Manual of Contract Documents for Highway Works

Pavement
Contract preparation

CP 204 Instructions for specifiers for CC 204 Pavement surface treatments

Version LIVE_2024-09-17

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Contents

Latest release notes

Document Code	Version number	Date of publication of relevant change	Changes made to	Type of change
CP 204	LIVE_2024-09-17	Not available	Core document	Change to policy, major revision, new document development
This document replaces certain sections of MCHW Volume 1 Series 900, Volume 2 Series NG 900, Volume 1 Series 1000 and Volume 2 Series NG 1000, which have been withdrawn. It has been revised to adhere to the most current drafting guidelines, has undergone significant restructuring, and has also undergone revisions of a technical nature.				

Previous versions

Document Code	Version number	Date of publication of relevant change	Changes made to	Type of change

Foreword

This document provides specifier instructions for the production of the works specific requirements for CC 204 Pavement surface treatments.

This document does not form part of the works specification.

The works specification is made up of both the Specification for Highway Works and the works specific requirements completed by the Specifier.

This document is applicable for contracts throughout the UK, complemented by the additional specification requirements and contractual changes of each Overseeing Organisation.

Users are responsible for applying all appropriate documents applicable to their contract.

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1. High friction surfacing

General requirements for high friction surfacing

1.1 High friction surfacing (HFS) shall be installed in the locations detailed in CC 204/WSR/001.

High friction surfacing (HFS)

Drawing/ model number(s)	Description	Chainage from	Chainage to	Surface treatment reference	Product application	HFS performance designation
(a)	(b)	(c)	(d)	(e)	(f)	(g)

a) Enter text, to define the drawing or model number which contains the location where the permitted surface treatment option is to be constructed.

b) Enter text, to define the location of the surface treatment option [e.g. road name, direction, lane].

c) Enter a number in units of m, to define the start chainage of the HFS.

d) Enter a number in units of m, to define the end chainage of the HFS.

e) Enter a unique reference, to define the material reference that assigns work specific material requirements.

f) Enter one or more values, from options Cold applied HFS, Hot applied HFS, to to define the application of HFS.

g) Enter a value, from options A, B, C, to define the performance designation of the HFS.

Verification requirements for HFS

1.2 HFS shall be compliant with BS 8870 [Ref 12.N].

1.3 Verification shall be undertaken for the HFS by testing constituents in accordance with BS 8870 [Ref 12.N].

1.4 The frequency of testing of the HFS constituents shall be per batch of material and every 6 months for calcined bauxite.

1.5 The requirements for "Verification" in Section 14 of GC 101 [Ref 11.N] shall apply to the HFS constituents.

Documentation requirements for type approval installation trial (TAIT) for HFS

1.6 HFS shall have undergone a Type approval installation trial (TAIT) in accordance with BS 8870 [Ref 12.N].

1.7 As part of the TAIT, laboratory tests shall be carried out in accordance with BS 8870 [Ref 12.N].

1.8 The following Documentation shall be submitted for the HFS assessed under the TAIT prior to the commencement of the HFS installation: report of results of TAIT laboratory testing in accordance with BS 8870 [Ref 12.N].

1.9 The requirements for "Documentation" in Section 2 of GC 101 [Ref 11.N] shall apply to the report with results of laboratory testing.

1.10 The surface macrotexture depth of HFS assessed under the TAIT shall comply with requirements for surface macrotexture depth of the installed HFS detailed under Installation requirements for HFS, requirements 1.16 to 1.20 in this Section.

1.11 The mean corrected pendulum test value (PTV_{Corr}) of the HFS assessed under the TAIT shall comply with requirements for PTV_{Corr} of the installed HFS detailed under Installation requirements for HFS, requirements 1.21 to 1.25 in this Section.

1.12 The following Documentation shall be submitted for the HFS prior to the commencement of the HFS installation: TAIT witness certificate in accordance with BS 8870 [Ref 12.N].

1.13 The requirements for "Documentation" in Section 2 of GC 101 [Ref 11.N] shall apply to the TAIT witness certificate.

Installation requirements for HFS

1.14 The requirements for "Product acceptance schemes" in Section 12 of GC 101 [Ref 11.N] shall apply to the installation of HFS.

1.15 Installation of HFS shall be compliant with BS 8870 [Ref 12.N].

1.16 The average surface macrotexture depth of the installed HFS after application and before opening to traffic shall be 1.4 mm or greater.

1.17 Verification shall be undertaken for the surface macrotexture depth of the HFS by measurement in accordance with BS EN 13036-1 [Ref 19.N].

1.18 The frequency of surface macrotexture depth measurements shall be 10 measurements evenly spaced along a diagonal line across the lane width with one set per 100 m or less of carriageway lane unless otherwise stated in CC 204/WSR/001.

SI.1.18 The frequency of surface macrotexture depth measurements shall be [enter free text].

1.19 The requirements for "Verification" in Section 14 of GC 101 [Ref 11.N] shall apply to the measurement of the surface macrotexture depth of the HFS.

1.20 Verification for surface texture shall be undertaken by an accredited testing laboratory in compliance with "Accredited laboratory" in Section 16 of GC 101 [Ref 11.N].

1.21 The mean corrected pendulum test value (PTV_{Corr}) of the installed HFS after application and before opening to traffic shall be an average of not less than 70 with no individual value lower than 65.

1.22 Verification shall be undertaken for the PTV_{Corr} of the HFS by testing in accordance with BS EN 13036-4 [Ref 18.N] with a set of a minimum of 8 measurements evenly spread across the HFS.

1.23 The frequency of PTV_{Corr} testing shall be one set per 100 m length or less of HFS unless otherwise stated in CC 204/WSR/001.

SI.1.23 The frequency of PTV_{Corr} testing shall be [enter free text].

1.24 The requirements for "Verification" in Section 14 of GC 101 [Ref 11.N] shall apply to the testing of the PTV_{Corr} of the HFS.

1.25 Verification for the PTV shall be undertaken by an accredited testing laboratory in compliance with "Accredited laboratory" in Section 16 of GC 101 [Ref 11.N].

1.26 For a period of 2 years after opening to traffic, the performance requirements for routine installation in BS 8870 [Ref 12.N] shall be maintained.

2. Cold applied ultra-thin surfacing

General requirements for cold applied ultra-thin surfacing

2.1 Cold applied ultra-thin surfacing (CAUTS) shall be installed in the locations detailed in CC 204/WSR/002.

Cold applied ultra-thin surfacing (CAUTS)						
Drawing/ model number(s)	**Description**	**Chainage from**	**Chainage to**	**Surface treatment reference**	**CAUTS type**	**Traffic level**
(a)	(b)	(c)	(d)	(e)	(f)	(g)

a) Enter text, to define the drawing or model number which contains the location where the permitted surface treatment option is to be constructed.

b) Enter text, to define the location of the surface treatment option [e.g. road name, direction, lane].

c) Enter a number in units of m, to define the start chainage of the CAUTS.

d) Enter a number in units of m, to define the end chainage of the CAUTS.

e) Enter a unique reference, to define the material reference that assigns work specific material requirements.

f) Enter one or more values, from options CAUTS to fall under the scope of BS EN 12271, CAUTS to fall under the scope of BS EN 12273, CAUTS to have a Product Acceptance Scheme Certificate, to define the type of CAUTS to be used (all CAUTS need a Product Acceptance Scheme Certificate for the installation).

g) Enter text, to define the traffic level of the location where the permitted surface treatment option is to be constructed.

Cold applied ultra-thin surfacing (CAUTS) (continued)				
Drawing/model number(s)	**Minimum PSV**	**Maximum AAV**	**Nominal thickness (mm)**	**Road/tyre noise level**
(a)	(h)	(i)	(j)	(k)

h) Enter a number, to define the minimum PSV of aggregates.

i) Enter a number, to define the maximum AAV of aggregates.

j) Enter text, to define the nominal thickness of the CAUTS system (state value in mm or not applicable).

k) Enter a value, from options Level 2 [Road Surface influence of -2.5dB(A)], Level 1 [Road Surface influence of -0.5dB(A)], Level 0 [Road Surface influence of +1.2dB(A)], NR (no requirement), to define road/tyre noise level.

Product requirements for constituents for CAUTS

2.2 Coarse aggregates for CAUTS shall be crushed rock or steel slag complying with "Constituents for bituminous mixtures" in Section 7 of CC 202 [Ref 10.N].

