering bricks to BS 3921 set in designation (i) mortar. The gully pot shall be bedded on and surrounded with 150mm wet lean concrete grade ST4.

New gully gratings shall have a unique ‘LB Enfield’ Identification.

1. **Raising / Lowering Manhole Covers, Boxes, Etc**
   1. General
      1. Reinstatement of failed chamber top and gully grating installations, or necessary raising because of pavement reconstruction or overlays, shall be subject to the following considerations:
2. It is likely that all work, from removal of the unit(s) to completion of reinstatement, will have to be carried out against strict time constraints in order that a partial or complete road closure can be lifted and the road reopened to traffic;
3. The frame supporting structure may have deteriorated, may not meet requirements, or may be damaged during removal of the unit and/or any surrounding pavement material;
4. It may not be a realistic proposition, because of time constraints, to limit the thickness of bedding material to the range permitted within this Specification;
5. Re-use of frames and covers shall require the approval of the Engineer;
6. Any of the above considerations may warrant a departure from the standard and will, therefore, need the approval of the Engineer.
   1. Re-bedding of Covers/Gully Gratings
      1. The depth of reconstruction must be measured, bearing in mind that this may vary at different parts of the frame where the installation is within the camber of a road pavement. The bedding material must be in accordance with sub-clause 3 to 8 of this Clause, and compatible with the required thickness of application. Mixing and placing must be as described in sub-clause 9 to 11 of this Clause.
      2. Bedding layers greater than 50 mm thick shall be laid in two stages. The first layer shall be no thicker than 40 mm and must be covered with a proprietary packing material whilst the mortar is workable. Uniform contact between materials is necessary in a composite bedding layer, and the proprietary packing material shall be tamped down to ensure even contact with the bedding. Placing of frame and cover shall be as set out in sub-clause 12 to 17 of this Clause.
   2. Bedding Materials
      1. Chamber tops and gully tops shall be bedded upon bedding material which has the following properties:
7. the material shall be non-shrink. Use of other materials may be considered in consultation with the Engineer;
8. the material shall have a minimum workable life of 15 minutes;
9. the compressive strength of the material shall exceed 30N/mm2;
10. the tensile strength of the material shall exceed 5N/mm in 3 hours (Test).

**Method in accordance with BS 6319: Part 2;**

e). notwithstanding the above requirements, the use of proprietary bedding components to different specifications may be permitted subject to appropriate certification and approval from the Engineer.

* + 1. This specification is for a rapid-hardening material which could, for example, be achieved by a suitable resin based material. The use of alternative bedding compounds to different specifications is not necessarily precluded where they form part of an alternative proprietary support system which has the approval of the Engineer.
    2. Bedding materials shall be laid strictly in accordance with the manufacturers’ recommendations. Materials manufactured for use in different temperature conditions must be selected as appropriate to suit site conditions at the time of mixing and application. Thickness of materials must be within the range stipulated by the manufacturer.
    3. Packing materials described below may be incorporated within the bedding material provided that this is in accordance with recommendations of the mortar manufacturer and the requirements of this Specification.
  1. Packing Materials.
     1. Packing materials have historically been used, particularly where it has been necessary to raise the finished levels of chamber tops and gully tops, whilst retaining the existing frame supporting structure, e.g. because of pavement overlays or strengthening works.
     2. Packing materials shall be proprietary and purpose-made of suitable materials. The Contractor shall ensure that the proposed packing materials are compatible with the bedding material which it is intended to use. The use of materials such as quarry tiles and slates as packing materials is not permitted.
  2. Mixing and Placing the Bedding Layer.
     1. Mechanical mixing of the materials is preferred, although manual mixing is permitted. The maximum quantity to be mixed by each method shall not exceed 50 kg and 25 kg respectively. In cases where cementitious materials are used the manufacturer’s recommended water content must be used.
     2. The bedding material must be placed on the chamber immediately after mixing. It shall be placed at a depth approximately 5 mm greater than the required bedding thickness and spread across the full width of the chamber wall. Deep trowel marks in the bedding shall be filled and the surface of the bedding floated to an approximately even finish.
  3. Thermo-Setting Polymer Resin Materials.
     1. There are a number of issues which must be borne in mind when working with thermosetting polymer resin materials:

1. Care is required in their safe handling. Harmful vapours may be produced during mixing and the use of gloves, goggles and barrier creams is recommended by manufacturers. Some products are available in different grades to suit different temperature conditions in order to provide the necessary time of initial set, and such products shall be selected accordingly;
2. They remain at the same level of workability prior to setting, but the set is usually very rapid and early strengths develop quickly. Bedding of the frame must take place promptly after placement of the bedding material;
3. They form a strong bond with contiguous materials, but the bond may be severely impaired if the surfaces are not kept clean and dry. Site conditions may dictate the need to take extra precautionary measures in keeping the surfaces clean and dry. Tools must be cleaned before the material sets. More importantly, frames which have been bedded on polyester resin which has set may not be separable from the resin. Removal of frames in such situations will also damage the frame supporting structure;
4. Once set, the material becomes inert, and is not a toxic waste;
5. Unmixed material must be mixed and disposed of with care according to Control of Substances Hazardous to Health Regulations (COSHH) Regulations, and strictly in accordance with the manufacturers’ recommendations.
   1. Placing of Frames and Covers
      1. The frame shall be lowered onto the bedding as soon as possible, preferably using a mechanical lifting device rather than by solely manual means, in accordance with Health and Safety requirements.
      2. The frame must be placed on the bedding so that all webs of the frame are fully supported by the frame supporting structure. The webs must not overhang the internal faces of the frame supporting structure. There must be no voids in the bedding beneath the frame. Special care must be taken in the vicinity of the cover seatings.
      3. The frame must be carefully tamped down to the required level and slope. This can be achieved to the Specification requirements by placing a straight edge over the frame webs and surrounding carriageway or other level control points as appropriate.
      4. Any holes within the frame must be infilled with bedding material and the flanges of the frame enveloped by a minimum thickness of 10 mm of the same material. A greater thickness may be applied provided that sufficient depth is left available for placement of any surfacing layers. Such application can be an effective use of any surplus material from the main bedding mix.
      5. Exposed surfaces of the bedding around the outside of the frame must be floated to fill any voids and remove any loose fragments, and the exposed surface of the bedding material inside the chamber must be pointed to a smooth finish.
      6. The cover shall be placed in the frame by a mechanical lifting device, or lifting keys with long shanks, after the bedding material has sufficiently set.
      7. The frame shall not be exposed to any load or disturbance until the bedding material has attained a strength of 20 N/mm2
   2. Reinstatement of Surrounding Carriageway.

* + 1. Flexible Construction -

The cover shall be placed in the frame, preferably using a mechanical lifting device, and reinstatement shall then be undertaken as follows:

1. Mark out a square or rectangular area for the patch to embrace all unsound material
2. Form the Edges of the excavated area by saw cutting or planning on straight lines to a firm, undisturbed vertical edge.
3. No step is required between wearing course and base course, although a minimum of a 75mm step should be made between basecourse and roadbase.
4. Ensure all edges are trimmed and sweep clean.
5. Paint edges of the area with hot 50 penetration bitumen.
6. Spray the base of the area with tack coat.
7. Place patching materials in uniform layer, levelled and shaped to maintain existing carriageway camber/ crossfall following compaction. The new material must be flush with all joints, channels and projections and be level or not more than 3mm above adjoining pavement surfaces.
8. Compact all parts of the patch to refusal avoiding roller marks on the surface and damage to adjacent sound material. Care should be taken to ensure that no material is pushed or displaced during compaction.
9. On completion of the operation, clean the site thoroughly.

above methodology is subject to the following additional requirements:

1. the cover and frame shall not be exposed to any load or disturbance until the bedding material has attained sufficient strength;
2. care must be taken to avoid contact between any compaction device and the frame or cover in order to avoid damaging the frame or cover or the bedding layer;
3. if the foot or plate of mechanical compaction equipment will not fit between the frame and the sides of the excavation at all levels, a self-setting fill material shall be used, which is compatible with the bedding material;
4. self-setting fill material shall be placed no higher than 40mm beneath the finished surface level, in order to allow placement and thorough compaction of a permanent wearing course. Some materials may require the use of a bonding agent;
5. after installation the frame and cover shall be flush with the road surface;
6. the joint between the reinstated and existing materials shall be sealed with bituminous material. Reinstatement of Surrounding Rigid Carriageway.
   * 1. Rigid / Concrete Construction

The cover shall be placed in the frame, and reinstatement shall then be undertaken as far as possible in accordance with the Specification (MCHW volume 1) Series 1000, subject to the following considerations:

1. where possible a waterproof membrane shall be reinstated;
2. the installation shall not be exposed to any load or disturbance until the bedding material has attained sufficient strength;
3. concrete shall be placed and compacted to the required level, with any reinforcement at the appropriate position. There shall be no adverse reaction between the concrete and the bedding material, and the surface of the concrete shall be textured as required;
4. if a preformed joint filler has been used, the groove shall be sealed in accordance with the sealant manufacturer’s instructions;
5. after installation the frame and cover shall be flush with the road surface.

