Manual of Contract Documents for Highway Works

Pavement
Contract preparation

CP 207 Instructions for specifiers for CC 207 Footway, cycle track, paved area, kerb unit and access step construction

Version LIVE_2024-10-03

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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 207	LIVE_2024-10-03	Not available	Core document	Change to policy, major revision, new document development
This document replaces MCHW Volume 1 Series 1100 and MCHW Volume 2 Series NG 1100 that have been withdrawn. These documents have been revised in accordance with the Manual for Development of Documents and, as a result, have undergone significant restructuring and technical revisions.				

Previous versions

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Foreword

This document provides specifier instructions for the production of the works specific requirements for CC 207 Footway, cycle track, paved area, kerb unit and access step construction.

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.

Users are responsible for archiving contract documentation in accordance with the user's quality management system.

1. General requirements for footway, cycle track and paved area construction

1.1 General requirements for footway, cycle track and paved area construction shall be as specified in CC 207/WSR/001.

General requirements for footway, cycle track and paved area construction				
Drawing/ model number	**Design level document number**	**Detail/model numbers**	**Location**	**Footway, cycle track or paved area option**
(a)	(b)	(c)	(d)	(e)

a) Enter text, to define the drawing or model which contains the location where the permitted option is to be constructed.
b) Enter text, to define the documentation which contains design level information.

c) Enter text, to define the detail or model which contains the detail for the permitted option, including materials and thicknesses.

d) Enter text, to define the location of the permitted option [e.g. GPS coordinates].

e) Enter one or more values, from options as defined in Footway, cycle track or paved area options of WSR 207/001, to define the corresponding reference for work specific construction requirements.

1.2 Footway, cycle track or paved area options shall be as described in CC 207/WSR/001.

Footway, cycle track or paved area options								
Footway, cycle track or paved area option	**Material 1 type**	**Material 1 reference**	**Material 1 nominal thickness**	**Material 2 type**	**Material 2 reference**	**Material 2 nominal thickness**	**Material 3 type**	**Material 3 reference**
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)

Footway, cycle track or paved area options								
Footway, cycle track or paved area option	**Material 1 type**	**Material 1 reference**	**Material 1 nominal thickness**	**Material 2 type**	**Material 2 reference**	**Material 2 nominal thickness**	**Material 3 type**	**Material 3 reference**

a) Enter a unique reference, to define the work specific construction requirements for the footway, cycle track or paved area option.
b) Enter a value, from options Asphalt surface course, Modular paving, to define the material 1 type.

c) Enter a value, from options as defined in Footway, cycle track and paved area materials of WSR 207/001, to define the corresponding material reference.

d) Enter a number in units of mm, to define the nominal thickness of material 1.

e) Enter a value, from options Binder course, Laying course, to define the material 2 type.

f) Enter a value, from options as defined in Footway, cycle track and paved area materials of WSR 207/001, to define the corresponding material reference.

g) Enter a number in units of mm, to define the nominal thickness of material 2.

h) Enter a value, from options Binder course, Base course, Subbase, to define the material 3 type.

i) Enter a value, from options as defined in Footway, cycle track and paved area materials of WSR 207/001, to define the corresponding material reference.

Footway, cycle track or paved area options (continued)							
Footway, cycle track or paved area option	**Material 3 nominal thickness**	**Material 4 type**	**Material 4 reference**	**Material 4 nominal thickness**	**Material 5 type**	**Material 5 reference**	**Material 5 nominal thickness**
(a)	(j)	(k)	(l)	(m)	(n)	(o)	(p)

Footway, cycle track or paved area options (continued)							
Footway, cycle track or paved area option	**Material 3 nominal thickness**	**Material 4 type**	**Material 4 reference**	**Material 4 nominal thickness**	**Material 5 type**	**Material 5 reference**	**Material 5 nominal thickness**

j) Enter a number in units of mm, to define the nominal thickness of material 3.

k) Enter a value, from options Subbase, Capping, Not used, to define the material 4 type.

l) Enter a value, from options as defined in Footway, cycle track and paved area materials of WSR 207/001, to define the corresponding material reference.

m) Enter a number in units of mm, to define the nominal thickness of material 4.

n) Enter a value, from options Capping, Not used, to define the material 5 type.

o) Enter a value, from options as defined in Footway, cycle track and paved area materials of WSR 207/001, to define the corresponding material reference.

p) Enter a number in units of mm, to define the nominal thickness of material 5.

1.3 Footway, cycle track and paved area materials shall be as described in CC 207/WSR/001.

Footway, cycle track and paved area materials		
Material reference	**Material designation**	**Document and section reference**
(a)	(b)	(c)

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

b) Enter text, to define the material designation corresponding to the material reference [e.g. 6F1 unbound capping, CBGM 1 base, AC 20 dense bin 100/150 rec].

c) Enter text, to define the SHW document number and section for the associated material [e.g. CC 207.2].

2. Capping for footways, cycle tracks and paved areas

General requirements for capping for footways, cycle tracks and paved areas

2.1 General requirements for unbound capping for footways, cycle tracks and paved areas shall be as specified in CC 207/WSR/002.

General requirements for unbound capping for footways, cycle tracks and paved areas	
Material reference	**Material to be non-frost susceptible**
(a)	(b)

a) Enter a value, from options as defined in Footway, cycle track and paved area materials of WSR 207/001, to define the corresponding reference for the material.
b) Enter a value, from options Yes, No, to define if the material needs to be non-frost susceptible.

2.2 General requirements for bound capping for footways, cycle tracks and paved areas shall be as specified in CC 207/WSR/002.

General requirements for bound capping for footways, cycle tracks and paved areas						
Material reference	**Binder/ combination of binders**	**Water content of material to be stabilised**	**Maximum organic matter content of material to be stabilised**	**Maximum intact lump dry density (IDD) of chalk**	**Moisture Condition Value (MCV) of material to be stabilised**	**Water content of stabilised material to be compacted**
(a)	(b)	(c)	(d)	(e)	(f)	(g)

a) Enter a value, from options as defined in Footway, cycle track and paved area materials of WSR 207/001, to define the corresponding reference for work specific capping construction requirements.

b) Enter text, to define the binder or combination of binders to be used.

c) Enter text, to define the water content (minimum and/or maximum) of the material to be stabilised to form bound capping.

d) Enter a number in units of %, to define the maximum organic matter content of the material to be stabilised to form bound capping.

e) Enter a number in units of mg/m^3, to define the maximum IDD of chalk to be stabilised to form bound capping, when applicable.

f) Enter text, to define the minimum and/or maximum MCV of the material to be stabilised to form bound capping, when applicable.

g) Enter text, to define the water content (minimum and/or maximum) of the stabilised material to enable compaction.