2.3 Coarse aggregates for CAUTS shall be compliant with BS EN 13043 [Ref 2.N].

2.4 The coarse aggregates shall meet the following performance characteristics: Minimum PSV and Maximum AAV as per 2.1, LA_{30} and FI_{20}.

2.5 The requirements of "Designated standards" in Section 10 of GC 101 [Ref 11.N] shall apply to coarse aggregates for CAUTS.

Installation requirements for CAUTS

2.6 The CAUTS shall fall under the scope of BS EN 12271 [Ref 26.N], BS EN 12273 [Ref 22.N] or have a Product Acceptance Scheme Certificate.

2.7 The CAUTS installation shall have a Product Acceptance Scheme Certificate.

2.8 The CAUTS shall have undergone a system installation performance trial (SIPT).

2.9 The Product Acceptance Scheme for the CAUTS shall demonstrate that the product has met the requirements of the SIPT.

CAUTS under the scope of BS EN 12271 or BS EN 12273

2.10 Surface dressing CAUTS shall be compliant with BS EN 12271 [Ref 26.N].

2.11 The surface dressing CAUTS shall meet the following performance characteristics: be performance category 0, 1, 2, 3, 4, or 5 and use bitumen emulsion or polymer modified bitumen emulsion.

2.12 The requirements of "Designated standards" in Section 10 of GC 101 [Ref 11.N] shall apply to the surface dressing CAUTS.

2.13 Slurry surfacing CAUTS shall be compliant with BS EN 12273 [Ref 22.N].

2.14 The slurry surfacing CAUTS shall meet the following performance characteristics: be performance category 0, 1, 2, 3, 4, or 5 and use bitumen emulsion or polymer modified bitumen emulsion.

2.15 The requirements of "Designated standards" in Section 10 of GC 101 [Ref 11.N] shall apply to the slurry surfacing CAUTS.

CAUTS under Product acceptance scheme certification

2.16 The requirements for "Product acceptance schemes" in Section 12 of GC 101 [Ref 11.N] shall apply to CAUTS not under the scope of BS EN 12271 [Ref 26.N] or BS EN 12273 [Ref 22.N].

System installation performance trial (SIPT) requirements and verification for CAUTS

2.17 The CAUTS assessed under the SIPT shall be installed in accordance with the manufacturer's method statement.

2.18 The area treated with the CAUTS assessed under the SIPT shall be a minimum of 50 m in length and a lane wide.

2.19 Surface texture depth of CAUTS assessed under the SIPT shall comply with requirements for Surface texture depth of installed CAUTS detailed under Requirements for installation of CAUTS, requirements 2.26 to 2.30 in this Section.

2.20 After opening to traffic and for 2 years, the surfacing of the CAUTS assessed under the SIPT shall have no signs of distress in accordance with TRL 674 [Ref 9.N].

Installation and verification requirements for CAUTS

2.21 CAUTS installers shall have a quality plan for specialist activities in accordance with "Quality Plans" in Section 6 of GC 101 [Ref 11.N].

2.22 The requirements for "Product acceptance schemes" in Section 12 of GC 101 [Ref 11.N] shall apply to the installation of CAUTS.

2.23 Surface preparation shall be in accordance with BS 594987 [Ref 3.N]and the method statement.

2.24 The layer thickness of the installed CAUTS shall be in accordance with the CAUTS Product Acceptance Scheme certificate.

2.25 The road and adjacent side roads, footways, cycle tracks and paved areas shall be kept substantially free of loose chippings for a period of 30 days after completion of the surfacing work.

Surface texture depth of installed CAUTS

2.26 Surface texture depth of the installed CAUTS after compaction and before opening to traffic shall be as per Table 2.26.

Table 2.26 Requirements for surface texture depth for CAUTS

Road type	Average per 1,000 m section, mm		Average for a set of 10 measurements mm (minimum)
	Minimum	Maximum	
Roads	1.5	2.0	1.2

2.27 Verification shall be undertaken for the surface texture depth of CAUTS by measurement in accordance with BS EN 13036-1 [Ref 19.N].

2.28 The frequency of the surface texture depth measurements shall be 10 measurements at 5 m spacing along a diagonal line across the lane width with one set per 250 m of carriageway lane unless otherwise stated in CC 204/WSR/002.

SI.2.28 The frequency of the surface texture depth measurements shall be [enter free text].

2.29 The requirements for "Verification" in Section 14 of GC 101 [Ref 11.N] shall apply to the surface texture depth measurements.

2.30 Verification for surface texture depth by testing shall be undertaken by an accredited testing laboratory in compliance with "Accredited laboratory" in Section 16 of GC 101 [Ref 11.N].

2.31 For a period of 2 years after opening to traffic, the average texture depth per 1000 m^2 shall be maintained above 1.0 mm.

2.32 The texture depth shall be measured in accordance with BS EN 13036-1 [Ref 19.N].

Integrity of installed CAUTS

2.33 Before opening to traffic, the integrity of the CAUTS shall be "excellent" as defined in TRL 674 [Ref 9.N].

2.34 Verification shall be undertaken for the inspection of the surface integrity of CAUTS before opening to traffic, including the presence of fretting, ravelling, stripping and loss of chippings as per TRL 674 [Ref 9.N].

2.35 The frequency of surface integrity inspection shall be continuous along the CAUTS.

2.36 The requirements for "Verification" in Section 14 of GC 101 [Ref 11.N] shall apply to the inspection of the CAUTS surface integrity before opening to traffic.

2.37 For a period of 5 years after opening to traffic, the integrity of the CAUTS shall be maintained as termed serviceable in accordance with TRL 674 [Ref 9.N].

3. Asphalt surface preservation systems

General requirements for asphalt surface preservation systems

3.1 Asphalt surface preservation systems shall be applied in the locations detailed in CC 204/WSR/003.

Asphalt surface preservation systems					
Drawing/ model number(s)	**Description**	**Chainage from**	**Chainage to**	**Surface treatment reference**	**Minimum characteristic skid coefficient**
(a)	(b)	(c)	(d)	(e)	(f)

a) Enter text, to define the drawing or model number which contains the location where the permitted surface treatment option is to be constructed.

b) Enter text, to define the location of the surface treatment option [e.g. road name, direction, lane].

c) Enter a number in units of m, to define the start chainage of the preservation system application.

d) Enter a number in units of m, to define the end chainage of the preservation system application.

e) Enter a unique reference, to define the material reference that assigns work specific material requirements.

f) Enter a number, to define the skid resistance after treatment application.

Requirements for surface preservation systems

3.2 The requirements for "Product acceptance schemes" in Section 12 of GC 101 [Ref 11.N] shall apply to surface preservation systems.

3.3 The surface preservation systems shall have undergone a system installation performance trial (SIPT).

3.4 The Product Acceptance Scheme for the surface preservation systems shall demonstrate that the product has met the requirements of the SIPT.

System installation performance trial (SIPT) requirements and verification for asphalt surface preservation systems

3.5 The asphalt surface preservation system assessed under the SIPT shall be installed in accordance with the manufacturer's method statement.

3.6 The area treated with the asphalt surface preservation system assessed under the SIPT shall be a minimum of 50 m in length and a lane wide.

3.7 The hydraulic conductivity of the preservation system assessed under the SIPT shall be determined in accordance with BS EN 12697-40 [Ref 6.N]and compared with a control section, unless otherwise stated in CC 204/WSR/003.

SI.3.7 The hydraulic conductivity of the treated section and a control section assessed under the SIPT shall be [select one from: determined, not determined] to define if hydraulic conductivity has to be measured.

3.8 Verification shall be undertaken for the hydraulic conductivity of treated and control sections by testing the preservation system assessed under the SIPT.

3.9 The frequency of hydraulic conductivity testing shall be 3 per SIPT per section.

3.10 The requirements for "Verification" in Section 14 of GC 101 [Ref 11.N] shall apply to the testing of hydraulic conductivity of surfaces treated with preservation systems and control sections assessed under the SIPT.

3.11 Recovered binder assessment of surfaces treated with preservation systems and control sections assessed under the SIPT shall be carried out in accordance with CD 227 [Ref 8.N].

3.12 For sections with a nominal layer thickness below 40 mm, the recovered binder assessment of the preservation system assessed under the SIPT shall be carried out on the bottom part of the core (after removal of the upper 10 mm).