All existing manhole covers, Statutory Undertakers’ boxes etc, are to be adjusted where necessary. The tolerance allowed in the paving shall also apply to the adjustment of all covers.

The Contractor shall accept full responsibility for any damage occurring to any ‘Statutory Undertakers’ property when carrying out these works.

Shafts, boxes etc, shall be built up in brickwork of similar type and dimensions to the existing and frames shall be bedded on a maximum of 12mm cement mortar beneath which final adjustment shall be made with approved shim packing.

1. **Pipes and Pipe Fittings**

Pipes and pipe fittings shall be in accordance with Clause 501 with the following additions and amendments:

1. Clay pipes for foul and surface water drains shall be ‘Extra Strength’ pipes provided with spigot and socket joints to BS 65.

Flexible joints shall provide for an angular deflection, in any direction from a straight line, of not less than 5 degrees for diameters up to 305mm and 21/2 degrees for diameters of 380mm or more. They shall provide for a draw of 20mm of longitudinal movement without breaking the seal;

**APPENDIX 5/2: DRAINAGE AND SERVICE DUCT REQUIREMENTS**

1 All service ducts shall be 100mm diameter with a minimum wall thickness of 5mm to BS 4660.

2Service ducts for street lighting should have the words ‘STREET LIGHTING’ printed in whitealong their length at 1m centres. When laid the wording shall be uppermost.

3 All ducts shall have yellow polythene tape with the words ‘ELECTRICAL CABLES’ printed clearly laid approximately 100mm above the top of the duct.

4 Colour coding for ducts shall be in accordance with National Joint Utilities Group Publication No.7, unless otherwise stated in any Works Order.

5The types of chambers required shall be as stated below unless varied in the instructing Works Order:

Carriageway Duct Chamber Covers

All inspection chamber covers, frames and gratings shall be class D400 to BS EN124, heavy duty ductile iron with minimum size opening (450mm x 450mm);

Footway Duct and Utility Chamber Covers

Footway duct and utility chamber covers and frames shall be replaced, where instructed in any Works Order, with 75mm deep recessed units to Class B125 of BS EN 124 with a single seal and service identification (i.e. BT, CCTV or ELEC). The paving infill shall be bedded on 15mm epoxy resin. At crossing points where the infill is tactile paving slabs, they shall be bedded on 25mm epoxy resin.

Suppliers: Jones of Oswestry

Tel. (01691) 653251

Fax (01691) 658222

Saint-Gobain Pipelines plc

Tel. (0115) 930 5000

Fax (0115) 932 9513

6All service ducts to be fitted with a 5mm diameter polypropylene draw cord break weight 5.5kN(1220lb) and be mandrel tested using a proving mandrel after installation.

**APPENDIX 6/1: REQUIREMENTS FOR ACCEPTABILITY AND TESTING ETC. OF EARTHWORKS MATERIALS**

1. **Permitted classes of material and the tests required and acceptable limits**

Class Tests Required Acceptable Limits:

Lower Upper

1A Grading to BS 1377 Part 2:1990 Test 7 Table 6/2 Table 6/2

Uniformity coefficient 10 -

BS 892

Replaced by BS 6100: Subsection 2.4.1

Moisture Content OPT - 4% OPT + 2%

to BS 1377 Part 2:1990 Test 1

1B Grading to BS 1377 Part 2:1990 Table 612 Table 612

Test 7

Uniformity coefficient - 10

to BS 892

Replaced by BS 6100: Subsection

Moisture Content OPT + 2% OPT + 2%

to BS 1377 Part 2:1990 Test 1

1C As Table 611

4 Grading to BS 1377 Part 2:1990 Test 7 100% passing 125µm

15-45% passing 63µm

0- 10% passing 2µm

Moisture Content to BS 1377 Part 2:1990 Plastic

Test 1 limit x 1.2

5B As Appendix 6/8 – Item 14

6F1 Grading to BS 1377 Part 2:1990 Test 7 As Table 6/2

Moisture Content to BS 1377 Part 2:1990 As Table 6/2

Test 1

Optimum Moisture Content Result for above

to BS 5835:2005

10% fines value to Clause 635 As Table 6/2

6F2 Grading to BS 1377 Part 2:1990 Test 7 As Table 6/2

Moisture Content to Optimum Optimum

BS 1377 Part 2:1990 Test 1 m/c - 2% m/c

Optimum Moisture Content Result for above

to BS 5835:2005

10% fines value to Clause 635 50 KN -

6K Grading to BS 1377 Part 2:1990 Test 7 As Table 6/2

Uniformity coefficient to

BS 892 10 -

Replaced by BS 6100: Subsection 2.4.1

Plasticity Index 6

BS 1377 Part 2:1990 Test 4

Moisture Content to Optimum Optimum

BS 1377 Part 2:1990 Test 2 m/c -2% m/c + 1%

Optimum Moisture Content For Test Above

to BS 1377 Part 2:1990 Test 14

10% fines value to Clause 635 100 kN

Resistivity to Clause 637 2000 ohm.cm

Redox potential to Clause 638 400mV

6N Grading to BS 1377 Part 2:1990 Test 7 To Table 6/2

Uniformity coefficient 10 -

to BS 892

Replaced by BS 6100: Subsection 2.4.1

10% fines value to Clause 635 100 kN -

Effective angle of internal 33 Deg.

friction (0) to Clause 636.2

Effective cohesion to Clause 636.2 App. 6/1 -

Moisture content to BS 1377 Part 2:1990 OPT - 4% OPT + 2%

Test 1

1 (b) All materials except U2, organic material or material that is susceptible to spontaneous combustion, may be constituents of Class 4 material.

1. Acceptability of material shall be determined by the Contractor and agreed with the Engineer.
2. Specification for crushed granite:

Grading

BS sieve size: % by mass passing:

37.5 100

20 0-10

10 0-3

Other acceptable materials shall comply with Table 6/1 Class 1 C.

4. Uniformity of Fill Material

Unless authorised by the Engineer the class and source of fill material shall be uniform throughout the depth and width of the permanent Works.

5. Frost Susceptibility Clause 601

Material used within 450mm of the surface of the road shall not be frost susceptible as defined by the test described in the Transport and Road Research Laboratory Report LR 90 and Supplementary Report SR 3 18. The material shall be deemed to be frost susceptible if in the test the heave is greater than 13mm.

6. Cohesive material referred to on the Drawings shall have the following properties:

* 1. Comply with Table 6/1 Class 4.
  2. Moisture content to BS 1377 Part 2:1990 Test 1 Plastic Limit - 4% (Upper Limit).
  3. Grading to be within the limits of table 6/2 Class 2B.

7. The *Contractor* is encouraged to submit proposals, for processing to render unacceptable material Class U1 that is encountered acceptable, and if his proposals are acceptable to the Overseeing Organisation, this will be confirmed to the *Contractor* in writing.

8. Localised dewatering shall be permitted for individual excavations only as approved by the Engineer. General ground water lowering will not be permitted.

9. The rapid assessment procedure for material acceptability shall not be used unless exceptionally permitted by the Overseeing Organisation.

10. The *Contractor* may remove acceptable material or unacceptable material from any part of any Site that is surplus to the requirements of the work that has generated it provided that the *Contractor* warrants that it is to be used for a recycling process that has been approved by the Overseeing Organisation.

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

**General Requirements**

1. The *Contractor* will be made aware of the location, extent and nature of any Class U2 material that the Overseeing Organisation believes to be present on any site in the instructing *Works Order .*
2. The *Contractor* shall, in the event of uncovering any Class U2 material while carrying out any Project, immediately notify the Overseeing Organisation and shall subsequently comply with all requirements for the handling and disposal of such materials, issued by the *Authority’s* Environmental Protection & Safety Team, and confirmed to the Contractor by the Overseeing Organisation.
3. The *Contractor* shall comply with all special requirements for dealing with any leachate or contaminated water that may arise while carrying out any Project. Any such requirements will be issued by the Environmental Protection & Safety Team and confirmed to the *Contractor* by the Overseeing Organisation.