General requirements for bound capping for footways, cycle tracks and paved areas (continued)							
Material reference	**MCV immediately before compaction**	**Minimum California bearing ratio (soaked CBR measured in the laboratory)**	**Determination of the linear swelling during laboratory mixture design stage**	**Determination of the soaked CBR and linear swelling during construction stage**	**Maximum water soluble sulfate content**	**Maximum oxidisable sulfides content (%)**	**Maximum total potential sulfate content (%)**
(a)	(h)	(i)	(j)	(k)	(l)	(m)	(n)

h) Enter text, to define the minimum and/or maximum MCV of the stabilised material immediately before compaction.

i) Enter a number in units of %, to define the minimum CBR of the bound capping layer.

j) Enter a value, from options Yes, No, to define if the linear swelling needs to be measured during the laboratory mixture design stage.

k) Enter a value, from options Soaked CBR only, Soaked CBR and linear swelling, Not required, to define if the soaked CBR and linear swelling need to be measured during the construction stage.

l) Enter a number in units of mg/l, to define the maximum water soluble sulfate content of the material to be stabilised to form bound capping.

m) Enter text, to define the maximum oxidisable sulfides content of the material to be stabilised to form bound capping.

n) Enter text, to define the maximum total sulfate content of the material to be stabilised to form bound capping.

2.3 Unbound capping for footways, cycle tracks and paved areas shall comply with constituents and product requirements, installation, testing, verification and documentation within "Unbound capping for pavement foundations" in Section 6 of CC 201 [Ref 32.N].

2.4 Bound capping used in footways, cycle tracks and paved areas shall comply with class 9A, 9B, 9C, 9D, 9E or 9F.

2.5 Class 9A, 9B, 9C, 9D, 9E or 9F bound capping for footways, cycle tracks and paved areas shall comply with constituents and product requirements, installation, testing, verification and documentation within "Bound capping for pavement foundations" in Section 7 of CC 201 [Ref 32.N].

3. Unbound subbase for footways, cycle tracks and paved areas

General requirements for unbound subbase for footways, cycle tracks and paved areas

3.1 General requirements for unbound subbase for footways, cycle tracks and paved areas shall be as specified in CC 207/WSR/003.

General requirements for unbound subbase for footways, cycle tracks and paved areas				
Material reference	**Design subgrade surface modulus**	**Category for percentage of crushed or broken particles in coarse aggregate**	**Maximum nominal layer thickness**	**Material to be non-frost susceptible**
(a)	(b)	(c)	(d)	(e)

a) Enter a value, from options as defined in Footway, cycle track and paved area materials of WSR 207/001, to define the corresponding reference for the material.
b) Enter a number in units of MPa, to define the design subgrade surface modulus for the characteristic section.

c) Enter a value, from options $C_{50/10}$, $C_{90/3}$, to define the category for crushed or broken particles and totally rounded particles in the mixture.

d) Enter a number in units of mm, to define the maximum layer thickness (default maximum layer thickness is 225 mm).

e) Enter a value, from options Yes, No, to define if the material needs to be non-frost susceptible.

3.2 Unbound mixtures for unbound subbase for footways, cycle tracks and paved areas shall comply with constituents and product requirements, installation, testing, verification and documentation within "Unbound mixtures for pavement subbase" in Section 8 of CC 201 [Ref 32.N].

4. Hydraulically bound granular mixture (HBGM) base for footways and paved areas

General requirements for HBGM base for footways and paved areas

4.1 General requirements for hydraulically bound granular mixtures (HBGM) for bases for footways and paved areas shall be as specified in CC 207/WSR/004.

General requirements for hydraulically bound granular mixtures (HBGM) for bases for footways and paved areas					
Material reference	**Category for percentage of crushed or broken particles in coarse aggregate**	**Resistance to fragmentation of coarse aggregate**	**Construction method**	**Transverse cracks spacing (m)**	**Longitudinal cracks spacing (m)**
(a)	(b)	(c)	(d)	(e)	(f)

a) Enter a value, from options as defined in Footway, cycle track and paved area materials of WSR 207/001, to define the corresponding reference for the material.
b) Enter a value, from options C_{NR},$C_{90/3}$, $C_{50/30}$, to define the category for crushed or broken particles and totally rounded particles in the mixture.

c) Enter a value, from options LA_{50}, LA_{60}, to define the category for maximum value of Los Angeles coefficient.

d) Enter one or more values, from options in-situ method, ex-situ method, to define the construction method.

e) Enter text, to define the transverse crack spacing formed by induced cracks and transverse construction joints.

f) Enter text, to define the longitudinal crack spacing formed by induced cracks and longitudinal joints.

4.2 HBGM base for footway and paved areas shall be CBGM 1, SBGM 1, FABGM 1 or HRBBGM 1.

4.3 CBGM 1, SBGM 1, FABGM 1 or HRBBGM 1 base for footways and paved areas shall comply with constituents and product requirements, production and installation, testing, verification and documentation within and "Hydraulically bound mixtures for pavement subbase" in Section 9 of CC 201 [Ref 32.N].

4.4 The grading of CBGM 1 base for footways and paved areas shall be 0/20.

4.5 HBGM base for footways and paved areas shall be compressive strength class C5/6.

Installation and verification requirements for HBGM for bases for footways and paved areas

4.6 The surface level of the HBGM base for footways and paved areas shall be at the design level within the following tolerances: + 5 / - 15 mm.

4.7 Verification shall be undertaken for the surface levels of the HBGM base for footways and paved areas by measurement against the datum on a grid of points not more than 2 m spacing transversely and not more than 5 m spacing longitudinally.

4.8 The frequency of measurement of surface levels shall be once prior to overlay.

4.9 The requirements for "Verification" in Section 14 of GC 101 [Ref 23.N] shall apply to the measurement of the surface levels of HBGM for bases for footways and paved areas.

5. Bituminous materials for footways, cycle tracks and paved areas

Cold recycled bound materials (CRBM) for footways, cycle tracks and paved areas

Product requirements for CRBM for footways, cycle track and paved areas

5.1 CRBM shall be compliant with BS 9228 [Ref 37.N].

5.2 The CRBM shall meet the following performance characteristics: QVE B1, QVE B2, QVE B3, QVE B4, SVE B1, SVE B2, SVE B3 or SVE B4.

5.3 The mixture design for CRBM shall be established by accelerated curing for 72 hours at 60 °C.

Installation requirements for CRBM for footways, cycle tracks and paved areas

5.4 Surface to receive the CRBM shall be prepared in accordance with BS 9228 [Ref 37.N].

5.5 The production and installation of CRBM shall be in accordance with BS 9228 [Ref 37.N].

5.6 Verification shall be undertaken for the quality control compliance of the CRBM by inspection and testing in accordance with BS 9228 [Ref 37.N].