3.13 Verification shall be undertaken for binder assessment of the surfaces treated with preservation systems and control sections assessed under the SIPT by testing cores.

3.14 The frequency of coring and testing shall be one per section at months 1, 6, 12 and 24 after application.

3.15 The requirements for "Verification" in Section 14 of GC 101 [Ref 11.N] shall apply to the coring and binder assessment testing of surfaces treated with preservation systems and control sections assessed under the SIPT.

3.16 The skid resistance of the treated section with preservation systems assessed under the SIPT shall not fall below the investigatory level, established as per CS 228 [Ref 21.N].

3.17 Verification shall be undertaken for the skid resistance of treated sections using SCRIM in accordance with CS 228 [Ref 21.N].

3.18 The frequency of skid resistance shall be once per year.

3.19 The requirements for "Verification" in Section 14 of GC 101 [Ref 11.N] shall apply to skid resistance testing of treated surfaces with preservation systems assessed under the SIPT.

3.20 Verification for the hydraulic conductivity, binder assessment and skid resistance by testing shall be undertaken by an accredited testing

laboratory in compliance with "Accredited laboratory" in Section 16 of GC 101 [Ref 11.N].

Requirements and verification for installation of surface preservation systems

3.21 Surface preservation systems shall be installed by organisations registered to and operating in compliance with a quality management scheme in accordance with Quality management schemes in Section 7 of GC 101 [Ref 11.N] for the application of BS EN ISO 9001 [Ref 16.N]for the supply and application of surface treatments to road surfaces.

3.22 The requirements for "Product acceptance schemes" in Section 12 of GC 101 [Ref 11.N] shall apply to the installation of surface preservation systems.

3.23 Surface preservation systems shall be installed on identified lengths suitable for preventative maintenance, as per CS 230 [Ref 15.N].

3.24 The application rate of the preservation system shall be as stated in the Product Acceptance Scheme certificate.

3.25 Verification shall be undertaken for the application rate using test patches (not less than 1 x 1 m^2) installed in advance of the main works.

3.26 The frequency of application rate measurement shall be one per site.

3.27 The requirements for "Verification" in Section 14 of GC 101 [Ref 11.N] shall apply to the measurement of the application rate.

3.28 Street furniture shall not be oversprayed with the treatment.

3.29 Road markings shall be avoided or re-applied if oversprayed with the treatment.

3.30 The road and adjacent side roads, footways, cycle tracks and paved areas shall be kept substantially free from loose particles from the preservation system for a period of 30 days after completion of the surface treatment.

Skid resistance of surfaces treated with surface preservation systems

3.31 The minimum characteristic skid coefficient of the surface for 12 months following treatment with the surface preservation system, measured by routine survey, shall be as stated in CC 204/WSR/003.

Documentation for installation of surface preservation systems

3.32 The following Documentation shall be submitted for surface preservation systems prior to the commencement of application of the surface preservation system: Details of preservation system report, including: type, proposed application rate of the preservation system; details of the surface to be treated: type and visual condition.

3.33 The requirements for "Documentation" in Section 2 of GC 101 [Ref 11.N] shall apply to the details of the surface preservation system report.

3.34 The following Documentation for surfaces treated with preservation systems shall be submitted as continuous records: Preservation system report, including: weather conditions at the time of installation; adopted spray rate of asphalt preservation system.

3.35 The requirements of "Records" in Section 3 of GC 101 [Ref 11.N] shall apply to the preservation systems report.

4. Emergency area surface treatment

General requirements for emergency area surface treatments

4.1 The emergency area surface treatment shall be installed in the locations detailed in CC 204/WSR/004.

The emergency area surface treatment	
Drawing/model number(s)	**Description**
(a)	(b)

a) Enter text, to define the drawing or model number which contains the location where the permitted surface treatment option is to be constructed.

b) Enter text, to define the location of the surface treatment option [e.g. road name, direction, lane].

Constituent requirements and verification for emergency area surface treatments

4.2 The constituents used in the emergency area surface treatment shall be compliant with BS 8870 [Ref 12.N].

4.3 Verification shall be undertaken for emergency area surface treatment by testing constituents in accordance with BS 8870 [Ref 12.N].

4.4 The frequency of testing of the emergency area surface treatment constituents shall be per batch of material and every 6 months for calcined bauxite.

4.5 The requirements for "Verification" in Section 14 of GC 101 [Ref 11.N] shall apply to emergency area surface treatment constituents.

Product requirements for emergency area surface treatments

4.6 The requirements for "Product acceptance schemes" in Section 12 of GC 101 [Ref 11.N] shall apply to the emergency area surface treatment.

4.7 The emergency area surface treatment shall have undergone a system installation performance trial (SIPT).

4.8 The Product Acceptance Scheme for the emergency area surface treatment shall demonstrate that the product has met the requirements of the SIPT.

4.9 The colour of the emergency area surface treatment shall be compliant with GD 301 [Ref 24.N].

System installation performance trial (SIPT) requirements and verification for emergency area surface treatments

4.10 The emergency area surface treatment assessed under the SIPT shall be representative of an emergency area as described in Appendix E/F9 of GD 300 [Ref 17.N].

4.11 The loss of mass to demonstrate fuel resisting properties of the emergency area surface treatment shall be $C_{imax6.}$.

4.12 Verification shall be undertaken for the loss of mass to determine fuel resisting properties of the emergency area surface treatment assessed under the SIPT by testing in accordance with BS EN 12697-43 [Ref 5.N].

4.13 The frequency of loss of mass testing shall be once per SIPT.

4.14 The requirements for "Verification" in Section 14 of GC 101 [Ref 11.N] shall apply to the testing of the loss of mass of the emergency area surface treatment assessed under the SIPT.

4.15 The level of delamination of the emergency area surface treatment assessed under the SIPT shall be no more than 0.5%.

4.16 Verification shall be undertaken for the level of delamination of the emergency area surface treatment assessed under the SIPT by assessment in accordance with BS EN 12274-8 [Ref 23.N].

4.17 The frequency of assessment of the level of delamination of the emergency area surface treatment assessed under the SIPT shall be at 12 months after opening to traffic and at 24 months after opening to traffic.

4.18 The requirements for "Verification" in Section 14 of GC 101 [Ref 11.N] shall apply to the assessment of the level of delamination of the emergency area surface treatment assessed under the SIPT.

4.19 The level of wear of the emergency area surface treatment assessed under the SIPT shall be no more than 3%.

4.20 Verification shall be undertaken for the level of wear of the emergency area surface treatment assessed under the SIPT by assessment in accordance with BS EN 12272-2 [Ref 28.N].

4.21 The frequency of assessment of the level of wear of the emergency area surface treatment assessed under the SIPT shall be at 12 months after opening to traffic and at 24 months after opening to traffic.

4.22 The requirements for "Verification" in Section 14 of GC 101 [Ref 11.N] shall apply to the assessment of the level of wear of the emergency area surface treatment assessed under the SIPT.

4.23 The colour of the emergency area surface treatment assessed under the SIPT shall be compliant with GD 301 [Ref 24.N].

4.24 The mean corrected pendulum test value (PTV_{Corr}) of the emergency area surface treatment assessed under the SIPT shall be an average of not less than 60, with no individual value less than 55.

4.25 Verification shall be undertaken for the PTV_{Corr} of the emergency area surface treatment assessed under the SIPT by measurement in accordance with BS EN 13036-4 [Ref 18.N]with a set of a minimum of 8 measurements evenly spread across the SIPT area.

4.26 The frequency of measurement of the PTV_{Corr} of the emergency area surface treatment assessed under the SIPT shall be one set at 12 months after opening to traffic and at 24 months after opening to traffic.

4.27 The requirements for "Verification" in Section 14 of GC 101 [Ref 11.N] shall apply to the measurement of the PTV_{Corr} of the emergency area surface treatment assessed under the SIPT.

4.28 At opening to traffic, the initial surface texture depth of the emergency area surface treatment assessed under the SIPT shall be a mean of not less than 1.2 mm for a set of measurements and not less than 1.0 mm for an individual measurement.

4.29 Verification shall be undertaken for the initial surface texture depth of the emergency area surface treatment assessed under the SIPT by measurement in accordance with BS EN 13036-1 [Ref 19.N]with a set of a minimum of 8 measurements evenly spread across the SIPT area.