**Known Toxic Materials likely to be encountered**

1. Some or all of the following toxic materials may be encountered:

Toluenic Extractable Matter Total Phenols

Sulphides Chlorides

Coal Tar Derivatives Mineral Oils

Total Sulphates Total Cyanide Total Lead Available Nickel Available Zinc Total Cadmium Total Barium Available Copper Total Arsenic Total Mercury

Hexavalent Chromium Methane

1. Methods of excavation, precautions and requirements for handling shall comply with the requirements of the Environmental Health Officer, the Health and Safety Executive and the London Waste Regulation Authority.
2. Leachate and contaminated water shall be dealt with in a manner acceptable to Thames Water Authority.

**Requirements of the Environmental Health Officer**

1. Dust nuisance shall be minimised by damping down surfaces and keeping site roads and access/egress routes clean and well watered. Vehicle wheel washing facilities shall be provided at each egress point.
2. Sheeted vehicles shall be used

**APPENDIX 6/5: GEOTEXTILES USED TO SEPARATE EARTHWORKS MATERIALS**

1. Geogrid shall be “Tensar Tri-Ax TX-170G”, or equivalent, as stated in the instructing Works Order, laid with a minimum overlap of 300mm.

Further details of “Tensar” products are available from:

Tensar International Limited

Units 2-4 Cunningham Court,

Shadsworth Business Park,

Blackburn,

BB1 2QX

Tel: 01254 262431

Fax: 01254 266868

www.tensar.co.uk

1. Geotextiles shall be “Terram T1500”, or equivalent, as stated in the instructing Works Order , laid with a minimum overlap of 300mm. The requirements for puncture resistance and mass per unit area shall be 2250N and 180g/m² respectively, unless otherwise stated in the instructing Works Order .

Further details of “Terram” products are available from:

Terram Limited

Mamhilad

Pontypool

Gwent

South Wales,

NP4 0YR

Tel: 01495 767444

Fax: 01495 762383

www.terram.com

# APPENDIX 6/7: SUB-FORMATION & CAPPING & PREPARATION & SURFACE TREATMENT OF FORMATION

1. Permitted capping materials shall comply with Table 6/1 Class 6F2 with the exception of chalk.
2. Material used in capping layers shall have an in situ CBR value of not less than 15% when tested by a method approved by the Engineer or a laboratory CBR value of not less than 15% when tested in accordance with BS 1377 Part 2:1990, Test 16, at the insitu moisture content following compaction.
3. A demonstration area shall be prepared as specified in Clause 613 sub- clause 4. The dry density shall be determined in accordance with Clause 612 sub-clause 14. If the demonstration is approved by the Engineer, subsequent areas of capping where the material is the same as in the trial area shall be compacted to provide the same or higher dry density.
4. Appendix 6/1 shall also apply as regards frost susceptibility
5. Class 6F2 capping material shall have 10% fines value of 50 KN.

**APPENDIX 6/8: TOPSOILING, GRASS SEEDING & TURFING**

**1** Any areas of the site that are to be designated as areas of Class 5A material shall be identified as such in the instructing *Works Order .***2** The *Contractor* shall ensure that all areas of topsoil, grassed areas and verges on the Site are left undisturbed, except where such disturbance forms an essential part of the Works. Any requirements for the removal and/or reuse of indigenous topsoil (including its use as turf) shall be as stated in the instructing *Works Order* .**3** The depth of any topsoil stripping shall be as stated in the instructing *Works Order .***4** Topsoil stockpiles shall not exceed a height of 2m.**5** Topsoil shall not be stockpiled on any part of the Site for longer than the duration of any associated project work, as agreed with the Overseeing Organisation. **6** The *Contractor* shall remove any surplus topsoil from any part of the Site and store it at his depot for re-use for other work in this contract, up to a maximum storage of 25 tonnes. Topsoil stockpiled at the *Contractor’s* depot may be stockpiled for the duration of this contract, or other period of time as instructed by the Overseeing Organisation. **7** Any requirements for covering slopes of Classes 2E and 7B fill shall be as stated in the instructing *Works Order* .**8** The use of imported topsoil, Class B, shall only be permitted or requested in the instructing *Works Order* .**9** The requirements for topsoil treatment, in areas to be turfed, shall be as stated in the instructing *Works Order* .**10** The requirements of sub-Clause 618.3 shall apply to this contract.**11** All topsoil shall have stones and other debris removed which have dimensions greater than 5mm equivalent diameter.**12** Topsoil shall be deposited and spread on the areas indicated in the instructing *Works Order* , to the thicknesses stated therein, in layers not exceeding 150mm. Each layer shall be firmed before spreading the next. The thickness shall be reduced where necessary to allow for any subsequent turfing required in the instructing *Works Order .* The use of tracked vehicles for laying shall not be permitted.

**13** Any areas of compaction caused by handling in unfavourable weather, by heavy vehicles, or by any other reason shall be broken up to their full depth by an approved method and regarded as necessary to comply with the specified levels.

**14** Class 5B Imported Topsoil

Before any topsoil is brought on site the whole of the areas to be soiled shall be approved by the Engineer.

* 1. **Source of Topsoil – BS 3882:2015**

Any source of topsoil (including soils to be retained on site) whether natural or manufactured shall be investigated carefully with respect to its suitability for the intended use.

The source of the topsoil shall be approved by the Engineer who may request an inspection of the supply at source prior to delivery to site or at any time during the contract.

* 1. **Specification of Topsoil**

The topsoil shall comply with BS 3882:2015 and BS 4428:1989 and with the following specification:

Texture: medium loam: max. min.

sand (.05-2mm) 75% 20%

silt (.002-0.05mm) 60% 5%

clay (less than .002mm) 30% 5%

Soil reaction: 6 to 7.5 pH.

Stone content: 2mm to 5mm: 20% max. by dry weight

Max. stone size: 5mm in any dimension

Electrical conductivity: 100-1500 micromhs per cm on a 1:2.5 soil-water extract.

Extractable Nitrogen (N): not less than 0.2%

Extractable Phosphorus (P): not less than 45 ppm

Extractable Potassium (K): not less than 240 ppm

Extractable Magnesium (Mg): not less than 80 ppm

Organic matter: not less than 4% by dry weight in any circumstances.

Generally, the topsoil shall be free from subsoil, brick or other building material, rubbish or other extraneous material, pernicious weeds including their roots, seeds or top growth, sticks or roots of trees or shrubs, and shall be free from all chemical or other pollution.

Maximum Phytotoxic elements: Total copper: 130mg/kg

Total nickel: 70mg/kg

Total Zinc: 200g/kg

Water Soluble Boron: 3mg/kg

Maximum zootoxic elements: Arsenic: 40mg/kg

Cadmium: 15mg/kg

Chromium: 1000mg/kg

Lead: 2000mg/kg

Mercury: 20mg/kg

* 1. **Sample Load of Topsoil**

The Engineer may request that a load of topsoil not less than 1 cubic metres shall be delivered to site for approval prior to any spreading being carried out. Not less than 1/2 cubic metre of this shall be retained on site for comparison with subsequent loads. If the topsoil source is changed from the original, the Contractor shall give the Engineer 48 hours notice to this effect and a sample of the new and any subsequent topsoil shall be subject to approval in the same manner as the first.

Acceptance based on a visual inspection of the sample load shall be subject to receipt of a satisfactory analysis of the soil and/or agreement being reached on any measures required to bring the proposed material up to specification, these measures being at the Contractor's expense.

* 1. **Testing Topsoil**

Prior to approval of topsoil the Contractor shall arrange for a report on topsoil quality to be carried out by an approved Soil Scientist. The report shall contain an analysis of all the qualities referred to above, plus recommendations for any improvements required to bring the soil up to the above specification.

Samples for analysis shall be fully representative of the soil proposed for use. Ten equal samples shall be taken, thoroughly mixed and quartered. Two lots each of 500gms of this mixture shall be put into plastic bags, with appropriate labelling and sent to the Analyst and the Engineer.