5.7 The frequency of testing, inspection and quality control compliance of CRBM shall be in accordance with BS 9228 [Ref 37.N].

5.8 The requirements for "Verification" in Section 14 of GC 101 [Ref 23.N] shall apply to the testing, inspection and quality control compliance of the CRBM.

5.9 The surface level of the CRBM for footways, cycle tracks and paved areas shall be at the design level within the following tolerances: + 15 mm and - 15 mm.

Installation verification for CRBM for footways, cycle tracks and paved areas

5.10 Verification shall be undertaken for the surface level of the CRBM by measurement against the datum level on a grid of points not more than 2 m spacing transversely with a minimum of two transverse measurements and not more than 5 m spacing longitudinally.

5.11 The frequency of measurement of surface levels shall be once prior to overlay.

5.12 The requirements for "Verification" in Section 14 of GC 101 [Ref 23.N] shall apply to the measurement of the surface level of CRBM.

Asphalt binder course for footways, cycle tracks and paved areas

Product requirements for asphalt binder course for footways, cycle tracks and paved areas

5.13 Asphalt binder course for footways, cycle tracks and paved areas shall be compliant with BS EN 13108-1 [Ref 6.N]following PD 6691 [Ref 24.N].

5.14 The asphalt binder course for footways, cycle tracks and paved areas shall meet the following performance characteristics: AC 20 dense bin 40/60 rec, AC 20 dense bin 40/60 rec W, AC 20 dense bin 100/150 rec or AC 20 dense bin 100/150 rec W.

5.15 The requirements of "Designated standards" in Section 10 of GC 101 [Ref 23.N] shall apply to asphalt binder course for footways, cycle tracks and paved areas.

5.16 Aggregates for asphalt binder course for footways, cycle tracks and paved areas shall be compliant with BS EN 13043 [Ref 1.N].

5.17 The aggregates for asphalt binder course for footways, cycle tracks and paved areas shall meet the following performance characteristics: FI_{35}, LA_{30}, MS_{25}, V_{10}.

5.18 The requirements of "Designated standards" in Section 10 of GC 101 [Ref 23.N] shall apply to aggregates for asphalt binder course for footways, cycle tracks and paved areas.

5.19 Bitumen for asphalt binder course for footways, cycle tracks and paved areas shall be compliant with BS EN 12591 [Ref 5.N].

5.20 The bitumen for asphalt binder course for footways, cycle tracks and paved areas shall meet the following performance characteristics: BS EN 12591 [Ref 5.N], Table 1A.

5.21 The requirements of "Designated standards" in Section 10 of GC 101 [Ref 23.N] shall apply to bitumen for asphalt binder course for footways, cycle tracks and paved areas.

Installation and verification requirements for asphalt binder course for footways, cycle tracks and paved areas

5.22 Asphalt binder course for footways, cycle tracks and paved areas shall be installed in accordance with BS 594987 [Ref 3.N].

5.23 The surface level of the asphalt binder course for footways, cycle tracks and paved areas shall be at the design level within the following tolerances: + 10 mm and - 10 mm.

5.24 Verification shall be undertaken for the surface level of the asphalt binder course for footways, cycle tracks and paved areas by measurement against the datum level on a grid of points not more than 2 m spacing transversely and not more than 5 m spacing longitudinally.

5.25 The frequency of measurement of surface levels shall be once prior overlay.

5.26 The requirements for "Verification" in Section 14 of GC 101 [Ref 23.N] shall apply to the asphalt binder course for footways, cycle tracks and paved areas.

Asphalt surface course for footways, cycle tracks and paved areas

Product requirements for asphalt surface course for footways, cycle tracks and paved areas

5.27 Asphalt concrete surface course for footways, cycle tracks and paved areas shall be compliant with BS EN 13108-1 [Ref 6.N]following PD 6691 [Ref 24.N].

5.28 The asphalt concrete surface course for footways, cycle tracks and paved areas shall meet the following performance characteristics: AC 6 dense surf 70/100, AC 6 dense surf 100/150, AC 10 close surf 70/100, AC 10 close surf 100/150, AC 6 dense surf 70/100 W, AC 6 dense surf 100/150 W, AC 10 close surf 70/100 W or AC 10 close surf 100/150 W.

5.29 The requirements of "Designated standards" in Section 10 of GC 101 [Ref 23.N] shall apply to asphalt concrete surface course for footways, cycle tracks and paved areas.

5.30 Hot rolled asphalt surface course for footways, cycle tracks and paved areas shall be compliant with BS EN 13108-4 [Ref 7.N]following PD 6691 [Ref 24.N].

5.31 The hot rolled asphalt surface course for footways, cycle tracks and paved areas shall meet the following performance characteristics: HRA 0/2 F surf 40/60 or HRA 15/10 F surf 40/60.

5.32 The requirements of "Designated standards" in Section 10 of GC 101 [Ref 23.N] shall apply to hot rolled asphalt surface course for footways, cycle tracks and paved areas.

5.33 Aggregates for asphalt surface course for footways, cycle tracks and paved areas shall be compliant with BS EN 13043 [Ref 1.N].

5.34 The aggregates for asphalt surface course for footways, cycle tracks and paved areas shall meet the following performance characteristics: FI_{35}, LA_{30}, MS_{25}, AAV_{10}, PSV_{50}.

5.35 The requirements of "Designated standards" in Section 10 of GC 101 [Ref 23.N] shall apply to aggregates for asphalt surface course for footways, cycle tracks and paved areas.

5.36 Bitumen for asphalt surface course for footways, cycle tracks and paved areas shall be compliant with BS EN 12591 [Ref 5.N].

5.37 The bitumen for asphalt surface course for footways, cycle tracks and paved areas shall meet the following performance characteristics: be in accordance with BS EN 12591 [Ref 5.N], Table 1A.

5.38 The requirements of "Designated standards" in Section 10 of GC 101 [Ref 23.N] shall apply to bitumen for asphalt surface course for footways, cycle tracks and paved areas.

Installation and verification requirements for asphalt surface course for footways, cycle tracks and paved areas

5.39 Asphalt surface course for footways, cycle tracks and paved areas shall be installed in accordance with BS 594987 [Ref 3.N].

5.40 The surface level of the asphalt surface course for footways, cycle tracks and paved areas adjacent to kerb units or ironwork shall be at the design level within the following tolerances: + 5 mm and - 0 mm.

5.41 Verification shall be undertaken for the surface level of the asphalt surface course for footways, cycle tracks and paved areas adjacent to kerb units or ironwork by measurement against the datum level on a grid of points not more than 2 m spacing transversely and not more than 5 m spacing longitudinally.