4.30 The frequency of measurement of initial surface texture depth of the emergency area surface treatment assessed under the SIPT shall be one set per SIPT.

4.31 The requirements for "Verification" in Section 14 of GC 101 [Ref 11.N] shall apply to the measurement of the initial surface texture depth of the emergency area surface treatment assessed under the SIPT.

4.32 The retained surface texture depth of the emergency area surface treatment assessed under the SIPT shall be a mean of not less than 1.2 mm for a set of measurements and not less than 1.0 mm for an individual measurement.

4.33 Verification shall be undertaken for the retained surface texture depth of the emergency area surface treatment assessed under the SIPT by measurement in accordance with BS EN 13036-1 [Ref 19.N]with a set of a minimum of 8 measurements evenly spread across the SIPT area.

4.34 The frequency of the measurement of the retained surface texture depth of the emergency area surface treatment assessed under the SIPT shall be one set per SIPT area at 12 months after opening to traffic and at 24 months after opening to traffic.

4.35 The requirements for "Verification" in Section 14 of GC 101 [Ref 11.N] shall apply to the measurement of the retained surface texture depth of the emergency area surface treatment assessed under the SIPT.

4.36 At opening to traffic, the resistance to surface shear of the emergency area surface treatment assessed under the SIPT shall be not less than 1500 KPa.

4.37 Verification shall be undertaken for the resistance to surface shear of the emergency area surface treatment assessed under the SIPT by testing in accordance with PD CEN/TS 12697-51 [Ref 7.N].

4.38 The frequency of resistance to surface shear testing shall be once per SIPT before opening to traffic, at 12 months and at 24 months.

4.39 The requirements for "Verification" in Section 14 of GC 101 [Ref 11.N] shall apply to the testing of the resistance to surface shear of the emergency area surface treatment assessed under the SIPT.

Product documentation for emergency area surface treatments

4.40 The following Documentation shall be submitted for the emergency area surface treatment colour prior to the commencement of the installation of the emergency area surface treatment: certificate of colour.

4.41 The requirements for "Documentation" in Section 2 of GC 101 [Ref 11.N] shall apply to the emergency area surface treatment colour documentation.

Installation requirements and verification for emergency area surface treatments

4.42 The emergency area surface treatment shall be installed in accordance with the manufacturer's installation method statement.

4.43 The requirements for "Product acceptance schemes" in Section 12 of GC 101 [Ref 11.N] shall apply to the installation the emergency area surface treatment.

Pendulum test value

4.44 Prior to opening to traffic and for 5 years, the mean corrected pendulum test value (PTV_{Corr}) of the emergency area surface treatment shall be an average of not less than 60 with no individual value lower than 55.

4.45 Verification shall be undertaken for the PTV_{Corr} of the emergency area surface treatment prior opening to traffic by testing in accordance with BS EN 13036-4 [Ref 18.N] with a set of a minimum of 8 measurements evenly spread across the emergency area.

4.46 The frequency of initial PTV_{Corr} measurement shall be one set per emergency area.

4.47 The requirements for "Verification" in Section 14 of GC 101 [Ref 11.N] shall apply to the testing of the PTV_{Corr} of the emergency area surface treatment.

Initial texture depth

4.48 Prior to opening to traffic, the initial surface texture depth of the emergency area surface treatment shall be a mean of not less than 1.2 mm for a set of measurements and not less than 1.0 mm for an individual measurement.

4.49 Verification shall be undertaken for the initial surface texture depth of the emergency area surface treatment by measurement in accordance with BS EN 13036-1 [Ref 19.N]with a set of a minimum of 8 measurements evenly spread across the emergency area.

4.50 The frequency of initial surface texture depth measurement shall be one set per emergency area.

4.51 The requirements for "Verification" in Section 14 of GC 101 [Ref 11.N] shall apply to the measurement of the initial surface texture depth of the emergency area surface treatment.

Colour

4.52 Prior to opening to traffic and for 5 years, the colour of the emergency area surface treatment shall be as defined in GD 301 [Ref 24.N].

Retained texture depth

4.53 For a period of 5 years after opening to traffic, the retained surface texture depth of the emergency area surface treatment shall be a mean of not less than 1.2 mm for a set of measurements with no individual measurement under 1.0 mm.

4.54 The retained surface texture depth shall be measured in accordance with BS EN 13036-1 [Ref 19.N].

Surface integrity

4.55 For a period of 5 years after opening to traffic, the level of delamination of the installed emergency area surface treatment shall be not more than 2%.

4.56 The delamination of the installed emergency area surface treatment shall be assessed in accordance with BS EN 12274-8 [Ref 23.N].

4.57 For a period of 5 years after opening to traffic, the level of wear of the installed emergency area surface treatment shall be not more than 6%.

4.58 The level of wear of the installed emergency area surface treatment shall be assessed in accordance with BS EN 12272-2 [Ref 28.N].

4.59 Deterioration arising from accidental damage other than fuel spillages, and damage caused by failure of the underlying carriageway on which the emergency area surface treatment has been laid shall be excluded from any assessment of level of delamination or level of wear of the installed emergency area surface treatment.

5. Slurry surfacing incorporating microsurfacing

General requirements for slurry surfacing incorporating microsurfacing

5.1 Slurry surfacing incorporating microsurfacing shall be applied in the locations detailed in CC 204/WSR/005.

Slurry surfacing incorporating microsurfacing								
Drawing/ model number(s)	**Description**	**Chainage from**	**Chainage to**	**Surface treatment reference**	**Minimum PSV**	**Maximum AAV**	**Colour**	**Nominal layer thickness**
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)

a) Enter text, to define the drawing or model number which contains the location where the permitted surface treatment option is to be constructed.

b) Enter text, to define the location of the surface treatment option [e.g. road name, direction, lane].

c) Enter a number in units of m, to define the start chainage of the slurry surfacing application.

d) Enter a number in units of m, to define the end chainage of the slurry surfacing application.

e) Enter a unique reference, to define the material reference that assigns work specific material requirements.

f) Enter a number, to define the minimum PSV of aggregates.

g) Enter a number, to define the maximum AAV of aggregates.

h) Enter a unique reference.

i) Enter a number in units of mm, to define the required layer thickness.

Slurry surfacing incorporating microsurfacing (continued)	
Drawing/model number(s)	**Performance category**
(a)	(j)

a.j) Enter text, to define the performance category of the slurry surfacing.

Requirements for slurry surfacing incorporating microsurfacing

5.2 Aggregates used in slurry surfacing shall be compliant with BS EN 13043 [Ref 2.N].

5.3 The aggregates shall meet the following performance characteristics: be crushed rock, slag, gravel or calcined bauxite and have a minimum PSV and a maximum AAV as per SI5.1.

5.4 The requirements of "Designated standards" in Section 10 of GC 101 [Ref 11.N] shall apply to the aggregates for slurry surfacing incorporating microsurfacing.

5.5 Slurry surfacing incorporating microsurfacing shall be compliant with BS EN 12273 [Ref 22.N].

5.6 The slurry surfacing shall meet the following performance characteristics: have the performance category specified in SI 5.1j.

5.7 The requirements of "Designated standards" in Section 10 of GC 101 [Ref 11.N] shall apply to the aggregates for slurry surfacing incorporating microsurfacing.

Requirements and verification for installation of slurry surfacing incorporating microsurfacing

5.8 Slurry surfacing incorporating microsurfacing shall be installed by organisations registered to and operating in compliance with a quality management scheme in accordance with Quality management schemes in Section 7 of GC 101 [Ref 11.N] for the application of BS EN ISO 9001 [Ref 16.N]for the supply and application of surface treatments to road surfaces.

5.9 Transverse and longitudinal joints in the slurry surfacing shall be formed with no ridges.

5.10 Application of the slurry surfacing shall leave no bare strips.

5.11 All voids, cracks and surface irregularities within the surface treated with slurry surfacing shall be filled by the slurry surfacing.

5.12 The amount of slurry surfacing applied in each area shall be recorded.

5.13 Slurry surfacing shall not be applied with air temperatures below 4°C.

5.14 Slurry surfacing shall not be applied if standing water is present on the surface.

5.15 In warm weather, immediately ahead of spreading the slurry surfacing, the surface shall be damped by mist water spray.

5.16 Surface levels after the slurry surfacing application shall comply with "General requirements for flexible pavement construction" in Section 1 of CC 202 [Ref 10.N].