* 1. **Placing Topsoil**

Levels of topsoil after spreading shall be 25 mm above the required finished level to allow for settlement. Generally the required finished levels after settlement and cultivation shall be:

i) in the case of grass areas, flush with any adjoining paved areas, manholes, etc;

ii) in the case of planted areas, 50 mm below any adjoining paved areas, manholes, etc. to allow for depth of mulch.

**Weather for Spreading Topsoil**

Topsoil shall not be handled, spread or cultivated in any way when wet or during wet weather when structural damage to it may occur.

**APPENDIX 7/1 : PERMITTED PAVEMENT OPTIONS**

**Schedule 1: General Requirements**

The General Requirements for each Programmed Project shall be as stated in Schedule 1, below, unless amended in the instructing Works Order.

|  |  |  |  |
| --- | --- | --- | --- |
| Grid for checking surface levels of pavement courses | Machine Lay | Longitudinal dimension | 10 metres |
| Transverse dimension | 2 metres |
| Hand lay | Longitudinal dimension | 5 metres |
| Transverse dimension | 1 metre |
| Surface regularity: Clause  702.7 Table 7/2 | | Category of Road | A |

Schedule 2: General Requirements for Construction Materials

|  |  |
| --- | --- |
| **Clause** | **Requirement** |
| 801.2 | The limiting distance for deposition of unbound mixes referred to in sub-Clause 801.2 shall be 500mm unless otherwise stated in the instructing Works Order or otherwise instructed by the Engineer. |
| 801.3 | The limiting distance for deposition of unbound mixes referred to in sub-Clause 801.3 shall be 500mm unless otherwise stated in the instructing Works Order. |
| 801.7 | All material shall comply with sub-Clause 801.7 unless otherwise stated in the instructing Works Order. |
| 802.4 | Unbound materials in capping and subbase shall be spread and compacted in layers of not more than 150mm compacted thickness. |
| 802.14 | The thickness of each compacted layer shall be as stated in the instructing Works Order. |
| 901.2 and 942.5 | The requirements for resistance to fragmentation (hardness), resistance to freezing and thawing (durability) and cleanness of aggregates shall be as stated in sub-Clauses 901.2 and 942.5 unless otherwise stated in the instructing Works Order. |

**Subbase**

|  |  |  |
| --- | --- | --- |
| **Clause** | **Description** | **Particular Requirements** |
| 821 | Cement Bound Granular Mixtures A (CBGM A) | * Strength Class C12/15. |
| 803 | Type 1 unbound mixture for subbase | * Material should generally contain 100% recycled aggregates. * Mixtures containing crushed gravel coarse aggregate shall not be permitted on roads carrying a traffic loading of more than 2msa unless the subbase strength is at least 30% CBR. |

**FLEXIBLE PAVEMENT CONSTRUCTION DETAILS SHEET 1**

1. Coated Chippings (Clause 915) : Nominal Size - 20m

Stone type (1) granite Minimum PSV - 65

Maximum AAV - 10

Spread Rate – 12-14kg/m²

2. Surface Texture Required (Clause 921) - Sand Patch Method.

3. BS EN 13108-1:2006, BS EN 13108-7:2006

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Surface course materials** | | | | | |
| **Material Ref** | **Clause** | **Description** | | | **Special Requirements** |
| ST 6 | 942 | Thin Surface Course Systems TSCS 6 | | | Thickness: 20mm–30mm  Traffic Count > 600 cv/lane/day  Stress level: 2  Minimum Declared PSV: PSV65  Maximum Aggregate Abrasion Value 16  Minimum Wheel Tracking level required on  BBA HAPAS Certificate: Level 2  Road/ Tyre Noise Level Relative to HRA  Required on BBA HAPAS Certificate: Level 1  Minimum Compacted Layer thickness: 15mm  Average Macrotexture depth value: Level *[3, 2*  *or 1 as required NG 942]*  Performance Guarantee Period: 5 years  Surface Macrotexture- Performance  Guarantee *[3, 2 or 1 as required NG 942]* |
| ST 10 | 942 | Thin Surface Course Systems TSCS 10 | | | Thickness: 30mm-40mm  Traffic Count > 600 cv/lane/day  Stress Level:2  Minimum declared PSV: PSV65  *]* Maximum Aggregate Abrasion Value 16  Minimum Wheel Tracking level required on  BBA HAPAS Certificate: Level 2  Road/ Tyre Noise Level Relative to HRA required on  BBA HAPAS Certificate: Level 2  Minimum Compacted Layer thickness: 25mm  Average Macrotexture depth value: Level *[3, 2 or 1 as required NG 942]*  Performance Guarantee Period: 5 years  Surface Macrotexture- Performance  Guarantee *[3, 2 or 1 as required NG 942]* |
| S1S | 974AR | Stone Mastic Asphalt  SMA 10 | | | Thickness: 25mm-50mm  Traffic Count > 600 cv/lane/day  Stress Level:2  Minimum declared PSV: PSV65  *]* Maximum Aggregate Abrasion Value 16  Minimum Wheel Tracking level required Level 3 as TS2010 Table NG2.3  Minimum Compacted Layer thickness: 25mm |
| SAG | 942.19 | Surface applied Grit | | | 0/4 clean dry or lightly coated grit  Where required |
| S1H | 943 | Hot Rolled Asphalt  HRA 35/14 F surf des PMB WTR 2 + PCC 14/20 | | | Thickness: 50mm  Grade of binder: a polymer modified binder to achieve the wheel tracking performance to PD 6691:2015 +A1:2016 Table C.3 Class 2 [ Wheel Tracking  test temperature 60°C ]  Coated chippings to PD 6618 C.8  Aggregate size 14/20  PSV65  AAV12  Deformation after installation: Required  [CI 943:10] |
| S2H | 943 | Hot Rolled  Asphalt  HRA 35/14 F  surf des 40/60  WTR 1 + PCC 14/20 | | | Thickness: 50mm  Grade of binder: 40/60 pen paving grade or a polymer modified binder to achieve the wheel tracking performance to PD 6691:2015 +A1:2016 Table C.3  Class 1 [Wheel Tracking test temperature 45°C]  Coated chippings to PD 6618 C.8  Aggregate size 14/20  PSV 65  AAV12  Deformation after installation: Required  [CI 943:10] |
| S3H | 911 | HRA 30/14 F  surf 40/60 +  PCC 14/20 | | | Thickness: 40mm  Coated chippings to PD 6618 C.8  Aggregate size 14/20  PSV 65  AAV12 |
| S4H | 911 | HRA 55/10 F  surf des 40/60 | | | Thickness: 40mm  Aggregate size 10mm  PSV 60  AAV 12 |
| S3A | 912 | Close Graded Asphalt Concrete Surface Course (AC10 Close  Surf 40/60) | | | Thickness:30mm–40mm  Minimum declared PSV: PSV60  Maximum Aggregate Abrasion Value:AAV16  Binder Penetration: 40/60 pen  (Conform to BS EN 13108 – 1: 2006 and PD6691:2015 +A1:2016:Annex B) |
| SFA | None | Dense Asphalt Concrete Surface Course (AC6 dense 100/150) | | | Thickness: 20mm  Conform to EN13108:1 and PD6691: Annex B  Minimum declared PSV: PSV 50  Maximum Aggregate Abrasion Value: AAV16  Limestone fine aggregate shall not be used |
| Bi1S | 937 | SMA 14 bin  40/60 des  WTR 2 | | | Thickness: 40mm-60mm  Grade of binder: 40/60 pen paving grade or a polymer modified binder to achieve the wheel tracking performance to PD 6691:2015 +A1:2016  Table D.2 Class 2 [Wheel Tracking test  temperature 60°C  Deformation after installation: Required 937.6 |
| Bi2S | 937 | SMA 14 bin  40/60 des  WTR 1 | | | Thickness: 40mm-60mm  Grade of binder: 40/60 pen paving grade or a polymer modified binder to achieve the wheel tracking performance to PD 6691:2015 +A1:2016  Table D.2 Class 1 [Wheel Tracking test  temperature 45°C |
| Bi3S | 937 | SMA 10 bin 40/60 | | | Thickness: 30mm-50mm |
| SAG | 903.19 | Surface  applied grit | | | Where required |
| Bi1H | (BS  13108  -4) | HRA 60/20  bin 40/60\*  des WTR 2 | | | Thickness: 45mm-80mm  \*Grade of binder: 40/60 pen paving grade or a polymer modified binder to achieve the wheel tracking performance to PD 6691:2015 +A1:2106  Table C.3 Class 2 [Wheel Tracking test  temperature 60°C] |
| Bi2H | (BS  13108  -4) | HRA 60/20  bin 40/60\*  Des WTR 1 | | | Thickness: 45mm-80mm  \*Grade of binder: 40/60 pen paving grade or a polymer modified binder to achieve the wheel tracking performance to PD 6691:2015 +A1:2016  Table C.3 Class 1 [Wheel Tracking test  temperature 45°C] |
| Bi3H | 905 | HRA 60/20  bin 40/60 | | | Thickness: 45mm-100mm  Composition: PD 6691 Table C1 |
| Bi1A | 929 | AC20 HDM  bin PMB WTR 2 | | | Thickness: 50mm-100mm  Composition PD 6691:2015 +A1:2016 Table B11. Binder  grade PMB to achieve Wheel tracking  performance to PD6691 Table B.4 at 60oC  Volumetric properties after installation: Required  [CI 929.3] |
| Bi1A1 | 929 | AC20 HDM  bin WTR 2 | | | Thickness: 50mm-100mm  Composition PD 6691:2015 +A1:2016 Table B11. Binder  grade 40/60 to achieve Wheel tracking  performance to PD6691 Table B.4 at 60oC  Volumetric properties after installation: Required  [CI 929.3] |
| Bi1A2 | 929 | AC20 dense  bin WTR 2 | | | Thickness: 50mm-100mm  Composition PD 6691:2015 +A1:2016 Table B11. Binder  grade 40/60 to achieve Wheel tracking  performance to PD6691 Table B.4 at 60oC  Volumetric properties after installation: Required  [CI 929.3] |
| Bi2A | 929 | AC 20 HDM  bin 40/60 WTR1 | | | Thickness: 50mm-100mm  Composition PD 6691:2015 +A1:2016 Table B11 Binder  grade 40/60 to achieve Wheel tracking  performance to PD6691 Table B.4 at 45oC  Volumetric properties after installation: Required  [CI 929.3] |
| Bi2A1 & Bi3A | 929 | AC 20 dense bin 40/60 WTR1 | | | Thickness: Insert 50mm-100mm  Composition PD 6691:2015 +A1:2016 Table B11 Binder  grade 40/60 to achieve Wheel tracking  performance to PD6691 Table B.4 at 45oC |
| **For regulating ( in addition)** | | | | | |
| BiRH | 911 | HRA 50/10 F  reg 40/60 | Thickness: 20-40mm | | |
|  | | | | | |
| **9.3 Base materials** | | | | | |
| **Material Ref** | **Clause** | **Description** | | **Special Requirements** | |
| Ba1H | 904 | HRA 60/32 base 40/60 | | Thickness: 60mm-150mm  PD6691 Annex C Table C1  Course Aggregate: crushed rock, blast furnace slag and  steel slag only. | |
| Ba2H | 904 | HRA 60/20 base 40/60 | | Thickness: 45mm-80mm | |
| Ba1A | 929 | AC 32 HDM  base 40/60 | | Thickness 70-150mm  PD6691 Annex B Tables B5 & B7  Course Aggregate: crushed rock, blast furnace slag and  steel slag only. | |
| Ba2A & Ba3A | 906 | AC 32 dense  base 40/60  rec | | Thickness: Insert 70mm- 150mm  PD6691 Annex B Table B11  Course Aggregate: crushed rock, blast furnace slag and  steel slag only. | |
| Ba1E | 930 | EME2  AC 20 EME2  base 10/20  des | | Thickness 90-150mm  Composition to PD 6691 Appendix B  BS EN 13108-1 | |
| **For footways and cycleways** | | | | | |
| BaFC |  | 14 Cold mix | | Thickness: 40mm- 70mm  SVH or QVH as available Class B1 | |
| BaFA |  | AC14 dense  base 100/150 | | Thickness: 40mm- 55mm  Composition PD 6691:2015 +A1:2016 Table B.14 | |