5.42 The frequency of measurement of surface levels shall be once prior to opening.

5.43 The requirements for "Verification" in Section 14 of GC 101 [Ref 23.N] shall apply to the measurement of the surface level of the asphalt surface course for footways, cycle tracks and paved areas.

5.44 The number of longitudinal irregularities in the asphalt surface course, measured by rolling straightedge, shall not exceed the values in table 5.44.

Table 5.44 Maximum permitted number of longitudinal irregularities in asphalt surface course

Irregularity	≥4 mm		≥7 mm		≥10 mm
Assessment length (m)	300	75	300	75	All
Permitted number	60	27	6	3	0

5.45 The asphalt surface course shall have not more than five irregularities that are 4 mm or greater in any 5 metre length.

5.46 The maximum permitted number of longitudinal irregularities for section lengths that are less than 300 m but form part of a surface more than 300 m in length, shall be that for a 300 m length, pro rata then rounded up to the nearest whole number.

5.47 Where the length of the pavement is less than 300 m, the number of longitudinal irregularities in the asphalt surface course shall be assessed in 75 m lengths.

5.48 Verification shall be undertaken for the longitudinal regularity of the asphalt surface course for lengths of pavement greater than 75 m by testing continuously along the entire length using a rolling straightedge.

5.49 The frequency of longitudinal regularity testing shall be once prior to opening.

5.50 The requirements for "Verification" in Section 14 of GC 101 [Ref 23.N] shall apply to the testing of the longitudinal regularity of the asphalt surface course.

5.51 Longitudinal regularity of the asphalt surface course less than 75 m in length, measured as the difference between the surface and the underside of a straightedge placed parallel to the direction of travel, shall be not more than 3 mm.

5.52 Verification shall be undertaken for the longitudinal regularity of the asphalt surface course for lengths of pavement less than 75 m by testing at 5 m intervals using a 3 m straightedge and wedge in accordance with BS 8420 [Ref 28.N].

5.53 The frequency of longitudinal regularity testing shall be once prior to opening.

5.54 The requirements for "Verification" in Section 14 of GC 101 [Ref 23.N] shall apply to the testing of the longitudinal regularity of the asphalt surface course.

5.55 The transverse regularity of the asphalt surface course, measured as the difference between the surface and underside of a straightedge shall be not more than 3 mm.

5.56 Verification shall be undertaken for the transverse regularity of the asphalt surface course by testing at 5 m intervals using a 1 m straightedge and wedge, in accordance with BS 8420 [Ref 28.N].

5.57 The frequency of transverse regularity testing shall be once prior to opening.

5.58 The requirements for "Verification" in Section 14 of GC 101 [Ref 23.N] shall apply to the testing of the transverse regularity of asphalt surface course.

Rectification of bituminous layers during footways, cycle tracks and paved areas

5.59 The depth of rectification for bituminous layers for footways, cycle tracks and paved areas shall be to the full depth of the layer.

5.60 The width of rectification for bituminous layers for footways, cycle tracks and paved areas shall be a minimum of 3 m or the full width of the footway, cycle track or paved area, whichever is less.

5.61 The length of rectification for bituminous base and binder course for footways, cycle tracks and paved areas shall be a minimum of 5 m.

5.62 The length of rectification of asphalt surface course for footways, cycle tracks and paved areas shall be a minimum of 15 m.

Local repairs to asphalt surfaced footways, cycle tracks and paved areas

5.63 Local repairs to asphalt surfaced footways, cycle tracks and paved areas shall be specified in CC 207/WSR/005.

Local repairs to asphalt surfaced footways, cycle tracks and paved areas		
Drawings/model numbers	**Repair area**	**Local repair materials and thicknesses**
(a)	(b)	(c)

a) Enter text, to define the drawing or model number which contains the location where the local repair is to be undertaken.
b) Enter a number in units of m^2, to define the area of the local repair.

c) Enter text, to define the permitted materials and nominal layer thicknesses for the local repair.

Product requirements for proprietary local repair products to asphalt surfaced footways, cycle tracks and paved areas

5.64 Coarse aggregates in surface courses used for local repair materials shall be PSV_{50}.

5.65 Proprietary products for local repairs shall have a surface macrotexture depth not less than 0.8 mm when tested in accordance with BS EN 13036-1 [Ref 39.N], with only a single test point required.

5.66 The requirements for "Product acceptance schemes" in Section 12 of GC 101 [Ref 23.N] shall apply to proprietary local repair products.

Product documentation for proprietary local repair products to asphalt surfaced footways, cycle tracks and paved areas

5.67 The following Documentation shall be submitted for proprietary local repair products prior to the commencement of installation: product acceptance scheme certificate.

5.68 The requirements for "Documentation" in Section 2 of GC 101 [Ref 23.N] shall apply to proprietary local repair products.

General requirements for local repairs to asphalt surfaced footways, cycle tracks and paved areas

5.69 Local repairs to asphalt surfaced footways, cycle tracks and paved areas shall be installed by organisations registered to and operating in compliance with a quality management scheme in accordance with [(replacement for Clause 104.8-11)] for the application of BS EN ISO 9001 [Ref 36.N].

5.70 Where local repairs to asphalt surfaced footways, cycle tracks and paved areas are undertaken, the full depth of the existing defect shall be removed.

5.71 Where the area of repair is > 1 m^2, the width of local repairs to asphalt surfaced footways, cycle tracks and paved areas shall be a minimum of 3 m or the full width of the footway, cycle track or paved area, whichever is less.

5.72 Where the area of repair is > 1 m^2, the length of local repairs to asphalt surfaced footways, cycle tracks and paved areas shall be a minimum of 2 m.

5.73 The edges to the area of local repair shall be saw-cut or mechanically removed to form a rectangular shape or rounded shape extending at least 250 mm beyond the edge of the defect.

5.74 At the point of effecting the local repair, the substrate shall be free from standing water, loose material and foreign matter.

Installation requirements for local repairs to asphalt surfaced footways, cycle tracks and paved areas

5.75 Vertical joints between successive layers in local repairs shall have a minimum horizontal step of 150 mm.

5.76 Bituminous mixtures for local repairs shall be installed in accordance with BS 594987 [Ref 3.N].

5.77 Proprietary products for local repairs shall be installed in accordance with the manufacturer's instructions.

5.78 On completion for the local repair, the surface level of the local repair for asphalt surfaced footways, cycle tracks and paved areas shall be at the surface level of the existing surface within the following tolerances: + 5 mm and - 5 mm.

Verification requirements for local repairs to asphalt surfaced footways, cycle tracks and paved areas

5.79 Verification shall be undertaken for the surface level of local repairs by measurement against the level of existing surface on a grid of points, with not more than 2 m spacing transversely and not more than 1 m spacing longitudinally when the area is > 1 m^2.