5.17 The road and adjacent side roads, footways, cycle tracks and paved areas shall be kept substantially free of loose particles from the slurry surfacing for a period of 30 days after completion of the surfacing work.

5.18 The design, materials and workmanship shall be guaranteed against defect and failure to meet the end performance requirements for a period of two years.

5.19 Minimum surface texture depth at the end of the guarantee period shall be as per Table 5.19.

Table 5.19 Requirements for minimum surface texture depth for Slurry surfacing

Traffic cv/lane/day	Speed limit 50 mph or 60 mph	Speed limit 40 mph or lower
50 to 250	1.0 mm	0.8 mm
10 to 50	1.0 mm	0.7 mm
Below 10	1.0 mm	No requirement

5.20 Verification shall be undertaken for the surface texture depth of slurry surfacing in accordance with BS EN 13036-1 [Ref 19.N].

5.21 The frequency of surface texture depth testing shall be in accordance with BS EN 13036-1 [Ref 19.N].

5.22 The requirements for "Verification" in Section 14 of GC 101 [Ref 11.N] shall apply to the testing of surface texture depth of the slurry surfacing.

Documentation for installation of Slurry surfacing incorporating microsurfacing

5.23 The following Documentation for slurry surfacing shall be submitted not more than 30 days after completion of the work: s built manual, including: surface texture depth test results, volume of slurry surfacing used and areas covered with calculated thickness, record of traffic control, weather information, unforeseen problems and a list of complaints, if any, from the general public or road users.

6. Surface dressing for pavements: recipe specification

General requirements for surface dressing for pavements: recipe specification

6.1 Surface dressing recipe specification shall be applied as specified in CC 204/WSR/006.

Surface dressing recipe specification								
Drawing/ model number(s)	**Description**	**Chainage from**	**Chainage to**	**Surface treatment reference**	**Chippings**	**Minimum PSV**	**Maximum AAV**	**Rate of spread of chippings**
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)

a) Enter text, to define the drawing or model number which contains the location where the permitted surface treatment option is to be constructed.

b) Enter text, to define the location of the surface treatment option [e.g. road name, direction, lane].

c) Enter a number in units of m, to define the start chainage of the surface dressing application.

d) Enter a number in units of m, to define the end chainage of the surface dressing application.

e) Enter a unique reference, to define the material reference that assigns work specific material requirements.

f) Enter a number in units of mm, to define size of chippings.

g) Enter a number, to define the minimum PSV of aggregates.

h) Enter a number, to define the maximum AVV of aggregates.

i) Enter a number in units of kg/m^2, to define the design rate of spread of chippings.

Surface dressing recipe specification (continued)					
Drawing/ model number(s)	**Tolerances for chippings rate of spread**	**Binder type**	**Rate of spread of binder**	**Tolerances for binder rate of spread**	**Guarantee period**
(a)	(j)	(k)	(l)	(m)	(n)

Surface dressing recipe specification (continued)					
Drawing/ model number(s)	**Tolerances for chippings rate of spread**	**Binder type**	**Rate of spread of binder**	**Tolerances for binder rate of spread**	**Guarantee period**

j) Enter a value, from options ±5% (Highly stressed sites, motorways and dual carriageways), ±10% (All other sites), ±15% (Lightly trafficked single carriageways (up to 100 cv/l/d)), to define the tolerances for chippings spread permitted for the works.

k) Enter text, to define the designed binder type.

l) Enter a number in units of kg/m^2, to define the design rate of spread of binder.

m) Enter a value, from options ±5% (Highly stressed sites, motorways and dual carriageways), ±10% (Single carriageways), to define the tolerances for binder spread permitted for the works.

n) Enter a number in units of year, to define the guarantee period for materials and workmanship.

6.2 Surface dressing materials, installation techniques and procedures shall be selected to meet the specification requirements.

6.3 An as built manual shall be provided.

6.4 The materials and workmanship shall be guaranteed against defects and failure to meet the specification for a period of 1 year, unless otherwise stated in CC 204/WSR/006.

Materials and equipment requirements and verification - binder for surface dressing for pavements: recipe specification

6.5 The binder for surface dressing for pavements, recipe specification shall be compliant with BS EN 13808 [Ref 4.N].

6.6 The binder for surface dressing for pavements, recipe specification shall meet the following performance characteristics: Class 9.

6.7 The requirements of "Designated standards" in Section 10 of GC 101 [Ref 11.N] shall apply to the binder for surface dressing for pavements, recipe specification.

6.8 The accuracy of spread of the spray bar shall be tested prior to the commencement of the surface dressing season.

6.9 The accuracy of spread of the spray bar to spread the binder for surface dressing for pavements, recipe specification shall be as per BS 1707 [Ref 20.N].

6.10 Verification shall be undertaken for accuracy of spread of the spray bar in accordance with PD 6689 [Ref 29.N].

6.11 The frequency of accuracy of spread of the spray bar shall be in accordance with PD 6689 [Ref 29.N].

6.12 The requirements for "Verification" in Section 14 of GC 101 [Ref 11.N] shall apply to the testing of the accuracy of spread of the spray bar.

6.13 Verification for the testing for the accuracy of spread of the spray bar shall be undertaken by an accredited testing laboratory in compliance with "Accredited laboratory" in Section 16 of GC 101 [Ref 11.N].

6.14 The binder sprayer shall be capable of uniform application at the designed rate of spread over a variable or fixed width sufficient to allow a full lane width to be produced in a single pass.

6.15 Verification shall be undertaken for rate of spread of the binder for surface dressing for pavements, recipe specification, by measuring in accordance with BS EN 12272-1 [Ref 27.N].

6.16 The frequency of rate of spread of the binder for surface dressing for pavements, recipe specification, shall be as per PD 6689 [Ref 29.N].

6.17 The requirements for "Verification" in Section 14 of GC 101 [Ref 11.N] shall apply to the measurement of the rate of spread of the binder for surface dressing for pavements, recipe specification,.

6.18 Verification shall be undertaken for accuracy of spread of the binder for surface dressing for pavements, recipe specification, by measuring in accordance with BS EN 12272-1 [Ref 27.N].

6.19 The frequency of accuracy of spread of the binder for surface dressing for pavements, recipe specification, shall be as per PD 6689 [Ref 29.N].

6.20 The requirements for "Verification" in Section 14 of GC 101 [Ref 11.N] shall apply to the measurement of the accuracy of spread of the binder for surface dressing for pavements, recipe specification,.

6.21 Verification for rate and accuracy of binder spread shall be undertaken by an accredited testing laboratory in compliance with "Accredited laboratory" in Section 16 of GC 101 [Ref 11.N].

Materials and equipment requirements and verification - chippings for surface dressing for pavements: recipe specification

6.22 The chippings for surface dressing for pavements, recipe specification, shall be compliant with BS EN 13043 [Ref 2.N].

6.23 The chippings for surface dressing for pavements, recipe specification, shall meet the following performance characteristics: be crushed rock, slag, gravel or calcined bauxite; FI_{20}, f_1, LA_{30}.

6.24 The requirements of "Designated standards" in Section 10 of GC 101 [Ref 11.N] shall apply to the chippings for surface dressing for pavements, recipe specification,.

6.25 The chipping spreader shall have controlled metering and be capable of variable or fixed width application to match the binder sprayer.

6.26 Verification shall be undertaken for rate of spread of chippings for surface dressing for pavements, recipe specification, by measuring in accordance with BS EN 12272-1 [Ref 27.N].

6.27 The frequency of rate of spread of chippings for surface dressing for pavements, recipe specification, shall be as per PD 6689 [Ref 29.N].

6.28 The requirements for "Verification" in Section 14 of GC 101 [Ref 11.N] shall apply to the measurement of the rate of spread of chippings for surface dressing for pavements, recipe specification,.

6.29 Verification shall be undertaken for accuracy of spread of chippings for surface dressing for pavements, recipe specification, by measuring in accordance with BS EN 12272-1 [Ref 27.N].

6.30 The frequency of accuracy of spread of chippings for surface dressing for pavements, recipe specification, shall be as per PD 6689 [Ref 29.N].

6.31 The requirements for "Verification" in Section 14 of GC 101 [Ref 11.N] shall apply to the measurement of the accuracy of spread for surface dressing for pavements, recipe specification,.