**Surface Treatments**

|  |  |  |  |
| --- | --- | --- | --- |
| **Ref.** | **Clause** | **Description** | **Particular Requirements** |
| ST1 | 924 | HFS Type 1 (Hot or Cold Applied) Grey colour | * Minimum PSV 70+ * Certification required to demonstrate * the system has a current HAPAS certificate |
| ST2 | 924 | HFS Type 1 (Hot or Cold Applied) Buff colour | * Minimum PSV 70+ * Certification required to demonstrate * the system has a current HAPAS certificate |

**Overbanding and Inlaid Crack Sealing Systems**

|  |  |  |  |
| --- | --- | --- | --- |
| **Ref.** | **Clause** | **Description** | **Particular Requirements** |
| O1 | 711 | Systems described in Appendix 7/11 | The minimum wet skid resistance  value overbanding and inlaid crack sealing  systems when newly installed shall not be less than 60 |
| G1 | 971AR, 972AR & 973 AR | Pavement Reinforcement Geogrid | As stated in the instructing Works Order |

Location: As Specified

Surface Regularity (Clause 702.7).

**Schedule 6: Thin Surface Course Systems: Information to be Provided by the Contractor**

1. A copy of the British Board of Agrément HAPAS Roads and Bridges Certificate or Certificates for the thin surface course system or systems that are proposed for use in the works, together with a copy of the Quality Plan and Installation Method Statement associated with each Certificate.
2. For any Certificate that covers several variants of one thin surface course system, proposed variant or variants of the system to be used in the Works.
3. If requested, or if the thin surface course system is not produced under a Sector Scheme, the proposed component materials to be used in the thin surface course system and their proportions for each proposed system.
4. Proposed source or sources of coarse aggregate together with statement of properties including polished stone value, ten per cent fines value, aggregate abrasion value and flakiness index.
5. If regulating material is to be used, evidence of its deformation resistance either independently or in combination with the thin surface course system.

**Schedule 7: Modified Binder and Mixture Data Requirements**

The following data shall be provided to the Engineer as required in sub-clauses 937.9, 938.1, 943.5 and 943.8 in respect of the proposed modified binder and of the proposed mixture as appropriate:

I **Binder Samples**

For polymer modified bitumens the binder shall be sampled from the delivery according to BS EN 58:2012, BS 2000-474:2012. For modified blended with the other component materials 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 2000), 100g 5secs and at 5°C 200g 60secs, before and after hardening in the Rolling Thin Film Oven Test (RTFOT) in accordance with ASTM D 2872 and after RTFOT followed by the BBA HAPAS high pressure ageing test (HiPAT).

III **Product Identification Test and Rheological Properties**

Results for the binder(s) proposed shall comprise rheological data for each binder in the form of complex shear (stiffness) modulus (G\*) and phase angle (δ), after RTFOT and after RTFOT followed by HiPAT.

IV **Storage Stability Test**

All binders shall be stored strictly in accordance with the manufacturer’s instructions. Binders claimed to remain homogeneous in storage without agitation shall be tested for storage stability in the manner described in Clause 958. 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 EN13632 Visualisation of polymer dispersion in polymer modified bitumen.

VI **Cohesion**

Vialit Pendulum cohesion test curve of the modified binder, in accordance with Clause 957 for the binder supplied, after RTFOT and after RTFOT and Ageing in accordance with Clause 955.

VII **FRAASS Brittle Point (IP 80)**

FRAASS brittle point measure using BS EN 12593 shall be provided on the binder as supplied, after RTFOT and after RTFOT and Ageing in accordance with Clause 955.

VIII **Mixture Data requirements**

The following additional data should be provided to the Overseeing Organisation for materials designed in accordance with Clause 90.1.17 and Clause 929 in respect of the proposed mixture.