5.80 The frequency of measurement of surface levels shall be once prior to opening.

5.81 The requirements for "Verification" in Section 14 of GC 101 [Ref 23.N] shall apply to measurement of surface levels of the local repair.

6. Modular paving

General requirements for modular paving

6.1 General requirements for modular paving shall be as specified in CC 207/WSR/006.

General requirements for modular paving								
Material reference	**Paving unit type**	**Paving unit thickness**	**Paving unit length**	**Paving unit width**	**Laying course material type**	**Jointing material type**	**Laying pattern**	**Edge detail**
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)

a) Enter a value, from options as defined in Footway, cycle track or paved area option of WSR 207/001, to define the corresponding reference for work specific material construction requirements.
b) Enter a value, from options Precast concrete flag, Natural stone slab, Concrete paving block, Clay paver, Natural stone sett, to define the type of modular paving.

c) Enter a number in units of mm, to define the thickness of the paving unit.

d) Enter a number in units of mm, to define the length of the paving units.

e) Enter a number in units of mm, to define the width of the paving units.

f) Enter a value, from options laying course, bedding mortar, to define the type of material for the laying course.

g) Enter a value, from options fine aggregate, mortar, to define the type of material for the jointing.

h) Enter a value, from options Stack bond, Stretcher bond, 45 Degree herringbone, 90 Degree herringbone, 45 Degree stretcher bond, 90 Degree stretcher bond, Basket weave, Two size herringbone, to define the laying pattern of the paving units.

i) Enter a value, from options Single stretcher course, Double stretcher course, Soldier course, Not used, to define the edge detail of the paving units.

6.2 General requirements for tactile paving surface indicator units shall be as specified in CC 207/WSR/006.

General requirements for tactile paving surface indicator units				
Material reference	**Tactile paving surface indicator unit type**	**Orientation**	**Colour**	**Light reflectance value (LRV)**
(a)	(b)	(c)	(d)	(e)

a) Enter a unique reference, from options as defined in Schedule 1.4 of CC 207, to define the corresponding unit reference for the work specific construction requirements for the tactile paving surface indicator.
b) Enter text, to define the type of tactile paving surface indicator unit that is to be used.

c) Enter text, to define the orientation of the tactile paving surface indicator unit relative to the direction of travel, where required.

d) Enter text, to define the colour of the tactile paving surface indicator unit.

e) Enter text, to define the light reflectance value (LRV) for the tactile paving surface indicator unit.

Product requirements and documentation for modular paving

Laying course and jointing material for modular paving

6.3 Laying course for modular paving shall be compliant with BS EN 13242 [Ref 2.N].

6.4 The laying course for modular paving shall meet the following performance characteristics: G_F85, f_4 and 0/4.

6.5 The requirements of "Designated standards" in Section 10 of GC 101 [Ref 23.N] shall apply to laying course for modular paving.

6.6 Bedding mortar for modular paving shall be compliant with BS 7533-101 [Ref 33.N].

6.7 The laying course mortar for modular paving shall meet the following performance characteristics: Type 35.

6.8 The following Documentation shall be submitted for the bedding mortar for modular paving prior to the commencement of laying of the modular paving: product data sheet.

6.9 Jointing fine aggregate for modular paving shall be compliant with BS EN 13242 [Ref 2.N].

6.10 The jointing fine aggregate for modular paving shall meet the following performance characteristics: G_F85, f_4 and 0/1.

6.11 The requirements of "Designated standards" in Section 10 of GC 101 [Ref 23.N] shall apply to jointing fine aggregate for modular paving.

6.12 Jointing mortar for modular paving shall be compliant with BS 7533-101 [Ref 33.N].

6.13 The jointing mortar for modular paving shall meet the following performance characteristics: Type 40.

6.14 The following Documentation shall be submitted for jointing mortar for modular paving prior to the commencement of laying of modular paving: product data sheet.

Precast concrete flags for modular paving

6.15 Precast concrete flags shall be compliant with BS EN 1339 [Ref 14.N].

6.16 The precast concrete shall meet the performance characteristics as stated in table 6.18.

6.17 The requirements of "Designated standards" in Section 10 of GC 101 [Ref 23.N] shall apply to precast concrete flags.

6.18

Table 6.18 Requirements for precast concrete flags for modular paving

Property	Minimum required performance/class when tested in accordance with BS EN 1339 [Ref 14.N]
Weathering resistance	Class 3
Bending strength	Class 2
Abrasion resistance	Class 4

6.19 The unpolished skid resistance value (USRV) of the precast concrete flags for modular paving shall be specified in CC 207/WSR/006.

The unpolished skid resistance value (USRV) of the precast concrete flags for modular paving	
Material reference	**Unpolished skid resistance value (USRV)**
(a)	(b)

a) Enter a unique reference.
b) Enter a value, from options 40 or 45, to define the minimum USRV performance of the precast concrete flags when tested in accordance with BS EN 1339 [Ref 14.N].

Natural stone slabs for modular paving

6.20 Natural stone slabs shall be compliant with BS EN 1341 [Ref 43.N].

6.21 The natural stone slabs shall meet the performance characteristics as stated in table 6.23.

6.22 The requirements of "Designated standards" in Section 10 of GC 101 [Ref 23.N] shall apply to natural stone slabs.

6.23

Table 6.23 Requirements for natural stone slabs for modular paving	
Property	Minimum required performance/class for natural stone slabs when tested in accordance with BS EN 1341 [Ref 43.N]
Durability of flexural strength	98% retained after 56 cycles
Weathering resistance of flexural strength	98% retained after 25 cycles with de-icing salts
Slip/skid resistance	Unpolished skid resistance value (USRV) of 45
Water absorption	0.3%

6.24 The flexural strength of natural stone slabs for modular paving shall be specified in CC 207/WSR/006.

The flexural strength of natural stone slabs for modular paving	
Material reference	**Flexural strength (kN)**
(a)	(b)

The flexural strength of natural stone slabs for modular paving	
Material reference	**Flexural strength (kN)**

a) Enter a unique reference.
b) Enter a value, from options 3.5, 6.0, 9.0 or 14.0, to to define the flexural strength of natural stone slabs when tested in accordance with BS EN 1341 [Ref 43.N].

Concrete paving blocks for modular paving

6.25 Concrete paving blocks shall be compliant with BS EN 1338 [Ref 13.N].

6.26 The concrete paving blocks shall meet the performance characteristics as stated in table 6.28.

6.27 The requirements of "Designated standards" in Section 10 of GC 101 [Ref 23.N] shall apply to concrete paving blocks.

