**SS17064**

Growth, Environment and Transport



Road Asset Renewal Contract

**Schedule 6 Part 2**

**SERVICE INFORMATION**



**Important Notice**

This document has been prepared by The Kent County Council (“the Client”) to present the Client’s requirements and provides details to bidders for this stage of the tender process.

This document shall be read in conjunction with:

* Schedule 1: Instructions to Tender
* Schedule 2: Forms for Completion
* Schedule 4: Quality Questions
* Schedule 5: Financial
* Schedule 6: Scope of Services
* Schedule 7: Data room

If a bidder considers that any of the information submitted in its tender should not be disclosed by the Client under a Freedom of Information Act 2000 request, it will have to set this out in the Freedom of Information Form provided by the Client in Schedule 2 (Forms for Completion). The bidder will accept any decision made by the Client as set out in the Freedom of Information Form.

**AMENDMENT SHEET**

|  |  |  |  |
| --- | --- | --- | --- |
| **Version Number** | **Amendment** | **Initials** | **Issue Date** |
| V1 | 1st draft | DWA | 11/10/17 |
| V2 | 2nd Draft | CL | 05/11/17 |
| V3 | 3rd Draft | RC/BD | 06/12/17 |
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APPENDIX 0/1: CONTRACT-SPECIFIC ADDITIONAL, SUBSTITUTE AND CANCELLED

CLAUSES, TABLES AND FIGURES INCLUDED IN THE CONTRACT

LIST OF ADDITIONAL CLAUSES, TABLES AND FIGURES

| **Clause No.** | **Title** | **Written on Page No Following** |
| --- | --- | --- |
| 185 AR | Night Work |  |
| 186 AR | Sectional Completion |  |
| 187 AR | Site Safety |  |
| 190 AR | Completion |  |
| 191 AR | Health and Safety File |  |
| 571 AR | Renewing and Re-Levelling BT Covers and Frames |  |
| 588 AR | Adjustment of Ironwork |  |
|  |  |  |
| 670 AR | Trial pits |  |
| 686 AR | Geosynthetics |  |
|  |  |  |
| 887 AR | Materials Approval using Portable Dynamic Plate Test |  |
| 888 AR | Granular sub-base - Performance Categorised material |  |
| 889 AR | Dynamic Plate Test |  |
| 896 AR | Wheelpath Deformation Measurement |  |
|  |  |  |
| 935 AR | Application Of Grit |  |
| 971 AR | Stone mastic asphalt surface course |  |
| 990 AR | Geotextile Reflective Crack Control Membrane |  |
|  |  |  |
| 1270 AR | Reinstatement of road markings |  |
| 1279 AR | Road Stud Types |  |
| 1282 AR | Methyl Methacrylate Road Markings |  |
| 1286 AR | Surveys Of Existing Road Markings |  |
|  |  |  |
|  | **Restricted Working** |  |
| 9000 AR | Definitions |  |
| 9001 AR | Restricted working |  |
|  |  |  |

NONE

LIST OF SUBSTITUTE CLAUSES, TABLES AND FIGURES

|  |  |  |
| --- | --- | --- |
| **Clause No.** | **Title** | **Rewritten on Page No Following** |
| 709 SR | Cold Milling (Planing) of Pavement |  |
|  |  |  |
| 907 SR | Regulating Course |  |
| 921 SR | Surface Macrotexture of Bituminous Surface Courses |  |
| 924 SR | High Friction Surfacings |  |
|  |  |  |
| 1212 SR | Road Markings |  |
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NONE

LIST OF CANCELLED CLAUSES, TABLES AND FIGURES

|  |  |  |
| --- | --- | --- |
| **Clause No** | **Title** |  |
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NONE

ADDITIONAL CLAUSES, TABLES AND FIGURES

SERIES 100 PRELIMINARIES

Clauses 127 to 184 - Not Used

185 AR Night Work

Night work will only be permitted as detailed in Appendix 1/85.

186 AR Sectional Completion

The Contractor shall comply with the requirements described in Appendix 1/86.

187 AR Site Safety

In the interests of Site Safety, where there is a foreseeable risk, safety helmets and high visibility warning clothing shall be worn on the Site by all Site personnel at all times. The high visibility warning clothing shall be as described in Clause 117.18.

190 AR Completion

The Contractor shall comply with the requirements of Appendix 1/88.

191 AR Health and Safety File

The Contractor shall comply with the requirements of Appendix 1/89.

SERIES 500 DRAINAGE AND SERVICE DUCTS

571AR Renewing and Re-Levelling BT Covers and Frames

The overseeing organisation has an agreement with BT (LN 320) permitting the contractor to carry out works on BT inspection chamber covers and frames.

The works shall be carried out in accordance with the BT specification LN320 attached in Appendix F, at all times.

Where required, the Overseeing Organisation may agree with BT for the Contractor to replace covers/frames. These shall be supplied by BT at no cost and delivered to the Contractor’s depot/storage facilities.

The contractor shall remain responsible for storage, handling and transport of the items to site for use in the works.

BT reserve the right to audit and inspect work carried out by the contractor under this process. Where completed works fail such an inspection, or are found not to comply with the LN320 specification, the contractor shall be responsible for repairing them to BT’s satisfactory. Where BT carry out any repair works themselves due such a failure, the contractor shall be responsible for any costs incurred by BT which they may subsequently try to recover.

588 AR Adjustment of Ironwork

1. Where the adjustment or replacement of existing frames and covers or gratings to service boxes, service valves and the like is required, such adjustment or replacement shall be in accordance with Clause 507.18.

SERIES 600 EARTHWORKS

670 AR Trial Pits

1. From time to time the *Contractor* will be instructed to excavate trial pits for purposes such as locating services, determining surfacing depths and investigating pavement or ground conditions.

Trial pits shall be excavated by saw cutting to at least 50mm depth in bound materials.

Material shall be removed in layers as directed by the Overseeing Organisation.

**Location of Services**

1. The *Overseeing Organisation* will obtain initial services information which will be supplied to the *Contractor*. The *Contractor* shall be responsible for arranging for undertakers to trace and mark the approximate location of their services, if considered necessary, before the start of excavation.

Trial pits which are specifically for locating services or where services could reasonably be expected shall be dug by hand.

**Recording of Information**

1. The *Contractor* shall agree the timing of the excavation with the *Overseeing Organisation t*o enable the *Overseeing Organisation* to arrange attendance. Measuring and recording of information will be carried out by the *Contractor* unless otherwise stated on the Task Order..

**Reinstatement**

1. Reinstatement shall be carried out as soon as recording of information is complete unless instructed otherwise. The materials used and the degree of compaction shall be such as to restore the Site as near as possible to its original condition. Settlement of reinstatements in excess of 10mm at any position within 2 years of reinstating shall be made good by the *Contractor*.

686 AR Geosynthetics

The type of geosynthetic and location shall be as described in Appendix 6/86.

SERIES 800 ROAD PAVEMENTS – UNBOUND, CEMENT AND OTHER HYDRAULICALLY BOUND MIXTURES

887 AR Materials approval using Portable Dynamic Plate Test

1. The material shall be compacted into a box minimum dimensions: 610mm x 610mm x 420mm deep, with a Vibrotamper minimum mass exceeding 60kg in at least 3 layers with 8 passes on every point in each layer.
2. The moisture content shall satisfy the requirements for the particular material being approved.
3. The density shall be checked with a calibrated nuclear density gauge in direct transmission mode to ensure a minimum compaction of 95% of wet density achieved in BS 1377 Part 4 Method 3.7.
4. The materials shall be tested using the Dynamic Plate Test in accordance with Clause 889AR
5. The mean Stiffness modulus shall satisfy the requirements of the relevant Clause for the material.

888AR Granular Sub-Base

888AR Granular sub-base – performance categorised material

1. Granular sub-base – performance categorised material shall be one of the following Selected granular materials complying with this clause including materials complying with the 800 series of the specification and other recycled and secondary aggregates for example: crushed concrete, demolition waste, asphalt planings, furnace bottom, fuel and incinerator ash, slag but excluding unburnt colliery spoil

2. The material shall have a Los Angeles coefficient of LA 55 when tested in accordance with BS EN 1097-2.

3. The material shall contain no gypsum plaster, putrescent or soluble material and not more than a total of 2% by mass, timber, plastic, steel or other degradable material. The maximum dimension of any such material shall not exceed 25mm.

4. The material at time of compaction shall be at an appropriate moisture content between +1% and –2% of the optimum moisture content as determined by BS 1377-4 or a recognized field identification test.

5. The material shall satisfy the requirements of Table 8/88 below when tested in the Laboratory for approval purposes using the Portable Dynamic plate in accordance with Clause 887 AR

6. In addition after installation they should have sufficient mechanical interlock not to rut under construction traffic. If necessary this should be demonstrated by a field trial. The material shall not exhibit a rut depth exceeding 20mm after 100 passes of an 8tonne axle

7. When tested in -situ the material shall achieve a Stiffness Modulus (Foundation Surface Modulus) measured by Portable Dynamic Plate, as given by Table 8/88 measured at a rate of 1 test per 20 linear metres of carriageway

8. Unless otherwise stated in Appendix 7/1, when used in the carriageway the materials shall not be frost susceptible if used within 450mm of the designed final surface when tested in accordance with Clause 801.8

Table 8/88 Stiffness of granular materials

|  |  |  |  |
| --- | --- | --- | --- |
| Stiffness at top of layer | In-situ ( Foundation Surface Modulus) | | Laboratory |
| Rolling Mean of 5 results | Any Individual Value |
| Category A material | 100 MPa | 80MPa | 150 MPa |
| Capping Layer | 40 MPa | 30MPa | 60 MPa |

9. Materials shall be compacted with vibrating rollers without drying out or segregation so that when tested they achieve 95% of the density when compacted in accordance with BS 1377-4 Method 3.7. This shall be measured in-situ using a calibrated nuclear density meter at a rate of 1 test per 50 linear metres of carriageway.

10. Prior to laying the bituminous material the surface of the sub base shall satisfy the surface tolerance requirements of Clause 702

11. At least 2 weeks before laying of material is to commence, details shall be submitted to the Overseeing Organisation of the sources of material and the methods intended to be used.

889AR Dynamic Plate Test

1. Dynamic Plate Tests shall be carried out using equipment which has been properly calibrated to manufacturer’s specification and subject to a validation check prior to use.

2 The equipment shall be capable of delivering a total load pulse of peak magnitude 6-8kN, of total duration 15-40 milliseconds, to a rigid circular plate of 300mm diameter. Both the applied load and the transient deflection shall be measured.

3 The dynamic modulus shall be determined at each point tested using the following formula:-

Dynamic Modulus, Evd (MPa) = P(1-ν2)

0.3y

Where: P is the peak applied load (kN)

y is the peak deflection (mm)

ν is the Poissons Ratio; a value of 0.35 shall be used in the absence of any other data

1. The stiffness modulus shall be obtained using the following formula:-

Stiffness Modulus, G (MPa) = Evd / 0.6.

1. The full technical specification and method of use of the Dynamic Plate Test apparatus is published by the German Federal Ministry of Transport, Road Construction Department in TP BF-StB Part B 8.3, 1992 (In German).

896 AR Wheelpath Deformation Measurement.

1 Where a trafficking trial is required the deformation shall be measured as described in this clause.

2 Ruts that develop under construction traffic, measured in accordance with this Clause, shall nowhere exceed the following limits:

* All stabilised/bound surfaces – 10mm
* < 250mm thick granular material – 30mm
* ≥ 250mm thick granular material – 40mm

3 At each point, the cumulative rut, calculated by summing the deformations from each trafficked foundation layer shall not exceed 50mm.

4 Wheelpath Deformation measurement shall be carried out using a straight edge with a length of at least 2m. The straight edge shall be placed transverse to the rut and raised clear from the rut by two identical blocks. The blocks shall be placed on undisturbed material outside of the wheel path. The amount of deformation shall be the difference between the deepest vertical measurement from the straight edge to the surface of the foundation (A) and the height of the blocks (B)



SERIES 900 ROAD PAVEMENTS - BITUMINOUS BOUND MATERIALS

935 AR Application of Grit

**GENERAL**

1. To improve early life skid resistance, the contractor shall apply grit to the surface of unchipped HRA, SMA and TSCS surface courses.

2. Grit shall be coated with 40/60 grade bitumen, shall be coarse aggregate mixture conforming with 935AR and shall be machine applied as specified in Appendix 7/1 and/or Table 935AR/2.

|  |  |  |
| --- | --- | --- |
| **Test Sieve** | **Proportion passing test sieve (% by mass)** | |
|  | **2/4 particle size** | **1/2.8 particle size** |
| 8  6.3  4  2.8  2  1  0.63 | -  100  90 – 100  -  0 – 25  -  0 – 2 | -  -  100  90 – 100  -  0 – 25  0 – 2 |
| Target binder content (%) | 0.7 (+/– 0.5%) | 1 (+/– 0.5%) |
| Machine application rate (kg/m2) | 1 – 5 (for SMA 14) | 1 – 1.25 (for SMA 6 and SMA 10) |

**Table 935AR/2 Composition of grit mixture**

3. The grit shall be applied from hoppers attached to a roller after the asphalt has been laid and after the initial compaction by roller. The rolling pattern shall, as far as practicable, provide a single application of grit to the full width with no overlap. When the material has reached ambient temperature, any surplus grit shall be removed carefully prior to the application of road markings and before the road is opened to traffic.

971 AR Stone Mastic Asphalt Surface Course

**GENERAL**

1. Stone Mastic Asphalt surface course shall comply with the requirements of BS EN 13108 Bituminous mixtures - Material specifications Part 5, PD 6691 Guidance on the use of BS EN 13108 and TS 2010 (Version 2). Stone Mastic Asphalt shall be designed and manufactured to comply with the requirements of PD 6691 annex D unless otherwise varied by this clause and shall be transported handled and laid in accordance with the requirements of BS 594987.

**MATERIALS**

**Aggregate**

2. The coarse aggregate shall be material substantially retained on a 2mm test sieve, conforming to all appropriate requirements of BS EN 13043:2002 and consisting of either crushed rock or crushed gravel of one or more of the following groups: basalt, gabbro, granite, gritstone, hornfels, porphyry or quartzite.

3. Unless otherwise specified in Appendix 7/1, the coarse aggregate shall have the following properties:

* The flakiness index for the coarse aggregates shall be FI20;
* Resistance to Fragmentation – Category LA30;
* Aggregate abrasion Value – for carriageway material, not more than 12, after reference to HD36/06 Table 3.2;
* Durability (Water Absorption) – Category WA24 2;
* Polished Stone Value – the minimum PSV to be specified in Appendix 7/1 for carriageway surface course after reference to Table NG 971AR/1. Minimum PSV for all footway surface course material shall be 45.
* The fines content category for the coarse aggregate shall be f4;
* The resistance to surface abrasion for the coarse aggregate shall be AAV12.

4. The fine aggregate shall substantially pass a 2 mm test sieve and be a crushed material from either crushed rock or crushed gravel of one or more of the following groups: basalt, gabbro, granite, gritstone, hornfels, porphyry or quartzite.

**Filler**

6. Added filler shall only be crushed limestone or other approved material in accordance with the requirements of BS EN 13043, 5.2.1.

7. Hydrated lime may be added up to a maximum of 2% by mass of the aggregate.

**Binder Grades**

8. The binder shall be 40/60 paving bitumen or a polymer modified binder to achieve the required wheel tracking and crack resistance performance. Where a polymer modified binder is used, compliance and test data for the binder proposed shall be included as part of the Type Approval Installation Trial (TAIT), Stage 1 requirements. The Overseeing Organisation’s approval to use specific materials needs to be sought on a material by material basis and should not be assumed.

**MIXTURE**

9. The target grading for the mixture shall fall within the limits given in PD 6691 Table D1 for 0/6 and 0/10mm nominal aggregate sizes, unless agreed otherwise by the Overseeing Organisation. The manufacturer shall carry out initial type testing in accordance with EN 13108 – 20 to demonstrate conformity with EN 13108 – 5 and PD 6691, as amended below.

10. Minimum binder contents (by mass of the total mixture) for each nominal aggregate size shall be:

0/10mm Bmin6.7

0/6mm Bmin7.1

11. The SMA mixtures shall include a minimum fibre content of 0.3% (by mass of the total mixture). The average binder drainage category of a set of specimens tested in accordance with BS EN 12697-18:2004 (Clause 5) Schellenberg method shall be less than 0.3%.

12. Void content of laboratory compacted specimens of the mixture at target composition prepared and tested as detailed in BS EN 13108-20:2006 (Annex C, Table C.1) shall fall within 3 to 4%. When tested in accordance with PD 6691 Table 4 but with the amendment that BS EN 12697-6 procedure C, sealed specimen shall be used to determine specimen bulk density.

13. The resistance to permanent deformation of samples at target composition taken in accordance with BS 594987:2007, Annex G, shall be determined in accordance with BS EN12697-22:2003 using the small device and Procedure B in air at a test temperature of 60 ºC. The results shall be recorded in the Producer’s quality management system and reported as part of the TAIT procedures.

**COMPACTION**

14. The laid thickness shall be within the range permitted in Table 971AR/1.

|  |  |  |
| --- | --- | --- |
| **Mixture description** | **Thickness range (mm)** | **Minimum thickness (mm)** |
| SMA 6 | 20 – 40 | 15 |
| SMA 10 | 25 – 40 | 25 |

**Table 971AR/1 Permitted laid thickness**

**SURFACE TEXTURE**

15. Surface texture requirements of SMA surface courses shall be as stated in the Task Order and in accordance with Clause 921SR. Texture depth measurement shall be carried out in accordance with Clause 921SR

**NOMINAL LAYER THICKNESS**

16. Unless otherwise stated in Appendix 7/1 nominal compacted thickness shall be:

10mm 40mm

6mm 30mm

**RECLAIMED ASPHALT**

17. Unless otherwise permitted by the Overseeing Organisation, reclaimed asphalt shall not be permitted for use in Stone Mastic Asphalt surfacing course.

990 AR Geotextile Reflective Crack Control Membrane

The Geotextile Fabric

1. The membrane shall be a non-woven, 100% polypropylene fabric with the following characteristics:

|  |  |  |  |
| --- | --- | --- | --- |
| (a) | Tensile strength | ISO 10319/1 | 115x115 kN/m minimum |
| (b) | Elongation at maximum load% | ISO 10319/1 | 2.5% minimum |
| (c) | Melting point | ASTM D.276 | 180°C minimum |
| (d) | Asphalt retention | ASTM D 6140-97 | 1.1 kg/m² |

2The fabric shall not be exposed to direct sunlight for a cumulative period exceeding 2 weeks prior to its being overlaid and shall be stored in accordance with the manufacturer's instructions.

Surface Preparation

3 The surface of any existing pavement to be overlaid, whether directly with the membrane, or with a regulating course onto which the membrane will subsequently be laid, shall receive the following treatment:

(a) All cracks of width greater than 5mm shall be blown clean and dry with hot compressed air and filled with 60 - 80 pen grade filled bitumen incorporating 70 - 75% Limestone filler, using a screed box not exceeding 50mm wide.

(b) All potholes, or fretted areas shall be filled with regulating material of aggregate size appropriate for the depth of material laid.

1. The minimum surface temperature shall be 15°C, and the surface shall be dry and swept free from dirt, oil, vegetation and other debris, by mechanical broom.

Bond Coat

4. The binder shall be either 200 pen bitumen maintained in a tanker/spray at 160ºC ± 5ºC or 100 pen maintained at 180ºC ± 5ºC and sprayed at a rate of 0.9 l/m2 ± 0.1 l/m2 or cut back bitumen, sprayed at a rate of 1.0 l/m2 ± 0.1 l/m2. If the surface is porous/pervious the rate shall be increased, with the agreement of the Overseeing Organisation, to allow for the binder lost into the surface. The binder shall be sprayed uniformly over the whole area on which the fabric is to be laid, plus 150mm at each side using pressure jets specifically designed and calibrated for the purpose.

Fabric Laying

1. The fabric shall be laid out mechanically immediately after spraying whilst maintained under sufficient light tension to ensure no wrinkling. Should wrinkling in excess of 25mm occur inadvertently, the fold shall be slit and laid flat, permitting only a double thickness of material. Transverse and longitudinal joints shall be butted, joints shall not coincide with longitudinal or transverse cracks. All fabric must be bonded to the substrate with bitumen, and the Overseeing Organisation may permit additional bitumen to be placed manually to ensure this.

6. The fabric shall be brushed with a stiff broom over its whole surface to ensure it is in contact with the bitumen film. If hot binder is used this shall take place before the binder has cooled to a non-tacky state.

7. The surface of the fabric shall be rolled with at least one pass of a rubber coated drum roller or pneumatic tyred roller immediately after laying the fabric to press the fabric into the bond coat.

8. Construction and emergency traffic may run on the fabric immediately after laying. However, it must be ensured that damage is not caused to the membrane by vehicles turning, braking etc. and it must also be ensured that the membrane is kept clean of mud or other detritus. If damage occurs the affected area shall be patched with bond coat and fabric. If the surface of the fabric becomes tacky with bitumen during construction, this may be blotted if necessary with sand to prevent spreading and pick-up of the fabric. Excess sand shall be removed by sweeping before overlaying

SERIES 1000 ROAD PAVEMENTS - CONCRETE MATERIALS

SERIES 1200: TRAFFIC SIGNS AND ROAD MARKINGS

1270 AR Reinstatement of Road Markings

1Permanent road markings shall be reinstated following the completion of any works within the following periods:

1. Stop lines, give way lines and solid centre lines - no later than 7 days after completion of the surface course at each individual site.
2. Other markings - no later than 14 days after completion of the surface course or surface dressing at each individual site.
3. Immediate temporary reinstatement of marking (stop/ give way) following re surfacing.

1279 AR Road Stud Types

|  |  |
| --- | --- |
| **Table 12/3: Road stud types** | |
| **Type** | **Details** |
|  | 254mm x 140mm permanently inlaid, self-wiping depressible, reflecting red, amber, white or green road stud that may be unidirectional or bi-directional. The stud shall be suitable for use on all roads including those carrying heavy traffic or army tanks, and which may be subject to frequent snow clearing operations. The stud shall be constructed to facilitate the easy removal of the depressible component of the stud for the purpose of renewing the reflectors or cleaning the base unit. |
|  | 100mm x 100mm permanently bonded, surface mounted, reflecting red, amber, white or green road stud which may be unidirectional or bi-directional and shall be suitable for use on bituminous and concrete roads and remain fixed in all weather and traffic conditions |
|  | 100mm x 100mm permanently bonded, self-adhesive, surface mounted, reflecting red, amber, white or green road stud which may be unidirectional or bi-directional and shall be suitable for use on low stress bituminous and concrete roads and remain fixed in all weather and traffic conditions. |
|  | 100mm x 100mm permanently anchored (with shaft), non-reflecting road stud which shall be made of stainless steel and shall be suitable for use on bituminous or concrete roads and remain fixed in all weather and traffic conditions. Shall have a serrated surface for anti-slip purposes |
|  | 100mm diameter permanently inlaid 360 degree one piece tempered glass, non-depressible, reflecting red, amber, white or green road stud |

1282 AR Methyl Methacrylate Road Marking Materials

1. Where instructed by the *Overseeing Organisation* road markings to be applied to concrete surfaces (including block paving) shall be as follows:
2. Surfaces to be coated shall be prepared so that they are clean, dry and free from all surface contamination prior to application of road marking materials.
3. Unless otherwise specified by the road marking material manufacturer, concrete surfaces shall be sealed/primed with a reactive methyl methacrylate concrete sealer applied all in accordance with manufacturer’s instructions.
4. Apply the two component reactive methyl methacrylate road marking material in a fluid condition, all in accordance with manufacturer’s instructions.

1286 ARSurveys of Existing Road Markings

1. The *Contractor* is to undertake surveys of existing road markings prior to carrying out any works under this contract requiring the reinstatement of road markings on the task order.

2. The *Contractor’s* survey shall consist of a record of the number, type colour and location of the existing road markings. This record shall be comprehensive and accurate enough to allow the reinstallation of all existing road markings within the works area in the same location. The surveys shall be written, electronic and/or marked on site.

709 SR Cold-Milling (Planing) Of Pavement

1. Where cold-milling of pavement is required, the area of carriageway to be milled shall be removed by a suitable milling machine to the requirements specified in Appendix 7/9. The process shall be carried out so as not to produce excessive quantities of dust, which shall be minimised by damping with water sprays.

2. The cut edges shall be left neat, vertical and in straight lines. The Contractor shall brush and sweep the milled surface by mechanical means to produce a clean and regular uniform running surface with a 10mm maximum groove depth for bituminous or concrete surfaces and 5 mm where Fine/Micro milling is specified.

3. Carriageways shall be milled to the tolerance of ± 6 mm (±4mm for Micro milling). If the tolerances in this Clause are exceeded, the full extent of the area which does not comply shall be rectified by further milling or by regulating with materials in accordance with Clause 907.

4. Existing ironwork shall not be disturbed by the milling action. Where necessary, surfacing in the vicinity of ironwork and in small or irregular areas shall be cut out by pneumatic tools or other suitable methods and removed.

5. Where milling is carried out on a carriageway open to traffic, temporary ramping to ensure the safe passage of vehicles shall be provided in accordance with the requirements of Appendix 1/17.

6. If the milled surface profile varies by more than 10 mm, when measured transversely or longitudinally by a 3 metre straight edge, adjustments or replacements shall be made to the cutting teeth on the milling drum before work continues. Any discontinuity between adjacent milling passes exceeding 10 mm, when measured transversely by a 3 metre straight edge, shall be rectified by further milling or regulating before placing bituminous materials.

7. Where milling is required over extensive areas, the Contractor shall programme the work to allow removal of full lane widths unless this is impracticable. The Contractor shall notify his proposed programme of milling to the Overseeing Organisation prior to commencement of the work.

8. Immediately after milling, surplus materials shall be removed by a machine of suitable and efficient design and the milled surface swept to remove all dust and loose debris.

9. The material removed from the carriageway shall be removed from site and disposed of by the Contractor, unless otherwise agreed by the Overseeing Organisation. No stockpiling shall be allowed on Site unless the material is to be used in the Works.

10. Carriageways which are closed to traffic to permit milling shall be resurfaced after milling prior to reopening the carriageway to traffic unless otherwise agreed by the Overseeing Organisation.

11. When specified in Appendix 7/9, prior to cold-milling the Contractor shall carry out a sweep of the area(s) to locate any buried metalwork within the layer to be cold-milled. The sweep shall be carried out with electronic detection equipment suitable for the purpose. The surface shall be clearly marked above all objects to show their detected extent. The objects shall be referenced and their location and depth reported to the Overseeing Organisation within 6 hours of discovery. Surfacing in the vicinity of such objects shall be excavated using pneumatic tools or other suitable methods.

907 SR Regulating Course

**GENERAL**

1. Regulating courses, which may consist of one or more layers of a bituminous material, shall have their finished surfaces laid to achieve the appropriate tolerances for horizontal alignments, surface levels and surface regularity for pavement layers, in accordance with Clause 702.

2. Unless otherwise specified in Appendix 7/1, stone mastic asphalt complying with Clause 937, or base or binder course asphalt concrete complying with Clause 929 or hot rolled asphalt complying with Clause 943, shall be used for regulating courses immediately below surface courses. Bituminous mixtures for regulating courses shall meet the requirements for the appropriate material, as specified above.

3. Unless otherwise specified in Appendix 7/1, the following materials shall be used for regulating courses:

i) SMA 10 reg 40/60 WTR 2 (Clause 937)

ii) HRA 60/20 reg 40/60 des WTR 2 (Clause 905)

iii) AC 20 HDM reg 40/60 (Clause 907)

4. The maximum and minimum compacted layer thicknesses for each regulating layer shall meet those recommended in BS 594987 for the selected material. Minimum regulating course thickness shall not be less than 15mm.

5. An increased thickness of the new binder course or base shall be applied in the situation where regulating course is required underneath a new overlay of binder course or base. A separate regulating course layer shall be avoided. Nevertheless, the maximum and minimum compacted layer thicknesses for the new binder course or base shall meet those recommended in BS 594987.

6. Regulating course mechanical properties shall be sufficient to support the overlaying material without compromising the durability and bearing capacity of the new overlay.