**Saturation Ageing Tensile Stiffness (SATS) ratio –** as described in Clause 953.

**APPENDIX 7/2: EXCAVATION AND REINSTATEMENT OF EXISTING SURFACING**

* 1. Localised reinstatements shall be undertaken using the ‘Specification for the Reinstatement of Openings in Highways (Third Edition 2010)/ (fourth edition May 2020 when it comes into force in May 2021)‘, published by the Stationery Office on behalf of the Department for Transport, except for the amendments detailed in the table below and the particular requirements of each Works Order.

|  |  |  |
| --- | --- | --- |
| **Specification for the Reinstatement of Openings in Highway** | **Subject** | **Amendment** |
| Appendix A1 | Backfill Materials | Delete Appendix and replace with sub-clause 5 below |
| Appendix A2 | Key to Materials | Delete Appendix and replace with materials detailed in Appendix 7/1 |
| Appendix A3 | Reinstatement – Flexible Road | s Delete Appendix and replace with table below |
| Appendix A4 | Reinstatement – Composite Roads | Delete Appendix and replace with sub-clause 3 below |
| Appendix A5 | Reinstatement – Rigid Roads | Additional requirement of sub-clause 4 below |

|  |  |
| --- | --- |
| **Reinstatement Classification** | **Partial Depth Reinstatement (Up to 100mm deep) (Note: Surface Course is to match surrounding carriageway surface)** |
| PDR1 | HRA 30/14 f surf 40/60 40mm thick |
| PDR2 | AC 10 close surf 100/150 40mm thick |
| PDR3 | SMA 10 surf 40/60 40mm thick |
| PDR4 | AC 20 dense bin 40/60 60mm thick and HRA 30/14 f surf 40/60 40mm thick |
| PDR5 | AC 20 dense bin 40/60 60mm thick and AC 10 close surf 100/150 40mm thick |
| PDR6 | AC 20 dense bin 40/60 60mm thick and SMA 10 surf 40/60 40mm thick |

* 1. Short-life Reinstatements

Where the reinstatement is within a road that is to be resurfaced within the next month, the binder course and surface course reinstatement shall comprise 100mm Asphalt Concrete binder course brought up to a level flush with the surrounding carriageway, containing 60 PSV coarse aggregate.

* 1. Composite Roads

Partial depth repairs shall be undertaken as for flexible roads, except that for full depth patch repairs the base layer shall be as stated in the instructing Works Order. The binder course and surface course layers shall be reinstated with a surface course material matching the existing carriageway, and an asphalt concrete binder course at the thickness required to make the repair flush with the surrounding carriageway.

* 1. Rigid Roads

Where rigid roads are overlaid with a minimum of 100mm of bituminous surfacing, localised repairs shall be undertaken as for composite roads.

Where rigid roads are overlaid with less than 100mm of bituminous surfacing, repairs shall be undertaken in accordance with the ‘Specification for the Reinstatement of Openings in Highways (Third Edition 2010)/ (Fourth Edition May 2020) when it comes into force in May 2021‘

* 1. Trench Reinstatements

Trenches shall be reinstated as stated below, and with the surfacing materials detail in sub-clause 3.

* + - backfilling of trenches under existing carriageways with ST4 concrete to 100mm below the top of the existing surfacing;
    - backfilling of trenches under new carriageways with granular Type 1subbase to formation level;
    - backfilling of trenches under new and existing footways with Granular subbase Type 1 to formation level. All other trench backfilling shall comply with the requirements specified in sub-Clause 505.2 and to the level specified in sub-Clause 505.8 unless otherwise instructed by the Engineer;

**APPENDIX 7/3: Surface Dressing – Performance Specification (Sheets 1, 2 & 3)**

|  |  |
| --- | --- |
| Type 1 |  |
| Location | As directed by the *Employer* |
| Road Surface | Hard |
| Type of Binder | Premier polymer modified bitumen binder shall be  used. This shall be an emulsion in which a polymer  has been incorporated and which can demonstrate  enhanced performance properties at both high and  low ambient temperatures |
| Chippings | Uncoated 10 mm granite chippings with uncoated  6 mm granite chippings racked in |
| Minimum PSV | 65 |
| Maximum AAV | 12 |
| Requirements  for Rolling | Initial pass with a light steel roller and then  compaction by pneumatic multi-wheel roller |
|  |  |
| Type 2 |  |
| Location | As directed by the *Employer* |
| Road Surface | Hard |
| Type of Binder | Premier polymer modified bitumen binder shall be  used. This shall be an emulsion in which a polymer  has been incorporated and which can demonstrate  enhanced performance properties at both high and  low ambient temperatures |
| Chippings | Uncoated 14 mm granite chippings with uncoated  6 mm granite chippings racked in |
| Minimum PSV | 65 |
| Maximum AAV | 12 |
| Requirements  for Rolling | Initial pass with a light steel roller and then  compaction by pneumatic multi-wheel roller |
|  |  |
| Type 3 |  |
| Location | As directed by the *Employer* |
| Road Surface | Hard |
| Type of Binder | Premier polymer modified bitumen binder shall be  used. This shall be an emulsion in which a polymer  has been incorporated and which can demonstrate  enhanced performance properties at both high and  low ambient temperatures. |
| Chipping Size | Single layer of 10 mm uncoated granite  chippings |
| Minimum PSV | 65 |
| Maximum AAV | 12 |
| Requirements  for Rolling | Pneumatic multi-wheel roller |
|  |  |
| Type 4 |  |
| Location | As directed by the *Employer* |
| Road Surface | Hard |
| Type of Binder/Chippings | Premier polymer modified bitumen binder shall be  used. This shall be an emulsion in which a polymer  has been incorporated and which can demonstrate  enhanced performance properties at both high and  low ambient temperatures. |
| Performance  Criteria | Double layer of 10 mm uncoated granite  chippings |
| Minimum PSV | 65 |
| Maximum AAV | 12 |
|  |  |
| Type 5 |  |
| Location | As directed by the *Employer* |
| Road Surface | Hard |
| Type of Binder/Chippings | Proprietary Surface Dressing System |
| Performance  Criteria | 24 months after laying the surface dressing shall  have a surface texture of 1.5 mm as measured by  the sand patch test, and shall not have fretted to  the extent that more than 25% of the chippings  have been lost from the original continuous  mosaic pattern |
| Minimum PSV | 65 |
| Maximum AAV | 12 |

* + - 1. Application of binder shall not be carried out: -

• When there is precipitation;

• When there is free water on the surface;

• When the air temperature is at or below the values given in para 2. below;

• For emulsion binders when the relative humidity exceeds 80%;

• When the road surface temperature exceeds 35°C for roads carrying over 200

cv/lane/day or 40°C below that traffic level.

* + - 1. The minimum air temperature for spraying shall be 10°C for bitumen emulsion and to the

manufacturer’s recommendations for all modified binders.

* + - 1. The proposed Surface Dressing shall have been subject to a Type Approval Installation Trial (TAIT), which shall be self-certified within the quality management scheme 13, details of which shall be supplied by the Contractor.
      2. Existing road markings covered by new surface dressing shall be reinstated within the following timescales: -

• On the principal road network within 48 hours;

• Junctions and mini roundabouts on non-principal roads within 72 hours;

• All other road markings within 7 days.

* + - 1. Proprietary sealant shall be applied to surface dressing after final sweep when specified by Engineer in Works Order.

**APPENDIX 7/4: BOND COATS, TACK COSTS AND OTHER BITUMINOUS SPRAYS (Sheets 1,2, AND BINDER DATA SHEET)**

**For planned works over 20m2 only Bond Coats will be used and the use of Tack Coats will not be permitted.**

**Bond coats shall comply with BS 594987:2015 +A1:2017**

1 Locations, site specific limitations, type of treatment required, details of the existing surface and overlay materials and any surface preparation required shall be as stated on the instructing Works Order.

2 Bond coats, tack coats and other bituminous sprays shall not be sprayed onto kerbs, street furniture, or adjacent walls and the like. If necessary such features shall be masked prior to applying bituminous sprays. Where bituminous sprays are accidentally sprayed onto such features they shall be cleaned or replaced.

3 Rate of spread required shall be proposed by the Contractor and as accepted by the Engineer.

4 If required, the blinding material to be used shall be proposed by the Contractor and as accepted by the Engineer.

5 The following information shall be provided by the Contractor and submitted with the Contractor’s Programme:

(i) The product or products he proposes to use together with their data sheets, product identification data, cohesivity data as specified;

(ii) For each product, a copy of the BS EN ISO 9001 certificate showing the name of the manufacturer, the name of the certification body and the reference number and date of the certificate;

(iii) The spraying Equipment proposed, and a test certificate;

(iv) The source or sources of blinding material proposed;

(v) Contingency plans in the event of any breakdown;

(vi) The results of any other tests or other data the Contractor considers would assist the Engineer in assessing the technical merit of the treatment such as:

* Tackiness test and/or trafficability time and methods of test;
* Breaking time test results for different weather conditions and substrates;
* Test results for bond to newly laid concrete (e.g. from a BBA/HAPAS certificate if available)

**For localised reinstatements less than 20m2 and footway works. The following can be used:**

Type of Binder: Bitumen Emulsion

Binder Grade or Classification: Class K1-40 – K1-70

Rate of Spread: 0.5 litres/m²

Permitted Additives to Binder: None

Blinding materials: None

Bituminous spray type Anionic Road Emulsions Class

**APPENDIX 7/9: COLD MILLING (PLANING) OF BITUMUNOUS BOUND FLEXIBLE PAVEMENT**

1. All profile planning, constant depth planing and sweeping required shall be carried out in accordance with the particular requirements stated in the instructing Works Order.
2. Combined rate for planing will only be used for restricted night work. (3 hours or less) All other planing to be remeasurable. No preliminaries uplift will be applicable to this item.