6.28

Table 6.28 Requirements for concrete paving blocks for modular paving	
Property	Minimum required performance/class when tested in accordance with BS EN 1338 [Ref 13.N]
Weathering resistance	Class 3
Abrasion resistance	Class 4
Slip/skid resistance	Unpolished skid resistance value (USVR) of 45

6.29 Concrete paving blocks shall have a chamfered edge.

Clay pavers for modular paving

6.30 Clay pavers shall be compliant with BS EN 1344 [Ref 9.N].

6.31 The clay pavers shall meet the performance characteristics as stated in table 6.33.

6.32 The requirements of "Designated standards" in Section 10 of GC 101 [Ref 23.N] shall apply to clay pavers.

6.33

Table 6.33 Requirements for clay pavers for modular paving	
Property	Minimum required performance/class when tested in accordance with BS EN 1344 [Ref 9.N]
Freeze/thaw resistance	Class FP100 (freeze/thaw resistant)
Transverse breaking load	Class T4
Abrasion resistance	Class A2
Slip/skid resistance	Unpolished skid resistance value (USRV) of 45

Natural stone setts for modular paving

6.34 Natural stone setts shall be compliant with BS EN 1342 [Ref 42.N].

6.35 The natural stone setts shall meet the performance characteristics as stated in table 6.37.

6.36 The requirements of "Designated standards" in Section 10 of GC 101 [Ref 23.N] shall apply to natural stone setts.

6.37

Table 6.37 Requirements for natural stone setts for modular paving	
	Minimum required performance/class when tested in accordance with BS EN 1342 [Ref 42.N]
Compressive strength	130 MPa in accordance with BS EN 1926 [Ref 30.N]
Durability of compressive strength	98% after 56 cycles
Weathering resistance of compressive strength	98% after 25 cycles with de-icing salts
Slip/skid resistance	Unpolished skid resistance value (USRV) of 45
Water absorption	0.3%

Tactile paving surface indicator units for modular paving

6.38 Tactile paving surface indicator units shall be compliant with Annex NA of PD CEN/TS 15209 [Ref 48.N].

Installation requirements and verification for modular paving

6.39 Modular paving shall be laid in accordance with BS 7533-102 [Ref 34.N].

6.40 The laying course thickness under precast concrete flags and natural stone slabs shall be 25 mm + 15 / - 5 mm.

6.41 The laying course thickness under concrete paving blocks, clay pavers and natural stone setts shall be 30 mm + 15 / - 5 mm.

6.42 The surface level of modular paving shall be at the design level within the following tolerances: ± 6 mm.

6.43 The surface level of jointing material for modular paving shall be at the design level within the following tolerances: + 0 mm / - 3 mm.

6.44 Verification shall be undertaken for the surface levels of modular paving by measurement against the datum level on a grid of points not more than 2 m spacing transversely and not more than 5 m spacing longitudinally.

6.45 The frequency of measurement of surface levels shall be once prior opening.

6.46 The requirements for "Verification" in Section 14 of GC 101 [Ref 23.N] shall apply to the measurement of the surface levels of modular paving.

6.47 The surface regularity of modular paving, measured as the difference between the surface and the underside of a 1 m straightedge shall be not more than 3 mm.

6.48 Verification shall be undertaken for the surface regularity of modular paving by using a 1 m straightedge and wedge in accordance with BS 8420 [Ref 28.N].

6.49 The frequency of surface regularity testing shall be once prior to opening.

6.50 The requirements for "Verification" in Section 14 of GC 101 [Ref 23.N] shall apply to the testing of the regularity of the modular paving surface.

7. Cellular paving for maintenance hardstandings

General requirements for cellular paving for paved areas of maintenance hardstandings

7.1 General requirements for cellular paving for paved areas of maintenance hardstandings shall be specified in CC 207/WSR/007.

General requirements for cellular paving for paved areas of maintenance hardstandings				
Drawing/model number	**Design level document number**	**Location**	**Design subgrade surface modulus**	**Design vehicle weight**
(a)	(b)	(c)	(d)	(e)

a) Enter text, to define the drawing or model which contains the location where the cellular paving is to be constructed.
b) Enter text, to define the documentation which contains the design level information.

c) Enter text, to define the location of the permitted option [e.g. GPS coordinates].

d) Enter a number in units of MPa, to define the design subgrade surface modulus to be used in the cellular paving design.

e) Enter a number in units of kg, to define the design vehicle weight to be used in the cellular paving design.

Contractor design requirements for cellular paving for paved areas of maintenance hardstandings

7.2 Cellular paving for maintenance hardstandings shall be Contractor designed based on the design subgrade surface modulus and the design vehicle weight.

7.3 The following items of cellular paving for maintenance hardstandings shall be Contractor designed: cellular paving and foundation.

7.4 The design of cellular paving for maintenance hardstandings shall be in accordance with CD 226 [Ref 17.N].

7.5 The requirements for "Contractor design" in Section 17 of GC 101 [Ref 23.N] shall apply to cellular paving for maintenance hardstandings.

Product requirements for cellular paving for paved areas of maintenance hardstandings

7.6 The subbase for cellular paving shall be Type 1 unbound mixture complying with "Unbound subbase for footways, cycle tracks and paved areas" in Section 3 of this document.

7.7 Cellular paving cells shall have a minimum thickness of 80 mm.

7.8 Cellular paving cells shall have a maximum cell diameter of 120 mm.

7.9 Cellular paving cell walls shall have a minimum thickness of 40 mm.

7.10 Cellular paving shall have a cell diameter to cell wall thickness not more than 3:1.

7.11 Soil for cellular paving shall comply with "Ground preparation for planting and seeding works" in Section 2 of LC 120 [Ref 27.N].

7.12 Grass seed for cellular paving shall comply with "Grass seeding, wildflower seeding and turfing works" in Section 4 of LC 120 [Ref 27.N].

7.13 Concrete for cellular paving for maintenance hardstandings shall be compliant with BS EN 206 [Ref 11.N], BS 8500-1 [Ref 15.N] and BS 8500-2 [Ref 16.N].

7.14 The concrete for cellular paving for maintenance hardstandings shall meet the performance characteristics as stated in table 7.15.

7.15

Table 7.15 Requirements for concrete for cellular paving for paved areas of maintenance hardstandings

Minimum compressive strength class at 28 days	Maximum aggregate size	Minimum air content	Exposure class	Permitted cement and combination types	Minimum cement or combination content in kg/m^3	Maximum water/cement ratio
C28/35	D_{max} 20	4.5%	XF4	In accordance with Table A.6 of BS 8500-1 [Ref 15.N],	300	0.55
	D_{max} 14	5.5%			320	
	D_{max} 10	6.5%			340	

				excluding CEM IV/B-P,		

Installation and verification requirements for cellular paving for paved areas of maintenance hardstandings

7.16 Installation of the subbase for cellular paving shall comply with "Unbound subbase for footways, cycle tracks and paved areas" in Section 3 of this document.