921 SR Surface Macrotexture of Bituminous Surface Courses

1 Bituminous surface courses include Thin Surface Course Systems, Asphalt hot mix materials , surface dressing , microasphalt and slurry surfacing

2 The requirements of this clause supersede the requirements of BS 594987 Clause 8.

3 The measurement of surface macrotexture shall be carried out in one of the following ways

a) SCANNER survey vehicle – [SMTD] in accordance with the operators instructions

b) Walking speed laser texture meter to EN ISO 14473-1 in accordance with the operators instructions

c) Patch test to BS EN13036-1 with at least one set of 10 individual measurements taken per 100m of carriageway.

d) Mini Texture Meter [MTM] in accordance with the Operating Maintenance Manual (1986).

4 The requirements for macrotexture are classified High, Medium or Low in accordance with Table 921SR/1

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Table 921SR/1** | | **Average not less than** | | **Average not less than** | **Average not greater than** | |
|  | | **per km or carriageway lane length** | | **Per 10 readings** | **per km or carriageway lane length** | **Per 10 readings** |
|  | Thin Surfacing Level | SCANNER/ laser [SMTD] | Patch | Patch | Patch | Patch |
| **Initial** | |  |  |  |  |  |
| *High* | *3* | n/a | **1.30(1)** | 1.00(1) | **1.8** | 1.6 |
| *Medium* | *2* | n/a | **1.00** | 0.90 | **1.5** | 1.4 |
| *Low* | *1* | n/a | **0.80** | 0.70 | **1.3** | 1.2 |
| *Very Low* | *n/a* | n/a | **0.70** | 0.60 | **1.3** | 1.2 |
| **Retained after 12mths in Wheel Track** | |  |  |  |  |  |
| *High* | *3* | 0.75 | 1.10 | 0.90 | n/a | n/a |
| *Medium* | *2* | 0.55 | 0.85 | 0.75 | n/a | n/a |
| *Low* | *1* | 0.45 | 0.70 | 0.65 | n/a | n/a |
| *Very Low* | *n/a* | 0.40 | 0.60 | 0.60 | n/a | n/a |
| **Retained after 24mths in Wheel Track** | |  |  |  |  |  |
| *High* | *3* | 0.60 | 0.90 | 0.80 | n/a | n/a |
| *Medium* | *2* | 0.45 | 0.70 | 0.60 | n/a | n/a |
| *Low* | *1* | 0.40 | 0.60 | 0.55 | n/a | n/a |
| *Very Low* | *n/a* | 0.37 | 0.50 | 0.50 | n/a | n/a |

Note 1 Texture Depth measurements shall be taken on a dry surface. Typically this requires 3 to 4 dry days after laying/rainfall.

Note 2 MTM measurements may be carried out if the device has been calibrated for the particular surfacing type.

Note 3 On surfaces other than SMA/Thin Surface Course systems the value of 1.3 mm is increased to 1.50 mm and the value of 1.00 mm increased to 1.20 mm.

5 The surface macrotexture of new surfaces should where required be measured not more than 7 days after the surfacing has been laid and where practicable before the surfacing has been opened to traffic

6 Measurements shall be made and the macrotexture determined as follows

a) Over sections of each carriageway 1000m in length or the complete carriageway lane where this is less than 1000m

b) On lane/surface lengths not exceeding 50m in length regularly spaced along the section and covering not less than one third of the section

c) When using the patch test method 10 individual measurements shall be taken within the 50m section.

7 A set of measurements shall be taken along a diagonal line across the lane width unless otherwise instructed

8 Where the determination of average texture depth for a section of the carriageway lane, based on measurement taken over part of the section is less than shown in the contract, measurements shall be extended to cover the complete length of the section and the average macrotexture depth recalculated.

924 SR High Friction Surfacings

**General**

1. High friction surfacing systems shall have current British Board of Agrément HAPAS Roads and Bridges Certificates. Such systems shall only be installed by a Contractor approved by the BBA and certificate holder as an Approved Installer of that system.

2. The BBA/HAPAS Type and Classification required for each location shall be as specified by the Overseeing Organisation (Table NG9/24: Volume 2: Notes for Guidance on the Specification for Highway Works).

3. The installation and quality procedures shall be in accordance with the HAPAS certificate for each system and the current method statement agreed by the BBA. These documents and the results of all quality control checks carried out on site by the Contractor and quality assurance information completed in accordance with the requirements of HAPAS, including results from BBA surveillance visits, shall be supplied to the Overseeing Organisation.

4. For each location where ‘Special Surfacing’ systems are applied, the total quantities of each system component used, the measured area of the surface treated and the calculated coverage rate in kg/m2 shall be notified in writing to the Overseeing Organisation within 5 days of completion at that location. For systems in which aggregate is broadcast over a film of binder applied to the surface, the calculated coverage rate shall be that of the binder film and shall not include the mass of aggregate.

**Site Suitability**

5. The Contractor will be deemed to have visited the site(s) in order to be satisfied with the conditions and to assess the existing surface for suitability and design purposes. The Contractor's attention is drawn to this particularly in connection with newly laid surface courses and fatted surface dressings.

6. The Contractor shall ensure that it is satisfied that the surface is suitable for the application.

**Surface Treatment**

7. High Friction Surfacing made with resin-based binders (i.e. Polyurethane, Epoxy or Methyl Methacrylate) and aggregate of high polishing resistance, shall be applied by spray, brush, squeegee or screed box onto a sound substrate to provide a textured, durable matrix of adequate skid resistance.

**Binder**

8. The binder shall contain a Polyurethane, Methyl Methacrylate, Epoxy or other approved resin component, as approved under HAPAS certification and specified in the Task Order.

**Aggregate**

9. All High Friction Surfacings shall incorporate an aggregate of suitable Polished Stone Value (PSV). For ‘High Friction Surfacings’ the aggregate shall be 100% calcined bauxite with a PSV exceeding 70.

10. All PSV tests shall have been carried out in accordance with BS EN 1097-8 by a UKAS accredited laboratory, or equivalent, for that test within the previous 24 months for calcined bauxite and 12 months for other aggregates. The Contractor's attention is also drawn to sub-clause 34 & 35 of this specification.

11. The grading of any aggregate used shall be such that a surface texture of over 1.0mm (when determined in accordance with the procedures noted in sub-clause 33) shall be maintained for at least three years from the time of application. The aggregate shall be clean, hard, durable and free from any foreign matter.

**Mixing of Material**

12 All materials shall be thoroughly mixed in the proportions specified by the manufacturer. At no stage shall the temperature of the materials exceed that recommended by the material manufacturer. A temperature gauge, calibrated every six months to an accuracy of ±2°C, shall be used to ensure overheating does not take place. A record of the mixing/spray temperature of each batch shall be kept by the Contractor and be readily available for inspection on site by the Overseeing Organisation.

13 The Contractor shall provide UKAS accredited test results of the cured epoxy or other resin component binder.

14 The Contractor shall provide samples of binder from a mixed batch or from the spraybar of spray equipment, at a rate of not less than two samples for each shift worked or each 1,000 square metres completed, whichever is lesser. Each sample shall be poured to a depth of 3.2 ± 0.4mm into a shallow tray of at least 150mm x 150mm which shall be supplied by the Contractor. The binder shall be cured, with no further mixing, at 23°C±5°C and after 7 days tested as described in BS EN ISO 2039-1:2003, BS 2782-3:Method 365D:1997 except that the rate of grip separation shall be 5mm per minute with a tolerance of 20%. Although the test piece shall be cut to the dimensions shown in Figure 1. Method 320A, the requirement that the narrow parallel portion shall nowhere deviate by more than 2% from the mean shall be deleted. The conditioning period shall be at least 2 hours at 23°C±1°C immediately before testing takes place. The tensile strength and elongation at break of the specimens shall not be less than 10.5N/mm² and 30% respectively. The results of this testing shall be supplied to the Overseeing Organisation within two weeks of completion.

**Colour**

15 Where coloured High Friction Surfacing is specified, the Contractor shall provide the Overseeing Organisation, for approval, samples of each colour in an unworn condition and in a worn state when the aggregate colour is clearly visible. Samples shall be of at least 80mm diameter size and shall be comprised of the same constituent materials, mixed in the same proportions, as will be used on any site works.

16 High Friction surfacing, when applied, shall be of a uniform colour, which matches the samples approved by the Overseeing Organisation.

**Surface Preparation**

17 The surface shall be prepared to remove dust, laitance and other loose matter, or suspect material. Any oil, diesel or petrol on the surface shall be completely removed by a method agreed by the Overseeing Organisation. The surface shall be dry before application of the binder. Any excessive build up of rubber on the surface shall be removed by an abrasive pre-treatment method approved by the Overseeing Organisation.

**Weather**

18 It is the Contractor's responsibility to decide when weather conditions and other circumstances are suitable for carrying out the work. ( See also sub-clause 2)

**Protection of Street Furniture**

19 High Friction Surfacing shall be applied to the full width of the carriageway or in lanes as agreed by the Overseeing Organisation. It shall be applied up to the carriageway edge without overlapping on to the kerbs, channels, footways or any structure adjoining the highway. The Contractor shall provide, fix, remove on completion, and dispose of, self-adhesive masking material (or other approved) to protect all road studs and cover all carriageway ironwork and similar fixtures prior to dressing to give complete protection from the binder. Unless instructed to the contrary by the Overseeing Organisation, all existing road markings shall also be masked prior to application. All covering material shall be removed to the Contractor's tip off site.

**Transverse End Joints**

20 If the High Friction Surface includes the machine sprayed application of binder then transverse end joints shall be made with a protective mat or paper strip not less than 1 metre wide at each end of the site. Application shall then commence and finish on the protective mats or strips.

**Quality of Materials**

21 All materials used within the selected process(es) shall comply with the appropriate British Standards and Highways Agency Specification clauses, where such exist, and recent (less than six months old) evidence provided in terms of test results, etc to prove such compliance.

**Surface Finish**

22 The finished surface of the treated area shall be of uniform appearance, free from irregularities and ridges. The substrate shall be fully covered with a continuous and impervious film through which no visible holes shall be permitted.

23 Any remedial work required to restore road markings, clean ironwork, kerbs, channels and adjacent areas resulting from poor protection during the surfacing treatment will be agreed with the Overseeing Organisation and undertaken by the Contractor at no additional cost to the Employer.

**Performance Specification**

24 The surface treatment work carried out at each site shall only be deemed acceptable if the minimum standards of performance are achieved and maintained throughout the defects correction period, which shall be 3 years for this Clause. For the purposes of this Clause the wheel-track zone shall be taken to be between 0.5m and 1.1m and between 2.55m and 3.15m from the centre of the nearside lane markings for each traffic lane. By applying a High Friction Surfacing the Contractor shall be deemed to be accepting that the condition of the existing surface is suitable for the purposes of achieving the performance criteria over the Defects Correction Period.

25 Any areas of existing surfacing causing concern to the Contractor shall be notified in writing to the Overseeing Organisation, together with the reasons, and action agreed if necessary. Performance criteria in this respect shall be monitored by the Overseeing Organisation and shall be evaluated in terms of the following properties:

**Aggregate Stripping**

26 Aggregate stripping shall be deemed to have taken place where more than 25% of the surface aggregate particles have been lost from the original mosaic pattern over the following areas:

* Any single area of 0.5m2 or more;
* Any cumulative area ≥15% within the wheel tracks.

**Loss of Adhesion to Substrate**

27 Areas of total loss due to the matrix/binder film having lost adhesion to the original road surface are easily identified. Remedial works to any such areas shall be carried out as soon as possible when any area of 0.2m², or more, within the works, or where a cumulative area of ≥15% within the wheel tracks, has been identified by the Overseeing Organisation.

28 Additionally, any regular pattern of loss (e.g. coinciding with joints between adjacent screed runs) shall be made good in a manner approved by the Overseeing Organisation. Any remedial treatment shall be applied in such a way so as to ensure the surface has consistent properties and appearance.

**Total Abrasion Loss**

29 Gradual abrasion of the matrix and/or aggregate is permissible within the service life of the applied materials, provided that a continuous mosaic of aggregate is exposed throughout the surface at all times. When such abrasion completely reveals the underlying binder film or original road surface, this shall be defined as "Total Abrasion Loss". Remedial works to any area of Total Abrasion Loss shall commence when any such area of 0.2m², or more, within the works, or where a cumulative area of ≥15% within the wheel tracks, has been identified by the Overseeing Organisation.

**Surface Cracking**

30 Isolated cracking of the High Friction Surfacing that extends into the surface course and produces cracks in excess of 0.5mm width shall be sealed by the Contractor using a suitable epoxy or similar resin and the ‘Special Surfacing’ made good.

31 Multiple cracking of whatever width and depth shall be made good by removing all cracked material as a continuous area and replacing with special surfacing (and new surface course if cracked) unless otherwise agreed by the Overseeing Organisation.

**Aggregate Embedment**

32 Where the continuous mosaic of aggregate on the surface becomes reduced to a discontinuous mosaic due to partial or complete embedment into the matrix or binder film, or substrate, then a reduction in macrotexture will become evident. The criterion for embedment shall therefore be defined in terms of macrotexture, measured by the Sand Patch Test in accordance with BS 598: Pt.105. The number of individual measurements shall be decided by the Overseeing Organisation as appropriate to the size of area under consideration, but this shall not be less than one measurement per square metre, and shall not be less than five measurements for any single dispute.

33 Remedial work shall be carried out when any area of 1.0m² or more is found by the Overseeing Organisation to have a macrotexture mean value of below 1.0mm.

**Skid Resistance**

34 The skid resistance of the surfacing may be measured by the Overseeing Organisation at any time during the defects correction period. Testing will be carried out using either a 12-monthly calibrated 'Pendulum' skid tester in accordance with BS EN 13036-4 or a Griptester in accordance with BS 7941-2. On roads with a speed limit of 40mph or greater, tested with the 'Pendulum' tester ONLY, corrections for surface texture will be applied to the 'as-measured' results as noted in Table 4 of BS EN 13036-4.

35 The resulting value of skidding resistance shall be known as the Pendulum Test Value (PTV).

* 'High Friction' surfacings shall be deemed unacceptable unless, throughout the defects correction period, the average Pendulum Test Value (PTV) as measured by the Pendulum tester at 10m intervals exceeds 70 (or 0.76 Griptester reading) for any 50m section and that no individual reading is below 63 (or 0.68 Griptester reading). Testing shall be carried out in the nearside wheeltrack of any lane treated.

**Defects**

36 Defects arising from damage caused by settlement, subsidence or structural failure of the carriageway on which the surface has been applied are excluded from the guarantee.

**Remedial Works**

37 The Contractor shall carry out any subsequent works, required to attain and/or maintain the performance requirements, at no additional cost to the Overseeing Organisation.

38 The materials and methods selected for any such remedial work will depend on the actual areas involved and the time of year. Details shall be agreed with the Overseeing Organisation. In the event of any first time remedial work not being successful the Overseeing Organisation may, at their discretion, agree to the Contractor undertaking further remedial works - otherwise the procedures in sub-clause 15.3 shall apply.

39 The Overseeing Organisation reserves the right to take appropriate action to remove or alleviate any potential danger arising at any time as a result of failure or partial failure of the surfacing and to recover the cost of this from the Contractor. Should the Contractor have any special requirements for dealing with such situations then these must be defined at time of tender. The Overseeing Organisation will notify the Contractor of any such action to be taken as soon as possible.

**Reimbursement**

40 When remedial action is inappropriate or unsuccessful then the Contractor shall reimburse the Employer the full cost of Providing the Works on the carriageway lengths (full width), which have failed to meet the performance requirements.

**Opening to Traffic**

41 The process used must have a sufficiently short curing time to enable the treated surface (including any remedial treatment) to be opened to traffic within the maximum curing time specified by the Overseeing Organisation. The site shall not be opened unless all excess chippings have been removed and sufficient loose chipping signs have been erected.

**Storage of Materials**

42 The Contractor shall notify the Overseeing Organisation of its sites for storage of materials and plant. Access for sampling or inspection purposes shall be provided to the Overseeing Organisation at least three days prior to their use in the works.

**Loading of Chippings**

43 The Contractor shall ensure that chippings are not spilled on carriageways or footways during any operation of loading or unloading of any temporary stockpiles, within the County.

**Surplus Aggregate**

44 The Contractor shall remove surplus aggregate from the carriageway by approved suction sweeper in accordance with the following:

* An operation shall be carried out to remove by suction only all surplus material within 24 hours of completion of the surfacing. Further operations to remove any subsequently loosened material shall be carried out over the next fourteen days after completion of the surfacing.
* The Contractor shall maintain adjacent side roads, footways and paved areas free of loose and surplus aggregate for a period of fourteen days after completion of the surfacing work, hand-sweeping where necessary.

45 All surplus materials shall be removed and disposed of by the Contractor at no extra cost to the Overseeing Organisation. The Contractor's attention is drawn to the Waste Management Regulations 1994 and the Environmental Protection Act 1990 - The Duty of Care.

1212 SR Road Markings

**General**

**1** Road markings shall be white or yellow (Class Y1) complying with BS EN 1436:2007+A1:2008 Table 6, as appropriate except where an alternative shade has been specified in Appendix 12/3. The markings shall consist of continuous or intermittent lines, letters, figures, arrows or symbols and comply with sub-Clauses 2 and 16 of this Clause.

Statutory requirements controlling road markings are contained in The Traffic Signs Regulations and General Directions 2016 (Statutory Instrument 2016 No. 362) and subsequent amending regulations.

**Permanent Road Markings**

**2** Permanent road markings shall be one of the following Kite Marked or equivalent approved materials and comply with the colour, location and material type requirements described in Appendix 12/3:

1. Thermoplastic road marking material or paint in accordance with BS EN 1871;
2. Permanent preformed road markings in accordance with BS EN 1790;
3. Methyl Methacrylate

They shall also be tested in road trials to the Roll-over class P5 in accordance with the procedure stated in BS EN 1824 to demonstrate compliance with the performance requirements as stated in sub-Clauses 3 to 6. The test report shall give particulars of the quality and quantity of the material, including drop on glass beads laid at the test site for future reference and comparison purposed should such a need arise.

**3** Road markings shall have the following road performance as defined in BS EN 1436:2007+A1:2008 for the period of the functional life starting from the date of application or when the road is trafficked, whichever is later. The materials to be used shall be to the same mix, material quality, quantity and rate of application as used on the test site.

|  |  |  |  |
| --- | --- | --- | --- |
| **Property** | **BS EN 1436 Reference** | **Requirement** | **Minimum Value** |
| Colour | Table 6 | 1. White 2. Yellow Class Y1 | x, y co-ordinates given  x, y co-ordinates given |
| Luminance Factor | Table 2 | 1. Class B2 2. Class B1 | 0.3  0.2 |
| Skid Resistance | Table 7 | 1. Class S3 2. Class S1 | 55  55 |
| Retroreflectivity | Table 2 Class RL for dry markings | 1. Class R2 2. Class R1 | 100  80 |

Note: 1 = White, 2 = Yellow

**4** The length and width tolerances and thicknesses for white or yellow lines shall be in accordance with The Traffic Signs Regulations and General Direction 2016.

The permitted tolerances shall be as follows:

1. Length: +10%, -5%
2. Width: +10%, -5%

Road marking materials shall be laid to the following thicknesses:

1. Screed lines 2.0mm minimum
2. Sprayed yellow edge lines 0.8mm minimum
3. Sprayed lines (other than yellow) 1.5mm minimum
4. Extruded lines 2.5mm minimum

With the exception of the road markings listed in Regulation 32 (2) of The Traffic Signs Regulations and General Directions, in no case shall any materials be laid so the finished surface is more than 6mm above the adjacent surface. Unless specified, all white markings shall be reflectorised with glass beads in accordance with BS EN 1423 and BS EN 1424 by incorporation (apart from preformed markings) into the road marking mixture and to the wet surface of the marking. The glass beads shall not have more than 1,000 ppm of Arsenic Trioxide, 200 ppm of Lead and 1,000 ppm of Antimony. The *Contractor* shall supply test certificates showing compliance with these requirements.

**5** Where there is a requirement for improved visibility in wet conditions at night, products showing the following performance in addition to that stated in sub-Clause 3 shall be used.

|  |  |  |  |
| --- | --- | --- | --- |
| **Property** | **BS EN 1436 Reference** | **Requirement** | **Minimum Value** |
| Colour | Table 6 | White | x,y co-ordinates given |
| Luminance Factor | Table 2 | Class B3 | 0.4 |
| Skid Resistance | Table 7 | Class S2 | 5 5 |
| Dry Retroreflectivity | Table 3 | Class R--4 | 200 |
| Wet Retroreflectivity | Table 4 | Class RW3 | 50 |

**6** Where there is a requirement for improved skid resistance as referred to in Appendix 12/3 products showing the following performance in addition to that stated in sub-Clause 3 shall be used.

|  |  |  |  |
| --- | --- | --- | --- |
| **Property** | **BS EN 1436 Reference** | **Requirement** | **Minimum Value** |
| Skid Resistance | Table 7 | Class S3 | 55 |

**7** The pavement shall be prepared in accordance with the following:

1. Where the marking is to be applied on concrete carriageway, the transverse texturing shall be freed from all traces of curing compound by wire brushing or other approved means. Prior to the application of thermoplastic material a primer compatible with the road surface and the marking material shall be applied in accordance with the manufacturer’s instructions. Prior to the application of road marking material the pavement should have a minimum 48 hours of dry conditions in order to ensure minimum moisture content. Road marking material should not be laid before the concrete has cured for at least 28 days.
2. It is the *Contractor’s* responsibility to ensure the road surface is sufficiently clean and dry to achieve the necessary level of adhesion with the road marking. Where the *Contractor* believes that mechanical sweeping is needed to remove extensive detritus, loose chippings, etc. or that warming/drying of the road surface is necessary, this shall be agreed with the *Overseeing Organisation.*

**8** The application of permanent road markings shall be in accordance with the Sector Scheme described in Appendix A. A copy of the lining contractors current UKAS accredited certificate showing compliance with this scheme shall be submitted prior to the starting date.

**Note 1:** This scheme requires Road Marking operatives to hold a relevant qualification being either:-

1. NVQ Level 2 Pavement Marking – Certified by RSMA; or
2. Certified Operatives Training Scheme – Administered by CSCS or LGNTO

All trained operatives shall carry a registration card indicating their level of competence/training. Road marking operations shall only be undertaken in the presence of a trained operative whose registration card covers the operations being undertaken as part of the *works.*

**9** Road marking materials shall only be applied to surfaces which are clean and dry. Markings shall be free from raggedness at their edges and shall be uniform and free from streaks. Longitudinal road markings shall be laid to a regular alignment.

**10** The *Contractor* shall be responsible for the correct setting out of all lines, arrows, letters, symbols, hatching, triangles, zig-zag lines, chevrons, road studs and the like. The *Overseeing Organisation* will give any advice required by the *Contractor* to enable it to site the markings in their correct positions (in writing, if requested by the *Contractor* or their representative).

Studs complying with the requirements of Clause 1213 and Appendix 12/3 shall be fixed in the carriageway generally parallel to the centre line and other markings and conforming to The Traffic Sign Regulations and General Direction 2016 and the Traffic Signs Manual.

**11** 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.

**12** The *Contractor* shall submit to the *Overseeing Organisation* within seven days a daily record of work carried out.

**Raised Rib Road Markings**

**13** Raised Rib Road Markings shall only be used on all-purpose roads (both single and dual carriageway) with at least 1 metre wide hardstrips. They shall comply with sub-Clauses 1, 2(i), 3, 5, 6, 7, 8 and 9 of this Clause.

**14** Raised Rib Road Markings shall be white lines which are continuous over the sections where they are specified in Appendix 12/3. Where specified in Appendix 12/3 gaps shall be provided for drainage purposes.

**15** Raised Rib Road Markings shall be in accordance with The Traffic Signs Regulations and General Directions 2016 (Statutory Instrument 2016 No. 362), Diagram 1012.2 and 1012.3, as appropriate. Spacing of the transverse raised rib shall be 500mm or 250mm as specified in Appendix 12/3.

**16** Raised Rib Road Markings shall not be used adjacent to hatched areas or central reserve crossings except as prescribed for use with diagrams 1040.3, 1040.5 and 1042.

**Temporary Road Markings**

**17** Temporary road markings shall only be installed with the prior approval of the *Overseeing Organisation*. They shall comply with sub-Clauses 1 to 12 of this Clause or if required to be removable, be constructed only from a proprietary preformed road marking material complying with BS EN 1790.

**18** When temporary road markings are used on surfaces that will continue to be used by public traffic after their removal, any shadow trace remaining after their removal shall be permanently obliterated. Preformed materials shall not be used for this obliteration.

**19** Temporary road markings constructed from a proprietary preformed road marking material shall only be adopted in locations and on types of road surface as described in Appendix 12/3 and shall comply with any other requirement therein. The marking material shall be new and together with any primer shall be stored and installed in accordance with the manufacturer’s instructions and within the recommended shelf life.

**20** Temporary preformed road markings shall only be applied to surfaces that are clean and dry. Upon removal they shall be disposed of off Site and if any making good is necessary to the road surface it shall be satisfactorily carried out before the road is opened to traffic.

**Road Markings on Porous Asphalt Surfacing**

**21** Spray paint, thermoplastic applied by machine screed, spray or extrusion or preformed road markings shall be used for carriageway markings on porous asphalt surfacing. Manual screeding shall not be permitted except for directional arrows and similar markings.

**Removal of Road Markings**

**22** The removal of road markings on surfaces that will continue to be used by traffic shall be undertaken in a manner that will avoid damage to the surface.

**23** The removal of temporary road markings shall comply with sub-Clauses 18 and 19 of this Clause. For bituminous running surfaces, the removal of permanent road markings shall be by mechanical means, hydro blasting or forced air abrasive (grit blasting), or scabbling only. Hot Compressed Air (HCA) lance is not to be used unless agreed in advance with the *Overseeing Organisation* where it may be permitted on other types of running surfaces. In all cases the *Contractor* shall submit details of the proposed method for the *Overseeing Organisation’s* consent.

**Masking of Road Markings**

**24** When black masking materials are required to cover existing permanent road markings, they shall comply with BS 7962. The total thickness of original and masking materials shall not exceed 6mm.

**Longitudinal Road Markings Lateral Tolerances**

**25** For longitudinal road markings, the lateral tolerances shall be within ± 25mm from the designed position. Any discontinuities between road markings shall be replaced with a smooth taper from one road marking to the other. The length of the transition shall be derived from table below. All road markings shall comply with the dimensions, angles and proportions stated in the Traffic Signs Regulations and General Directions 2016 (Statutory Instrument 2016 No. 362) and any subsequent amending Regulations.

|  |  |
| --- | --- |
| **Speed Limit (mph)** | **Taper** |
| 30 | 1 in 40 |
| 40 | 1 in 40 |
| 50 | 1 in 45 |
| 60 | 1 in 50 |
| 70 | 1 in 55 |

**Performance Standard**

**26** Unless otherwise specified in Appendix 12/3 white road markings laid as part of this performance specification shall comply with the minimum standards of performance defined in sub-Clauses 3 and 4 of this Clause. Where high performance road markings are specified they shall comply with the requirements defined in sub-Clauses 5 and 6 of this Clause. Unless otherwise specified in Appendix 12/3, this performance standard shall apply for a period of 2 years from the date of application, for all road markings.

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

LIST OF ALTERATIONS TO EXISTING CLAUSES, TABLES AND FIGURES

| **Clause No.** | **Title** |
| --- | --- |
| 104K | Standards, Quality Assurance, Agrément Certificates and Other Approvals |
| 105K | Goods, Materials, Sampling and Testing Goods and Materials |
| 110K | Information Boards |
| 117K | Traffic Safety and Management |
|  |  |
| 702K | Horizontal Alignments, Surface Levels and Surface Regularity of Pavement Courses Horizontal Alignments |
|  |  |
| 801K | General Requirements for Unbound Mixtures |
|  |  |
| 901K | Bituminous Base, Binder Course and Surfacing Materials |
| 903K | Placing and Compaction of Bituminous Mixtures |
| 915K | Coated Chippings for Application to Hot Rolled Asphalt Surfacings |
| 920K | Bond Coats, Tack Coats and Other Bituminous Sprays |
|  |  |
| 1212K | Road Markings |
| 1214K | Traffic Cones, Traffic Cylinders, Flat Traffic Delineators and Other Traffic Delineators |
| 1216K | Temporary Traffic Signs |
|  |  |
| Appendix F | Publications Referred to in the Specification |

NONE

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

SERIES 100 PRELIMINARIES

104 K Standards, Quality Assurance, Agrément Certificates and Other Approvals

Add after Sub-Clause 18 as follows

“19 In case of bituminous materials, in addition to the requirements for the plant to have certification to Sector Scheme 14, the Contractor shall supply details of the weekly OCL value of each of the plants proposed or used. Data shall be not more than one week in arrears.”