# APPENDIX 7/11: OVERBAND AND INLAID CRACK SEALING SYSTEMS

1. Simple overbanding repairs of cracks up to 20mm shall be undertaken using hot ‘filled bitumen’. A hot lance to dry the crack / joint and warm to assist the penetration of the liquid shall be used prior to overbanding.
2. Inlaid crack repairing system shall be undertaken using the “Permatrack H” system, manufactured by IKO PLC or similar approved. Further information is available from:

IKO PLC

Appley Lane North Aplley Bridge Wigan

WN6 9AB

Tel: 0844 412 7228

1. The BBA/HAPAS grade classification for each location shall be as specified in the instructing Works Order.
2. The minimum PSV of the source aggregate for chippings shall be 60.

**APPENDIX 7/13: SAW-CUT AND SEAL BITUMINOUS OVERLAYS ON EXISTING JOINTED CONCRETE PAVEMENTS**

1 Location: see Works Order

2 Bituminous overlays are to be removed from cementitious pavements to be repaired prior to re-overlay. Locations and nominal thicknesses of material to be removed are identified in the Works Order.

3 Dimensions of saw-cuts shall be as Clause 713 Figure 7/1, unless specified otherwise in the Works Order.

4 Tolerances on saw-cuts:

i) Plan position of the centre line of the sealant slot and of the crack-initiation slot relative to the centre line of the existing joint shall be 10 mm.

ii) Width of sealant slot shall be 20mm ±2mm as shown on Clause 713 Figure 7/1

iii) Width of crack initiation slot shall be 3mm ±1mm as shown on Clause 713 Figure 7/1

**APPENDIX 7/14: PREPARATION OF JOINTED CONCRETE PAVEMENTS PRIOR TO OVERLAYING AND SAW-CUT AND SEAL OF THE BITUMINOUS OVERLAY**

See Works Order information for details.

**APPENDIX 7/18: Site Specific Details and Requirements for Cold Recycled Bitumen Bound Material**

See works Order information for details.

**APPENDIX 7/19: SITE SPECIFIC DETAILS AND REQUIREMENTS FOR RECYCLED CEMENT BOUND MATERIAL**

See Works Order information for details.

**APPENDIX 7/21 – SURFACE DRESSING**

**Binder Data Sheet**

|  |  |
| --- | --- |
| Manufacturer of binder |  |
| Product name |  |
| Binder type |  |
| Binder grade |  |

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Supplied binder** | **Age binder** | **Recovered binder** |
| Test | As supplied to site | Recovered in  accordance with  Clause 923 | Aged in accordance  with Clause 923 |
| Penetration at 25 deg C dmm  (100g and 5 secs) |  |  |  |
| Penetration at 5 deg C dmm  (200g and 60 secs) |  |  |  |
| Vialit pendulum Cohesion (Cl  939) max peak value J/sq cm  (Tenderer to include graphical  output) | # | # | # |
| Product identification test (Cl.  922.6) Complex shear  (stiffness) and phase angle  data (see Cl 928) | N/a |  |  |
| Minimum viscosity STV 4 mm  cup at 40 deg C, or Redwood  2 at 85 deg C. |  | N/a | N/a |
| Other properties the  Contractor considers useful |  |  |  |
| Weather limits –information  from binder manufacturer: road  or air temperatures: humidity;  wind chill adjustment;  tolerance of surface dampness  etc. | Temperature max:  Temperature min:  Humidity max:  Wind chill adj:  Other: |  |  |

# Tenderers to supply a graphical output

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

**Precast Concrete Kerbs, Channels, Edgings & Quadrants**

**The item in the Schedule of Rates for taking up and laying of existing or laying of new precast concrete kerbs shall include for the temporary and permanent reinstatement of any damage caused to any type of carriageway.**

1 Precast concrete kerbs, channels, edgings and quadrants shall comply with the type designations and dimensions stated in Table NA.1 BS EN 1340:2003 and Schedule of Rates.

2The details of kerb joints shall be 'butt' jointed for concrete unless stated otherwise in the Works Order that instructs their use.

3 All kerbs shall be bedded and haunched with a minimum of 150mm ST4 concrete unless otherwise stated in the Works Order that instructs their use.

4New kerbs on existing carriageway surfaces shall be laid after cutting the chase. The front cut shall be made with a clean saw cut.

5Should any damage be done to the finished kerbs, edging, channel blocks or combined drainage units, or should any movement of the blocks take place during the execution of the works or during the maintenance period, the Contractor shall take out and make good the lengths so affected, including all associated works. New concrete bed and haunch is to be provided for kerbing, edging, channel blocks and combined kerbing and drainage units.

**Granite Kerbs**

**The item in the Schedule of Rates and Prices for taking up and laying of existing or laying of new granite kerbs shall include for the temporary and permanent reinstatement of any damage caused to any type of carriageway.**

6The size, height, width and length of granite kerbs shall be as stated in the Works Order that instructs their use.

7 All granite kerbs shall be made entirely of natural granite, 'Fair Picked' or as stated in the Works Order that instructs their use.

8The details of kerb joints shall be no greater than 15mm open joint for granite, in which case they shall be pointed with a sand and cement mortar unless stated otherwise in the Works Order that instructs their use.

9 All kerbs shall be bedded and haunched with a minimum of 150mm ST4 concrete unless otherwise stated in the Works Order that instructs their use.

10 New kerbs on existing carriageway surfaces shall be laid after cutting the chase. The front cut shall be made with a clean saw cut.

**Precast Concrete Flags**

**The item in the Schedule of Rates and Prices for laying of precast concrete flags, artificial stone and natural stone paving shall include for cutting to radius corners, irregular frontage lines, trees, street furniture etc. in accordance with BS 7533-4, and for the replacement of 63mm thick (depending on thickness of slab) and up to 150mm wide, Class 1 mortar to Clause 2404, the sand being sharp sand, at the back of the footway, around street furniture etc., trowelled to a smooth finish.**

**The rates are also to include for raising or lowering of, size up to and including 0.5m2, the level of any type of utility cover and frame on any size brick or precast concrete chamber 50mm or less.**

11 The dimensions and type designations for precast concrete flags artificial stone and natural stone and granite setts shall comply with the type designations and dimensions as follows:

|  |  |
| --- | --- |
| Nominal Size (mm) | Thickness (mm) |
| 600 X 450 | 50 or 63 |
| 600 x 600 | 50 or 63 |
| 600 x 750 | 50 or 63 |
| 450 x 450 | 50 or 70 |
| 400 x 400 | 50 or 65 |

12Fibre reinforced paving shall be hydraulically pressed concrete with ‘Strux’ 90/40 structural synthetic fibre reinforcement manufactured by Marshalls or equivalent.

13Precast concrete flags shall be laid with a 150mm bond unless stated otherwise in the Works Order.

14 Precast concrete flags shall be laid on 150mm compacted Type 1 on 25mm thick sharp sand bedding unless stated otherwise in the Works Order that instructs their use.

15Alternative bedding for flags shall only be permitted where expressly permitted in the Works Order that instructs their use.

16 Alternative sizes for flags shall only be permitted where expressly permitted by the Engineer.

**Precast Concrete Block & Setting Paving**

17Precast concrete paving blocks shall comply BS EN 1338:2003 and with the requirements in the Works Order instructing its use.

18Concrete setting paving shall be Marshalls “Tegula”, or equivalent, laid in accordance with the requirements stated in the Works Order instructing its use. Further details regarding Marshalls Products are available from:

Marshalls Mono Ltd

Landscape House

Premier Way

Lowfields Business Park

Elland

HX5 9HT

Tel. 0845 302 0600

[www.marshalls.co.uk](http://www.marshalls.co.uk)

19 The layout and bedding details for blocks and setts shall be as stated in the Works Order instructing their use.

20 Concrete sett paving shall be 60mm thick 160 Gauge 160 x 160mm plan size, either Traditional or Pennant Grey in colour as instructed in the Works Order.