6.32 Verification for rate and accuracy of spread of chippings for surface dressing for pavements, recipe specification, shall be undertaken by an accredited testing laboratory in compliance with "Accredited laboratory" in Section 16 of GC 101 [Ref 11.N].

Preparation for the application of surface dressing for pavements: recipe specification

6.33 Substrate to receive surface dressing shall be in accordance with BS EN 12271 [Ref 26.N]before surface dressing commences.

6.34 Before binder is applied, street furniture shall be masked using self-adhesive masking material.

6.35 Oil, sand or similar materials shall not be used for masking street furniture.

6.36 Any packed mud or other deposits on the road surface shall be removed.

6.37 The road surface shall be free of all loose material prior to commencement of surface dressing application.

Application of surface dressing for pavements: recipe specification

6.38 Surface dressing shall be installed by organisations registered to and operating in compliance with a quality management scheme in accordance with Quality management schemes in Section 7 of GC 101 [Ref 11.N] for the application of BS EN ISO 9001 [Ref 16.N]for the supply and application of surface treatments to road surfaces.

6.39 A Quality plan for executing the works shall be provided.

6.40 Binder for surface dressing for pavements, recipe specification, shall be applied to the road surface at the rates specified in WSR 204/006.

6.41 Surface dressing application restrictions shall apply when one or more of the following circumstances apply:

1. when there is precipitation;
2. when there is free water on the surface;
3. when the air temperature is at or below 10°C when using bitumen emulsion and uncoated chippings, or as per manufacturer's recommendations when using modified or fluxed binders or coated chippings;
4. when the relative humidity exceeds 80% for emulsion binders; and/or,
5. when the road surface temperature exceeds 35°C for roads carrying over 200 cv/lane/day or 40°C below that traffic level

6.42 No other restrictions to the application of surface dressing shall apply, unless otherwise stated in CC 204/WSR/006.

SI.6.42 Other surface dressing application restrictions are as follows: [enter free text].

6.43 Transverse joints in the surface dressing, recipe specification, shall be formed with spraying starting and finishing on a protective strip not less than 1 metre wide at each end of the lane length being treated.

6.44 Transverse joints in the surface dressing, recipe specification, shall be of binder overlap only and not wider than 100 mm.

6.45 Transverse joints in the surface dressing, recipe specification, shall have no ridges or bare strips.

6.46 Longitudinal joints in the surface dressing, recipe specification, shall coincide with lane markings.

6.47 Longitudinal joints in the surface dressing, recipe specification, shall be of binder overlap only while ensuring that the proposed rate of spread is achieved across the joint.

6.48 Longitudinal joints in the surface dressing, recipe specification, shall be formed with no ridges.

6.49 Application of the surface dressing, recipe specification shall leave no bare strips.

6.50 Rolling of the surface dressing shall be performed by rubber coated steel-wheeled vibratory rollers and/or pneumatic tyred rollers as per BS 594987 [Ref 3.N].

Aftercare of the surface dressing: recipe specification

6.51 Masking shall be removed after the surface dressing has been applied and before opening the road to unrestricted traffic.

6.52 Surplus chippings shall be removed from the road by suction sweeping before it is opened to unrestricted traffic.

6.53 Verification shall be undertaken for aggregate loss from the surface dressing by monitoring.

6.54 The frequency of monitoring shall be for a minimum period of 2 hours after the road is opened to traffic unless otherwise stated in CC 204/WSR/006.

SI.6.54 The monitoring of surface dressing shall be [enter a number] .

6.55 The requirements for "Verification" in Section 14 of GC 101 [Ref 11.N] shall apply to the monitoring of surface dressing.

6.56 The road and adjacent side roads, footways, cycle tracks and paved areas shall be kept substantially free of loose chippings from the surface dressing for a period of 30 days after completion of the work.

Documentation for the surface dressing: recipe specification

6.57 The following Documentation shall be submitted for Surface dressing prior to the commencement of the surface dressing installation: Quality Plan for executing the works.

6.58 The requirements for "Documentation" in Section 2 of GC 101 [Ref 11.N] shall apply to the Quality plan.

6.59 The following Documentation for surface dressing installation shall be submitted not more than 30 days after completion of the work: as built manual, including: all test results; variations to the design and those necessitated by localised site conditions; weather information; unforeseen problems and a list of complaints, if any, from the general public or road users.

7. Surface dressing: material design, application and end product performance

General requirements for surface dressing for pavements: material design, application and end product performance

7.1 Surface dressing shall be applied in the locations detailed in CC 204/WSR/007.

Surface dressing						
Drawing/ model number(s)	**Description**	**Chainage from**	**Chainage to**	**Surface treatment reference**	**Minimum PSV**	**Maximum AAV**
(a)	(b)	(c)	(d)	(e)	(f)	(g)

a) Enter text, to define the drawing or model number which contains the location where the permitted surface treatment option is to be constructed.

b) Enter text, to define the location of the surface treatment option [e.g. road name, direction, lane].

c) Enter a number in units of m, to define the start chainage of the surface dressing application.

d) Enter a number in units of m, to define the end chainage of the surface dressing application.

e) Enter a unique reference, to define the material reference that assigns work specific material requirements.

f) Enter a number, to define the minimum PSV of aggregates.

g) Enter a number, to define the maximum AAV of aggregates.

Requirements for surface dressing for pavements: material design, application and end product performance

7.2 Surface dressing for pavements, design, application and end product performance, shall be compliant with BS EN 12271 [Ref 26.N].

7.3 The chippings for surface dressing for pavements, design, application and end product performance, shall meet the following performance characteristics: be crushed rock, slag, or gravel.

7.4 The requirements of "Designated standards" in Section 10 of GC 101 [Ref 11.N] shall apply to the chippings for surface dressing for pavements, design, application and end product performance.

7.5 The accuracy of spread of the spray bar shall be tested prior to the commencement of the surface dressing season.

7.6 The accuracy of spread of the spray bar to spread the binder for surface dressing for pavements: material design, application and end product performance shall be as per BS 1707 [Ref 20.N].

7.7 Verification shall be undertaken for accuracy of spread of the spray bar in accordance with PD 6689 [Ref 29.N].

7.8 The frequency of accuracy of spread of the spray bar shall be in accordance with PD 6689 [Ref 29.N].

7.9 The requirements for "Verification" in Section 14 of GC 101 [Ref 11.N] shall apply to the testing of the accuracy of spread of the spray bar.

7.10 Verification for the testing for the accuracy of spread of the spray bar shall be undertaken by an accredited testing laboratory in compliance with "Accredited laboratory" in Section 16 of GC 101 [Ref 11.N].

Requirements and verification for installation of surface dressing for pavements: material design, application and end product performance

7.11 Surface dressing for pavements, design, application and end product performance shall be installed by organisations registered to and operating in compliance with a quality management scheme in accordance with Quality management schemes in Section 7 of GC 101 [Ref 11.N] for the application of BS EN ISO 9001 [Ref 16.N]for the supply and application of surface treatments to road surfaces.

7.12 Street furniture, road markings and kerbs shall not be oversprayed with the surface dressing for pavements, design, application and end product performance.

7.13 Transverse joints of the surface treated with surface dressing for pavements, design, application and end product performance, shall be of binder overlap only and not wider than 100 mm.

7.14 Longitudinal joints of the surface treated with surface dressing for pavements, design, application and end product performance, shall coincide with lane markings and be of binder overlap only to a maximum extend of 300 mm.

7.15 Transverse and longitudinal joints of the surface treated with surface dressing for pavements, design, application and end product performance shall be formed with no ridges or bare strips.

7.16 The accuracy of spread of the spray bar used for spraying the binder of the surface dressing for pavements, design, application and end product performance, shall be tested prior to the commencement of the surface dressing season.

7.17 The accuracy of spread of the spray bar used for spraying the binder of the surface dressing for pavements, design, application and end product performance, shall be as per BS 1707 [Ref 20.N].

7.18 Verification shall be undertaken for accuracy of spread of the spray bar used for spraying the binder of the surface dressing for pavements,

design, application and end product performance, in accordance with PD 6689 [Ref 29.N].

7.19 The frequency of accuracy of spread of the spray bar used for spraying the binder of the surface dressing for pavements, design, application and end product performance, shall be annually.

7.20 The requirements for "Verification" in Section 14 of GC 101 [Ref 11.N] shall apply to accuracy of spread of the spray bar used for spraying the binder of the surface dressing for pavements, design, application and end product performance,.