105 K Goods, Materials, Sampling and Testing Goods and Materials

(i) Add to the end of sub-clause 1:

"All goods and materials shall be new unless otherwise described in the Contract."

(ii) Add sub-Clause 9 as follows:

"9 Source approval will be automatically granted where the source satisfies a quality assurance scheme to BS EN ISO 9001 independently accredited by UKAS or equivalent; otherwise the Contractor shall satisfy himself and supply adequate data and information for the Overseeing Organisation to confirm approval of the source before any materials are used. The Contractor must allow sufficient time in his programming for the source approval process. Any change to a quality control or quality assurance system shall be notified to the Overseeing Organisation so that reapproval can be granted."

110 K Information Boards

Delete first sentence of sub-clause 1 and insert the following:

“The Contractor shall provide and erect information boards as described in Appendix 1/21”.

117 K Traffic Safety and Management

Sub-Clause 18 is deleted and substituted by

"Where work is carried out on or adjacent to a highway open to traffic the Contractor shall ensure that the workforce and the site supervisory staff at all times wear high visibility warning clothing complying with BS EN 471. Clothing shall be Class 3 to Table 1 and shall comply with the requirements of para. 4.2.3(b). In addition on motorways or other high speed roads full length sleeves meeting the requirements of para. 4.2.4 shall be provided for coveralls and jackets. The colour of the clothing shall be “fluorescent yellow” or “fluorescent orange-red” complying with Table 2. The retroreflective material used shall be to Class 2 as defined at Table 5. The clothing must be properly fastened at all times. Clothing complying with other specifications may be used in accordance with Clause 104.2 where they offer equivalent levels of performance in so far as the specification given is not inconsistent with the basic health and safety requirements set out in Annex 2 of the Personal Protective Equipment Directive (89/686/EEC). The Contractor shall ensure that the person in charge of the workforce is readily distinguishable from the person designated in sub-Clause 19 of this Clause and from the remainder of the workforce".

SERIES 700 ROAD PAVEMENTS - GENERAL

702 K Horizontal Alignments, Surface Levels and Surface Regularity of Pavement Courses Horizontal Alignments

702.7 After "... shall be taken on 75m lengths." Add the following additional text:-

When checking compliance with Table 7/2, Class A roads shall be regarded as Category A roads and all other roads as Category B roads unless stated otherwise in Appendix 7/1.

Additionally, the riding quality of Category A roads shall be tested within 28 days of completion of laying using a single wheel bump integrator towed at a nominal speed of 32km/h in accordance with TRL SR 26UC. The values obtained shall not be greater than the limits specified below for any 50m length:

Irregularity Index "r"

Surface Course 200cm/km

Binder Course 230cm/km

Where the existing riding quality is very poor and the Contractor considers that they will be unable to comply with the above tolerances, the Contractor shall give adequate notice in writing to the Overseeing Organisation so that the irregularity of the existing surface can be checked and, if necessary, additional regulating agreed. In no circumstances will a poorer ride quality than the original be acceptable. In the case of two or more courses required the final layer shall comply with the above limit.

SERIES 800 ROAD PAVEMENTS – UNBOUND, CEMENT AND OTHER HYDRAULICALLY BOUND MIXTURES

801 K General Requirements for Unbound Mixtures

Replace Table 8/3 with the following table

|  |  |  |  |
| --- | --- | --- | --- |
| TABLE 8/3: Additional Requirements for Recycled Coarse Aggregate and Recycled Concrete Aggregate Used in Type 1, Type 2 and Type 4 Unbound Mixtures | | | |
| **Unbound Mixture** | **Type 1** | **Type 2** | **Type 4 (asphalt arisings)** |
| **Component Identified by Clause 710** | Maximum Permitted Content (% by mass *(m)* or volume *(v)*) | | |
| Asphalt (Class Ra) | **50** *(m)* | **50** *(m)* | **100** *(m)* |
| Glass (Class Rg) | **25** *(m)* | | |
| Other materials (Class X), including wood, plastic and metal | **1** *(v) if >(m)* | | |

SERIES 900 ROAD PAVEMENTS - BITUMINOUS BOUND MATERIALS

901 K Bituminous Base, Binder Course and Surfacing Materials

901.3 Aggregates for Bituminous Mixtures

After BS EN 13043, add

The coarse aggregate shall be crushed rock or slag – flint gravel is not acceptable. If more than one type of stone or slag is used in any mixture, then approval must be obtained for each of the types proposed and the proportions to be used. In carriageway Surface Course materials, limestone shall not be permitted as the coarse aggregate in any material nor the fine aggregate in any 6mm Dense Surface Course, Stone Mastic Asphalt or Thin Surface Course materials.

901.15 This sub-clause to be numbered (i)

Add the following sub clauses:

(ii) No fluxing or volatile oils shall be used in the manufacture of any permanent bituminous material unless specified by the Overseeing Organisation in writing,

(iii) For all Surface Course materials except Hot Rolled Asphalt where the coarse aggregate is quartzite, basalt, or any other igneous rock, the binder shall include an adhesion agent, cement preferred.

903 K Placing and Compacting of Bituminous Mixtures

903.27 Dense ASPHALT CONCRETE Binder Course as a Surface Course

In sub clause (i) delete reference to PSV50 and replace with PSV55.

903.27 Delete sub clause (ii) and add:-

• Where approved by the Overseeing Organisation AC 20 dense bin material may be used as a temporary (less than 3 weeks) surface on low speed lightly trafficked 'C' or Unclassified roads if the aggregate is crushed rock (other than limestone) with a PSV of not less than 55.

Add the following sub-clauses after 903.28., 903.29

(i) At the end of the carpet and across side roads, transverse joints shall be made by letting into the surface. The change in gradient in the finished transition length shall not exceed 1 in 50 unless by so doing a smoother transition can be achieved.

(ii) The Contractor shall make provision for making safe in suitable material, the run-on and run-off and any raised longitudinal joint or projecting ironwork at the end of each day's work and shall remove such material prior to continuing the surface operations unless otherwise agreed by the Overseeing Organisation. Signing shall be in accordance with the requirements of Appendix 1/17.

Where trafficking of the binder course is anticipated to extend beyond 3 weeks, a suitable HSC asphalt, as detailed in Appendix 7/1, shall be substituted. Any variation in thickness will be compensated by additional thickness of the base material. A temporary speed limit of 30 mph or less shall apply if necessary.

915 K Coated Chippings for Application to Hot Rolled Asphalt Surfacings

915.4 The aggregate shall be deemed to comply if the mean of the 3 most recent consecutive results from tests relating to the material to be supplied, carried out within the previous 6 months by testing by an appropriate organisation accredited in accordance with sub-Clauses 105.3 and 105.4 for those tests, within 6 weeks of sampling, complies with the declared categories specified in Table 9/24DAR.

920 K Bond Coats, Tack Coats and Other Bituminous Sprays

920.1 The bond or tack coats required for thin surfacing systems and their application shall be in accordance with the British Board of Agrément HAPAS Roads and Bridges Certificate for each system. All other bond coats, tack coats and bituminous sprays shall comply with sub-Clauses 2 to 12 of this Clause.

Bond Coats

920.2 Bond coats shall be applied to all surfaces to be overlaid with SMA surface course. The bond coat shall be premium grade and have proven low tack properties, so as to not adhere to the tyres of the paver, delivery vehicles, etc.. Bond coats shall have a British Board of Agrément HAPAS Roads and Bridges Certificate. In the event that no such certificates have been issued, they shall not be used without the approval of the Overseeing Organisation.

Tack Coats

920.3 Tack coats shall be applied between base and binder course layers and between binder course and asphalt concrete surface course and shall be bitumen emulsions as specified in BS 594987.

SERIES 1200 TRAFFIC SIGNS

1212 K Road Markings

(i) Sub-clause 3: Delete table and substitute with the following:

|  |  |  |  |
| --- | --- | --- | --- |
| **Property** | **BS EN 1436**  **Reference** | **Requirement\*** | **Value** |
| Colour | Table 6 | 1. White  2. Yellow, Class Y1, Y2 | x, y co-ordinates given  x, y co-ordinates given |
| Luminance  Factor | Table 5 | 1. Class B3  2. Class B1 | 0.4  0.2 |
| Skid Resistance | Table 7 | 1. Class S3  2. Class S3 | 55  55 |
| Retroreflectivity | Table 2 Class of RL for dry markings | 1. Class R4  2. Class R2 | 200  100 |
|  | Table 3 Class of RL for markings during wetness | 1. Class RW3 | 50 |
|  | Table 4 Class of RL for markings during rain | 1. Class RR3 | 50 |

\*note: 1 = White, 2 = Yellow

(ii)Sub-clause 6 is deleted and substituted with the following:

6. Not Used

(iii)Delete sub-Clause 18 and insert the following:

“18. The removal of road markings on surfaces that will that will continue to be used by traffic shall be undertaken in a manner that will avoid damage to the surface.

The removal of temporary road markings shall comply with sub-Clauses 14 and 16 of this Clause.

The removal of permanent road markings shall comply with the requirements of Appendix 12/3.

In all cases the Contractor shall submit details of the proposed method for the Overseeing Organisation’s consent”

1214 K Traffic Cones, Traffic Cylinders, Flat Traffic Delineators and Other Traffic Delineators

(i)Add to the end of sub-clause 1 the following:-

"All traffic cones shall be 1 metre in height."

(ii)In sub-clause 9 delete “BS 873:Part 6” and replace with “BS EN 12899-1”.

(iii)In sub-clause 11 delete “Class 1 or Class 2 as specified in BS 873:Part 6” and replace with “CRI and RA2 as specified in BS EN 12899-1”.

(iv)In sub-clause 34 delete “BS 873:Part 1” and replace with “BS 8442”.

1216 K Temporary Traffic Signs

(i) Delete the first paragraph of sub-Clause 1 and insert the following:

"1. Unless specified otherwise the temporary traffic signs shall be designed by the Contractor. They shall comply with Clause 1201, satisfy Clause 117, have the consent of the Overseeing Organisation prior to installation, and comply with sub-Clauses 2 to 7 of this Clause."

(ii) In sub-clause 2(i)(a) delete “BS 873:Part 6 for Class 1 material” and replace with “BS EN 12899-1 for CR2 and RA2 material”.

(iii) In sub-clause 2(i)(b) delete “BS 873:Part 2” and replace with “BS 8442”.

(iv) Delete sub-clause 3(i)(a) and replace with the following:

3(i)(a)sign plates shall be constructed of materials to the standard for a permanent sign;

(v) Delete sub-clause 3(i)(b)

(vi) In sub-clause 3(i)(c) delete “or timber”

(vii) In sub-clause 3(i)(d) delete second and third sentences

(viii) Delete sub-clause 3(i)(e)

(ix) In sub-clause 3(ii)(a) delete “BS 873:Part 1” and replace with “BS 8442”

(x) Delete sub-clauses 3(ii)(b) to 3(ii)(e)

Appendix F Publications Referred to in the Specification

British Standards and other publications named in the additional, substitute and amended clauses included in Appendices 0/1 and 0/2, and in the numbered appendices, are brought into the Contract by reference, but are not listed separately here.

Clause 571 AR (Renewing and Re-Levelling BT Covers and Frames) references BT document LN320.This document is attached LOCATION IN TENDER DOCUMENT. The contractor shall comply with all relevant requirements.

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

1/1.1 Temporary Initial Accommodation

Separate temporary initial accommodation is not anticipated for the *Overseeing Organisation*.

Should the *Overseeing Organisation* require any separate accommodation for any services lasting longer than 5 days these will be detailed on the Task Order and a quotation will be sought in accordance with the quotation procedure.

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

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Clause** | | | | **Work, Goods or Material** | **Test** | | **Frequency of Testing** | **Test Certificate** | **Comments** | |
| **Series 100** | | | | |  | |  |  |  | |
| 109 | Noise Control | | | | Leq and L max | | As required in Appendix 1/9 |  | Standard as per Appendix 1/9 | |
|  | Vibration Control | | | | Peak particle velocity | | As required in Appendix 1/9 |  | Standard as per Appendix 1/9 | |
| **Clause** | | | **Work, Goods or Material** | | | | **Test** | **Frequency of Testing** | **Test Certificate** | | **Comments** | |
| **Series 500** | | | | | | |  |  |  | |  | |
| 507 | | | Chambers | | | |  |  |  | |  | |
|  | | |  | Covers, grates and frames | | |  |  |  | | Product certification scheme applies | |
|  | | |  | Cover bolts | | |  |  |  | | Quality management scheme applies | |

APPENDIX 1/5: TESTING TO BE CARRIED OUT BY THE CONTRACTOR (continued)

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Clause** | **Work, Goods or Material** | | | **Test** | **Frequency of Testing** | **Test Certificate** | **Comments** |
| **Series 600** | | | |  |  |  |  |
| 601 631 to | Acceptable material | | |  |  | Required |  |
| 637 640 | Class | General Description | |  |  |  |  |
|  | 1 | General granular fill | | Grading/ uniformity coefficient | Twice a week |  |  |
|  |  |  | | mc/MCV (N) | 2 per 1000m³ up to max of 5 per day |  |  |
|  |  |  | | SMC of chalk (N) | Twice a week |  |  |
|  |  |  | 1C only | Resistance to fragmentation (N) | Weekly |  |  |
|  | 5 | Topsoil | | Grading | Daily |  |  |
|  | 6 | Selected granular fill | | Grading/uniformity coefficient | 1 per 400 tonnes |  |  |
|  |  |  | | PI/LL(N) | Daily |  |  |
|  |  |  | | Resistance to fragmentation (N) | Weekly for on-site material |  |  |
|  |  |  | | SMC (N) | Weekly |  |  |
|  |  |  | | omc/mc, mc or MCV (N) | 1 per 400 tonnes |  |  |

APPENDIX 1/5: TESTING TO BE CARRIED OUT BY THE CONTRACTOR (continued)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Clause** | **Work, Goods or Material** | | **Test** | **Frequency of Testing** | **Test Certificate** | **Comments** |
| **Series 600 (continued)** | | |  |  |  |  |
| 601 631 to | Acceptable material | |  |  | Required |  |
| 637 640 (cont/d) | Class | General Description |  |  |  |  |
|  | 6 | Selected granular fill (continued) | Organic matter/water soluble sulfate (WS) (N) | Weekly |  |  |
|  |  |  | Oxidisable sulfides (OS) and total potential sulfate (TPS) content (N) | Weekly |  |  |
|  |  |  | pH/chloride ion content (N) | Weekly |  |  |
|  |  |  | Resistivity (N) |  |  |  |
|  |  |  | Undrained and drained shear parameters (N) |  |  |  |

APPENDIX 1/5: TESTING TO BE CARRIED OUT BY THE CONTRACTOR (continued)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Clause** | **Work, Goods or Material** | | **Test** | **Frequency of Testing** | **Test Certificate** | **Comments** |
| **Series 600 (continued)** | | |  |  |  |  |
| 601.1(iii) | Made ground excavated from within the site | | Chemical contamination Testing Suite B |  |  | See Note 9 |
| 601.12 | Recycled materials imported to site | | Chemical contamination Testing Suite A |  |  | See Note 8 |
| 602 | Earthworks material beneath surface of a road or paved central reserve | | Frost heave (N) |  | Required |  |
|  | (i) Off site source | |  | 1 every four months |  |  |
|  | (ii) On site source | |  | As required |  |  |
| 609 621 | Geotextiles | | Tensile load | 1 per 400 square metres | Required |  |
|  |  | | Permeability |  |  |  |
|  |  | | Pore size |  |  |  |
| 612 | Compaction of fills | |  |  | Required |  |
|  |  | Method compaction | Field dry density (N) |  |  |  |
|  |  | End product compaction | Optimum mc (2.5 kg rammer/ vibrating hammer method) (N) | Each class or sub class of material |  |  |
|  |  |  | Field dry density (N) | 1 per 400 tonnes |  |  |

APPENDIX 1/5: TESTING TO BE CARRIED OUT BY THE CONTRACTOR (continued)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Clause** | **Work, Goods or Material** | **Test** | **Frequency of Testing** | **Test Certificate** | **Comments** |
| **Series 600 (continued)** | |  |  |  |  |
| **Series 700** | |  |  |  |  |
| 710 | Constituent materials in recycled aggregate and recycled concrete aggregate | Quality control | As required by the ‘Quality Protocol for the production of aggregates from inert waste’ | Required |  |
| 711 | Overband and inlaid crack sealing systems |  |  | Required | BBA certification (or equivalent) applies |

APPENDIX 1/5: TESTING TO BE CARRIED OUT BY THE CONTRACTOR (continued)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Clause** | **Work, Goods or Material** | **Test** | **Frequency of Testing** | **Test Certificate** | **Comments** |
| **Series 800** | |  |  |  |  |
| 801 803 804 805 | General requirements for unbound mixtures for adjacent to cement bound materials, concrete | Water-soluble sulfate (WS) content (N) | 1 per 400 tonnes or per location if less than 400 tonnes | Required |  |
| 806  807 | pavements, structures or products | Oxidisable sulfides (OS) content and total potential sulfate (TPS) content (N) | 1 per 400 tonnes or per location if less than 400 tonnes |  |  |
|  | Unbound mixtures beneath surface of a road or paved central reserve | Frost heave (N) | 1 per source |  |  |
|  |  | Grading and fines content | 1 per week |  |  |
|  |  | Plastic index (N) |  |  |  |
|  |  | Resistance to fragmentation (N) | 6 monthly |  |  |
|  |  | Resistance to wear – micro-Deval test |  |  |  |
|  |  | Resistance to freezing and thawing (magnesium sulfate soundness) (N) | 1 per source |  |  |
|  |  | Water absorption (N) |  |  |  |
|  |  | Volume stability of blast furnace slags | 6 monthly |  |  |
|  |  | Volume stability of steel (BOF and EAF) slags | 6 monthly |  |  |
|  |  | CBR (N) | 1 per source and then monthly |  |  |
|  |  | OMC/mc (N) |  |  |  |
|  |  | Density (N) |  |  |  |
|  |  | Water absorption (N) |  |  |  |

APPENDIX 1/5: TESTING TO BE CARRIED OUT BY THE CONTRACTOR (continued)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Clause** | **Work, Goods or Material** | **Test** | **Frequency of Testing** | **Test Certificate** | | **Comments** |
| **Series 800 (continued)** | |  |  |  |  | |
| 821,  822,  823, | Cement and other Hydraulically Bound Mixtures (HBM) | Tests for control and checking of HBM | Tests specified in Table 8/14 and Table 8/15 | Required |  | |
| 830,  831, |  | Coefficient of linear expansion |  |  |  | |
| 832,  834 |  | Test for laboratory design | Test specified in Clause 880 |  |  | |
| 835,  840 |  |  |  |  |  | |
| 888AK | Granular Sub-base - Performance Categorised Material | Resistance to Fragmentation (N) | 1 per source and then monthly |  |  | |
|  |  | Grading and Fines content | 1 per week |  |  | |
|  |  | Optimum M.C  (N) | 1 per month per source and then monthly |  |  | |
|  |  | Portable Dynamic Plate | 1 per source and then monthly |  |  | |
|  |  | Field Trial | As required by the Overseeing Organisation |  |  | |
|  |  | Stiffness Modulus to Clause 889AK | 1 per 50 linear metres |  |  | |
|  |  | Frost susceptibility | 1 per source |  |  | |
|  |  | Nuclear Density Gauge (N) | 1 per 50 linear metres |  |  | |

APPENDIX 1/5: TESTING TO BE CARRIED OUT BY THE CONTRACTOR (continued)

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Clause** | **Work, Goods or Material** | | **Test** | **Frequency of Testing** | **Test Certificate** | **Comments** | |
| **Series 900** | | |  |  |  |  |
| 901, 925, | Aggregates for bituminous materials | |  |  | Required | National quality management sector schemes apply. |
| 937, 938, 943 |  | Resistance to fragmentation (hardness) | Resistance to fragmentation (N) | Monthly |  |  |
|  |  | Resistance to freezing and thawing (durability) | Soundness (N) | 1 per source |  |  |
|  |  |  | Water absorption (N) |  |  |  |
|  |  | Cleanness | Sieve test (mass passing 0.063 mm sieve) (N) | Monthly |  | Washing and sieving method to be used |
|  |  | Shape | Flakiness Index (N) | Monthly |  |  |
|  |  | Blastfurnace slag | Bulk density(N) | 1 per 500 tonnes |  |  |
|  |  |  | Soundness (N) | Once every 4 months |  |  |
|  |  |  | Dicalcium silicate disintegration | 1 per 500 tonnes |  |  |
|  |  |  | Iron disintegration (N) |  |  |  |
|  |  | Steel slag | Bulk density | 1 per 500 tonnes |  |  |
|  |  |  | Volume stability (N) | 1 per 500 tonnes |  |  |

APPENDIX 1/5: TESTING TO BE CARRIED OUT BY THE CONTRACTOR (continued)

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Clause** | **Work, Goods or Material** | | **Test** | **Frequency of Testing** | **Test Certificate** | **Comments** | |
| **Series 900 (continued)** | | |  |  |  |  | |
| 901, 925, 937, | Aggregates for bituminous materials (cont’d) | |  |  | Required | National quality management sector schemes apply. | |
| 938, 943 (cont’d) |  | Coarse aggregate for surface courses | Resistance to polishing (PSV) (N) | 1 per source |  |  | |
|  |  |  | Resistance to surface abrasion (AAV) (N) | 1 per source |  |  | |
|  | Binders for bituminous mixtures | | Penetration (N) | 1 per 750 tonnes | Required | National quality management sector schemes apply. Modified binders should have a BBA HAPAS Roads and Bridges Certificate. In the event that no such Certificates have been issued, then in the interim, only modified binders undergoing BBA assessment should be considered for approval by the Overseeing Organisation. | |
|  |  | | Softening point (N) | 1 per 750 tonnes |  |
|  |  | |  |  |  |
|  |  | |  |  |  |
| 903 to 907 | Bituminous mixtures | | Grading (N) | For Audit Test purpose only |  | | National Highway Sector Schemes apply |
| 909 to 912,  914  916,  925,  926,  929,  930,  937,  938,  941,  943,  946 to  948 |  | | Binder Content (N) |  |  | |  |
| 929 | Base and Binder Course Asphalt Concrete.(Design Mixtures) | | Permanent Works - In situ air void content (N) |  | Required | |  |
|  |  | | Permanent Works Refusal air void content (N) |  |  | |  |
|  |  | | Permanent Works Deformation resistance |  |  | |  |
|  |  | | Deformation resistance (design) |  | Required | | The test certificate is the CE Mark for the mixture |
|  |  | | Stiffness (design) |  |  | |  |

APPENDIX 1/5: TESTING TO BE CARRIED OUT BY THE CONTRACTOR (continued)

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Clause** | **Work, Goods or Material** | | **Test** | **Frequency of Testing** | **Test Certificate** | **Comments** | |
| **Series 900 (continued)** | | |  |  |  |  | |
| 930 | EME 2 | | Permanent Works -In situ air void content (N) |  | Required |  | |
|  |  | | Richness modulus (design) |  | Required | The test certificate is the CE Mark for the mixture | |
|  |  | | Duriez (design) |  |  |  | |
|  |  | | Deformation Resistance (design) |  |  |  | |
|  |  | | Stiffness (design) |  |  |  | |
| 911 | Hot Rolled Asphalt surface course (Design Mixtures) | | Design Binder Content | 1 per source | Required | The test certificate is the CE Mark for the mixture | |
| 915 | Coated chippings for application to Hot Rolled | | Hot sand test (N) | 1 per source |  | National Highway Sector Schemes apply | |
|  | Asphalt Surfacings | | Rate of spread (N) |  |  |  | |
| 921 | Surface macrotexture | | Volumetric Patch (N) |  | Required |  | |
| 924 | High friction surfaces | | Quality control checks | As required in sub-Clause 924.5 | Required | BBA HAPAS Roads and Bridges certification (or equivalent) applies | |
|  |  | | System coverage | As required in sub-Clause 924.6 |  |  | |
|  |  | Aggregate | Resistance to polishing (PSV) (N) | 1 per source and as required for coated chippings in sub-Clause 915.2 | Required |  | |
| 937 | Stone mastic asphalt (SMA) binder course and regulating course | | Permanent Works - In situ air void content (N) |  | Required | |  |
|  |  | | Permanent Works – Deformation resistance |  |  | |  |
|  |  | | Binder drainage test (design) |  | Required | | The test certificate is the CE Mark for the mixture |
|  |  | | Deformation resistance (design) |  |  | |  |
| 942 | Thin surface course systems | | General properties |  | Required | | The test certificate is in the form of a BBA HAPAS Certificate |
| 943 | Hot Rolled Asphalt Surface Course and Binder Course (performance-related design mixtures) | | Permanent Works – In situ air void content (N) |  | Required | |  |
|  | Permanent Works – Deformation resistance |  |  | |  |
|  |  | | Deformation resistance (design) |  | Required | | The test certificate is the CE Mark for the mixture |

APPENDIX 1/5: TESTING TO BE CARRIED OUT BY THE CONTRACTOR (continued)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Clause** | **Work, Goods or Material** | | **Test** | **Frequency of Testing** | **Test Certificate** | **Comments** |
| **Series 900 (continued)** | | |  |  |  |  |
| 920 | Bond coats, tack coats and other bituminous sprays | |  |  |  |  |
|  |  | Binder | Product identification | 1 per product per source | Required | Tests to be repeated every two years |
|  |  |  | Vialit cohesion | 1 per product per source | Required | Tests to be repeated every two years |
|  |  |  | Accuracy of spread | 1 for each binder and sprayer per month | Required | Not more than 6 weeks prior to start of work and one per month |
|  |  |  | Rate of spread | 1 per week |  |  |
|  |  |  | Penetration at 25°C and 5°C (N) | Every manufactured batch |  | Manufacturer’s QA test results may be submitted |

APPENDIX 1/5: TESTING TO BE CARRIED OUT BY THE CONTRACTOR (continued)

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Clause** | **Work, Goods or Material** | **Test** | | **Frequency of Testing** | | **Test Certificate** | | **Comments** | |
| **Series 900 (continued)** | |  | |  | |  | |  | |
| 990 AR | Geotextile Reflective Crack Control Membrane | | Strength  Elongation  Melting Point  Asphalt Retention | |  | |  | | Certificate to be provided from each production run |
|  |  | | Rate of spread of binder  Carpet Tile | | 1 per 3000m² | |  | |  |
|  |  | | Binder Properties | | 1 per contract | |  | | Manufacturer’s QA test results may be submitted |

APPENDIX 1/5: TESTING TO BE CARRIED OUT BY THE CONTRACTOR (continued)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Clause** | **Work, Goods or Material** | | **Test** | **Frequency of Testing** | **Test Certificate** | **Comments** |
| **Series 1000** | | |  |  |  |  |
| 1001 1030 1044 | Cement | |  |  | Required | Quality management and product certification schemes apply |
|  |  | Portland cement CEM I |  |  |  | Tests and test certificates are required |
|  |  | Portland blastfurnace cement |  |  |  |  |
|  |  | Blastfurnace cement CEM III/A |  |  |  |  |
|  |  | Portland pfa cement CEM II/B-V |  |  |  |  |
|  |  | Pozzolanic cement CEM IV/A |  |  | Required (BS 6610) |  |
|  |  | Portland cement with microsilica |  |  | Required | BBA Roads and Bridges certificate required for microsilica |
|  | Pulverised fuel ash | |  |  | Required | Tests and test certificates are required. Product certification schemes apply to pfa and slag |
|  | Ground granulated blast furnace slag | |  |  |  |  |
|  | Admixtures | |  |  |  |  |
|  | Mixing Water | | Sulfate content (N) | Monthly |  |  |
|  | Aggregates | | Resistance to freezing and thawing (magnesium sulfate soundness) (N) | 1 per source | Required |  |
|  |  | | Water absorption (N) |  |  |  |
|  |  | | Flakiness index (N) | Monthly |  |  |
|  |  | | Shell content (N) | 1 per source |  |  |
|  |  | | Resistance to fragmentation (N) | 6 monthly |  |  |
|  |  |  | Resistance to polishing (PSV) (N) | 1 per source |  |  |
|  |  |  | Resistance to abrasion (AAV) (N) | 1 per source |  |  |
|  |  | | Grading and fines content (N) | 1 per week per source |  |  |
|  |  | | Chloride content (N) | Weekly or as otherwise agreed (1 per source for CBM aggregate) |  |  |
|  |  | | Total sulfur (TS) and acid-soluble sulfate (AS) content (N) | Every 6 months |  |  |
|  |  | Flint coarse aggregate containing white flints | Water absorption (N) | 3 per source thereafter weekly | Required |  |