**Tactile Paving**

21Details of tactile paving at pedestrian crossings, steps, ramps and the like can be found in DETR Guidance on the use of Tactile Paving Surfaces (The Scottish Office).

22 All bullnosed kerbing at pedestrian crossing points must be laid with an optimum up stand of 6mm to the finished road surface levels’ ensuring no ponding of water occurs. The maximum up stand at any point on a dropped kerb must be no more than 12mm.

**Flexible Surfacing**

23 The types and thicknesses of materials, to be used for the reinstatement and localised repair of all footways and paved areas that are surfaced in flexible materials, shall be in accordance with the requirements stated in the ‘Specification for the Reinstatement of Openings in Highways’ Third Edition (issued by the Secretary of State for Transport on 26th April 2010 and published by The Stationery Office) & Fourth Edition when it comes into force in May 2021 subject to the agreement of the Engineer. Footway surfacing materials shall be as stated in the Works Order that instructs their use.

24All flexible materials used in footways shall comply with the relevant material specifications included in Series 700 and Appendix 7/1.

**In-Situ Concrete**

25All in-situ concrete in footways and paved areas shall be laid to the designed levels and crossfalls, as stated in the Works Order that instructs their use. Freshly laid concrete shall be allowed to cure for no less than 48 hours before being opened for use by the public. When, due to extenuating circumstances, concrete has been laid when the ambient temperature is below 4°C and falling, it shall be protected with Hessian sacking, or plastic sheeting overnight.

26In-situ concrete footways shall comprise ST4 concrete laid to the thickness stated in the instructing Works Order, brush finished and trowelled edged unless otherwise instructed by the Engineer.

**Covers**

27 All covers, frames to chambers, valves and stopcocks shall be adjusted to the correct levels at least 24 hours prior to laying of the surrounding surfacing.

**APPENDIX 12/3: TRAFFIC SIGNS ROAD MARKINGS AND STUDS**

1. **Road Markings - Scope** 
   1. This Appendix deals with the supplying and laying of screed, sprayed and extruded thermoplastic, road marking paint, solid glass beads and pre-formed road markings. It is an enhancement of Clause 1212.
   2. The basis of this specification is a requirement to achieve prescribed standards of performance during a two year maintenance period. The formulation of the line marking and its application on the site is the responsibility of the Contractor and any material composition may be used providing the performance requirements are achieved and that the materials satisfy the criteria listed in paragraph 2 of this Appendix.
   3. The markings shall be white or yellow continuous or intermittent lines, words, figures, arrows or symbols. Unless otherwise directed by the Overseeing Organisation, all markings shall conform to the requirements of the current Traffic Signs Regulations and General Directions and any subsequent amendments thereto.
   4. Superimposed white stripes at pedestrian crossings shall be of a nominal width as directed by the Overseeing Organisation and shall conform with the requirements of the Zebra, Pelican and Puffin Pedestrian Crossing Regulations and General Directions and any subsequent amendments thereto.
   5. Road Markings at pedestrian crossings shall comply with Traffic Signs Manual Chapter 6 Traffic Control.
2. **Permanent Road Markings**
   1. Permanent road markings are required to the layouts as specified in the works order
   2. Skid Resistance and retro-reflectivity levels to be as per Cl 1212 para 3 unless stated otherwise in works order.
3. **Performance Requirements** 
   1. The road marking shall be firmly bonded to the underlying surface.
   2. The Total Wear Index, at any position in the works as selected by the Overseeing Organisation, shall not exceed 30 when assessed in accordance with the Road Safety Markings Association (RSMA) procedure for determining wear/erosion of road markings.
   3. Unless otherwise specified, all white markings shall be reflectorised by incorporation into the road marking material and to the wet surface of the marking of either solid glass beads to BSEN 1423 and BSEN 1424 or equivalent materials.
4. **Existing Road Markings** 
   1. Where a marking is required to be laid on top or partially on top of an existing marking, the combined total thickness shall not exceed 6mm as detailed in current Traffic Signs Regulations and General Directions, and any superseded marking shall be either permanently removed or totally covered by the new marking.
   2. When directed by the Overseeing Organisation, the Contractor shall remove old markings by an approved method to ensure that the prepared surface is suitable to receive a new marking of regular thickness.
5. **Dimensional Tolerances** 
   1. The width tolerances and thickness for screed, spray, pre-formed and extrusion white or yellow lines shall be in accordance with the current Traffic Signs Regulations and General Directions.
6. **Workmanship** 
   1. On completion of each day’s work the road shall be left clean and free from any surplus material spilled during the progress of the work. All markings shall be uniform and free from streaks or blisters, and shall be free from raggedness at the edges. Trimming of edges, where necessary shall be undertaken as the work proceeds. Arrows associated with solid line systems shall be replaced no later than 48 hours after the completion of the adjoining continuous white line.
7. **Quality Assurance Scheme - Materials** 
   1. All materials and solid glass beads shall be obtained from manufacturers who operate Third Party QA Schemes under ISO 9002, EN 29002.
   2. A copy of the Manufacturer’s current road trial Reports to BS EN 1824 for road markings shall be submitted to the Overseeing Organisation prior to laying.
8. **Road Studs - Scope** 
   1. Permanent reflective road studs shall be 3MTM Marker Series 290 or similar approved.
9. **Road Studs - Permanent Reflecting** 
   1. Permanent reflecting road studs are required at the locations and positions as specified in the Works Order.
   2. Any further requirements are described in the Works Order.
10. **Road Studs - Materials** 
    1. Only studs falling into a category of BS EN 1463 or that hold a current statutory approval by the Secretary of State shall be used on any public road.
    2. Fixing materials shall be as recommended by the manufacturer.
11. **Road Studs - Workmanship** 
    1. Fixing methods shall follow the manufacturer's instructions.
    2. Fixing of studs shall not proceed during adverse weather conditions without the written instructions of the Overseeing Organisation or their representative.

**APPENDIX 30/5 Grass seeding Wildflower seeding and turfing. 1** Grass seeding and wildflower seed shall be sown during the period 1 March to 15 November.

**2** Grass seed shall comply with BS 4428**3** The upper 50mm of soil shall be cultivated to a fine tilth in all seeded areas.**4** Granular fertiliser is not required unless as stated in the instructing *Works Order* .**5** Species of Grass Mix:**MIXTURE TYPE A** General Amenity Grass Mix for verges and highwaysMinistry of Transport Standard Mix or similar approved35% Chopin Strong creeping red fescue25% Barmona Hard fescue20% Bardur Perennial ryegrass12.5% Bartender Smooth-stalked meadow grass5% Highland Browntop bent2.5% Crusader White clover)**MIXTURE TYPE B**Wild Flora MixBritish Seed Houses WF3 (20%) (Achillea millefolium (Yarrow) Centaurea nigra (Common Knapweed) Conopodium majus (Plaintain Pignut) Galium verum (Lady's Bedstraw) Geranium pratense (Meadow Cranesbill) Leucanthemum vulgare (Ox-eye Daisy) Linum usitatissimum (Common Flax) Lotus corniculatus (Birdsfoot Trefoil) Lotus ulignosus (Marsh Trefoil) Lychnis flos-cuculi (Ragged Robin) Onobrychis vicifolia (Sainfoin) Plantago lanceolata (Ribwort) Prunella vulgaris (Self-Heal) Ranunculus acris (Meadow Buttercup) Rhinanthus minor (Yellow Rattle) Sanguisorba minor (Salad Burnet) Scabiosa columbaria (Small Scabious) Vicia sativa (Common Vetch) with A18 Motorways/Road Verges (80%) mix.**6** Sowing Ratesa) New lawns and grass areas: 35g/ m2b) Top Dressing of Amenity verges: 15g/ m2c) Wildflower mix 5g/ m2**7** Locations for Hydraulic Seeding - not used.**8** Turf arising from site shall not be reused.**9** Not Applicable.

**10** Turfing shall be carried out in accordance with BS 3969 and BS 4428 and in accordance with Clause 3005.

**11** The following turf to be used for amenity areas and verges: “Rolawn Medallion” or equivalent and to be in accordance with sub-Clause 3004.6, unless otherwise stated in the instructing *Works Order* .**12** Where turf is laid on slopes greater than 20 degrees to the horizontal the turves shall be secured with a propriety wire pin, unless otherwise stated in the instructing *Works Order* ~~.~~ **13** Irrigation shall be carried out as required to ensure the establishment of seeded and turfed areas.