7.21 Verification for accuracy of spread of the spray bar used for spraying the binder of the surface dressing for pavements, design, application and end product performance, shall be undertaken by an accredited testing laboratory in compliance with "Accredited laboratory" in Section 16 of GC 101 [Ref 11.N].

7.22 The spread rate of binder and chippings of the surface dressing for pavements, design, application and end product performance, shall recorded.

7.23 Verification shall be undertaken for rate of spread of binder and chippings of the surface dressing for pavements, design, application and end product performance, by measured in accordance with BS EN 12272-1 [Ref 27.N].

7.24 The frequency of rate of spread of binder and chippings of the surface dressing for pavements, design, application and end product performance, shall be once per site.

7.25 The requirements for "Verification" in Section 14 of GC 101 [Ref 11.N] shall apply to the measurement of the rate of spread of binder and chippings of the surface dressing for pavements, design, application and end product performance,.

7.26 The accuracy of spread of binder and chippings of the surface dressing for pavements, design, application and end product performance, shall recorded.

7.27 Verification shall be undertaken for accuracy of spread of binder and chippings of the surface dressing for pavements, design, application and end product performance, by measuring in accordance with BS EN 12272-1 [Ref 27.N].

7.28 The frequency of accuracy of spread of binder and chippings of the surface dressing for pavements, design, application and end product performance, shall be as per PD 6689 [Ref 29.N].

7.29 The requirements for "Verification" in Section 14 of GC 101 [Ref 11.N] shall apply to the measurement of the accuracy of spread of binder and chippings of the surface dressing for pavements, design, application and end product performance,.

7.30 Verification for the rate and accuracy of spread of binder and chippings of the surface dressing for pavements, design, application and end product performance, shall be undertaken by an accredited testing

laboratory in compliance with "Accredited laboratory" in Section 16 of GC 101 [Ref 11.N].

7.31 The road and adjacent side roads, footways, cycle tracks and paved areas shall be kept substantially free of loose chippings from the surface dressing for a period of 30 days after completion of the surfacing work.

7.32 The design, materials and workmanship shall be guaranteed for a period of 2 years.

7.33 Minimum surface texture of the surface dressing for pavements, design, application and end product performance, at the end of the guarantee period shall be as per Table 7.33.

Table 7.33 Requirements for minimum surface texture depth for surface dressing

Surface dressing type	Traffic cv/lane/day	Speed limit	
		50 mph or higher	Speed limit 40 mph or lower
Single and racked-in surface dressings	More than 2000	1.5 mm	1.5 mm
	250 to 2000	1.5 mm	1.2 mm
	50 to 250	1.2 mm	1.0 mm
	Less than 50	1.0 mm	0.8 mm
Double and multiple-layered surface dressings	Over 3250	1.2 mm	
	250 to 3250	1.0 mm	
	Less than 250	0.8 mm	

7.34 Surface texture depth of surface dressing for pavements, design, application and end product performance, shall be assessed in accordance with BS EN 13036-1 [Ref 19.N].

Documentation for surface dressing for pavements: design, application and end product performance

7.35 The following Documentation for surface dressing for pavements, design, application and end product performance, installation shall be submitted as continuous records: as built manual, including: all test results; variations to the design and those necessitated by localised site conditions; weather information; unforeseen problems and a list of complaints, if any, from the general public or road users.

7.36 The requirements of "Records" in Section 3 of GC 101 [Ref 11.N] shall apply to the as built manual of the surface dressing for pavements, design, application and end product performance,.

8. Longitudinal diamond grinding of concrete pavement surfaces

General requirements for longitudinal diamond grinding of concrete pavement surfaces

8.1 Longitudinal diamond grinding of concrete pavement surfaces shall be as specified in CC 204/WSR/008.

Longitudinal diamond grinding of concrete pavement surfaces							
Drawing/ model number(s)	**Description**	**Chainage from**	**Chainage to**	**Surface treatment reference**	**Aggregate type**	**Nominal depth of longitudinal diamond grinding**	**Minimum characteristic skid coefficient**
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)

a) Enter text, to define the drawing or model number which contains the location where the permitted surface treatment option is to be constructed.

b) Enter text, to define the location of the surface treatment option [e.g. road name, direction, lane].

c) Enter a number in units of m, to define the start chainage of the longitudinal diamond grinding application.

d) Enter a number in units of m, to define the end chainage of the longitudinal diamond grinding application.

e) Enter a unique reference, to define the material reference that assigns work specific material requirements.

f) Enter text, to define the aggregate type of the concrete surface.

g) Enter a number in units of mm, to define the nominal depth of longitudinal diamond grinding.

h) Enter a number, to define the minimum characteristic skid coefficient of the concrete surface to be achieved for 12 months following longitudinal diamond grinding.

Longitudinal diamond grinding of concrete pavement surfaces (continued)	
Drawing/model number(s)	**Minimum road/tyre noise reduction**
(a)	(i)

i) Enter a number in units of dB, to define the minimum reduction of the road/tyre noise of the surface following the longitudinal diamond grinding.

Equipment requirements for longitudinal diamond grinding of concrete pavement surfaces

8.2 Longitudinal diamond grinding shall be undertaken using diamond blades.

8.3 Longitudinal diamond grinding shall be undertaken using equipment with a cutting head not less than 1200 mm wide.

8.4 The wheel base of the equipment used to undertake longitudinal diamond grinding shall be not less than 3.6 m.

Contractor design requirements and documentation of longitudinal diamond grinding of concrete pavement surfaces

8.5 The following items shall be Contractor design items for longitudinal diamond grinding:

1. blade spacing;
2. groove width; and,
3. groove depth.

8.6 The design of longitudinal diamond grinding shall be in accordance with CD 236 [Ref 25.N].

8.7 The requirements for "Contractor design" in Section 17 of GC 101 [Ref 11.N] shall apply to longitudinal diamond grinding.

8.8 The following Documentation shall be submitted for the Contractor design of longitudinal diamond grinding prior to the commencement of the works: Contractor design proposal including blade spacing, groove widths and groove depths.

8.9 Documentation for the Contractor design of longitudinal diamond grinding shall be submitted not less than 4 weeks prior to the commencement of the works.

Procedure requirements and verification for longitudinal diamond grinding of concrete pavement surfaces

8.10 Prior to the commencement of longitudinal diamond grinding, the road/tyre noise of the existing concrete surface shall be measured.

8.11 Verification shall be undertaken for the road/tyre noise of the existing concrete surface by measurement in accordance with BS EN ISO 11819-2 [Ref 1.N].

8.12 The frequency of the road/tyre noise of the existing concrete surface shall be once prior to commencement of longitudinal diamond grinding.

8.13 The requirements for "Verification" in Section 14 of GC 101 [Ref 11.N] shall apply to the measurement of the road/tyre noise of the existing concrete surface.

8.14 The following Documentation shall be submitted for the road/tyre noise of the existing surface prior to the commencement of longitudinal diamond grinding: test report.

8.15 Longitudinal diamond grinding shall be installed by organisations registered to and operating in compliance with a quality management scheme in accordance with with Quality management schemes in Section 7 of GC 101 [Ref 11.N] for the application of BS EN ISO 9001 [Ref 16.N]for the supply and application of surface treatments to road surfaces.

8.16 Longitudinal diamond grinding shall be undertaken across the full width of the lane.

8.17 Longitudinal diamond grinding shall be undertaken in the direction of the flow of traffic.

8.18 The load on the cutting drum on the longitudinal diamond grinding equipment shall be constant throughout the longitudinal diamond grinding process.

8.19 Grooves cut by longitudinal diamond grinding shall be not more than 5 mm deep.

8.20 Grooves cut by longitudinal diamond grinding shall be 2 to 4 mm wide.

8.21 The spacing of grooves cut by longitudinal diamond grinding shall be 1.75 to 3.25 mm wide.

8.22 Following the completion of longitudinal diamond grinding, the concrete surface and adjacent areas shall be free from grinding residue.

8.23 Overlapping of successive strips of longitudinal diamond grinding shall be avoided.

8.24 Successive strips of longitudinal diamond grinding shall be not more than 3.25 mm apart.

8.25 Following the completion of longitudinal diamond grinding, the regularity of the concrete surface, measured as the difference between the surface and the underside of a straightedge shall be not more than 5 mm.