APPENDIX 1/5: TESTING TO BE CARRIED OUT BY THE CONTRACTOR (continued)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Clause** | **Work, Goods or Material** | | **Test** | **Frequency of Testing** | **Test Certificate** | **Comments** |
| **Series 1000 (continued)** | | |  |  |  |  |
| 1001 1030 1044 (cont/d) | Aggregates (continued) | |  |  | Required | Quality management and product certification schemes apply |
|  |  | Sand (i.e fine aggregate) | Acid-soluble material (N) | Monthly |  | Not required for CBM aggregate. |
|  |  | Blastfurnace slag | Bulk density (N) | Every 6 months |  |  |
|  |  |  | Dicalcium silicate disintegration (N) | Every 6 months |  |  |
|  |  |  | Iron disintegration | Every 6 months |  |  |
|  |  |  | Total sulfur (TS) and acid-soluble sulfate (AS) content (N) | Every 6 months |  |  |
|  |  | Pulverised fuel-ash |  |  | Required (BS 3892:Part 2) |  |
|  |

APPENDIX 1/5: TESTING TO BE CARRIED OUT BY THE CONTRACTOR (continued)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Clause** | **Work, Goods or Material** | | **Test** | **Frequency of Testing** | **Test Certificate** | **Comments** |
| **Series 1200** | | |  |  |  |  |
| 1212 | Road markings | |  |  |  | National quality management sector scheme applies. Procedures are given in BS EN 1824 |
|  |  | | Tests specified in BS EN 1824 |  | Required |  |
|  |  | Glass Beads | Arsenic trioxide content, Lead content and Antimony content (N) | One per contract and/or per specific source of supply | Required |  |
| 1214 |  | |  |  |  |  |
|  | Temporary cones, cylinders, FTDs and other delineators | |  |  | Required | Certification that at least 1 in 500 of any batch of cones, cylinders, FTDs and other delineators to be used in the Temporary Works have passed the tests in Clause 1214 as appropriate is required |

APPENDIX 1/5: TESTING TO BE CARRIED OUT BY THE CONTRACTOR (continued)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Clause** | **Work, Goods or Material** | | **Test** | **Frequency of Testing** | **Test Certificate** | **Comments** |
| **Series 1500 Communictions** | | |  |  |  |  |
| 1218 | Detector loops | |  |  |  |  |
|  |  | Cable |  |  | Required | Certification that completed cables comply with specification TR 2029 is required |
|  |  | Epoxy Resin |  |  | Required | Certification that the epoxy resin complies with specification MCH 1540 is required |
|  |  | Feeder cable |  |  | Required | Certification that completed cables comply with specification TR 2031 is required |
|  |  | Joints | Pull test (4 kgf) | Each crimp |  |  |
|  |  | Installation | Series resistance | Each loop | Required | Certification in accordance with specification |
|  |  |  | Insulation resistance |  |  | MCH 1540 is required |
|  |  |  | Inductance |  |  |  |
|  | | |  |  |  |  |
|  |  | |  |  |  |  |
|  |  | |  |  |  |  |

**NOTES:**

1. Unless otherwise stated above, all sampling and testing in this Appendix shall be by the Contractor.
2. 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 105.5).
3. (N) Indicates that a UKAS or equivalent accredited laboratory sampling and test report or certificate is required.
4. 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.
5. Cube strength tests are not required for concrete complying with Clause 2602.
6. Unless otherwise shown in this Appendix test certificates for work, goods or materials as scheduled under any one Clause are required for all such work, goods or materials in the Works.
7. Unless specifically mentioned to the contrary, all samples used in the testing shall be taken from materials after delivery to the site for incorporation into the permanent works.
8. Chemical Contamination Testing Suite A

Limit values for total content of organic parameters :-

Total organic carbon (w/w %), BTEX (mg kg-1), PCBs (7 congeners) (mg kg-1), Mineral oil C10-C40 (mg kg-1), and PAHs.

Limit values (mg kg-1) for compliance leaching test using BS EN 12457- 3 at L/S 10 l kg-1:-

As (arsenic), Cd (cadmium), Cr (chromium (total)), Cu (copper), Hg (mercury), Ni (nickel), Pb (lead), Sb (antimony), Se (selenium), Zn (zinc), Cl (chloride), F (fluoride), SO4 (sulphate), Phenol index, Dissolved organic carbon, and Total Dissolved Solids.

1. Chemical Contamination Testing Suite B

Limit values for total content of organic parameters :-

Total organic carbon (w/w %), Acid neutralisation capacity, (mg kg-1), Mineral oil C10-C40 (mg kg-1), and PAHs.

Limit values (mg kg-1) for compliance leaching test using BS EN 12457- 3 at L/S 10 l kg-1:-

As (arsenic), Cd (cadmium), Cr (chromium (total)), Cu (copper), Hg (mercury), Ni (nickel), Pb (lead), Sb (antimony), Se (selenium), Zn (zinc), Cl (chloride), F (fluoride), SO4 (sulphate), Dissolved organic carbon, and Total Dissolved Solids.

APPENDIX 1/7: SITE EXTENT AND LIMITATIONS ON USE

1/7.1 Extent of Site

The limits of the Site shall be detailed in the Task Order

The *Contractor* shall note that for the purposes of the Conditions of Contract, the areas needed for the erection of advance warning traffic signs are deemed to be part of the Site.

There is no requirement for Site Clearance in any area included for such advance traffic signing.

1/7.2 Limitations on the Use of the Site

1. The Contractor shall not erect offices, stores or stockpiles etc. within the limits of the Site, without the approval of the Overseeing Organisation.
2. Footways, cycle tracks, lay-bys and grassed areas shall not be used for storage unless specifically authorised by the Overseeing Organisation.
3. Any additional restrictions or relaxation on the limitations on the use of the site shall be detailed in the Task Order.

1/7.3 Restrictions on Availability of the Site

Restrictions on the availability of the site will be detailed in the Task Order, but the *Contractor* shall also comply with the following general restrictions.

Road space booking will be required as detailed in Appendix 0/1.

The Contractor shall comply with all restrictions and requirements of the Kent Permit Scheme and the Kent Lane Rental Scheme.

1/7.4 Night Work

Day and Night time hours are described in Appendix 1/85. Work during the night shall only be undertaken with the prior approval of the Overseeing Organisation. In seeking approval the Contractor shall include such details that demonstrate that he has undertaken the necessary consultation and/or liaison with others required by the contract e.g. Environmental Health Officer’s.

APPENDIX 1/9: CONTROL OF NOISE AND VIBRATION

1/9.1 Noise

a) The Local Authority has informally agreed that the following measures would be acceptable and these are given as a guide; however it is for the Contractor to decide whether to seek the Local Authority's formal consent to his proposed methods of work and to the steps he proposes in order to minimise noise. The Local Authority may impose similar conditions to Contractor's offices, workshops, maintenance compounds and batching plants contiguous with the Site.

b) The normal working hours within the Site shall be Monday to Friday between 0700 and 1900 hours and Saturday between 0700 and 1300 hours, with no working on Sundays or public holidays. Exceptionally, consent for work outside these hours may be given after any necessary consultation. 14 days notice is required from the Contractor when seeking such consent.

c) The noise levels (see Note (i) below) scheduled below for periods outside the normal working hours will only be permitted when consent has been given to exceptional working.

d) The ambient noise level, Leq (see Note (ii) below), from all sources when measured 2.0m above the ground at the noise control stations as defined in e) below shall either not exceed the appropriate level given in the Schedule or not exceed by more than 3 dB(A) the existing ambient noise level, Leq (see Note (iii) below), at the control station measured over the same period, whichever level is the greater. The maximum sound level at any noise control station shall not exceed the level given in the Schedule. Exceptionally the Contractor may be given permission to carry out works which exceed the noise levels in the Schedule, provided that 56 days notice of the date and timing of these works is given to the Overseeing Organisation and the Contractor demonstrates that he intends to take all reasonable measures to mitigate the noise nuisance. After consultations with the Local Authority and any other interested bodies a decision will be given within 42 days of receipt of the notice.

e) For the purposes of this Appendix, a noise control station shall be taken as any point adjacent to the Site. If no site is clearly identified in the Contract, a noise control station shall be taken as any point 1m from the facade of any building near the Works.

f) If complaints of noise are received, the Contractor shall immediately take all measures necessary to demonstrate to the Overseeing Organisation that the requirements in d) above are being complied with.

g) The Contractor shall provide the Overseeing Organisation with the results of such monitoring within 24 hours of notification of the complaint.

h) Where the results of any monitoring indicate non-compliance with the limits stated above, the Contractor shall immediately change his method of working, or to alternative plant, or to any combination of both. The Contractor shall further demonstrate that any new arrangements will satisfy the noise limits before fully recommencing operations.

i) The Contractor shall maintain a record of all complaints received with regard to noise and shall promptly notify the Overseeing Organisation of all such complaints.

1/9.2 Schedule for Total Noise Levels at Control Stations

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Period** | **Hours** | **Ambient Noise Level Leq measured at Control Station: dB (A)** | **Period of Hours over which Leq is applicable** | **Maximum Sound Level (see Note (iv) below) measured at Control Station dB (A)** |
| Mondays to Fridays | 0700 - 1900 (N)  1900 - 2100 | 72  62 | 12  any 1 hour | 85  70 |
| Saturday | 0700 - 1300 (N)  1300 - 2100 | 72  62 | 6  any 1 hour | 85  70 |
| Sunday and Public Holidays | 0700 - 0900  0900 - 1700  1700 - 2100 | 47  62  47 | any 1 hour  any 1 hour  any 1 hour | 55  70  55 |
| Nights | 2100 - 0700 | 47 | any 1 hour | 55 |
| All unattended plant outside normal working hours | | 47 | any 1 hour | 50 |

NOTES:

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

ii) The ambient noise level, Leq, at a noise control station is the total Leq from all the noise sources in the vicinity over the specified period.

iii) The existing ambient noise level, Leq, at a control station is the total Leq from all the noise sources in the vicinity over the specified period prior to the commencement of Works. It is the Contractor's responsibility to measure the ambient noise level prior to the commencement of Works and in the presence of the Overseeing Organisation. Should the Contractor fail to undertake such measurements, the Overseeing Organisation may choose to adopt the levels from the schedule above as the ambient noise levels, or such other figures as the Overseeing Organisation may specify.

iv) Maximum Sound Level is the highest value indicated on a sound level meter which meets the requirements of BS EN 60651 type 1 or 2 set to SLOW response and frequency weighting A or on an integrating - averaging sound level meter to BS EN 60804.

v) In the Column headed "Hours" (N) represents the normal working hours for the Site.

1/9.3 Vibration

a) i) The Contractor shall ensure that the vibration limits stated below are complied with.

ii) Peak particle velocity (ppv) generated by operations on site shall not exceed ....mm/s at the closest point of any building.

b) If complaints of vibration within any adjacent property are received then the Contractor shall immediately take all measures necessary, to demonstrate to the Overseeing Organisation, that the requirements of a) ii) above are being complied with.

c) The Contractor shall provide the Overseeing Organisation with the results of such monitoring within 24 hours of notification of the complaint.

d) Where the results of any monitoring indicate non-compliance with the limits stated above, then the Contractor shall immediately change his methods of working, or to alternative plant, or to any combination of both. The Contractor shall further demonstrate that any new arrangements will satisfy the vibration limits before fully recommencing operations.

e) The Contractor shall maintain a record of all complaints received with regard to vibration and shall promptly notify the Overseeing Organisation of all such complaints.

f) Particle velocity, as a function of time, shall be measured simultaneously for the x, y and z directions. One direction shall be parallel to the wall of the building.

g) In general the requirements of the monitoring system shall comply with BS 7385 Part 1 and shall provide a dynamic range appropriate for "machinery outside" as specified in Table 1.

|  |
| --- |
| ALTERNATIVE - ASHFORD BOROUGH COUNCIL |

APPENDIX 1/9: CONTROL OF NOISE AND VIBRATION

1/9.1 Noise

a) The Ashford Borough Council has adopted a Code of Practice for Noise Control on Construction Sites. The Council will seek compliance by negotiation and agreement where possible. If this cannot be achieved existing statutory controls within the Control of Pollution Act 1974 will be used.

b) The Code of Practice shall apply to all Works on the Site and also the Contractor's offices, workshops, maintenance compounds and batching plants contiguous with the Site.

c) The normal working hours within the Site shall be Monday to Friday between 0700 and 1900 hours and Saturday between 0700 and 1300 hours, with no working on Sundays or public holidays. For work outside of these hours and on Sundays, the Environmental Protection Officer of Ashford Borough Council shall be consulted and a notice under Section 60 of the Control of Pollution Act 1974 shall be submitted. The notice shall include the works programme with all dates identified where work outside of normal working hours is proposed. See 1/9.2 for contact details for the Environmental Protection Officer.

d) The noise levels (see Note (i) below) scheduled below for periods outside the normal working hours will only be permitted when consent has been given to exceptional working.

e) The ambient noise level, Leq (see Note (ii) below), from all sources when measured 2.0m above the ground at the noise control stations as defined in f) below shall either not exceed the appropriate level given in the Schedule or not exceed by more than 3 dB(A) the existing ambient noise level, Leq (see Note (iii) below), at the control station measured over the same period, whichever level is the greater. The maximum sound level at any noise control station shall not exceed the level given in the Schedule. Exceptionally the Contractor may be given permission to carry out works which exceed the noise levels in the Schedule, provided that 56 days notice of the date and timing of these works is given to the Overseeing Organisation and the Contractor demonstrates that he intends to take all reasonable measures to mitigate the noise nuisance. After consultations with the Local Authority and any other interested bodies a decision will be given within 42 days of receipt of the notice.

f) For the purposes of this Appendix, a noise control station shall be taken as any point adjacent to the Site. If no site is clearly identified in the Contract, a noise control station shall be taken as any point 1m from the facade of any building near the Works.

g) If complaints of noise are received, the Contractor shall immediately take all measures necessary to demonstrate to the Overseeing Organisation that the requirements in e) above are being complied with.

h) The Contractor shall provide the Overseeing Organisation with the results of such monitoring within 24 hours of notification of the complaint.

i) Where the results of any monitoring indicate non-compliance with the limits stated above, the Contractor shall immediately change his method of working, or to alternative plant, or to any combination of both. The Contractor shall further demonstrate that any new arrangements will satisfy the noise limits before fully recommencing operations.

j) The Contractor shall maintain a record of all complaints received with regard to noise and shall promptly notify the Overseeing Organisation of all such complaints.

1/9.2 Ashford Borough Council Code of Practice

a) The general philosophy of the Code of Practice is to minimise noise at source by the selection of appropriate work methods and the use of well maintained plant and equipment, in particular:

(i) All vehicles and mechanical plant used to carry out the Works will require appropriate exhaust silencers fitted in accordance with the manufacturers instructions;

(ii) If acoustic covers are fitted or temporary screens used, they will require to be in place whenever the machine is being used;

(iii) All vehicles and mechanical plant will need to be switched off when not in use or throttled down to a minimum when on standby;

(iv) Static plant which is left running outside the normal working hours listed in the Schedule will require acoustic enclosures of the type indicated in BS 5228 or will be otherwise attenuated to an equivalent standard.

b) The noise levels contained in the Schedule will form a basis of negotiations between the Environmental Protection Officer and any Contractor or Developer who intends to undertake construction works within the Ashford Borough Council area. It should be noted that these criteria take account of the relatively low background noise levels which currently exist in large areas of the Borough.

c) Sunday working which is audible to the nearest receiver, will not be permitted unless there are special circumstances in which case hours of working and noise levels shall be agreed with the Environmental Protection Officer at least 14 days before works commence.

d) Blasting and pile driving shall only be undertaken during the following time periods 0800 - 1800 Mon - Fri 0800 -1300 Sat.

e) Further advice on the implementation of this Code of Practice may be obtained from the Environmental Protection Officer.

Contact Tracey Butler

Tel. 01233 33571

Email: [tracey.butler@ashford.gov.uk](mailto:tracey.butler@ashford.gov.uk)

1/9.3 Schedule for Total Noise Levels at Control Stations

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Period** | **Hours** | **Ambient Noise Level Leq measured at Control Station: dB (A)** | **Period of Hours over which Leq is applicable** | **Maximum Sound Level (see Note (iv) below) measured at Control Station dB (A)** |
| Mondays to Fridays | 0700 - 1900 (N)  1900 - 2100 | 70  60 | 12  any 1 hour | 80  70 |
| Saturday | 0700 - 1300 (N)  1300 - 2100 | 70  60 | 6  any 1 hour | 80  70 |
| Sunday and Public Holidays | 0700 - 0900  0900 - 1700  1700 - 2100 | 45  60  45 | any 1 hour  any 1 hour  any 1 hour | 55  70  55 |
| Nights | 2100 - 0700 | 45 | any 1 hour | 55 |
| All unattended plant outside normal working hours | | 45 | any 1 hour | 50 |

NOTES:

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

ii) The ambient noise level, Leq, at a noise control station is the total Leq from all the noise sources in the vicinity over the specified period.

iii) The existing ambient noise level, Leq, at a control station is the total Leq from all the noise sources in the vicinity over the specified period prior to the commencement of Works. It is the Contractor's responsibility to measure the ambient noise level prior to the commencement of Works and in the presence of the Overseeing Organisation. Should the Contractor fail to undertake such measurements, the Overseeing Organisation may choose to adopt the levels from the schedule above as the ambient noise levels, or such other figures as the Overseeing Organisation may specify.

iv) Maximum Sound Level is the highest value indicated on a sound level meter which meets the requirements of BS EN 60651 type 1 or 2 set to SLOW response and frequency weighting A or an integrating - averaging sound level meter to BS EN 60804.

v) In the Column headed "Hours" (N) represents the normal working hours for the Site.

1/9.4 Vibration

a) i) The Contractor shall ensure that the vibration limits stated below are complied with.

ii) Peak particle velocity (ppv) generated by operations on site shall not exceed ....mm/s at the closest point of any building.

b) If complaints of vibration within any adjacent property are received then the Contractor shall immediately take all measures necessary, to demonstrate to the Overseeing Organisation, that the requirements of a) ii) above are being complied with.

c) The Contractor shall provide the Overseeing Organisation with the results of such monitoring within 24 hours of notification of the complaint.

d) Where the results of any monitoring indicate non-compliance with the limits stated above, then the Contractor shall immediately change his methods of working, or to alternative plant, or to any combination of both. The Contractor shall further demonstrate that any new arrangements will satisfy the vibration limits before fully recommencing operations.

e) The Contractor shall maintain a record of all complaints received with regard to vibration and shall promptly notify the Overseeing Organisation of all such complaints.

f) Particle velocity, as a function of time, shall be measured simultaneously for the x, y and z directions. One direction shall be parallel to the wall of the building.

g) In general the requirements of the monitoring system shall comply with BS 7385 Part 1 and shall provide a dynamic range appropriate for "machinery outside" as specified in Table 1.

APPENDIX 1/12: SETTING OUT AND EXISTING GROUND LEVELS

1/12.1 Information to be Provided by the Overseeing Organisation

Setting out information will be detailed in the Task Order.

1/12.2 Specific Requirements for Setting Out

a) The Contractor shall, in accordance with the information included in the Contract, set out, mark and maintain until they are no longer required, all reference lines, templates, bench marks and markers, permanent or temporary, necessary for the setting out and checking of the Works. The Contractor shall keep updated schedules and drawings of such information which he shall supply to the Overseeing Organisation as the setting out proceeds.

b) Where setting out markers are likely to be disturbed during the Works, the Contractor shall, transfer such markers to an adjacent point.

c) The Contractor shall not commence either general site clearance or fencing before obtaining the agreement of the Overseeing Organisation to the setting out of the Site boundaries.

d) Contract Bench Marks shall be agreed on Site. Prior to any work being carried out on the carriageway, the Contractor shall establish temporary bench marks throughout the Site at not more than 100 metres apart, and agree the levels of these temporary bench marks with the Overseeing Organisation using the Contract Bench Marks as datum.

e) Contract Bench Marks shall be established for each section or phase of the Works such that access to them is within the Site.

f) If any of the bench marks become displaced during the Contract then the Contractor shall re-establish them immediately at his own expense and provide the Overseeing Organisation with the amended co-ordinate and level values.

1/12.3 Existing Ground Levels

Existing ground levels shall be maintained unless otherwise stated in the task order.

1/12.4 Markings for Setting Out Purposes

a) An Agreement has been made between The Kent County Council and all the Statutory Undertakers that operate in Kent upon the paint colour and letter codes to be used for the marking of all temporary reinstatements and setting out details.

b) The Colour white shall be used for all paint markings for setting out purposes put down by the Contractor and all site staff. For information purposes the Statutory Undertakers in Kent shall be using the following colours:-

|  |  |  |
| --- | --- | --- |
| **Authority** | **Paint Colour** | **Letter Code** |
| Water | Blue | W |
| Electricity | Red | E |
| Telecom | Silver Grey | T |
| Gas | Yellow | G |
| Cable TV | Green | V |

1/12.5 Recording of Existing Details

Items to be removed and subsequently replaced shall be surveyed and their locations recorded by reference to temporary bench marks.

APPENDIX 1/13: PROGRAMME OF WORKS

1/13.1 Task Order Programme

a) The Contractor shall provide a programme of works in a form of a bar chart, or similar format, produced as a result of a "critical path analysis" and must abide by the constraints below for each task of the works during the Service Period. It shall show the level of detail appropriate to each Task Order and all activities and restraints, each of which shall be given a short title. All events shall be numbered and annotated with earliest and latest event dates. Once task orders are issued, the Contractor shall return a programme of works for the approval of and issuing by the Overseeing Organisation within a period of 4 weeks, unless otherwise agreed beforehand.

b) At the time of presentation of the programme the Contractor shall also provide a general description of the arrangements and methods of construction accompanied by a schedule of all labour and plant resources which the Contractor proposes to adopt for each activity within the Task Order programme.

1/13.2 Schedule of Constraints

a) Possession of Site

i) Delayed entry to any portion of the site as detailed in the Task Order;

ii) Except where agreed by the Overseeing Organisation in advance Lane Closures shall be removed for Bank Holiday Weekends;

iii) Sectional completion; see Appendix 1/86.

b) The Contractor shall take into account the constraints and conditions stated in the Contract which include the following:

i) The Site and the limitations on the Use of the Site (as Appendix 1/7);

ii) Restrictions on the Availability of the Site (as Appendix 1/7);

iii) The noise and vibration control limits (as Appendix 1/9);

iv) Traffic safety and management including Kent Permit Scheme and Kent Lane Rental Scheme notice requirements (as Appendix 1/17);

v) Restrictions arising from the use of substances hazardous to health (as Appendix 1/23);

vi) Phasing the Works;

vii) Work to Privately and Publicly Owned Services and Supplies (as Appendix 1/16);

viii) Trials and demonstrations in advance of main construction;

ix) Liaison with other contractors executing adjacent highway works;

x) Loop detector installation and connection

1/13.3 Activities

a) The level of detail on all Task Order programmes shall be not less than the following

i) Level 1

Within 4 weeks of issue of the task order and updated on a weekly basis.

A detailed construction programme including in each separate section:

(a) Traffic safety and management establishment and removal including Site accesses, plant crossings and temporary diversions;

(b) Base;

(c) Raising drainage covers;

(d) Surfacing including ramps;

(e) Traffic signal loops;

(f) Finishes, including High Friction Surfaces;

(g) Road markings.

ii) Level 2

Daily where any works were programmed or took place the preceding day/night

The Contractor shall submit a return by email confirming in detail all work activities carried out the previous day, what and what works, if any are programmed for that day/night. This shall include details of any sites completed and started/due to start.

iii) The Contractor shall submit further breakdowns of items and other details as may be requested by the Overseeing Organisation.

APPENDIX 1/14: PAYMENT APPLICATIONS

1/14.1 General

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

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

1/16.1 General

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

b) 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 Services. Compliance with the periods of notice given in this Appendix does not relieve the Contractor of his obligations.

c) Private Services to individual properties will generally not 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 diversions of private services affected by the Works. The Contractor shall have safe methods of dig to take account possible shallow services to properties.

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

1/16.2 Schedule of Statutory Undertakers and Other Authorities

The names, addresses and telephone numbers of the authorities serving in the locality, other than those having Special Requirements given in the Conditions of Contract, will be detailed in the Task Order packs:

Given in Appendix SI/5

1/16.3 Services and Supplies affected by the *services*

Services and supplies affected by providing the services will be detailed in the Task Order packs for scheme work.

1/16.4 Location of Existing Services and Supplies

Information provided to the Contractor by Statutory Undertakers and other service suppliers in respect of existing services and supplies will be supplied as part of the Task Order pack for scheme works. For maintenance or reactive Task Orders such as repairs, potholing and the like the Contractor shall allow for carrying out any searches and /or suitable methods to ensure the utility or other buried apparatus does not pose a risk to the Contractor’s employees or sub-contractors or to the apparatus. The Contractor will ensure that this is covered in the Contractor’s Plan.

1/16.5 Other Preliminary Arrangements

APPENDIX 1/17: TRAFFIC SAFETY AND MANAGEMENT

1/17.1 Responsibility for Traffic Safety and Management

The Contractor is responsible for the traffic safety and management and associated works as described in Clause 117 and this Appendix, including complying with the requirements and advice in the following publications:-

1. Safety at Street Works and Road Works - A Code of Practice - issued jointly by the HA, the Scottish Office and the Welsh Office.
2. The ‘Kent Permit Scheme’ and ‘Kent Lane Rental Scheme’ as published in www.kent.gov.uk

The Contractor will also be responsible for applying for, updating and closing permit application under the Kent Permit Scheme and Lane Rental scheme

The Contractor will be responsible for payment of Fixed Penalty Notices and S74 overrun charges for their own works.

1/17.2 Definitions

Generally the terms used are as described in the Traffic Signs Manual Chapter 8 Section D1.5 with the addition of the following:-

i) The word "should" where used in the Traffic Signs Manual Chapter 8

shall be regarded as a requirement of the Contract.

ii) "Running Lane for Emergency Use" shall be defined as a clear route through the Works for use by the Police, emergency and breakdown services.

(iii) "Traffic Safety and Management System" shall be defined as any system comprising the use of signs, lamps, cones and other aids to traffic movement placed on or adjacent to the Public Highway or Private Accesses.

1/17.3 Design Requirements

a) The Contractor shall design the Traffic Safety and Management Systems in specific phases compatible with his Contract programme and to comply with the specific requirements detailed below:-

b) Specific Design Requirements

(i) Provision of Traffic Safety and Management Systems to all services and supplies affected by the Works as listed in Appendix 1/16.3.

(ii) Vehicular and pedestrian access to adjacent properties shall be maintained at all times, unless otherwise agreed by the Contractor for short periods by prior arrangement with the owners/occupiers. The Overseeing organisation is to be notified of any such arrangements made. This is to include temporary arrangements for deliveries, etc.

(iii) A temporary road surface is to be trafficked warning signs to diag. 7010.1 shall be provided at suitable intervals along the affected length.

(iv) Temporary transverse changes in carriageway level shall be suitably ramped with fine shaping material and signed accordingly (diagrams 7010.1 and 7010.3).

(v) A longitudinal vertical step between adjacent running lanes shall not be permitted.

(vi) Traffic shall not be permitted to run on milled surfaces greater than 40mm below the existing carriageway level.

(vii) Traffic Regulation Orders will be made by the Overseeing Organisation which permit the temporary closure of the roads required for carrying out the Works. Notice periods are listed in Appendix 1/17.13 a).

(viii) For the period of the road closures the Contractor shall set up, maintain and subsequently remove the signed diversion routes shown in the task order. No other signed alternative route shall be permitted.

(ix) Pedestrian routes of desirable minimum width 1.5m (absolute minimum unobstructed width of 1.0m) shall be maintained at all times.