7.17 Cellular paving shall be installed in accordance with the manufacturer's requirements.

7.18 The surface level of cellular paving shall be at the design level within the following tolerances: ± 6 mm.

7.19 Verification shall be undertaken for the surface level of the cellular paving by measurement against the datum level on a grid of points not more than 2 m spacing transversely and not more than 5 m spacing longitudinally.

7.20 The frequency of measurements of surface levels shall be once prior to opening.

7.21 The requirements for "Verification" in Section 14 of GC 101 [Ref 23.N] shall apply to the measurement of the surface level of the cellular paving.

7.22 Cellular paving cells shall be filled with soil according to the manufacturer's requirements.

7.23 Soil within cellular paving cells shall be seeded with grass seed.

7.24 Verification shall be undertaken for the compressive strength of concrete for cellular paving by testing in accordance with BS EN 206 [Ref 11.N], BS 8500-1 [Ref 15.N] and BS 8500-2 [Ref 16.N].

7.25 The frequency of compressive strength testing of concrete for cellular paving shall be once per load.

7.26 The requirements for "Verification" in Section 14 of GC 101 [Ref 23.N] shall apply to compressive strength testing of concrete for cellular paving.

7.27 Verification shall be undertaken for air content of concrete for cellular paving by testing in accordance with BS EN 206 [Ref 11.N], BS 8500-1 [Ref 15.N] and BS 8500-2 [Ref 16.N].

7.28 The frequency of air content identity testing of concrete for cellular paving shall be once per load.

7.29 The requirements for "Verification" in Section 14 of GC 101 [Ref 23.N] shall apply to air content identity testing of concrete for cellular paving.

7.30 Verification shall be undertaken for consistency of concrete for cellular paving by testing in accordance with BS EN 206 [Ref 11.N], BS 8500-1 [Ref 15.N] and BS 8500-2 [Ref 16.N].

7.31 The frequency of consistence identity testing of concrete for cellular paving shall be once per load.

7.32 The requirements for "Verification" in Section 14 of GC 101 [Ref 23.N] shall apply to consistence identity testing of concrete for cellular paving.

7.33 Verification for testing of concrete for cellular paving shall be undertaken by an accredited testing laboratory in compliance with "Accredited laboratory" in Section 16 of GC 101 [Ref 23.N].

8. Kerb unit construction

General requirements for kerb unit construction

8.1 General requirements for kerb unit construction shall be as specified in CC 207/WSR/008.

General requirements for kerb unit construction					
Drawing/model number	**Design level document number**	**Detail/model number**	**Location**	**Type**	**Dimensions**
(a)	(b)	(c)	(d)	(e)	(f)

a) Enter text, to define the drawing or model number which contains the location where the kerb is to be constructed.
b) Enter text, to define the documentation which contains design level information.

c) Enter text, to define the detail or model number which contains the detail for the kerb unit, including materials and dimensions.

d) Enter text, to define the location of the kerbs [e.g. GPS coordinates].

e) Enter text, to define the type of kerb unit.

f) Enter a number in units of mm, to define the dimensions of the kerb unit.

General requirements for kerb unit construction (continued)	
Drawing/model number	**Unit reference**
(a)	(g)

g) Enter text, to define the corresponding material reference.

Product requirements and documentation for kerb units

8.2 Kerb units to be bonded to the pavement surface shall not be less than 100 mm in width at the base.

8.3 The width of kerb units to be bonded to the pavement surface shall not exceed the height of the kerb unit.

Bases, backing and bedding for kerb units

8.4 Concrete for kerb faces and backing shall be compliant with BS 8500-1 [Ref 15.N]and BS 8500-2 [Ref 16.N].

8.5 The concrete for kerb faces and backing shall meet the following performance characteristics: GEN1.

8.6 Concrete for kerb edge beams shall be compliant with BS 8500-1 [Ref 15.N] and BS 8500-2 [Ref 16.N].

8.7 The concrete for kerb edge beams shall meet the following performance characteristics: RC25/30.

8.8 The following Documentation shall be submitted for concrete for bases and backing for kerb units prior to the commencement of laying of kerb units: data sheet and mix design.

8.9 Bedding courses for kerb units shall be compliant with BS 7533-101 [Ref 33.N].

8.10 The bedding courses shall meet the following performance characteristics: Type 35.

8.11 The following Documentation shall be submitted for bedding courses for kerb units prior to the commencement of laying of kerb units: data sheet.

Precast concrete kerb units

8.12 Precast concrete kerb units shall be compliant with BS EN 1340 [Ref 12.N].

8.13 The precast concrete kerb units shall meet the performance characteristics as stated in table 8.15.

8.14 The requirements of "Designated standards" in Section 10 of GC 101 [Ref 23.N] shall apply to precast concrete kerb units.

8.15

Table 8.15 Requirements for precast concrete kerb units	
Property	Requirement in accordance with BS EN 1340 [Ref 12.N]
Weathering resistance	Class 3
Bending strength (bonded)	Class 2
Bending strength (non-bonded)	Class 2

Abrasion resistance	Class 3
Slip/skid resistance	Unpolished skid resistance value (USRV) of 45

Kerbs of natural stone

8.16 Kerbs of natural stone shall be compliant with BS EN 1343 [Ref 26.N].

8.17 The kerbs of natural stone shall meet the performance characteristics as stated in table 8.19.

8.18 The requirements of "Designated standards" in Section 10 of GC 101 [Ref 23.N] shall apply to kerbs of natural stone.

8.19

Table 8.19 Requirements for kerbs of natural stone	
Property	Requirement in accordance with BS EN 1343 [Ref 26.N]
Durability of flexural strength	98% after 56 cycles
Weathering resistance of flexural strength	98% after 25 cycles with de-icing salts
Slip/skid resistance	Unpolished skid resistance value (USRV) of 45

8.20 The kerbs of natural stone shall be as specified in CC 207/WSR/008.

The kerbs of natural stone		
Unit reference	**Flexural strength class**	**Water absorption**
(a)	(b)	(c)

a) Enter a unique reference.
b) Enter a value, from options 1, 2, 3, 4, 5 or 6, to define the flexural strength class of the kerbs of natural stone when tested in accordance with BS EN 1343 [Ref 26.N].

c) Enter a value, from options 0.3% or 0.2%, to define the water absorption of the kerbs of natural stone when tested in accordance with BS EN 1343 [Ref 26.N].