8.26 Verification shall be undertaken for the regularity of the concrete surface following longitudinal diamond grinding by testing at 300 m intervals using a 3 m straightedge in accordance with BS 8420 [Ref 14.N].

8.27 The frequency of regularity testing shall be once prior to opening to traffic.

8.28 The requirements for "Verification" in Section 14 of GC 101 [Ref 11.N] shall apply to the testing of the regularity of the concrete surface following longitudinal diamond grinding.

8.29 Following the completion of longitudinal diamond grinding, the 10 m and 30 m enhanced longitudinal profile variance of the concrete surface, measured by routine survey shall be condition category 2 or category 1 in accordance with CS 230 [Ref 15.N].

8.30 Following the completion of longitudinal diamond grinding, not less than 95% of any 20 m^2 section of the concrete surface shall have received grinding.

8.31 The minimum characteristic skid coefficient of the concrete surface for 12 months following longitudinal diamond grinding, measured by routine survey, shall be as stated in CC 204/WSR/008.

8.32 The reduction of the road/tyre noise level of the surface following the longitudinal diamond grinding shall be as stated in CC 204/WSR/008.

8.33 Verification shall be undertaken for the road/tyre noise of the surface following longitudinal diamond grinding by measurement in accordance with BS EN ISO 11819-2 [Ref 1.N].

8.34 The frequency of the road/tyre noise measurement of the surface following longitudinal diamond grinding shall be once within 3 months following longitudinal diamond grinding.

8.35 The requirements for "Verification" in Section 14 of GC 101 [Ref 11.N] shall apply to the measurement of the road/tyre noise of the surface following longitudinal diamond grinding.

9. Fine milling of concrete pavement surfaces

General requirements for fine milling of concrete pavement surfaces

9.1 Fine milling of concrete surfaces shall be as specified in CC 204/WSR/009.

Fine milling of concrete surfaces						
Drawing/ model number(s)	**Description**	**Chainage from**	**Chainage to**	**Surface treatment reference**	**Nominal milling depth**	**Minimum characteristic skid coefficient**
(a)	(b)	(c)	(d)	(e)	(f)	(g)

a) Enter text, to define the drawing or model number which contains the location where the permitted surface treatment option is to be constructed.

b) Enter text, to define the location of the surface treatment option [e.g. road name, direction, lane].

c) Enter a number in units of m, to define the start chainage of the fine milling application.

d) Enter a number in units of m, to define the end chainage of the fine milling application.

e) Enter a unique reference, to define the material reference that assigns work specific material requirements.

f) Enter a number in units of mm, to define the nominal depth of the concrete surface to be removed.

g) Enter a number, to define the minimum characteristic skid coefficient of the concrete surface to be achieved for 12 months following fine milling.

Equipment requirements for fine milling of concrete surfaces

9.2 Fine milling of concrete surfaces shall be undertaken with pick tips at a maximum spacing of 6 mm.

Procedure requirements and verification for fine milling of concrete surfaces

9.3 Fine milling of concrete surfaces shall be installed by organisations registered to and operating in compliance with a quality management scheme in accordance with with Quality management schemes in Section

7 of GC 101 [Ref 11.N] for the application of BS EN ISO 9001 [Ref 16.N]for the supply and application of surface treatments to road surfaces.

9.4 Fine milling of concrete surfaces shall be undertaken at the nominal milling depth +/- 3 mm.

9.5 Fine milling of concrete surfaces shall be undertaken continuously along a traffic lane.

9.6 Following the completion of fine milling, the regularity of the concrete surface, measured as the difference between the surface and the underside of a straightedge shall be not more than 5 mm.

9.7 Verification shall be undertaken for the regularity of the fine milled concrete surface by testing at 300 m intervals using a 3 m straightedge in accordance with BS 8420 [Ref 14.N].

9.8 The frequency of regularity testing shall be once prior to opening to traffic.

9.9 The requirements for "Verification" in Section 14 of GC 101 [Ref 11.N] shall apply to the testing of the regularity of the fine milled concrete surface.

9.10 Following the completion of fine milling, not less than 95% of any 20 m^2 section of the concrete surface shall have been fine milled.

9.11 At opening to traffic, the surface texture depth of the fine milled concrete surface shall be 0.8 to 1.3 mm.

9.12 Verification shall be undertaken for the surface texture depth of the fine milled concrete surface by measurement in accordance with BS EN 13036-1 [Ref 19.N]with a set of 10 measurements at 5 m spacing along a diagonal line across the lane width.

9.13 The frequency of surface texture depth measurements shall be one set per 250 m of carriageway lane.

9.14 The requirements for "Verification" in Section 14 of GC 101 [Ref 11.N] shall apply to the testing of the surface texture depth of the fine milled concrete surface.

10. Normative references

The following documents, in whole or in part, are normative references for this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

Ref.	**Document**
Ref 1.N	BSI. BS EN ISO 11819-2, 'Acoustics. Measurement of the influence of road surfaces on traffic noise. The close-proximity method'
Ref 2.N	BSI. BS EN 13043, 'Aggregates for bituminous mixtures and surface treatments for roads, airfields and other trafficked areas (Designated Standard - CPR)'
Ref 3.N	BSI. BS 594987, 'Asphalt for roads and other paved areas. Specification for transport, laying, compaction and product type testing protocols'
Ref 4.N	BSI. BS EN 13808, 'Bitumen and bituminous binders. Framework for specifying cationic bituminous emulsions (Designated Standard - CPR)'
Ref 5.N	BSI. BS EN 12697-43, 'Bituminous mixtures. Test methods for hot mix asphalt. Resistance to fuel'
Ref 6.N	BSI. BS EN 12697-40, 'Bituminous mixtures. Test methods. In situ drainability'
Ref 7.N	BSI. BSI. PD CEN/TS 12697-51, 'Bituminous mixtures. Test methods. Surface shear strength test'
Ref 8.N	National Highways. DMRB. CD 227, 'Design for pavement maintenance'
Ref 9.N	Transport Research Laboratory. TRL 674, 'Durability of thin surfacing system. Final report after nine years monitoring.'
Ref 10.N	National Highways. CC 202 'Flexible pavement construction'
Ref 11.N	National Highways. GC 101, 'General requirements for the Specification for Highway Works'
Ref 12.N	BSI. BS 8870, 'Materials for roads. High friction surfacing. Specification'
Ref 14.N	BSI. BS 8420, 'Methods of measuring irregularities on surfaces of roads, footways and other paved areas using straightedges and wedges'

Ref 15.N	National Highways. CS 230, 'Pavement maintenance assessment procedure'
Ref 16.N	BSI. BS EN ISO 9001, 'Quality management systems. Requirements [Designated Standard - NLF]'
Ref 17.N	National Highways. DMRB. GD 300, 'Requirements for new and upgraded all-purpose trunk roads (expressways)'
Ref 18.N	BSI. BS EN 13036-4, 'Road and airfield surface characteristics. Test methods - Method for measurement of slip/skid resistance of a surface: The pendulum test'
Ref 19.N	BSI. BS EN 13036-1, 'Road and airfield surface characteristics. Test methods. Measurement of pavement surface macrotexture depth using a volumetric patch technique'
Ref 20.N	BSI. BS 1707, 'Road surface dressing, bond coats, seals, preservatives and other sprays. Specification for the method of test for binder sprayers for accuracy of spread of binder (spray bar bench test).'
Ref 21.N	National Highways. CS 228, 'Skidding resistance'
Ref 22.N	BSI. BS EN 12273, 'Slurry surfacing - requirements (Designated Standard - CPR)'
Ref 23.N	BSI. BS EN 12274-8, 'Slurry surfacing. Test methods. Visual assessment of defects'
Ref 24.N	National Highways. GD 301, 'Smart motorways'
Ref 25.N	National Highways. CD 236, 'Surface course materials for construction'
Ref 26.N	BSI. BS EN 12271, 'Surface dressing - requirements (Designated Standard - CPR)'
Ref 27.N	BSI. BS EN 12272-1, 'Surface dressing. Test methods. Rate of spread and accuracy of spread of binder and chippings.'
Ref 28.N	BSI. BS EN 12272-2, 'Surface dressing. Test methods. Visual assessment of defects'
Ref 29.N	BSI. PD 6689, 'Surface treatments. Guidance on the use of BS EN 12271 and BS EN 12273.'

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