(x) Any alternate single way working shall be controlled by temporary traffic signals or stop/go boards.

(xi) Only one site at a time may be worked on in town centres.

(xii) If two or more sites are being worked on at the same time outside town centres, there must be no duplication in the diversion routes.

c) Commencement Date Signs

i) General

i) The Contractor shall provide and erect on Site at the locations given on the drawings, signs in accordance with Appendix 1/21.

ii) Where required, the contractor shall provide Variable Message Signs (VMS) and display legend agreed with the Project Manager and in accordance with the HA Specification TR 2518A . These are in addition to be above and must be sited in a safe manner without causing an obstruction to the Highway user.

g) In accordance with sub-clause 117.3, the Contractor shall submit his proposals for traffic safety and management to the Overseeing Organisation not later than 14 days before he intends to bring any such proposals into operation.

h) Where the Traffic Signs Manual Chapter 8 requires the use of a sign 7006, it shall be supplemented by the sign shown in Department of Transport Drawing No. NP 7006.7.

1/17.5 Works Traffic

i) Only vehicles and plant essential for carrying out the Works shall be allowed to enter any Working Space. Any vehicle deemed by the Overseeing Organisation to be non-essential (especially private cars), and any vehicle not complying with Clause 117 shall not be permitted to remain within the Working Space. If necessary the Contractor shall provide and maintain an area separate from the Site for the long term parking of his employees' and his sub-contractors' employees' private vehicles.. The Contractor shall arrange, if necessary, for the transport of personnel between the parking area and the Site.

ii) The Contractor shall ensure that all vehicle and plant movements within any Working Space do not exceed a speed of 20 mph. Suitable notices drawing drivers attention to this requirement shall be posted at all entrances to Working Spaces and at regular intervals within any Working Space. The Overseeing Organisation may require the installation of speed ramps at the Contractor's expense if this requirement is repeatedly ignored.

iii) Hazard warning lights, in lieu of roof mounted amber flashing lights, shall not be used.

iv) The Contractor’s attention is drawn to the need to assess the risks and develop and operate safe working practices when vehicles and plant are reversing on Site, whether or not they are on part of the highway. The Contractor’s practices and procedures shall take account of the conditions which obtain on Site.

1/17.6 Traffic Safety and Control Officer

i) The Contractor shall appoint a Traffic Safety and Control Officer and Deputy who shall be direct Employees (and not a sub-Contractor) and who shall be entirely responsible for any Traffic Safety and Management System including the running lane for emergency use as follows:-

(a) liaison with the Overseeing Organisation and where specified, with the Police;

(b) arranging and agreeing systems;

(c) setting out of the systems;

(d) controlling traffic and supervising any vehicle or item of plant whilst reversing;

(e) ensuring all systems requirements are met;

(f) inspection and maintenance of all Traffic Safety and Management equipment;

(g) arranging duties for watchmen and for patrolling and inspection of the Site;

(h) arranging and ensuring that at all times including weekends and public holidays the Contractor's communications base, equipped with radio and/or telephone, is manned by competent personnel;

(i) dealing with traffic in emergencies, including notifying the Police immediately of any accidents and the like;

(j) reinstatement or temporary alterations to Traffic Safety and Management Systems as requested by the Police in the event of an emergency.

ii) The Contractor shall supply to the Overseeing Organisation the name and telephone number of the Traffic Safety and Control Officer and his Deputy. This information shall be provided on the form headed "Emergency Call-Out Scheme - Contact Names & Telephone Numbers" contained in this Appendix, prior to commencement of Works.

iii) The responsibilities of the Traffic Safety and Control Officer and of his nominated deputy shall also include the following matters:

(a) Monitoring, with the assistance of sufficient mobile personnel and of sufficient other suitable and appropriate aids, the flow of traffic within the area and within the period defined for the operation of the vehicle recovery service;

(b) Ensuring that, within 5 minutes of notification of the occurrence of an incident, as defined below, resulting in stationary vehicle(s) on a highway open to the public, the incident is reported to the vehicle recovery service;

(c) Recording and logging all incidents and all movements of recovery vehicles and, when called, all movements of the emergency services. For the purposes of this Appendix, an “incident” is defined as a shed load, vehicle breakdown, vehicle abandonment or traffic accident, whether or not the latter involves personal injury.

1/17.7 Running Lane for Emergency Use

i) When two way traffic is operating on one carriageway of a dual carriageway, the Contractor shall provide a running lane for emergency use through the whole length of the closed carriageway. The running lane shall be maintained at all times, unless otherwise agreed by the Overseeing Organisation.

ii) The running lane shall be at least 3 metres wide and suitable for vehicular traffic. It may be used by the Police, or the emergency and breakdown services in the event of an incident on the operating carriageway.

iii) Work shall not commence on any operation until the alignment of the running lane has been set out and the route has been signed through the Site.

iv) The Contractor will be permitted to use the running lane provided its use is confined to mobile, i.e. self-propelled plant. The driver of this plant shall be present at all times. The running lane shall be kept free from all obstructions, mud and other debris at all times.

v) In the event of the running lane being brought into operation, the Contractor shall suspend all work within 1.2m either side of the running lane and all plant shall be removed from the running lane immediately.

vi) The Contractor shall at all times be responsible for delineating the running lane, and shall supply, maintain and move all traffic safety and management systems equipment as necessary.

vii) The Contractor shall sweep the running lane at the end of each working period or after any realignment and check that it is free from all obstructions and satisfactory for use.

1/17.8 Safety Zone

Safety Zones shall be kept clear of personnel, plant and materials at all times. The safety zone shall be physically marked out by cones on the traffic boundary and by a continuous physical barrier on the Works or inner boundary. The barrier shall be sufficient to keep pedestrians out and prevent inadvertent straying by site personnel. The method of physically marking the boundaries will have been chosen on the basis of an appropriate risk assessment. The minimum lateral and longitudinal clearances shall be as laid down in the Traffic Signs Manual Chapter 8 Section D3.2 unless otherwise determined by the Overseeing Organisation.

1/17.9 Existing Carriageway Markings

i) To avoid confusion the existing road studs or rubber inserts shall be removed as appropriate. Similarly existing white lines or markings shall be removed or concealed with a temporary surface as described in Appendix 12/3.3. In lane change areas and as otherwise described in the Contract, continuous 100mm wide white lines together with traffic cones, shall be used to define the width of the carriageway to be used, and as appropriate, 100mm wide 6m long 3m gap white lines for lane separation. During the removal of the traffic management system which has required any changes to the permanent markings or road studs the Contractor shall remove all temporary road markings and reinstate the original markings and studs, all to the satisfaction of the Overseeing Organisation, prior to opening that part of the carriageway to public use.

ii) Temporary Thermoplastic lines may be used only when:

1. the subsequent Traffic Safety and Management Systems do not require public use of that part of the carriageway and

2. the carriageway is to be reconstructed or covered by a new wearing course.

1/17.10 Removal & Erection of Safety Barriers on Trafficked Carriageways

i) Removal and erection of safety barriers shall take place only when the adjacent traffic lane is closed.

ii) Public traffic shall not be permitted to use any lane or hardshoulder where adjacent safety barrier protection is required by the Contract, without the consent of the Overseeing Organisation, unless the safety barriers are in place. Central reserve safety barriers, other than at obstructions, are not required when:

1. traffic flows are in the same direction in both adjacent lanes;

2. one adjacent lane is closed;

3. the central reserve forms one edge of the Working Area.

1/17.11 Traffic Safety and Management Patrols

i) During the period when any Traffic Safety and Management Systems are in operation on the Site the Contractor shall be responsible for patrolling in accordance with the requirements set out below.

ii) Where Traffic Safety and Management Systems are in place on motorways and dual carriageways the following requirements shall apply in addition to the requirements set out in the following sub-Clauses:-

1. the personnel required for patrolling shall be available on Site at all times day and night including weekends and public holidays;

2. the vehicle provided shall be fitted with a communication system (radio and/or telephone) enabling two way communication with the Contractor's communications base.

iii) The Site shall be patrolled at the frequencies laid down in the Table below. Any Traffic Safety and Management Systems that have become displaced and/or damaged in any way shall be repositioned and/or renewed immediately. In addition to patrolling, any defect in the Traffic Safety and Management Systems reported to the Contractor by either the Police or the Overseeing Organisation shall be rectified within two hours of that notification. If the Contractor fails to rectify the defect within the two hour period then the Overseeing Organisation may mobilise the Employer's Emergency Service for the area and shall recharge the Contractor accordingly for the time of that visit even if no work is carried out.

iv) The Contractor shall provide two able and competent watchmen for the purposes of patrolling the Site and attending to signs, lamps, cones and any other aids to traffic movement. To enable patrolling of the Site to be carried out the Contractor shall provide a vehicle suitable for the Site conditions. During periods of bad weather additional personnel and transport may be required.

Patrolling Frequencies

|  |  |  |  |
| --- | --- | --- | --- |
| **Road Category** | **Frequency/ day** | **At Intervals of not less than** | **Between the hours of** |
| Motorways, Trunk Roads, Dual Carriageways | 8 times | 3 hours | 07:01 to 07:00 |
| All other Roads Mondays to Fridays | 1 time | - | 19:00 to 22:00 |
| All other Roads Saturdays, Sundays and Public Holidays | 2 times | - | 07:00 to 09:00 and 17:00 to 19:00 |

Note that the frequencies for Saturdays, Sundays and Public Holidays on All Other Roads shall also apply to days where no work is being carried out on the Site, subject to Traffic Management being in place.

v) The Contractor shall ensure that a sufficient stock of spare signs, lamps, cones and other aids to traffic movement are available on Site to immediately make good all reasonably foreseeable damage to the Traffic Safety and Management Systems.

vi) The Contractor shall after each patrol of the Site enter into the log book held on Site a record of each patrol made. The log shall follow the format shown at the end of this Appendix and shall include the date and time of each patrol and record the particulars of any problems encountered and the remedial work carried out. The log book shall be retained on Site for inspection by the Overseeing Organisation at any time.

1/17.12 Crossovers

Crossovers not in use and adjacent to a trafficked lane shall remain closed with removable or permanent safety barriers as described in the Contract. Where removable safety barriers to a crossover has to be removed to permit the use of that crossover for a traffic system the Contractor shall provide and erect temporary ramped terminal sections and ensure that the safety barriers complies with the standards laid down.

1/17.13 Abnormal Loads

The Contractor shall assist with the movement of wide and/or abnormal loads through the Works by modifying the Traffic Safety and Management System as necessary. Any system so modified shall be reinstated immediately the wide and/or abnormal load has passed. All costs incurred by the Contractor for such assistance shall be paid for by the Employer on a Dayworks basis.

1/17.14 Timing of Operations

i) The Overseeing Organisation may permit the preplacement of traffic signs prior to the commencement of Works. Such signs shall be placed, and suitably covered prior to the commencement of Works, in agreed locations so as not to cause hindrance to passing motorists and pedestrians.

ii) Notwithstanding the provisions of the Conditions of Contract, installation of or alteration to the Traffic Safety and Management System shall only be carried out during the following times:-

|  |  |
| --- | --- |
| **Day** | **Between the hours of** |
| Mondays to Fridays | 00:00 hrs to 07:00 hrs  10:00 hrs to 16:00 hrs  19:00 hrs to 24:00 hrs |
| Saturdays | 00:00 hrs to 10:00 hrs  19:00 hrs to 24:00 hrs |
| Sundays and Public Holidays | 00:00 hrs to 10:00 hrs  19:00 hrs to 24:00 hrs |

1/17.15 Temporary Lighting

Temporary lighting as described in Appendix 14/3 shall be provided and maintained by the Contractor in the following situations during the hours of darkness and at times of poor visibility to illuminate:-

(i) all Working Spaces wherever work is in progress;

(ii) central reserve cross overs, forming part of the Traffic Safety and Management System;

(iii) all locations where the merging and/or diverging of traffic lanes or lane switching forms part of the Traffic Safety and Management System.

1/17.17 Portable Traffic Signals

(i) Permission to erect Portable Traffic Signals shall be obtained from the Area Roadworks Team. A copy of the standard application form is attached for reference at the back of this Appendix. Guidance on the completion of the application form may be obtained from the Area Roadworks Team or the website at www.sehauc.org.uk.

(ii) The completed form shall be submitted to the Area Roadworks Team for the Site as listed in Appendix 1/16.

(iii) The following minimum periods of notice, required by the Area Roadworks Team, to give approval shall apply:

1. sites requiring simple two way shuttle arrangements

...................7 days

2. sites such as junctions requiring more than 1. above

.................21 days

Should emergencies occur outside normal office hours, the Area Roadworks Team must be contacted prior to the actual installation of traffic signals to ensure adequate supplementary traffic management measures are carried out. The Form must then be submitted for approval on the next Working Day.

(iv) Traffic control signal equipment and operational facilities shall comply with the Department of Transport's Specification MCE0111 "Traffic Signal Control Equipment for use at Roadworks", the current Traffic Signs Regulations and General Directions and the requirements laid down in the Traffic Signs Manual Chapter 8, Sections D5.10 and 03.21.

(v) The Contractor shall satisfy the Overseeing Organisation that immediately before delivery to Site the apparatus has been inspected and tested. Only then shall the apparatus be installed on the Site. The installation shall be carried out by a competent operative.

(vi) The operative in overall control of the roadworks shall fully understand the signing requirements and the correct operation of the signals.

(vii) Traffic signals shall be vehicle actuated and shall also be capable of being operated on fixed time and manual modes.

(viii) Wherever possible temporary traffic signals shall be operated off mains supply.

(ix) Any alternate single way traffic working shall be controlled by traffic signals.

The maximum length of alternate single way traffic working controlled by signals shall be as follows unless otherwise agreed by the Overseeing Organisation:-

1. with only one length of single way traffic working at any one time a length of 200 metres.

2. with two lengths of single way traffic working at any one time a length of 150 metres for each length of working. If two sets of signals are to be used then a clear two way traffic length of at least 300 metres must be maintained between the two sets.

(x) The maximum length of single way working with 3-phase traffic signal operation will be significantly reduced from 200 metres.

(xi) Single way operation will not be permitted over any holiday period e.g. 4.00 pm Thursday 21 April 2011 to 9.30 am Tuesday 26 April 2011.

1/17.18 Radio Communication

The Contractor shall provide a two way radio or other communication system. This system shall enable easy communication between the ends of the site, to prevent excessive delays to traffic in the event of a problem on one part of the site.

1/17.19 Traffic Orders

a) Notice required by the Overseeing Organisation

The Overseeing Organisation will require the following periods of notice to enable it to arrange for traffic orders, temporary traffic orders and changes to speed limits. The contractor shall allow for these procedures within their programme:-

(i) amending or making traffic orders 12 weeks

(ii) authorising use of non-prescribed signs ................... 6 weeks

(iii) amending or making mandatory speed limit orders .. 12 weeks

1/17.20 Details of Events that could have a bearing on the Works

Details of events which may affect the works will be set out in the task order

1/17.21 Highways & Private Roads and Other Ways affected by the Works

Details of highways, private roads and other ways affected by the works will be set out in the task order.

Access to private properties must be maintained at all times unless otherwise agreed with the overseeing organisation.

1/17.16 Remedial Works and work carried out after Completion

The Contractor shall obtain prior approval from the Overseeing Organisation for the timing of all operations covering all work to be carried out after completion.

1/17.23 Maintenance Requirements

a) Until the date that completion is certified the Contractor shall be responsible for maintaining all lengths of the highway including its lighting, safety barriers etc., within the boundary of the site and the highway approaches thereto. The Contractor shall also ensure that such lengths and approaches are kept free of litter and refuse, to the standards detailed in the Environmental Protection Act 1990 (EPA), within the stated timescales.

b) The applicable Zone, as defined in the April 2006 Code of Practice on Litter and Refuse shall be as shown in the Works Information.

EPA Zones are as follows:

H = High Density of use

M = Medium Intensity of use

L = Low Intensity of use

c) The highway approaches shall be taken as 50 metres in advance of the start of the lead-in taper to 50 metres beyond the end of the exit taper. On long sections of highways where working areas are shorter than the overall length of the Site, the highway approaches shall be 50 metres beyond the extremes of the working area.

1/17.24 Cones for no Parking

1. If the Overseeing Organisation believes the site is subject to excessive parking, the Task Order will specify the placing of no parking cones in advance of the day.
2. The no parking/waiting cones will be either triangular or cone 500mm high in class 2 reflective material with a weighted base.
3. The cones will be placed 24 hours prior to commencement of the works on site

1/17.25 Letter drops

1. The Overseeing Organisation may require the following letter drops:
   * 1. Advance notification of services
     2. Post completion surveys
2. The Overseeing Organisation may provide the letters, or require the Contractor to print these depending on the requirements of the works.

1/17.26 Removal of vehicles from working area

a) The contractor shall erect ‘No Parking’ signs in accordance with Appendix 1/21.

b) Should the contractor require assistance to remove any vehicles from an area they are working in Kent Police can be contacted on 101 (Kent Police), 01622 690060 or by emailing general.fcc@kent.pnn.police.uk

1/17.27 Portable Variable message signs

1. The Contractor will comply with Traffic Advisory Leaflet 01/15 dated January 2015.
2. The Position of the Portable variable message sign will be detailed in the Task Order.
3. The VMS will be trailer mounted, contain vandal proof self-contained batteries.
4. The display will be LED

1/17.27 General Constraints

1. The *Contractor* drawn to the fact that the highway is a mix of urban and rural roads each having their own individual need and challenge. In particular the *Contractor* will take into account:
   1. parked cars
   2. other obstructions
2. The Contractor shall make every effort to ensure the parked cars or obstructions do not hinder the carrying out of the services. The Contractor will visit site on a maximum of three times on separate days before being able to apply for a compensation event or putting the Task Order on hold.
3. At each visit the Contractor will take a time and dated photograph of the obstruction/parked car to demonstrate attendance.

**KENT COUNTY COUNCIL – ENVIRONMENT , HIGHWAYS AND WASTE**

**EMERGENCY CALL-OUT SCHEME - CONTACT NAMES &**

**TELEPHONE NUMBERS**

**Site Information** To be Completed by the Overseeing Organisation

Site: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Road No: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Overseeing Organisation:

Location:

Works Description:

Start Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Finish Date:

Contractor:

**Contacts During Working Hours**

Contractor's Staff

Name Designation Telephone Number

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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Overseeing Organisation's Staff

Name Designation Telephone Number

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**Contacts Outside Working Hours**

Contractor's Staff

Name Designation Telephone Number

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Overseeing Organisation's Staff

Name Designation Telephone Number

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Distribution Police - Traffic Unit Overseeing Organisation

Scheme File No: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**KENT COUNTY COUNCIL – ENVIRONMENT, HIGHWAYS AND WASTE**

**TRAFFIC SAFETY & MANAGEMENT PATROLS - SITE LOG SHEET**

Site: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Road No: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Sheet No: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Contractor: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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| --- | --- | --- | --- | --- | --- |
| DATE | TIME | LOCATION | DEFECTS FOUND | REMEDIAL ACTION TAKEN | INITIALS |
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To be returned to Overseeing Organisation on completion of Contract

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|  | **THE TRAFFIC SIGNS REGULATIONS AND GENERAL**  **DIRECTIONS 2002. SI NO. 3113.**  **PORTABLE TRAFFIC SIGNALS.** | | | dobbin KCClogoc |
|  | All Fields are to be completed entering not applicable or N/A where appropriate | | |  |
| Notification of the use of 2-Way Portable Traffic Signals  TICK  ONE  BOX | |  |
| Application for Approval of Multiphase Portable Traffic Signals | |  |
| Request for Design and Approval of Portable Traffic Signals | |  |

|  |  |
| --- | --- |
| WORKS OF AN URGENT NATURE TRAFFIC SIGNAL REQUEST |  |

|  |  |
| --- | --- |
| Promoters work ref. | Ha ref. |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| To: Community Delivery Manager Kent Highway Service | |  | From: Promoter | |
| Address: | |  | Address: | |
|  | |  |  | |
| Tel. | Fax |  | Tel. | Fax |
| E-Mail | |  | E-Mail | |

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| Traffic Signal Supplier | | | | |  | |  | | **PTS EMERGENCY 24 hr CONTACT DETAILS** | | | | | | | |
| Tel. | | | Fax | | | |  | | Name : | | | | | | | |
| Promoters Contractor | | | | |  | |  | | Tel. | | | | | | | |
| Tel. | | | Fax | | | |  | |
| SITE LOCATION AND DETAILS:Road Number & Address | | | | | | | | | | | | | | | | |
| TRUNK ROAD: YES  NO  | | | | | | | | | | OS Grid Ref. E | | | | | | N |
| Is Site On A Traffic Sensitive Section Of Road. | | | | | | | | | | | YES  | NO  | |
| Is Site Near Existing Signalised Control | | | | | | | | | | | YES  | NO  | |
| Is There a Road Junction between Signal Heads | | | | | | | | | | | YES  \* | NO  | |
| \* The Promoter must supply a 1:1250 scale map of the works with this application # A map may be requested for any set of signals to determine exact position of heads. | | | | | | | | | | | | | | | | |
| Description of Works | | | | | | | | | | | | | | | | |
| Start Date of Signal Control | | | | | | |  | | | End Date of Signal Control | | | | | | |
| Times of Operation *circle / tick* | | | | 24hrs  peak times  overnight  off peak  | | | | | | | | | | | | |
|  | | | |  | | | |
| SUBMITTED BY | | Signature | | | | | | Print name | | | | | | Date | | |
| Contact details | | Tel | | | | Fax | | | | | | | E-mail | | | |
|  | **THE TRAFFIC SIGNS REGULATIONS AND GENERAL**  **DIRECTIONS 2002. SI NO. 3113.**  **PORTABLE TRAFFIC SIGNALS.** | | | | | | | | | | | | | | dobbin KCClogoc | |

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| PROMOTERS WORK REF. | | | | | HA REF. | | | |
|  | | | | | | | | |
| **FOR HIGHWAY AUTHORITY USE** | | | | | | | | |
| APPROVAL (FOR MULTI PHASE SIGNALS ONLY) | | | | APPROVED  | | NOT APPROVED  | | |
|  | | | |  | |  | | |
| Conditions Required | | | | | | | | |
| Authorised by | Signature | | Print | | | | | Date |
| Contact details | Tel | Fax | | | | | E-mail | |
| Note,  If Notification only with no site specific conditions only the HA Reference number is required to be returned.  If this form has been submitted as a request for approval, the HA must return both pages to the promoter.  If a design was requested, the HA must return this form with the design. | | | | | | | | |

|  |  |  |
| --- | --- | --- |
| **Minimum period of notice required** | **Advance Notice** |  |
|  |  |  |
| Emergency/Urgent | 2 Hours |  |
| 2 Way Portable Signals | 7 working days |  |
| 3 Way Multi Phase\* | 21 working days |  |
| All Portable Signals on Trunk Roads | 21 working days |  |
| The Highway Authority will reply within 3 working days of receipt of request. Reply to be sent to the Submitter. | | |

1. \*Minimum design period is 2 weeks for approval of portable traffic signals.

**Conditions relating to application.**

Legality

The Traffic Signs Regulations and General Directions 2002 SI 3113 permit the use of portable traffic signals in accordance with regulation 35 provided that:-

The equipment is type approved

The equipment is capable of working vehicle actuated.

The site involves simple shuttle working with no junctions in the controlled length.

The Highway Authority or Agent Authority is notified when signal control is used.

Safety at Street Works and Road Works a code of practice issued under The New Roads and Street works Act Section 65.3

All signals to be provided, installed, maintained and removed on site in accordance with Chapter 8, safety at Street works and Road Works CoP and Temporary Traffic Management on High Speed Roads - Good Working Practice document available at www.highways.gov.uk/aboutus/corpdocs/ttm\_sept\_02/index.htm

|  |  |  |
| --- | --- | --- |
|  | **THE TRAFFIC SIGNS REGULATIONS AND GENERAL**  **DIRECTIONS 2002. SI NO. 3113.**  **PORTABLE TRAFFIC SIGNALS.** | dobbin KCClogoc |

General Conditions

Portable traffic signals used to control junctions (i.e. more than simple shuttle working) or heavy plant crossings require that the Highway Authority issues specific site approval.

All signage to conform to Chapter 8 and the safety at Streetworks code of practice.

All portable traffic signals to be operated in accordance with DfT booklet " An Introduction to the use of Vehicle Actuated Portable Traffic Signals". Manual control for fixed time operation shall only be used with the written consent of the Highway Authority.

All Highway users within the are of traffic control will be advised of the intended dates of use of portable traffic signals by the applicant.

Setting up Site

All appropriate advance warning signs, in accordance with the recommendations of chapter 8 of the Traffic Signs Manual, to be established prior to positioning of the signals.

The maximum distance between portable traffic signals must not exceed 300 metres. The signals are to be set up to allow working space only and are not to include for parking for non-essential site vehicles.

Portable traffic signals are set up with time settings as a function of site length. The period of use and the controlled shuttle working length to be kept to an absolute minimum. Signals must operate vehicle actuated unless alternative agreed in writing.

When the switching off of permanent signals is required the promoter must contact the Highway Authority in advance, as far as reasonably practical, so the necessary arrangements can be made.

If the site can not be set out as planned the promoter must immediately contact the Highway Authority to discuss.

Environmental considerations.

In built up or residential areas, connection of signals to mains power supply may be preferable. The Electricity Supplier must be consulted and may levy a charge for supply. Connections to street lighting must be with the permission of the appropriate Authority and by a competent electrician. Any subsequent damage or repair will be a charge on the promoter.

All generators must meet the requirements of the Environmental Protection Act 1990 c43.

Maintenance

The signal supplier / hirer must provide and display on the equipment on site the call-out number for maintenance. Response to be within two hours.

Associated Documents

Notes for guidance TTS.ppt

Design example.

APPENDIX 1/18: TEMPORARY DIVERSION FOR TRAFFIC

1/18.1 Temporary Diversions

All temporary diversions for traffic will be designed and detailed in the Task Order

APPENDIX 1/21: INFORMATION BOARDS

1/21.1 Information Boards

a) General

An information board must be displayed at every street and road works site

except mobile works, short duration works and minor works that do not involve excavation In accordance with Safety at Street Works and Road Works .This board should be placed so that it does not obstruct footways or carriageways but can be clearly read by pedestrians, and any drivers who have stopped close to the board.

The information board must give the name of the organisation undertaking the works, any principal contractor and an emergency contact telephone number. Wherever practical, it should also contain other information that will be helpful in explaining to the public why the work is being done, how long it will take and a message apologising for inconvenience. It shall also include the Kent County Council logo.

Commencement Signs

a) The Contractor shall provide and erect Commencement Signs to LED 2015/STD/DRG/01 as appropriate. Any framing, stiffening or supports necessary shall not obstruct the face.

b) The “Date” line shall show the dates as the accepted Task Order programme. The Commencement Signs shall be erected 7 days prior to commencement of Works in an area.

c) Signs shall be fixed to existing street furniture.

d) The precise location of the signs is not critical but the Contractor shall erect sufficient signs in an area such that at least two signs can be seen from any location.

e) The positions chosen shall not cause obstruction to the footways, sight lines or private accesses.

f) Signs shall be erected with the bottom edge at the following mounting height above ground level:

i) Over or within a footway - 2.1m;

ii) Over or within a cycleway - 2.4m;

iii) Over or within a verge where pedestrians / cycles are not present - 1.5m.

g) Signs shall be removed from a road immediately the LED conversion works have been completed within that road.

h) Signs shall be maintained in a clean and legible condition from erection and throughout the duration of the Works in a road.

i) The faces of the signs shall be non-reflective and the signs shall be

manufactured from twin wall polypropylene sheet.

No Parking Signs

a) Where parked cars may prevent access to a lighting unit, the Contractor shall provide and erect No Parking signs to LED 2015/STD/DRG/02. Any framing, stiffening or supports necessary shall not obstruct the face.

b) The “Day”, “Time” & “Date” lines shall show the day(s), timings and date as the accepted Task Order programme.

c) The No Parking signs shall be erected 7 days prior to commencement of Works

1/21.3 Magnetic Signs on Vehicles Engaged on Mobile Maintenance Activities

When required by the Overseeing Organisation, The Contractor shall provide and display upon the vehicles in use information signs to notify the public that the vehicle(s) are engaged in carrying out work for The Kent County Council. For the duration of the Works the signs shall be maintained in a secure, clean and legible condition. Upon completion of the Works the signs shall be removed from the vehicles. The precise details of the sign and wording is to be agreed with the Contractor during the mobilisation period.

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

1/23.1 General

In connection with substances hazardous to health the Contractor shall be responsible for taking all reasonable steps to secure the safety of his employees, members of the Employer's staff or representatives and members of the public through the carrying out of all reasonable steps in connection with:-

1. traffic management measures

2. working practices

3. monitoring

This Appendix is included in the Contract because substances that may be hazardous to health are specified for use in the Providing the Services in this contract.

1/23.1 If the Employer identifies any further such risks these will be identified in the Task Order.

APPENDIX 1/24: QUALITY MANAGEMENT SYSTEM

1/24.1 General

The Contractor shall institute and operate a UKAS accredited quality management system complying with BS EN ISO 9001 and Clause 104. The quality management system shall be described in Quality Plans that shall be submitted to the Overseeing Organisation for acceptance.

The Contractor shall produce quality plans specifically covering the periods; Award of Contract to commencement of Works, the construction period and the period after completion is certified.

1/24.2 Quality Plans

(a) The Quality Plans shall cover the following items:

(i) Contractor's organisation and management;

(ii) Contractor's method statements and construction procedures;

(iii) Contractor's construction quality control;

(iv) Organisations’ Quality Plans (for each of the quality management schemes listed at Appendix A).

Details of the contents of each item are given in Annexes A to D to this Appendix.

(b) Items (a)(i) and (a)(iii) of the Quality Plans shall be submitted to the Overseeing Organisation for acceptance within 3 days of the Award of Contract. The Contractor shall submit the other parts of the Quality Plans 7 days prior to commencement of Works.

(c) The Quality Plan shall be relevant to the specific contract and be produced in as brief a form as is practicable.

(d) The Quality Plan shall reflect the management procedures and control actually being followed. Where circumstances or people change, or procedures prove to be impracticable, the Quality Plan shall be reviewed and if necessary after consultation with the Overseeing Organisation, re-issued.

(e) The Quality Plans shall outline the procedures for handling non-conformities identified in the Works by the Overseeing Organisation or the quality system and the consequent corrective and preventive action.

1/24.3 Method Statements

(a) The Contractor shall produce method statements as the Works progress. The extent to which method statements are required is dependant on the scale, complexity and criticality of the various activities.

(b) Method statements may be brief but shall describe each stage of construction activity including, where appropriate, the information given in Annex B.

SCHEDULE OF ANNEXES

ANNEX A: CONTRACTOR'S ORGANISATION AND MANAGEMENT

ANNEX B: CONTRACTOR'S METHOD STATEMENTS AND CONSTRUCTION PROCEDURES

ANNEX C: CONTRACTOR'S CONSTRUCTION QUALITY CONTROL

ANNEX D: ORGANISATIONS’ QUALITY PLANS

ANNEX A: CONTRACTOR'S ORGANISATION AND MANAGEMENT

This section of the Quality Plan shall include:

1. Definition of the Contract and its documentation.

2. The organisation of the Contract including the line of command and communication links between parties involved in the Contract.

3. Names, roles, responsibilities and authority of principals and key personnel.

4. Control of liaison and meetings with third parties.

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

6. The Contractor's control of sub-contracts.

7. Document control.

8. Programme for submission of method statements and Organisations Quality Plans.

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

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

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

11. Control and approval of purchases of materials.

12. Control of off-site activities (where appropriate).

13. Procedures for the regular review and recording by the Contractor of the quality of the Works.

14. Control of personnel selection, based on their care, skill and experience.

15. Management review/audits to monitor and exercise adequate control over the implementation of the quality plan.

16. Any other relevant item.

ANNEX B: CONTRACTOR'S METHOD STATEMENTS AND CONSTRUCTION

PROCEDURES

This section of the Quality Plan shall include:

1. Detailed method statements for each major activity, whether directly controlled or sub-contracted.

The method statements shall identify hold points and invoke:

- work instructions,

- quality control procedures,

- compliance testing/inspection arrangements,

- work acceptance procedures.

for all activities that might affect the quality of the permanent and temporary works.

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

ANNEX C: CONTRACTOR'S CONSTRUCTION QUALITY CONTROL

This section of the Quality Plan shall include:

1. Statement of the Contractor's organisation for quality control.

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

2. Arrangements for 'receiving' and 'in-process' testing.

3. Control of test laboratories.

4. Control of test, measuring and inspection equipment.

5. Document control.

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

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

8. Procedure for the review of Work submitted for review but not accepted as conforming to the Contract.

9. Procedure for the collation of quality records as identified in BS EN ISO 9001, and provision of copies when requested by the Overseeing Organisation.

ANNEX D: ORGANISATIONS’ QUALITY PLANS

The Quality Plan shall include:

1 Definition of the product or service to be provided.

2 The organisation organogram shall describe the line of command and state the name of the senior manager responsible for the contracted Work and the name of the Organisation’s on-site management representative. Contact addresses, telephone numbers etc. shall be provided.

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

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

Specific procedures for the following:

5\* Receipt and examination of certificates of conformity and test results for purchased products and transmission to the Overseeing Organisation on request.

6\* Product identification and traceability.

7\* Handling, storage, packaging and delivery to Site and storage and handling on Site.

8 Quality records.

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

APPENDIX 1/85: NIGHT WORK

1/85.1 Work outside normal operational hours will often be required and desirable for certain Task Orders.

Options for night working will be detailed and discussed at the earliest opportunity with the Overseeing Organisation and the Streetworks Team

The statement made above does not relieve the Contractor of his responsibility for "Timing of Operations" shown in Appendix 1/17.

1/85.2 For the purpose of this Appendix the night is defined as the period between 19:00 hrs and 07:00 hrs unless stated otherwise in the Task Order.

1/85.3 All works that may be disruptive to the public and local residents that are planned to be undertaken outside normal working hours will be discussed and agreed with the local Environmental Health Officer for the relevant District, Borough or City Council.

APPENDIX 1/86: SECTIONAL COMPLETION

1/86.1 Any sectional completion of the service shall be identified in the Task Order

APPENDIX 1/88: COMPLETION

1/88.1 General

i) Pursuant to Clause 11.2 (2) of the Conditions of Contract, Completion is when the contractor has met all of the conditions listed in the following table.

The table is divided into the individual sections of the Specification plus any other significant features.

| **Element** | **Requirements for Completion** |
| --- | --- |
| Preliminaries and Traffic Management | Provision of all testing and quality Records  All specified works involving services and supplies must be completed  All Traffic Management has been removed |
| Drainage, Earthworks, Pavements, Road Markings and Loop Detectors | All works defined in the Task Order are completed |
| Completion Certificate | Completion certificate has been issued by the Contractor and agreed & signed by the Overseeing Organisation as completed. |

**APPENDIX 1/89: HEALTH AND SAFETY FILE**

1/89.1 General

The Contractor shall provide the following information for the Health and Safety File.

1. Any restrictions on access and significant or difficult to manage hazards which may affect future maintenance or demolition work
2. Copies of all manufacturers’ information relating to the installation, operation, maintenance, removal and disposal of equipment installed under the Contract
3. Site testing data, including but not limited to, delivery tickets, laying records, intelligent roller outputs, results of sand patch testing, density measurements and rolling strait edge tests.

1/89.2 The information shall be provided in a hard copy format and in Word format and .pdf for any attachments

1/89.3 The information shall be provided within four weeks of Completion to either the Overseeing Organisation or the Principal Designer.

APPENDIX 2/3 MATERIAL TO BE RETAINED

2/3.1 Schedules of Material to be Retained

Any materials to be retained shall be identified in the Task Order unless otherwise stated

APPENDIX 2/4: EXPLOSIVES AND BLASTING

2/4.1 General

a) The Contractor's attention is drawn to the measures for the control of noise and vibration which are included in Appendix 1/9.

b) Explosives shall not be used for works within this Contract.

APPENDIX 2/5: HAZARDOUS MATERIALS

2/5.1 General

1. No hazardous materials are expected to be encountered within the Site.
2. Should the Contractor identify any such hazardous materials the Contractor shall report it immediately to the Overseeing Organisation and make the site safe.

APPENDIX 3/1: FENCING, GATES AND STILES

**1 Temporary Fencing**

1. Requirements for temporary fencing if different from requirements of appendix 1/17 shall be as detailed in the task order

**Appendix 5/1: Drainage**

EN Standard compliance

1. Access Covers and Frames shall:

* be made of non-malleable spheroidal graphite cast iron (ductile iron) grade 500/7 in accordance with EN1563 : 2011
* have a minimum classification of D400 for all installations in the carriageway unless otherwise specified by the adopting authority
* have product conformity certificates to BS EN 124 that are issued by a UKAS accredited certification body [e.g. BSI Kite Marked], This body shall have both EN 45011 & EN 45012 within its scope,
* be tested by a UKAS accredited or UKAS accepted third-party organisation that has BS EN 124 within its scope,
* bear visible, durable and integral markings required by EN 124 as defined in **Chapter 9 Marking**

Additional standard / guidelines / advice notes requirements

1. In addition gully grates and frames shall be compliant with the requirements of Highway Agency Guidance Note **HA104/09** ***Chamber Tops and Gully Tops For Road Drainage & Services: Installation & Maintenance***, more particularly: ***Chapter 4 Design Requirements Manhole Tops***

* The access cover and frame shall achieve silence in operation by means of a double triangular cover system, based on the three point suspension principle.
* The depth of insertion of the cover within the frame shall not be less than 50mm. If the security of the chamber cover within the frame relies upon the depth of insertion only, the depth of insertion shall be increased to a minimum of 80 mm.
* The bedding flange shall have a minimum thickness of 5 mm.
* The frame depth shall be 150mm.
* Where vertical frame stiffening webs/gussets are provided, they shall be located adjacent to seatings.
* For openings with corners, external corners of the frame should be solid (unless it can be demonstrated to the Overseeing Organisation that the inclusion of holes does not reduce the structural integrity of the system) and may be square, curved or chamfered but at no point should the width be less than the minimum bedding width.
* Frames should not contain holes within the seating areas of the bedding flanges beneath the cover seatings. Any holes within the bedding area of the frame should be minimal and should not reduce the specified bearing area of the frame.
* Frames should have an overall minimum bedding width of 50 mm of metal.
* The frame bearing area should be designed in such a way that the nominal bearing pressure in relation to the test load (BS EN 124) should not exceed 2.1N/mm2.

1. To improve the durability of the installation the frame shall feature a system to reduce stress in the substructure by 50%. Evidence must be provided to demonstrate this.
2. The product must incorporate a system that allows the installer to carry out an enhanced installation technique by:

* Allowing frame height and gradient adjustment of between 15mm and 50mm
* Giving a visual indication of the optimal bedding material depth above the flange of 20mm
* Ensuring a minimum depth of bedding material of 15mm below the flange is achieved

1. To ensure a durable installation, the flange of the frame shall feature as standard a system to ensure improved bedding mortar adhesion.
2. The PSRV (Polished Slip Resistance Value) shall be above 70 in order to mitigate the risk of vehicles skidding on the cover.
3. The chequer density shall be a minimum of 13%.
4. Products shall be manufactured by a company whose quality management system complies with and is Third Party verified and kite marked to the requirements of BS EN ISO9001:2008.
5. Products shall be manufactured by a company whose Environmental Management System complies with and is Third Party verified and kite marked to the requirements of BS EN 14001:2004
6. Products shall be manufactured by a company who has been awarded certification to an ISO accredited carbon reduction and management programme e.g. CEMARS, which has been independently assessed in compliance with ISO 14064-1:2006
7. The company shall have conducted a life cycle analysis of its products in accordance with ISO 14025 and created the resulting Type 3 Environmental Product Declaration (EPD) in accordance with EN15804
8. The company shall have achieved compliance to the requirements of BES:6001 Responsible Sourcing of Construction Products
9. The company shall have achieved or is seeking to achieve accreditation to OHAS:18001 (Occupational Health and Safety).
10. All access covers and frames components shall be coated in black water based paint containing no VOC’s.
11. Bedding material when undertaking installation must be a resin mortar, or a HAPAS approved alternative, to carry out the plugging of the inside edge of the frame. The bedding must exhibit the following properties:

* the compressive strength of the material should reach 60N/mm2 in 1 hour
* the tensile strength of the material should exceed 7N/mm2 in 1 hour

Evidence must be provided to demonstrate the strength characteristics.

1. The flowable bedding material must be a resin mortar, or a HAPAS approved alternative. The bedding must exhibit the following properties:

* the compressive strength of the material should exceed 60N/mm2 in 1 hour
* the tensile strength of the material should exceed 7N/mm2 in 1 hour

Evidence must be provided to demonstrate the strength characteristics.

EARTHWORKS

APPENDIX 6/1

APPENDIX 6/1: REQUIREMENTS FOR ACCEPTABILITY

AND TESTING ETC. OF EARTHWORKS MATERIALS

6/1.1 General

1. Excavated material from existing filter drains may be used in areas of fill providing that the criteria given in Table 6/1 are satisfied.
2. Trial holes in any material other than hard material shall include separating materials during excavation, backfilling with acceptable material and its compaction and finishing with 150 mm of top soil as the adjacent area dictates.
3. Trial holes in hard material shall include reinstatement of the hole with materials and thicknesses to be compatible with adjacent construction materials.

6/1.2 Requirements for Acceptability & Testing etc. of Earthworks Materials

Classes of Acceptable Material

1. Acceptable material for use as general fill shall comply with the requirements for Classes 1A and 1B of Table 6/1 and the additional requirements of this Appendix. It shall not contain any unacceptable material as defined in Clause 601.
2. Notwithstanding the requirements of Table 6/2 up to 5 per cent of the material may be made up of isolated boulders not exceeding 15 dm3 in size provided that the fill can be compacted in the manner specified in Clause 612.
3. The moisture content of the material shall be within the range:
4. Class 1A Lower : Optimum MC -4%

Upper : Optimum MC +2%

1. Class 1B Lower : Optimum MC -3%

Upper : Optimum MC +1%

1. The Contractor's responsibility for testing is detailed in Appendix 1/5.

6/1.3 Special Requirements for Determining Acceptability

1. The use of well-burnt or un-burnt colliery shale, slag, or any other industrial waste containing more than 0.2 per cent sulphate ion as determined by BS 1377 shall be subject to the following conditions:
2. The amount of organic matter in the material which shall be determined by loss on ignition at 1000°C shall not exceed 4 per cent.
3. Slag to be placed within 1 metre of finished road level shall comply with the stability requirements BS EN 12620 against iron and 'dicalcium silicate' unsoundness.
4. The aggregate crushing value of the material shall not exceed 30 when tested in accordance with BS 812:Part 110.

EARTHWORKS

APPENDIX 6/1

6/1.3 Special Requirements for Determining Acceptability (continued)

1. Earthworks classification will be made by the Overseeing Organisation in areas of cut.
2. If, in the opinion of the Overseeing Organisation any material has altered its classification or become unacceptable for whatever reason, the Overseeing Organisation may require the classification and acceptability tests to be repeated.
3. Sampling of materials by the Contractor for earthworks classification testing will normally be undertaken in conjunction with the Overseeing Organisation. The Overseeing Organisation shall be notified of the intention to sample at least 1 hour in advance, at which time the Overseeing Organisation may give approval for sole sampling by the Contractor.
4. Earthworks classification will be made by the Overseeing Organisation at the point of excavation for on-site materials, or at the point of deposition for imported materials.

6/1.4 The Rapid Assessment Procedure for Material Acceptability

The rapid assessment procedure for determining the acceptability of materials, in accordance with BS 1377:Part 4, may be used at the discretion of the Overseeing Organisation.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **TABLE 6/1 SR:** Acceptable Earthworks Materials: Classification and Compaction Requirements | | | | | | | | | | | | | | | | | |
| **Class** | | | | **General Material Description** | **Typical Use** | **Permitted Constituents (All Subject to Requirements of Clause 601, sub clause 601.1 and the Task Order)** | **Material Properties Required for Acceptability (In Addition to Requirements on Use of Fill Materials in Clause 601 sub clause 601.1 and Testing in Clause 631 and sub clause 631.1)** | | | | | | | **Compaction Requirements in Clause 612 and sub clause 612.12** | **Class** | | |
| **Property (See Exceptions in Previous Column)** | **Defined and Tested in Accordance with:** | | **Acceptable Limits Within:** | | | |
| **Lower** | | **Upper** | |
| S E L E C T E D  G R A N U L A R  F I L L | 6 | G | - | Selected granular material | Gabion filling | Natural gravel, crushed rock or any combination thereof. None of these constituents shall include any argillaceous rock. | (i) grading | BS 1377 : Part 2 (On-site) | | Tab 6/2 | | Tab 6/2 | | None | 6 | G | - |
| BS EN 933-2 (Off-site) | | Tab 6/5 | | Tab 6/5 | |
| (ii) Los Angeles coefficient | | Clause 635 | | - | | 50 |
| (iii) pH value | | BS 1377: Part 3 | | Tab 6/3 | | Tab 6/3 |
| (iv) Chloride | | BS EN 1744-1 | | - | | Tab 6/3 |
| (v) Water-soluble sulphate | | TRL Report 447 Test No 1 | | - | | Tab 6/3 |
| (vi) Oxidisable sulphate content | | TRL Report 447 Test No 2 & 4 | | - | | Tab 6/3 |

APPENDIX 6/2: REQUIREMENTS FOR DEALING WITH CLASS UIB AND CLASS U2 UNACCEPTABLE MATERIALS

6/2.1 Drawing References for Excavation and Disposal of Known Class UIB and Class U2 Material

Will be identified in the Task order

6/2.2 Requirements of Environmental Authority for Disposal including Specific Sites

Will be identified in the Task order

6/2.3 Known Hazardous Materials likely to be Encountered

Will be identified in the Task order

6/2.4 Methods of Excavation, Precautions and Requirements for Handling

Any exceptional methods etc. to be advised in the Task Order

6/2.5 Special Requirements for dealing with Leachate and Contaminated Water

To be advised in the Task Order after discussions with the EA.

6/2.6 Requirements for Special Drainage and for Sealing Exposed Surfaces of Contaminated Materials

Will be identified in the Task order

6/2.7 Testing

The testing methods for chemical analysis of hazardous materials, leachate and contaminated water shall be as shown in Appendix 1/5.

APPENDIX 6/3: REQUIREMENTS FOR EXCAVATION, DEPOSITION, COMPACTION (OTHER THAN DYNAMIC COMPACTION)

6/3.1 Earthworks Requirements

a) The earthworks requirements shall be as shown on the Task Order

6/3.2 Blasting for Excavation

a) Blasting is not permitted within this Contract.

6/3.3 Cutting Faces

a) Open trench excavations for pipe installations at the toe of slopes shall not exceed 10.0m in any one continuous length. A minimum of a 10.0m length shall be left unopened between lengths of opened trench.

b) For faces of cuttings prior to topsoiling, isolated patches of soft, fragmented or insecure material will be excavated and filled by well ramming in a Class of fill with similar characteristics to the surrounding intact material.

6/3.5 Embankment Construction

a) The Contractor will not be permitted either to oversteepen a batter by more than 10% steeper than the specified permanent slope batter or widen an embankment by more than H/5 (where H = embankment height) either to permit adequate compaction of the edges before trimming back or to obtain the final profile following any settlement of the fill.

b) For those sections of embankment where the Contractor chooses not to lay the full thickness of capping (or subbase where there is no capping) immediately after forming the sub-formation (or formation where there is no capping), an additional 300mm minimum compacted thickness of material of the same composition as the sub-formation (or formation where there is no capping), will be placed above sub-formation level (or formation level where there is no capping), as a weather protection layer.

6/3.6 End-product Compaction

a) For End-product compaction, the Contractor will be permitted to use nuclear methods to determine field dry density provided that he can demonstrate at a site trial in advance of the main earthworks, to the Overseeing Organisation’s satisfaction, that correlations with the standard test (BS 1377-9) are valid and repeatable for all Classes of material for which the Contractor proposes to use nuclear gauges for testing in the Contract.

6/3.7 Field Dry Density Testing

The frequency of testing of field dry density shall be as shown in Appendix 1/5.

APPENDIX 6/5: GEOTEXTILES USED TO SEPARATE EARTHWORKS MATERIALS

6/5.1 Requirements for Geotextiles

a) Geotextiles for separation layers shall be as shown on the Task Order

b) The material used for separation layers shall be Terram 1000 or equivalent polymer base non-woven fabric.

c) The geotextile shall have a minimum life expectancy of 10 years.

d) The Manufacturers Certificate of Compliance is required for each batch. Samples shall be supplied by the Contractor up to a maximum of 5 samples.

e) The area upon which the membrane is to be laid shall be rolled by one pass of a smooth wheeled roller having a mass per metre width of roll of not less than 700 kg.

f) Where lapping is employed adjacent sheets shall be overlapped by not less than 300mm or by such greater figure recommended by the manufacturer.

g) Test pieces and samples shall be retained by the Contractor until the date completion is certified when they shall be delivered to the Overseeing Organisation.

h) The number of tests on samples shall be as described in Appendix 1/5.

APPENDIX 6/6: FILL TO STRUCTURES AND FILL ABOVE STRUCTURAL FOUNDATIONS

6/6.1 General

a) Fill to Structures and Fill above Structural foundations shall be as shown on the Task Order

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

6/7.1 General

1. Capping shall be provided at the locations shown on the Task order
2. The capping layer shall advised on a Task order by Task Order basis.

6/7.2 Class of Material

6/7.3 Capping Construction

1. Construction of the capping layer shall be in accordance with Clauses 613.11(i) in cuttings and 613.12(i) on embankments.

6/7.4 Method Statement and Demonstration Area

At least 4 weeks before the laying of the material the Contractor shall submit to the Overseeing Organisation a Method Statement together with the material sources. The first 700 m2 of capping construction shall be considered a demonstration area in accordance with Clause 613 and shall only remain as part of the Permanent Works if fully meeting the requirements of the Contract.

6/7.5 Traffickability

1. Capping materials selected and laid in accordance with Tables 6/1 and 6/2 have been designed for long term support for the pavement foundation. Selection of materials for long term support does not imply capability for efficient and economic temporary support for the Contractor's chosen plant for laying and compaction, nor does it imply that the capping material will form an effective base for a haul road for transport of material through the site. The Contractor must make his own judgement on his traffickability requirements for material he selects for capping which may imply that not all material within the permitted gradings in Table 6/2 will meet his requirements for an efficient platform for construction plant.

6/7.6 Recycled Capping Materials

1. The permitted constituents of selected granular material for capping include recycled materials (for example, crushed concrete). Not more than 5% by weight of contaminants (for example, brick fragments in crushed concrete) will be permitted which must not include any organic, perishable, combustible, deleterious or hazardous materials.

APPENDIX 6/8: TOPSOILING

6/8.1 Topsoil Removal

1. The locations and depths of topsoil stripping shall be as stated on the Task Order
2. Topsoil shall be stripped as turf will be detailed in the Task Order

6/8.2 Areas where Topsoil to Remain

The Task Order will show those areas of the Site where the existing vegetation and topsoil are not to be removed prior to embankment construction

6/8.3 Topsoil Storage

All topsoil excavated from within the Site which is surplus to the requirements for resoiling shall remain on Site. the Task order shows details of the locations, height, contours and batter slopes where the surplus material is to be stored.

6/8.4 Topsoiling General Requirements

1. The Task Order shows the location and depths of topsoiling required.
2. Topsoil shall not be spread using a tracked vehicle.
3. Imported topsoil Class 5B shall be permitted.

6/8.5 Stockpiles

1. Topsoil excavated from stockpiles shall comply with the requirements of Clause 618.3.
2. The cumulative rainfall figure shall be measured as stated on the Task Order.
3. Topsoil shall be stored in stockpiles not exceeding 2m high.

APPENDIX 6/86: GEOSYNTHETICS USED TO REINFORCE EARTHWORKS MATERIALS OR FOR OTHER FUNCTIONS

6/86.1 Requirements for geosynthetic materials

a) Geosynthetics for reinforcement shall be as shown on the Task Order

b) Geosynthetics for other functions shall be as shown on the Task Order

c) The minimum life expectancy shall be:

i) 60 years for geosynthetics for soil reinforcement

ii) 120 years for geosynthetics for reinforced earth structures

iii) 60 years for geosynthetics for other functions.

d) Overlapping of adjacent geosynthetic strips will not be permitted.

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

**GENERAL REQUIREMENTS FOR CONSTRUCTION MATERIALS**

| **Schedule 4: General Requirements for Construction Materials** | |
| --- | --- |
| **Clause** | **Requirement** |
| 903.27 | A minimum PSV of 55 is required for any temporary running surface. |

**PERMITTED PAVEMENT OPTIONS – ASPHALT MATERIALS FOR SURFACE COURSES IN FLEXIBLE, RIGID AND COMPOSITE CONSTRUCTION**

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| **S1 - HRA 35/14 surf PMB des WTR1 +PCC 14/20 - Hot Rolled Asphalt Surface Course With Pre-Coated Chippings (Performance Related Design Mix)** |

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| --- | --- | --- |
| 1 | Location: | As instructed in Task Order |
| 2 | Surface texture | Minimum initial and retained texture shall be in accordance with clause 921SR.  Minimum texture requirements shall be as instructed in Task Order. Where not specified in task order, the material shall have medium texture requirements. |
| 3 | Material Information |  |
|  | Layer | Surface Course |
|  | Material: | HRA 35/14 surf PMB des WTR1 |
|  | Clause: | 943 |
|  | Binder: | The binder shall be a premium polymer modified binder complying with EN 14023 and with Clause 943 subclauses 3 and 4. It shall have minimum softening point of 75°C. |
|  | Thickness: | 45mm plus or minus thickness adjustments as per Task Order |
|  | Special Requirements: | Material shall comply with BS EN 13108-4. The mix design shall be in accordance with PD6691 Annex C |
|  | Rutting Resistance | The deformation resistance of the mix shall be Class 1 in accordance with PD 6691: Table C.3. |
|  | Coarse Aggregate: | Crushed rock or slag only excluding limestone. Adhesion agent required if quartzite, basalt or other igneous rock.  The water absorption of the coarse aggregate shall not exceed 2% measured by tests to BS EN 1097-6 |
|  | Fine Aggregate: | Crushed rock and/or natural sand mixture |
| 4 | 14/20 Pre-Coated Chippings |  |
|  | General Requirements | Chippings complying with Clause 915 shall be applied to the surface by a machine spreader at a minimum rate of spread to achieve at least 70% shoulder to shoulder cover as described in BS 594987 Clause 7. Chippings shall be rolled into the surface with a steel-wheeled roller without vibration  Chippings shall have Ten Percent Fines value in the range 220 to 320 kN measured dry. |
|  | Minimum PSV: | Minimum PSV shall be as instructed in Task Order. Where not specified in task order, minimum PSV shall be 60 |
|  | Maximum AAV: | 12 |
| 5 | Installation |  |
|  | General Requirements | The delivery temperatures and the minimum rolling temperature shall be in accordance with the bitumen supplier’s guidelines for the product.  Material shall not be laid when the combination of wind speed and temperature is within the ‘may not lay’ zone in Clause 945 Figure 9/1, or in the case of polymer modified binder, such more onerous requirements as the binder supplier requires.  The absolute minimum thickness at any point shall be not less than 35mm.  The deformation resistance after installation shall be determined as described in Clause 943 for each site |

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| **S2 - HRA 35/14 surf PMB des WTR2 +PCC 14/20 - Hot Rolled Asphalt Surface Course with pre-coated chippings (performance related design mix)** |

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| --- | --- | --- |
| 1 | Location: | As instructed in Task Order |
| 2 | Surface texture | Minimum initial and retained texture shall be in accordance with clause 921SR.  Minimum texture requirements shall be as instructed in Task Order. Where not specified in task order, the material shall have medium texture requirements. |
| 3 | Material Information |  |
|  | Layer | Surface Course |
|  | Material: | HRA 35/14 surf PMB des WTR2 |
|  | Clause: | 943 |
|  | Binder: | The binder shall be a premium polymer modified binder complying with EN 14023 and with Clause 943 subclauses 3 and 4.  It shall have minimum softening point of 75°C. |
|  | Thickness: | 45mm plus or minus thickness adjustments as per Task Order |
|  | Rutting Resistance | The deformation resistance of the mix shall be Class 2 in accordance with PD 6691: Table C.3. |
|  | Special Requirements: | Material shall comply with BS EN 13108-4. The mix design shall be in accordance with PD6691 Annex C |
|  | Coarse Aggregate: | Crushed rock or slag only excluding limestone. Adhesion agent required if quartzite, basalt or other igneous rock.  The water absorption of the coarse aggregate shall not exceed 2% measured by tests to BS EN 1097-6 |
|  | Fine Aggregate: | Crushed rock and/or natural sand mixture |
| 4 | 14/20 Pre-Coated Chippings |  |
|  | General Requirements | Chippings complying with Clause 915 shall be applied to the surface by a machine spreader at a minimum rate of spread to achieve at least 70% shoulder to shoulder cover as described in BS 594987 Clause 7. Chippings shall be rolled into the surface with a steel-wheeled roller without vibration  Chippings shall have Ten Percent Fines value in the range 220 to 320 kN measured dry. |
|  | Minimum PSV: | Minimum PSV shall be as instructed in Task Order. Where not specified in task order, minimum PSV shall be 60 |
|  | Maximum AAV: | 12 |
| 5 | Installation |  |
|  | General Requirements | The delivery temperatures and the minimum rolling temperature shall be in accordance with the bitumen supplier’s guidelines for the product.  Material shall not be laid when the combination of wind speed and temperature is within the ‘may not lay’ zone in Clause 945 Figure 9/1, or in the case of polymer modified binder, such more onerous requirements as the binder supplier requires.  The absolute minimum thickness at any point shall be not less than 35mm.  The deformation resistance after installation shall be determined as described in Clause 943 for each site |

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| **S3 - HRA 35/14 surf PMB des WTR2 +PCC 14/20 - Hot Rolled Asphalt Surface Course with pre-coated chippings (performance related design mix)** |

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| 1 | Location: | As instructed in Task Order – This material shall be used on roundabout gyratory carriageways only |
| 2 | Surface texture | Minimum initial and retained texture shall be in accordance with clause 921SR.  Minimum texture requirements shall be as instructed in Task Order. Where not specified in task order, the material shall have medium texture requirements. |
| 3 | Material Information |  |
|  | Layer | Surface Course |
|  | Material: | HRA 35/14 surf PMB des WTR2 |
|  | Clause: | 943 |
|  | Binder: | The binder shall be a premium polymer modified binder complying with EN 14023 and with Clause 943 subclauses 3 and 4.  It shall have minimum softening point of 75°C. |
|  | Thickness: | 45mm plus or minus thickness adjustments as per Task Order |
|  | Rutting Resistance | The deformation resistance of the mix shall be Class 2 in accordance with PD 6691: Table C.3. |
|  | Special Requirements: | Material shall comply with BS EN 13108-4. The mix design shall be in accordance with PD6691 Annex C |
|  | Coarse Aggregate: | Crushed rock or slag only excluding limestone. Adhesion agent required if quartzite, basalt or other igneous rock.  The water absorption of the coarse aggregate shall not exceed 2% measured by tests to BS EN 1097-6 |
|  | Fine Aggregate: | Crushed rock and/or natural sand mixture |
| 4 | 14/20 Pre-Coated Chippings |  |
|  | General Requirements | Chippings complying with Clause 915 shall be applied to the surface by a machine spreader at a minimum rate of spread to achieve at least 70% shoulder to shoulder cover as described in BS 594987 Clause 7. Chippings shall be rolled into the surface with a steel-wheeled roller without vibration  Chippings shall have Ten Percent Fines value in the range 220 to 320 kN measured dry. |
|  | Minimum PSV: | Minimum PSV shall be as instructed in Task Order. Where not specified in task order, minimum PSV shall be 60 |
|  | Maximum AAV: | 12 |
| 5 | Installation |  |
|  | General Requirements | The delivery temperatures and the minimum rolling temperature shall be in accordance with the bitumen supplier’s guidelines for the product.  Material shall not be laid when the combination of wind speed and temperature is within the ‘may not lay’ zone in Clause 945 Figure 9/1, or in the case of polymer modified binder, such more onerous requirements as the binder supplier requires.  The absolute minimum thickness at any point shall be not less than 35mm.  The deformation resistance after installation shall be determined as described in Clause 943 for each site |

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| **S4 - HRA 55/10 surf PMB des WTR1 - Hot Rolled Asphalt Surface Course (design mix)** |

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| 1 | Location: | As instructed in Task Order |
| 2 | Surface texture | Minimum initial and retained texture shall be in accordance with clause 921SR.  Minimum texture requirements shall be as instructed in Task Order  Where not specified in task order, the material shall have low texture requirements. |
| 3 | Material Information |  |
|  | Layer | Surface Course |
|  | Material: | HRA 55/10 F surf PMB des WTR1 |
|  | Clause: | 911 |
|  | Binder: | The binder shall be a premium polymer modified binder complying with EN 14023 and with Clause 943 subclauses 3 and 4. It shall have minimum softening point of 75°C. |
|  | Thickness: | 40mm plus or minus thickness adjustments as per Task Order |
|  | Special requirements: | Material shall comply with BS EN 13108-4  The mix design shall be in accordance with PD6691 Annex C |
|  | Rutting Resistance | The deformation resistance of the mix shall be Class 1 in accordance with PD 6691: Table C.3. |
|  | Coarse Aggregate: | Crushed rock or slag only excluding limestone. Adhesion agent required if quartzite, basalt or other igneous rock.  The water absorption of the coarse aggregate shall not exceed 2% measured by tests to BS EN 1097-6 |
|  | Fine Aggregate: | Crushed rock and/or natural sand mixture, containing at least 20% of crushed rock fines from a source with a minimum PSV of 60 |
|  | Minimum PSV: | Minimum PSV shall be as instructed in Task Order.  Where not specified in task order, minimum PSV shall be 60 |
|  | Maximum AAV: | 10 |
| 4 | Installation |  |
|  | General Requirements | The delivery temperatures and the minimum rolling temperature shall be in accordance with the bitumen supplier’s guidelines for the product.  Material shall not be laid when the combination of wind speed and temperature is within the ‘may not lay’ zone in Clause 945 Figure 9/1 and such more onerous requirements as the binder supplier requires.  The absolute minimum thickness at any point shall be not less than 25mm.  The deformation resistance after installation shall be determined as described in Clause 943 for each site  Grit as described in Clause 935AR shall be applied to the surface during installation.  After 3 months and before 12 months after the date of installation the SCRIM coefficient or equivalent GripNumber shall be measured on all sites in each direction in the wheelpath, and the values declared to the Overseeing Organisation within 4 weeks of taking the measurements |

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| **S5 - HRA 55/10 surf PMB des WTR2 - Hot Rolled Asphalt Surface Course (design mix)** |

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| 1 | Location: | As instructed in Task Order |
| 2 | Surface texture | Minimum initial and retained texture shall be in accordance with clause 921SR.  Minimum texture requirements shall be as instructed in Task Order  Where not specified in task order, the material shall have low texture requirements. |
| 3 | Material Information |  |
|  | Layer | Surface Course |
|  | Material: | HRA 55/10 F surf PMB des WTR2 |
|  | Clause: | 911 |
|  | Binder: | The binder shall be a premium polymer modified binder complying with EN 14023 and with Clause 943 subclauses 3 and 4. It shall have minimum softening point of 75°C. |
|  | Thickness: | 40mm plus or minus thickness adjustments as per Task Order |
|  | Special requirements: | Material shall comply with BS EN 13108-4  The mix design shall be in accordance with PD6691 Annex C |
|  | Rutting Resistance | The deformation resistance of the mix shall be Class 2 in accordance with PD 6691: Table C.3. |
|  | Coarse Aggregate: | Crushed rock or slag only excluding limestone. Adhesion agent required if quartzite, basalt or other igneous rock.  The water absorption of the coarse aggregate shall not exceed 2% measured by tests to BS EN 1097-6 |
|  | Fine Aggregate: | Crushed rock and/or natural sand mixture, containing at least 20% of crushed rock fines from a source with a minimum PSV of 60 |
|  | Minimum PSV: | Minimum PSV shall be as instructed in Task Order.  Where not specified in task order, minimum PSV shall be 60 |
|  | Maximum AAV: | 10 |
| 4 | Installation |  |
|  | General Requirements | The delivery temperatures and the minimum rolling temperature shall be in accordance with the bitumen supplier’s guidelines for the product.  Material shall not be laid when the combination of wind speed and temperature is within the ‘may not lay’ zone in Clause 945 Figure 9/1 and such more onerous requirements as the binder supplier requires.  The absolute minimum thickness at any point shall be not less than 25mm.  The deformation resistance after installation shall be determined as described in Clause 943 for each site  Grit as described in Clause 935AR shall be applied to the surface during installation.  After 3 months and before 12 months after the date of installation the SCRIM coefficient or equivalent GripNumber shall be measured on all sites in each direction in the wheelpath, and the values declared to the Overseeing Organisation within 4 weeks of taking the measurements |

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| **S6 - SMA 10 surf 40/60 WTR1 - Stone Mastic Asphalt Surface Course** |

|  |  |  |
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| 1 | Location: | As instructed in Task Order |
| 2 | Surface texture | Minimum initial and retained texture shall be in accordance with clause 921SR.  Minimum texture requirements shall be as instructed in Task Order  Where not specified in task order, the material shall have medium texture requirements. |
| 3 | Material Information |  |
|  | Layer | Surface Course |
|  | Material: | SMA 10 surf 40/60 WTR1 |
|  | Clause: | 971AR |
|  | Binder: | The grade of binder shall be 40/60 paving bitumen or a polymer modified binder to achieve the required wheel tracking and crack resistance performance |
|  | Thickness: | 40mm, plus or minus thickness adjustments as per Task Order |
|  | Special requirements: | Material shall comply with BS EN 13108-5  The mix design shall be in accordance with PD6691 Annex D |
|  | Rutting Resistance | The deformation resistance of the mix shall be Class 1 in accordance with PD 6691: Table D.2. |
|  | Coarse Aggregate: | Crushed rock or slag only excluding limestone. Adhesion agent required if quartzite, basalt or other igneous rock.  The water absorption of the coarse aggregate shall not exceed 2% measured by tests to BS EN 1097-6 |
|  | Fine Aggregate: | Crushed rock and/or natural sand mixture |
|  | Minimum PSV: | Minimum PSV shall be as instructed in Task Order.  Where not specified in task order, minimum PSV shall be 60 |
|  | Maximum AAV: | 12 |
| 4 | Installation |  |
|  | General Requirements | The delivery and rolling temperatures shall be as described in BS 594987 Table A.1 for ‘surf’ and the grade of binder 40/60, or as notified by the binder supplier for polymer modified binder PMB.  Material shall not be laid when the combination of wind speed and temperature is within the ‘may not lay’ zone in Clause 945 Figure 9/1 and such more onerous requirements as the binder supplier requires.  The absolute minimum thickness at any point shall be not less than 25mm.  The deformation resistance after installation shall be determined as described in Clause 943 for each site  Grit as described in Clause 935AR shall be applied to the surface during installation. |

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| **S7 - SMA 10 surf 40/60 WTR2 - Stone Mastic Asphalt Surface Course** |

|  |  |  |
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| 1 | Location: | As instructed in Task Order |
| 2 | Surface texture | Minimum initial and retained texture shall be in accordance with clause 921SR.  Minimum texture requirements shall be as instructed in Task Order  Where not specified in task order, the material shall have medium texture requirements. |
| 3 | Material Information |  |
|  | Layer | Surface Course |
|  | Material: | SMA 10 surf 40/60 WTR2 |
|  | Clause: | 971AR |
|  | Binder: | The grade of binder shall be 40/60 paving bitumen or a polymer modified binder to achieve the required wheel tracking and crack resistance performance |
|  | Thickness: | 40mm, plus or minus thickness adjustments as per Task Order |
|  | Special requirements: | Material shall comply with BS EN 13108-5  The mix design shall be in accordance with PD6691 Annex D |
|  | Rutting Resistance | The deformation resistance of the mix shall be Class 2 in accordance with PD 6691: Table D.2. |
|  | Coarse Aggregate: | Crushed rock or slag only excluding limestone. Adhesion agent required if quartzite, basalt or other igneous rock.  The water absorption of the coarse aggregate shall not exceed 2% measured by tests to BS EN 1097-6 |
|  | Fine Aggregate: | Crushed rock and/or natural sand mixture |
|  | Minimum PSV: | Minimum PSV shall be as instructed in Task Order.  Where not specified in task order, minimum PSV shall be 60 |
|  | Maximum AAV: | 12 |
| 4 | Installation |  |
|  | General Requirements | The delivery and rolling temperatures shall be as described in BS 594987 Table A.1 for ‘surf’ and the grade of binder 40/60, or as notified by the binder supplier for polymer modified binder PMB.  Material shall not be laid when the combination of wind speed and temperature is within the ‘may not lay’ zone in Clause 945 Figure 9/1 and such more onerous requirements as the binder supplier requires.  The absolute minimum thickness at any point shall be not less than 25mm.  The deformation resistance after installation shall be determined as described in Clause 943 for each site  Grit as described in Clause 935AR shall be applied to the surface during installation. |

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| **S8 - SMA 6 surf 40/60 WTR1 - Stone Mastic Asphalt Surface Course** |

|  |  |  |
| --- | --- | --- |
| 1 | Location: | As instructed in Task Order |
| 2 | Surface texture | Minimum initial and retained texture shall be in accordance with clause 921SR.  Minimum texture requirements shall be as instructed in Task Order  Where not specified in task order, the material shall have medium texture requirements. |
| 3 | Material Information |  |
|  | Layer | Surface Course |
|  | Material: | SMA 6 surf 40/60 WTR1 |
|  | Clause: | 971AR |
|  | Binder: | The grade of binder shall be 40/60 paving bitumen or a polymer modified binder to achieve the required wheel tracking and crack resistance performance |
|  | Thickness: | 35mm plus or minus thickness adjustments as per Task Order |
|  | Special requirements: | Material shall comply with BS EN 13108-5  The mix design shall be in accordance with PD6691 Annex D |
|  | Rutting Resistance | The deformation resistance of the mix shall be Class 1 in accordance with PD 6691: Table D.2. |
|  | Coarse Aggregate: | Crushed rock or slag only excluding limestone. Adhesion agent required if quartzite, basalt or other igneous rock.  The water absorption of the coarse aggregate shall not exceed 2% measured by tests to BS EN 1097-6 |
|  | Fine Aggregate: | Crushed rock and/or natural sand mixture |
|  | Minimum PSV: | Minimum PSV shall be as instructed in Task Order.  Where not specified in task order, minimum PSV shall be 60 |
|  | Maximum AAV: | 12 |
| 4 | Installation |  |
|  | General Requirements | The delivery and rolling temperatures shall be as described in BS 594987 Table A.1 for ‘surf’ and the grade of binder 40/60, or as notified by the binder supplier for polymer modified binder PMB.  Material shall not be laid when the combination of wind speed and temperature is within the ‘may not lay’ zone in Clause 945 Figure 9/1 and such more onerous requirements as the binder supplier requires.  The absolute minimum thickness at any point shall be not less than 15mm.  The deformation resistance after installation shall be determined as described in Clause 943 for each site  Grit as described in Clause 935AR shall be applied to the surface during installation. |

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| **S9 - SMA 6 surf 40/60 WTR2 - Stone Mastic Asphalt Surface Course** |

|  |  |  |
| --- | --- | --- |
| 1 | Location: | As instructed in Task Order |
| 2 | Surface texture | Minimum initial and retained texture shall be in accordance with clause 921SR.  Minimum texture requirements shall be as instructed in Task Order  Where not specified in task order, the material shall have medium texture requirements. |
| 3 | Material Information |  |
|  | Layer | Surface Course |
|  | Material: | SMA 6 surf 40/60 WTR2 |
|  | Clause: | 971AR |
|  | Binder: | The grade of binder shall be 40/60 paving bitumen or a polymer modified binder to achieve the required wheel tracking and crack resistance performance |
|  | Thickness: | 35mm plus or minus thickness adjustments as per Task Order |
|  | Special requirements: | Material shall comply with BS EN 13108-5  The mix design shall be in accordance with PD6691 Annex D |
|  | Rutting Resistance | The deformation resistance of the mix shall be Class 2 in accordance with PD 6691: Table D.2. |
|  | Coarse Aggregate: | Crushed rock or slag only excluding limestone. Adhesion agent required if quartzite, basalt or other igneous rock.  The water absorption of the coarse aggregate shall not exceed 2% measured by tests to BS EN 1097-6 |
|  | Fine Aggregate: | Crushed rock and/or natural sand mixture |
|  | Minimum PSV: | Minimum PSV shall be as instructed in Task Order.  Where not specified in task order, minimum PSV shall be 60 |
|  | Maximum AAV: | 12 |
| 4 | Installation |  |
|  | General Requirements | The delivery and rolling temperatures shall be as described in BS 594987 Table A.1 for ‘surf’ and the grade of binder 40/60, or as notified by the binder supplier for polymer modified binder PMB.  Material shall not be laid when the combination of wind speed and temperature is within the ‘may not lay’ zone in Clause 945 Figure 9/1 and such more onerous requirements as the binder supplier requires.  The absolute minimum thickness at any point shall be not less than 15mm.  The deformation resistance after installation shall be determined as described in Clause 943 for each site  Grit as described in Clause 935AR shall be applied to the surface during installation. |

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| **S10 - TSCS 10 - Thin Surface Course System** |

|  |  |  |
| --- | --- | --- |
| 1 | Location: | As instructed in Task Order |
| 2 | Surface texture | Minimum initial and retained texture shall be in accordance with clause 921SR.  Minimum texture requirements shall be as instructed in Task Order  Where not specified in task order, the material shall have medium texture requirements. |
| 3 | Material Information |  |
|  | Layer | Surface Course |
|  | Material: | TSCS 10 |
|  | Clause: | 942 |
|  | Binder: | The grade of binder shall be as per the BBA HAPAS Certificate to achieve the required wheel tracking and crack resistance performance |
|  | Thickness: | 40mm plus or minus thickness adjustments as per Task Order |
|  | Special requirements: | The material to be a proprietary product complying with a BBA HAPAS Certificate |
|  | Rutting Resistance | The deformation resistance of the mix shall be Class 2 in accordance with PD 6691: Table D.2. |
|  | Coarse Aggregate: | Crushed rock or slag only excluding limestone. Adhesion agent required if quartzite, basalt or other igneous rock.  The water absorption of the coarse aggregate shall not exceed 2% measured by tests to BS EN 1097-6 |
|  | Fine Aggregate: | Crushed rock and/or natural sand mixture |
|  | Minimum PSV: | Minimum PSV shall be as instructed in Task Order.  Where not specified in task order, minimum PSV shall be 60 |
|  | Maximum AAV: | 12 |
| 4 | Installation |  |
|  | General Requirements | The delivery temperatures and the minimum rolling temperature shall be in accordance with the bitumen supplier’s guidelines for the product.  Material shall not be laid when the combination of wind speed and temperature is within the ‘may not lay’ zone in Clause 945 Figure 9/1 and such more onerous requirements as the binder supplier requires.  The absolute minimum thickness at any point shall be not less than 25m.  The deformation resistance after installation shall be determined as described in Clause 943 for each site  Grit as described in Clause 935AR shall be applied to the surface during installation. |
|  | Performance Guarantee | The material shall be subject to the 5 year performance guarantee as described in Clause 942. 15 and 16. |

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| **S11 - TSCS 6 - Thin Surface Course System** |

|  |  |  |
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| 1 | Location: | As instructed in Task Order |
| 2 | Surface texture | Minimum initial and retained texture shall be in accordance with clause 921SR.  Minimum texture requirements shall be as instructed in Task Order  Where not specified in task order, the material shall have medium texture requirements. |
| 3 | Material Information |  |
|  | Layer | Surface Course |
|  | Material: | TSCS 6 |
|  | Clause: | 942 |
|  | Binder: | The grade of binder shall be as per the BBA HAPAS Certificate to achieve the required wheel tracking and crack resistance performance |
|  | Thickness: | 35mm plus or minus thickness adjustments as per Task Order |
|  | Special requirements: | The material to be a proprietary product complying with a BBA HAPAS Certificate |
|  | Rutting Resistance | The deformation resistance of the mix shall be Class 2 in accordance with PD 6691: Table D.2. |
|  | Coarse Aggregate: | Crushed rock or slag only excluding limestone. Adhesion agent required if quartzite, basalt or other igneous rock.  The water absorption of the coarse aggregate shall not exceed 2% measured by tests to BS EN 1097-6 |
|  | Fine Aggregate: | Crushed rock and/or natural sand mixture |
|  | Minimum PSV: | Minimum PSV shall be as instructed in Task Order.  Where not specified in task order, minimum PSV shall be 60 |
|  | Maximum AAV: | 12 |
| 4 | Installation |  |
|  | General Requirements | The delivery temperatures and the minimum rolling temperature shall be in accordance with the bitumen supplier’s guidelines for the product.  Material shall not be laid when the combination of wind speed and temperature is within the ‘may not lay’ zone in Clause 945 Figure 9/1 and such more onerous requirements as the binder supplier requires.  The absolute minimum thickness at any point shall be not less than 15mm.  The deformation resistance after installation shall be determined as described in Clause 943 for each site  Grit as described in Clause 935AR shall be applied to the surface during installation. |
|  | Performance Guarantee | The material shall be subject to the 5 year performance guarantee as described in Clause 942. 15 and 16. |

**PERMITTED PAVEMENT OPTIONS – ASPHALT MATERIALS FOR BINDER COURSES IN FLEXIBLE, RIGID AND COMPOSITE CONSTRUCTION**

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| --- |
| **Bi1 - SMA 20 bin 40/60 WTR1 - Stone Mastic Asphalt Binder Course** |

|  |  |  |
| --- | --- | --- |
| 1 | Location: | As instructed in Task Order |
| 2 | Material Information |  |
|  | Layer | Binder Course |
|  | Material: | SMA 20 bin 40/60 WTR1 |
|  | Clause: | 937 |
|  | Binder: | The grade of binder shall be 40/60 paving bitumen or a polymer modified binder to achieve the required wheel tracking and crack resistance performance |
|  | Thickness: | 60mm plus or minus thickness adjustments as per Task Order |
|  | Special requirements: | Material shall comply with BS EN 13108-5  The mix design shall be in accordance with PD6691 Annex D |
|  | Rutting Resistance | The deformation resistance of the mix shall be Class 1 in accordance with PD 6691: Table D.2. |
|  | Coarse Aggregate: | Crushed rock or slag only excluding limestone. Adhesion agent required if quartzite, basalt or other igneous rock.  The water absorption of the coarse aggregate shall not exceed 2% measured by tests to BS EN 1097-6 |
|  | Fine Aggregate: | Crushed rock and/or natural sand mixture |
| 3 | Installation |  |
|  | General Requirements | The delivery and rolling temperatures shall be as described in BS 594987 Table A.1 for ‘bin’ and the grade of binder 40/60, or as notified by the binder supplier for a polymer modified binder PMB.  Material shall not be laid when the combination of wind speed and temperature is within the ‘may not lay’ zone in Clause 945 Figure 9/1 and such more onerous requirements as the binder supplier requires.  The absolute minimum thickness at any point shall be not less than 50mm. |

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| --- |
| **Bi2 - SMA 14 bin 40/60 WTR1 - Stone Mastic Asphalt Binder Course** |

|  |  |  |
| --- | --- | --- |
| 1 | Location: | As instructed in Task Order |
| 2 | Material Information |  |
|  | Layer | Binder Course |
|  | Material: | SMA 20 bin 40/60 WTR1 |
|  | Clause: | 937 |
|  | Binder: | The grade of binder shall be 40/60 paving bitumen or a polymer modified binder to achieve the required wheel tracking and crack resistance performance |
|  | Thickness: | 45mm plus or minus thickness adjustments as per Task Order |
|  | Special requirements: | Material shall comply with BS EN 13108-5  The mix design shall be in accordance with PD6691 Annex D |
|  | Rutting Resistance | The deformation resistance of the mix shall be Class 1 in accordance with PD 6691: Table D.2. |
|  | Coarse Aggregate: | Crushed rock or slag only excluding limestone. Adhesion agent required if quartzite, basalt or other igneous rock.  The water absorption of the coarse aggregate shall not exceed 2% measured by tests to BS EN 1097-6 |
|  | Fine Aggregate: | Crushed rock and/or natural sand mixture |
| 3 | Installation |  |
|  | General Requirements | The delivery and rolling temperatures shall be as described in BS 594987 Table A.1 for ‘bin’ and the grade of binder 40/60, or as notified by the binder supplier for a polymer modified binder PMB.  Material shall not be laid when the combination of wind speed and temperature is within the ‘may not lay’ zone in Clause 945 Figure 9/1 and such more onerous requirements as the binder supplier requires.  The absolute minimum thickness at any point shall be not less than 35mm. |

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| --- |
| **Bi3 - HRA 60/20 bin 40/60 des WTR1 - Hot Rolled Asphalt Binder Course** |

|  |  |  |
| --- | --- | --- |
| 1 | Location: | As instructed in Task Order |
| 2 | Material Information |  |
|  | Layer | Binder Course |
|  | Material: | HRA 60/20 bin 40/60 des WTR1 |
|  | Clause: | 905 |
|  | Binder: | The grade of binder shall be 40/60 paving bitumen or a polymer modified binder to achieve the required wheel tracking and crack resistance performance |
|  | Thickness: | 60mm plus or minus thickness adjustments as per Task Order |
|  | Special requirements: | Material shall comply with BS EN 13108-4  The mix design shall be in accordance with PD6691 Annex C |
|  | Rutting Resistance | The deformation resistance of the mix shall be Class 1 in accordance with PD 6691: Table C.2. |
|  | Coarse Aggregate: | Crushed rock or slag only excluding limestone. Adhesion agent required if quartzite, basalt or other igneous rock.  The water absorption of the coarse aggregate shall not exceed 2% measured by tests to BS EN 1097-6 |
|  | Fine Aggregate: | Crushed rock and/or natural sand mixture |
| 3 | Installation |  |
|  | General Requirements | The delivery temperatures shall be as described in BS 594987 Table A.1 for ‘bin’ and the minimum rolling temperature shall be in accordance with BS 594987 Table 4 for the grade of binder 40/60, or as notified by the binder supplier for polymer modified binder PMB.  Material shall not be laid when the combination of wind speed and temperature is within the ‘may not lay’ zone in Clause 945 Figure 9/1 and such more onerous requirements as the binder supplier requires.  The absolute minimum thickness at any point shall be not less than 50mm. |

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| **Bi4 - HRA 50/14 bin 40/60 des WTR1 - Hot Rolled Asphalt Binder Course** |

|  |  |  |
| --- | --- | --- |
| 1 | Location: | As instructed in Task Order |
| 2 | Material Information |  |
|  | Layer | Binder Course |
|  | Material: | HRA 60/20 bin 40/60 des WTR1 |
|  | Clause: | 905 |
|  | Binder: | The grade of binder shall be 40/60 paving bitumen or a polymer modified binder to achieve the required wheel tracking and crack resistance performance |
|  | Thickness: | 45mm plus or minus thickness adjustments as per Task Order |
|  | Special requirements: | Material shall comply with BS EN 13108-4  The mix design shall be in accordance with PD6691 Annex C |
|  | Rutting Resistance | The deformation resistance of the mix shall be Class 1 in accordance with PD 6691: Table C.2. |
|  | Coarse Aggregate: | Crushed rock or slag only excluding limestone. Adhesion agent required if quartzite, basalt or other igneous rock.  The water absorption of the coarse aggregate shall not exceed 2% measured by tests to BS EN 1097-6 |
|  | Fine Aggregate: | Crushed rock and/or natural sand mixture |
| 3 | Installation |  |
|  | General Requirements | The delivery temperatures shall be as described in BS 594987 Table A.1 for ‘bin’ and the minimum rolling temperature shall be in accordance with BS 594987 Table 4 for the grade of binder 40/60, or as notified by the binder supplier for polymer modified binder PMB.  Material shall not be laid when the combination of wind speed and temperature is within the ‘may not lay’ zone in Clause 945 Figure 9/1 and such more onerous requirements as the binder supplier requires.  The absolute minimum thickness at any point shall be not less than 35mm. |

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| --- |
| **Bi5 - AC 20 HDM bin 40/60 des WTR1 – Asphalt Concrete Binder Course** |

|  |  |  |
| --- | --- | --- |
| 1 | Location: | As instructed in Task Order |
| 2 | Material Information |  |
|  | Layer | Binder Course |
|  | Material: | AC 20 HDM bin 40/60 des WTR1 |
|  | Clause: | 929 |
|  | Binder: | The grade of binder shall be 40/60 paving bitumen or a polymer modified binder to achieve the required wheel tracking and crack resistance performance |
|  | Thickness: | 60mm plus or minus thickness adjustments as per Task Order |
|  | Special requirements: | Material shall comply with BS EN 13108-1  The mix design shall be in accordance with PD6691 Annex B |
|  | Rutting Resistance | The deformation resistance of the mix shall be Class 1 in accordance with PD 6691: Table B.4. |
|  | Coarse Aggregate: | Crushed rock or slag only excluding limestone. Adhesion agent required if quartzite, basalt or other igneous rock.  The water absorption of the coarse aggregate shall not exceed 2% measured by tests to BS EN 1097-6 |
|  | Fine Aggregate: | Crushed rock and/or natural sand mixture |
| 3 | Installation |  |
|  | General Requirements | The delivery temperatures shall be as described in BS 594987 Table A.1 for ‘bin’ and the minimum rolling temperature shall be in accordance with BS 594987 Table 5 for the grade of binder 40/60, or as notified by the binder supplier for polymer modified binder PMB  Material shall not be laid when the combination of wind speed and temperature is within the ‘may not lay’ zone in Clause 945 Figure 9/1 and such more onerous requirements as the binder supplier requires.  The absolute minimum thickness at any point shall be not less than 50mm. |

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| **Bi6 - AC 10 EME2 bin 15/25 WTR2 – Asphalt Concrete Binder Course** |

|  |  |  |
| --- | --- | --- |
| 1 | Location: | As instructed in Task Order |
| 2 | Material Information |  |
|  | Layer | Binder Course |
|  | Material: | AC 10 EME2 bin 15/25 WTR2 |
|  | Clause: | 930 |
|  | Binder: | The grade of binder shall be 15/25 paving bitumen or a polymer modified binder to achieve the required wheel tracking and crack resistance performance |
|  | Thickness: | 30mm plus or minus thickness adjustments as per Task Order |
|  | Special requirements: | Material shall comply with BS EN 13108-1  The mix design shall be in accordance with PD6691 Annex B |
|  | Rutting Resistance | The deformation resistance of the mix shall be Class 2 in accordance with PD 6691: Table B.4. |
|  | Coarse Aggregate: | Crushed rock or slag only excluding limestone. Adhesion agent required if quartzite, basalt or other igneous rock.  The water absorption of the coarse aggregate shall not exceed 2% measured by tests to BS EN 1097-6 |
|  | Fine Aggregate: | Crushed rock and/or natural sand mixture |
| 3 | Installation |  |
|  | General Requirements | The delivery temperatures shall be as described in BS 594987 Table A.1 for ‘bin’ and the minimum rolling temperature shall be in accordance with BS 594987 Table 5 for the grade of binder 40/60, or as notified by the binder supplier for polymer modified binder PMB  Material shall not be laid when the combination of wind speed and temperature is within the ‘may not lay’ zone in Clause 945 Figure 9/1 and such more onerous requirements as the binder supplier requires.  The absolute minimum thickness at any point shall be not less than 25mm. |

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| **Bi7 - AC 10 EME2 bin 15/25 WTR2 – Asphalt Concrete Binder Course** |

|  |  |  |
| --- | --- | --- |
| 1 | Location: | As instructed in Task Order |
| 2 | Material Information |  |
|  | Layer | Binder Course |
|  | Material: | AC 14 EME2 bin 15/25 WTR2 |
|  | Clause: | 930 |
|  | Binder: | The grade of binder shall be 15/25 paving bitumen or a polymer modified binder to achieve the required wheel tracking and crack resistance performance |
|  | Thickness: | 45mm plus or minus thickness adjustments as per Task Order |
|  | Special requirements: | Material shall comply with BS EN 13108-1  The mix design shall be in accordance with PD6691 Annex B |
|  | Rutting Resistance | The deformation resistance of the mix shall be Class 2 in accordance with PD 6691: Table B.4. |
|  | Coarse Aggregate: | Crushed rock or slag only excluding limestone. Adhesion agent required if quartzite, basalt or other igneous rock.  The water absorption of the coarse aggregate shall not exceed 2% measured by tests to BS EN 1097-6 |
|  | Fine Aggregate: | Crushed rock and/or natural sand mixture |
| 3 | Installation |  |
|  | General Requirements | The delivery temperatures shall be as described in BS 594987 Table A.1 for ‘bin’ and the minimum rolling temperature shall be in accordance with BS 594987 Table 5 for the grade of binder 40/60, or as notified by the binder supplier for polymer modified binder PMB  Material shall not be laid when the combination of wind speed and temperature is within the ‘may not lay’ zone in Clause 945 Figure 9/1 and such more onerous requirements as the binder supplier requires.  The absolute minimum thickness at any point shall be not less than 35mm. |

**PERMITTED PAVEMENT OPTIONS – ASPHALT MATERIALS FOR BASE COURSES IN FLEXIBLE, RIGID AND COMPOSITE CONSTRUCTION**

|  |
| --- |
| **Ba1 - AC 32 HDM base 40/60 - Asphalt Concrete Binder Course** |

|  |  |  |
| --- | --- | --- |
| 1 | Location: | As instructed in Task Order |
| 2 | Material Information |  |
|  | Layer | Base Course |
|  | Material: | AC 32 HDM base 40/60 |
|  | Clause: | 929 |
|  | Binder: | The grade of binder shall be 40/60 paving bitumen |
|  | Thickness: | 100mm plus or minus thickness adjustments as per Task Order |
|  | Special requirements: | Material shall comply with BS EN 13108-1  The mix design shall be in accordance with PD6691 Annex B |
|  | Rutting Resistance | The deformation resistance of the mix shall be Class 1 in accordance with PD 6691: Table B.4. |
|  | Coarse Aggregate: | Crushed rock or slag only excluding limestone. Adhesion agent required if quartzite, basalt or other igneous rock.  The water absorption of the coarse aggregate shall not exceed 2% measured by tests to BS EN 1097-6 |
|  | Fine Aggregate: | Crushed rock and/or natural sand mixture |
| 3 | Installation |  |
|  | General Requirements | The delivery temperatures shall be as described in BS 594987 Table A.1 for ‘base’ and the minimum rolling temperature shall be in accordance with BS 594987 Table 5 for the grade of binder 40/60.  Material shall not be laid when the combination of wind speed and temperature is within the ‘may not lay’ zone in Clause 945 Figure 9/1 and such more onerous requirements as the binder supplier requires.  The absolute minimum thickness at any point shall be not less than 80mm. |

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| --- |
| **Ba2 - AC 20 HDM base 40/60- Asphalt Concrete Binder Course** |

|  |  |  |
| --- | --- | --- |
| 1 | Location: | As instructed in Task Order |
| 2 | Material Information |  |
|  | Layer | Base Course |
|  | Material: | AC 20 HDM base 40/60 |
|  | Clause: | 929 |
|  | Binder: | The grade of binder shall be 40/60 paving bitumen |
|  | Thickness: | 60mm plus or minus thickness adjustments as per Task Order |
|  | Special requirements: | Material shall comply with BS EN 13108-1  The mix design shall be in accordance with PD6691 Annex B |
|  | Coarse Aggregate: | Crushed rock or slag only excluding limestone. Adhesion agent required if quartzite, basalt or other igneous rock.  The water absorption of the coarse aggregate shall not exceed 2% measured by tests to BS EN 1097-6 |
|  | Fine Aggregate: | Crushed rock and/or natural sand mixture |
| 3 | Installation |  |
|  | General Requirements | The delivery temperatures shall be as described in BS 594987 Table A.1 for ‘base’ and the minimum rolling temperature shall be in accordance with BS 594987 Table 5 for the grade of binder 40/60.  Material shall not be laid when the combination of wind speed and temperature is within the ‘may not lay’ zone in Clause 945 Figure 9/1 and such more onerous requirements as the binder supplier requires.  The absolute minimum thickness at any point shall be not less than 50mm. |

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| --- |
| **Ba3 - HRA 60/32 base 40/60- Hot Rolled Asphalt Binder Course** |

|  |  |  |
| --- | --- | --- |
| 1 | Location: | As instructed in Task Order |
| 2 | Material Information |  |
|  | Layer | Base Course |
|  | Material: | HRA 60/32 base 40/60 |
|  | Clause: | 904 |
|  | Binder: | The grade of binder shall be 40/60 paving bitumen |
|  | Thickness: | 100mm plus or minus thickness adjustments as per Task Order |
|  | Special requirements: | Material shall comply with BS EN 13108-4  The mix design shall be in accordance with PD6691 Annex C |
|  | Coarse Aggregate: | Crushed rock or slag only excluding limestone. Adhesion agent required if quartzite, basalt or other igneous rock.  The water absorption of the coarse aggregate shall not exceed 2% measured by tests to BS EN 1097-6 |
|  | Fine Aggregate: | Crushed rock and/or natural sand mixture |
| 3 | Installation |  |
|  | General Requirements | The delivery temperatures shall be as described in BS 594987 Table A.1 for ‘base’ and the minimum rolling temperature shall be in accordance with BS 594987 Table 4 for the grade of binder 40/60.  Material shall not be laid when the combination of wind speed and temperature is within the ‘may not lay’ zone in Clause 945 Figure 9/1 and such more onerous requirements as the binder supplier requires.  The absolute minimum thickness at any point shall be not less than 80mm. |

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| --- |
| **Ba4 - HRA 60/20 base 40/60 - Hot Rolled Asphalt Binder Course** |

|  |  |  |
| --- | --- | --- |
| 1 | Location: | As instructed in Task Order |
| 2 | Material Information |  |
|  | Layer | Base Course |
|  | Material: | HRA 60/20 base 40/60 |
|  | Clause: | 904 |
|  | Binder: | The grade of binder shall be 40/60 paving bitumen or a polymer modified binder to achieve the required wheel tracking and crack resistance performance |
|  | Thickness: | 100mm plus or minus thickness adjustments as per Task Order |
|  | Special requirements: | Material shall comply with BS EN 13108-4  The mix design shall be in accordance with PD6691 Annex C |
|  | Coarse Aggregate: | Crushed rock or slag only excluding limestone. Adhesion agent required if quartzite, basalt or other igneous rock.  The water absorption of the coarse aggregate shall not exceed 2% measured by tests to BS EN 1097-6 |
|  | Fine Aggregate: | Crushed rock and/or natural sand mixture |
| 3 | Installation |  |
|  | General Requirements | The delivery temperatures shall be as described in BS 594987 Table A.1 for ‘base’ and the minimum rolling temperature shall be in accordance with BS 594987 Table 4 for the grade of binder 40/60.  Material shall not be laid when the combination of wind speed and temperature is within the ‘may not lay’ zone in Clause 945 Figure 9/1 and such more onerous requirements as the binder supplier requires.  The absolute minimum thickness at any point shall be not less than 80mm. |

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| **Ba5 - AC 14 EME2 base 15/25 WTR2 - Hot Rolled Asphalt Binder Course** |

|  |  |  |
| --- | --- | --- |
| 1 | Location: | As instructed in Task Order |
| 2 | Material Information |  |
|  | Layer | Base Course |
|  | Material: | AC 14 EME2 base 15/25 WTR2 |
|  | Clause: | 930 |
|  | Binder: | The grade of binder shall be 15/25 paving bitumen or a polymer modified binder to achieve the required wheel tracking and crack resistance performance |
|  | Thickness: | 45mm plus or minus thickness adjustments as per Task Order |
|  | Special requirements: | Material shall comply with BS EN 13108-1  The mix design shall be in accordance with PD6691 Annex B |
|  | Rutting Resistance | The deformation resistance of the mix shall be Class 2 in accordance with PD 6691: Table B.4. |
|  | Coarse Aggregate: | Crushed rock or slag only excluding limestone. Adhesion agent required if quartzite, basalt or other igneous rock.  The water absorption of the coarse aggregate shall not exceed 2% measured by tests to BS EN 1097-6 |
|  | Fine Aggregate: | Crushed rock and/or natural sand mixture |
| 3 | Installation |  |
|  | General Requirements | The delivery temperatures shall be as described in BS 594987 Table A.1 for ‘base’ and the minimum rolling temperature shall be in accordance with BS 594987 Table 4 for the grade of binder 40/60.  Material shall not be laid when the combination of wind speed and temperature is within the ‘may not lay’ zone in Clause 945 Figure 9/1 and such more onerous requirements as the binder supplier requires.  The absolute minimum thickness at any point shall be not less than 35mm. |

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| --- |
| **Ba6 - AC 20 EME2 base 15/25 WTR2 - Hot Rolled Asphalt Binder Course** |

|  |  |  |
| --- | --- | --- |
| 1 | Location: | As instructed in Task Order |
| 2 | Material Information |  |
|  | Layer | Base Course |
|  | Material: | AC 20 EME2 base 15/25 WTR2 |
|  | Clause: | 930 |
|  | Binder: | The grade of binder shall be 15/25 paving bitumen or a polymer modified binder to achieve the required wheel tracking and crack resistance performance |
|  | Thickness: | 60mm plus or minus thickness adjustments as per Task Order |
|  | Special requirements: | Material shall comply with BS EN 13108-1  The mix design shall be in accordance with PD6691 Annex B |
|  | Rutting Resistance | The deformation resistance of the mix shall be Class 2 in accordance with PD 6691: Table B.4. |
|  | Coarse Aggregate: | Crushed rock or slag only excluding limestone. Adhesion agent required if quartzite, basalt or other igneous rock.  The water absorption of the coarse aggregate shall not exceed 2% measured by tests to BS EN 1097-6 |
|  | Fine Aggregate: | Crushed rock and/or natural sand mixture |
| 3 | Installation |  |
|  | General Requirements | The delivery temperatures shall be as described in BS 594987 Table A.1 for ‘base’ and the minimum rolling temperature shall be in accordance with BS 594987 Table 4 for the grade of binder 40/60.  Material shall not be laid when the combination of wind speed and temperature is within the ‘may not lay’ zone in Clause 945 Figure 9/1 and such more onerous requirements as the binder supplier requires.  The absolute minimum thickness at any point shall be not less than 50mm. |

**HIGH FRICTION SURFACING**

| **Clause** | **High Friction Surfaces** | |
| --- | --- | --- |
| CL924SR | **Cold Applied – Epoxy Resin** | |
| Colour – Grey | Type Classification: HAPAS BBA Type 1  Minimum PSV: 70 (100% calcined bauxite)  **Epoxy Resin (cold applied)** |
| Colour – Red | Type Classification: HAPAS BBA Type 1  Minimum PSV: 70 (100% calcined bauxite)  **Epoxy Resin (cold applied)** |
| Colour – Buff | Type Classification: HAPAS BBA Type 1  Minimum PSV: 70 (100% calcined bauxite)  **Epoxy Resin (cold applied)** |
| Colour – Green | Type Classification: HAPAS BBA Type 1  Minimum PSV: 70 (100% calcined bauxite)  **Epoxy Resin (cold applied)** |
| **Cold Applied – Methyl Methacrylate Resin (MMA)** | |
| Colour – Grey | Type Classification: HAPAS BBA Type 1  Minimum PSV: 70 (100% calcined bauxite)  **Methyl Methacrylate Resin** (cold applied) |
| Colour – Red | Type Classification: HAPAS BBA Type 1  Minimum PSV: 70 (100% calcined bauxite)  **Methyl Methacrylate Resin** (cold applied) |
| Colour – Buff | Type Classification: HAPAS BBA Type 1  Minimum PSV: 70 (100% calcined bauxite)  **Methyl Methacrylate Resin** (cold applied) |
| Colour – Green | Type Classification: HAPAS BBA Type 1  Minimum PSV: 70 (100% calcined bauxite)  **Methyl Methacrylate Resin** (cold applied) |
| **Cold Applied – Polyurethane Resin** | |
| Colour – Grey | Type Classification: HAPAS BBA Type 1  Minimum PSV: 70 (100% calcined bauxite)  **Polyurethane Resin** (cold applied) |
| Colour – Red | Type Classification: HAPAS BBA Type 1  Minimum PSV: 70 (100% calcined bauxite)  **Polyurethane Resin** (cold applied) |
| Colour – Buff | Type Classification: HAPAS BBA Type 1  Minimum PSV: 70 (100% calcined bauxite)  **Polyurethane Resin** (cold applied) |
| Colour – Green | Type Classification: HAPAS BBA Type 1  Minimum PSV: 70 (100% calcined bauxite)  **Polyurethane Resin** (cold applied) |

Notes

1. Guarantee Period for all High Friction and Gateway surfacing shall be 3 years

**Schedule of Sub-base Materials**

|  |  |  |  |
| --- | --- | --- | --- |
| **Element** | **Clause** | **Material** | **Special Requirements** |
| Sub-base | 803 | Granular Sub-base Material Type 1 | All sub-base material shall comply with sub-Clause 801.7  Material of compacted thickness greater than 225mm shall be laid in two or more layers |

7/1.1 Pavement Regularity

1.1-1 Location

1. Location 'X' comprises all carriageway and hard shoulder.
2. Location 'Y' comprises all acceleration lane, deceleration lane, slip road carriageway and hardstrip.
3. Location 'Z' comprises all junctions, emergency crossings.

1.1-2 Grid for checking surface levels of pavement courses (Clause 702.4)

1. Location 'X' Longitudinal dimension 10 metres

Transverse dimension 2 metres

1. Location 'Y' Longitudinal dimension 5 metres

Transverse dimension 1 metre

1. Location 'Z' Longitudinal dimension 2 metres

Transverse dimension 2 metres

1.1-3 Surface Regularity (Clause 702.7 and 702.8 and Table 7/2)

1. Roads with speed limit exceeding 30 mph shall be Category 'A'
2. Roads with speed limit not exceeding 30 mph shall be Category 'B'
3. The interval for the measurement of longitudinal regularity shall be taken along the centreline of each lane.
4. The interval for the measurement of transverse regularity shall be 2 metres

7/1.2Requirements For Stress Absorbing Membrane Interlayer

1.2-1 Grid Type 1 (100kN/m)

Primarily intended for small works excluding reflective cracking caused by thermal movement.

The grid shall comply with the following requirements:

It shall be a composite glass-fibre mesh on geotextile backing;

It shall have a minimum tensile strength of 100kN/m in both longitudinal and transverse directions (e.g. GlasGrid 8501, or equivalent);

The minimum overlay thickness for the grid shall be 40 mm;

1.2-2 Grid Type 2 (200 kN/m)

Primarily intended for application on transverse and longitudinal cracks and for all types of joints in asphalt and concrete pavements, as well as for road widening

The grid shall comply with the following requirements:

* 1. It shall be a composite PVC/elastomeric polymer coated glass-fibre mesh;
  2. It shall have a minimum tensile strength of 200kN/m in longitudinal direction and 100kN/m transverse directions (e.g. GlasGrid 8502, or equivalent);
  3. The minimum overlay thickness for the grid shall be 40 mm.

1.2-3 General Requirements

The reinforcement grid shall be installed in accordance with the manufacturer’s instructions subject to the following:

* 1. Special care shall be taken to ensure ‘rucks’ in the grid are kept to a minimum and shall be cut and lapped where necessary or where instructed by the Overseeing Organisation
  2. Unless otherwise approved by the Overseeing Organisation, only an emulsion bond coat approved by the grid supplier/manufacturer shall be used;
  3. Working methods shall ensure construction traffic does not run over the uncovered grid more than is absolutely necessary;
  4. All areas of reinforcement grid shall be covered by surfacing material by the end of the working day.

Reinforcement grids shall be laid in widths of at least 1.5m such that it extends a minimum of 0.75m, in all directions, beyond any crack or construction joint formed as a result of the widening works.

7/1.3Compaction of Asphalt

All base and binder course asphalt laid shall comply with sub-Clauses 903.15, 16 and 17 and BS 594987 Clause 9.5 as modified by the specific requirements for the materials as listed below.

The quality records shall state the number of roller passes required for the layer at that location at the time of laying

7/1.4 Coated Chippings

1. Chippings shall be clean and bright in appearance, detached and free flowing.
2. Chippings shall have a Los Angeles coefficient in the range 22 to 14 when tested in accordance with BS EN 1097-2 using determination of resistance to fragmentation by Los Angeles test.
3. The minimum temperature of chippings shall be above 0°C and the chippings shall be ice-free.
4. Chippings shall be constant in colour except where described in the Contract or otherwise agreed by the Overseeing Organisation.
5. The surface course shall be laid "chipping free" for a width of 225mm along each channel and around each gully.

7/1.5High Friction Surfaces

1. Locations for High Friction Surfacing shall be as shown on the task order.
2. The Type Classification shall be Type 1.
3. All High Friction Surfacing systems shall be BBA HAPAS approved unless otherwise specifically authorised by the Overseeing Organisation
4. The minimum declared PSV of the aggregate shall be 70.
5. The minimum AAV of the aggregate shall be 12.
6. Only High Friction Surfaces which, after any curing period, give a natural black/dark grey, buff, red or green overall appearance to the finished surface, shall be permitted.

Surfaces to which any High Friction Surfacing (HFS) materials are to be applied shall be trafficked for at least 3 weeks and deemed suitable by the Contractor prior to application. ‘Slippery Road Ahead’ signs to TSRGD Diagram No. 557 shall be erected at each site until the Type 1 material has been applied, or unless Methyl Methacrylate (MMA) is applied by the Overseeing Organisation

7/1.6Bond/Tack Coats

Bond Coats shall be used below and between all new asphalt layers on any bound substrate. The rate of application of residual bitumen by the calibrated spray tanker shall be in accordance with BS 594987 Para 5.5.2, but shall be not less than 0.35l/sq m of residual bitumen. A certificate of calibration for the bond coat being used shall be available on the tanker.

Information on the bond coat used, the required temperature to achieve the rate of spread, confirmation of the rate of spread making allowance for the water content, either by carpet tile test or reconciliation, shall be provided in the quality records.

7/1.7Surface Macrotexture

Surface macrotexture depth shall be as stated on the task order in accordance with clause 921SR.

7/1.8Joints in Surface Course

1. Transverse Joints shall be cut by sawing, and only when the surface course is cold. Where a delay is created in the laying process such that material leaving the paver screed is or can be predicted to be, at a temperature of less than 120°C, a transverse joint shall be formed and all cold material removed and rejected.
2. Tie ins: Where an inlay or overlay abuts an existing surface the thickness of the surface course, or of both the surface course and binder course shall be at least as thick as the nominal laid thickness for the approaches to the joint.
3. Longitudinal Joints shall be cut by one of the following methods:
   1. a tapered edge restraint wheel attached to the roller that cuts and contains the asphalt as compaction takes place,
   2. cutting with a wheel fitted to a roller when the surface course is warm, removing at least a width equal to twice the thickness of the laid mat
4. All joints and vertical surfaces shall be coated with bitumen as described in Sub-clause 903.22.

7/1.9Modified Binder and Mixture Data Requirements

1. If a proprietary polymer modified binder course base or hot rolled asphalt surface course is proposed, the following data shall be provided to the Overseeing Organisation, in respect of the proposed modified binder:
   1. Modified Binders

Polymer modified binders shall comply with BS EN 14023. The supplier shall provide data showing the performance against all the essential tests in table 1 and the additional tests in table 2

* 1. Mixing and compaction temperatures

Maximum and minimum compaction temperatures shall be stated and any wind chill factor differing from conventional hot rolled asphalt utilising unmodified bitumen.

* 1. Mixture Tests

Where specified in the appropriate Appendix 7/1 sub clause for the material, data on the following characteristics shall be provided

1. Stiffness: Indirect Tensile Stiffness Modulus (ITSM) to EN 12697:26 Annex C before and after ageing as described in Clause 953 in the following circumstances
2. Deformation resistance: Wheel tracking test to PD 6691 Annex D.2 at 60ºC ( Class 2) or comply with BBA HAPAS SG3 Guidelines for Level 3
3. Fatigue: Indirect Tensile Fatigue Test ( HAPAS SG3 Guideline Appendix A3) or EN 12697-24 Annex E
4. Fracture Toughness: Crack Propagation by Semi-Circular Bending Test to EN 12697-44
5. In addition, information shall be supplied on minimum temperatures for delivery and rolling for the specific mixture incorporating a proprietary binder, which should be strictly adhered to by the user. For paving grade binders the requirements in BS 594987 Annex A shall be used.

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

Clause 903.4 requires a bond coat to be applied prior to placing bituminous material on any bound substrate, it shall be applied at a uniform rate in accordance with Clause 920 and at a minimum rate of 0.2kg/m2 residual bitumen or as otherwise stated in the Task Order. There shall be no bare areas or areas of ponding. Bond coats shall be in accordance with BS EN 13808.

Street Furniture, iron work and drop kerbs shall be masked using self adhesive masking materials before application starts and removed prior to the completion of the works.

If the bituminous material is a proprietary product (eg Clause 942 surface course), then the material shall be in accordance with the manufacturer’s BBA certification.

Bond coats shall not be temporarily trafficked.

**APPENDIX 7/9 :COLD-MILLING (PLANING) OF PAVEMENT**

7/9.1 General Requirements

1. Locations, depth, profile and finish of cold milling shall be as detailed in the Task Order.
2. Prior to any cold milling works, the Contractor shall sweep the area to locate any buried metalwork in accordance with Clause 709SR. The contractor shall also located and suitable mark any other obstructions, including overhead cables. These works shall be undertaken 48hours prior to any cold milling works commencing.
3. All existing detector loops to be reinstated shall be surveyed prior to cold milling.

**APPENDIX 7/11 : OVERBANDING AND INLAY CRACK/JOINT SEALING SYSTEMS**

7/11.1 General

1. The locations of overbanding crack sealing systems shall be as stated in the task order
2. All Inlay, Overbanding and Fill & Overbanding crack/joint sealing systems shall be BBA HAPAS Certificated
3. The minimum polished stone value of the source aggregate for chippings applied to the surface of crack/joint sealing systems shall be 65.

APPENDIX 10/85: CONCRETE CARRIAGEWAY REPAIRS

10/85.5 Re-sealing Joint Grooves and Sealing Cracks

a) Locations for Re-sealing Joint Grooves and Sealing Cracks shall be as shown in the Task order .

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12/ 3 – TRAFFIC SIGNS: ROAD MARKINGS AND STUDS

1. Locations, Colour and material type for permanent road markings shall be stated on the task order.
2. Locations where enhanced improved night visibility retro reflective road markings are required to Class R4 to Table 2 of BS EN 1436 shall be stated in Task Order.
3. When specified on the Task Order raised rib edge line shall be provided with ribs at 500mm between lane one and the hard shoulder/hard strip and to the right hand edge line. A rain gap must be provided to allow drainage as specified in the Traffic Signs Manual, Chapter 5 or on the Task Order.
4. Urgent junction lining which could have a significant impact on road safety such as (but not limited to) stop lines, give way markings shall be reinstated as soon as reasonably practicable.
5. The location of MMA ( Methyl Methacrylate) lining will be state on the Task Order. MMA lining is to be carried out as BS EN 1436 and manufacturer’s instructions.

**Removal or Concealment of Road Markings**

Temporary Obliteration

1. Where existing road markings are to be temporarily obliterated for traffic management or any other purpose the markings shall be completely covered by proprietary preformed removable black masking material which shall be able to withstand traffic loading for the required period. Upon removal of the black masking material the original markings are to be upgraded to the standard apparent before the temporary obliteration.
2. **Setting out of New Lining**
3. Setting out of new lining will apply where complete resurfacing of a road has been carried out or where there has been a significant change to the road lining layout.
4. **Retro-reflecting Road Studs**
5. The location of retro-reflecting Road Studs shall be stated on the Task Order.
6. Cutting of the surface course for installation of retro-reflecting road studs shall be by milling or diamond cutting methods only. Where existing road studs are to be re-used the Contractor shall provide new retro-reflecting inserts.
7. **Non Retro-reflecting Road Studs**
8. Locations of non-retro-reflecting road studs shall be stated in Task Order.
9. Non retro-reflecting road studs shall comply with BS EN1436-1 and

BS EN 1436-2.

1. Non retro-reflecting road studs shall be made from brushed stainless steel and have a serrated surface to provide skid resistance.
2. Each stud shall be square in shape with each side between 95mm and 110mm.
3. Any stud which is fixed or embedded in the carriageway shall not project more than 18mm above the carriageway at its highest point, nor more than 6mm at its edges.

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