In situ asphalt kerbs

8.21 Asphalt for in situ asphalt kerbs shall be compliant with BS EN 13108-4 [Ref 7.N].

8.22 The asphalt for in situ asphalt kerbs shall meet the following performance characteristics: in accordance with BS 5931 [Ref 10.N].

8.23 The requirements of "Designated standards" in Section 10 of GC 101 [Ref 23.N] shall apply to asphalt for in situ kerbs.

8.24 The torque bond shear strength of in situ asphalt kerbs shall be not less than 535 kPa.

8.25 Verification shall be undertaken for the torque bond shear strength of in situ asphalt kerbs by testing in accordance with BS EN 12697-48 [Ref 8.N].

8.26 The frequency of torque bond shear strength testing shall be once per product on a representative substrate.

8.27 The requirements for "Verification" in Section 14 of GC 101 [Ref 23.N] shall apply to torque bond shear strength of in situ asphalt kerbs.

8.28 The following Documentation shall be submitted for testing of torque bond shear strength of in situ asphalt kerbs prior to the commencement of production of in situ asphalt kerbs: torque bond shear strength test report.

8.29 The requirements for "Documentation" in Section 2 of GC 101 [Ref 23.N] shall apply to testing of torque bond shear strength of in situ asphalt kerbs.

In situ concrete kerbs and channels

8.30 Concrete for in situ concrete kerbs and channels shall be compliant with BS EN 206 [Ref 11.N], BS 8500-1 [Ref 15.N]and BS 8500-2 [Ref 16.N].

8.31 The concrete for in situ concrete kerbs and channels shall meet the performance characteristics as stated in table 8.32.

8.32

Table 8.32 Requirements for concrete for in situ concrete kerbs and channels

Minimum compressive strength class at 28 days	Maximum aggregate size	Minimum air content	Exposure class	Permitted cement and combination types	Minimum cement or combination content in kg/m^3	Maximum water/cement ratio
C28/35	D_{max} 20	4.5%	XF4	In accordance with Table A.6 of BS 8500-1 [Ref 15.N], excluding CEM IV/B-P, -Q and -V	300	0.55
	D_{max} 14	5.5%			320	
	D_{max} 10	6.5%			340	

Polymeric kerb units

8.33 The requirements for "Product acceptance schemes" in Section 12 of GC 101 [Ref 23.N] shall apply to polymeric kerb units.

8.34 Polymeric kerb units shall withstand temperatures of 60 °C for a period of 24 hours, without incurring damage to their integrity and functionality.

8.35 Polymeric kerb units shall meet the performance requirements in table 8.36.

8.36

Table 8.36 Performance requirements for polymeric kerb units		
Property	**Performance/class**	**In accordance with**
Bending strength	2.8 MPa	BS EN 1340 [Ref 12.N]
Slip/skid resistance	Unpolished skid resistance value (USRV) of 45	
Abrasion resistance	Class 4	
Weathering resistance - resistance to freeze-thaw with de-icing salts	Class 3	
Weathering resistance - resistance to UV light	Maintain performance/class requirements for bending strength, slip/skid resistance and abrasion resistance after artificial weathering	BS EN 14836 [Ref 47.N]

8.37 Polymeric kerb units shall not be less than 100 mm in width at their base.

8.38 Polymeric kerb units shall have a width greater than their design height above the road surface.

8.39 The following Documentation shall be submitted for polymeric kerb units prior to the commencement of installation: Product Acceptance Scheme certificate.

Installation and verification requirements for kerb units

Joints in kerb units

8.40 Where kerb units are installed adjacent to concrete pavements, joints in the kerb unit and base shall be provided at the pavement transverse joints.

8.41 Where kerb units are installed adjacent to expansion joints on bridge decks, joints shall coincide with the expansion joints of the bridge deck.

8.42 Joints in kerb units at transverse joints in concrete pavements shall be the same width as the sealing grooves in the transverse joints.

8.43 Joints in kerb units at transverse joints in concrete pavements shall be sealed in accordance with "Joint sealing of concrete pavements" in Section 15 of CC 203 [Ref 38.N].

8.44 Joints in kerb units at expansion joints in concrete pavements shall include filler board placed through the concrete base and kerb unit, complying with "Filler board for concrete pavements" in Section 14 of CC 203 [Ref 38.N].

Bonding of precast concrete kerb units to the pavement surface

8.45 Where precast concrete kerb units are bonded to the pavement surface, a bonding products shall be applied to the full area of the base of the kerb unit.

Installation of precast concrete kerb units and kerbs of natural stone

8.46 Precast concrete kerb units and kerbs of natural stone shall be laid in accordance with BS 7533-102 [Ref 34.N].

8.47 Precast concrete kerb units bonded to the pavement surface shall be capable of withstanding a static push-off load of 10 kN/m applied parallel to the pavement surface at right angles to the kerb.

Installation of in situ asphalt kerbs

8.48 In situ asphalt kerbs shall be formed in accordance with BS 5931 [Ref 10.N].

8.49 In situ asphalt kerbs shall be a minimum width of 500 mm if applied to an existing cold asphalt surface.

8.50 A bond coat shall be applied to the receiving surface prior to the laying of in situ asphalt kerbs complying with BS 594987 [Ref 3.N].

Installation of in situ concrete kerbs and channels

8.51 In situ concrete kerbs and channels shall be formed in accordance with BS 5931 [Ref 10.N].

8.52 Contraction joints for in situ concrete kerbs and channels shall be sawn or wet formed.

8.53 The minimum depth for sawn contraction joints for in situ concrete kerb units shall be the greater of 25 mm below the channel invert or one quarter of the channel section.

8.54 The wet formed joints for in situ concrete kerb units shall be cut into the concrete whilst it is still plastic to separate coarse aggregate particles over not less than two thirds of the cross-sectional area and finished to form a tapered sealing groove not less than 13 mm in width at the surface, tapering to not less than 5 mm at a depth of 25 mm.

8.55 The spacing of contraction joints for in situ concrete kerb units shall be not more than 5 m.

8.56 The spacing of expansion joints for in situ concrete kerb units shall be not more than 40 m.

8.57 Verification shall be undertaken for the compressive strength of concrete for in situ concrete kerb units by testing in accordance with BS EN 206 [Ref 11.N], BS 8500-1 [Ref 15.N] and BS 8500-2 [Ref 16.N].

8.58 The frequency of compressive strength testing of concrete for in situ concrete kerb units shall be once per load.

8.59 The requirements for "Verification" in Section 14 of GC 101 [Ref 23.N] shall apply to compressive strength testing of concrete for in situ concrete kerb units.

8.60 Verification shall be undertaken for the air content of concrete for in situ concrete kerb units by testing in accordance with BS EN 206 [Ref 11.N], BS 8500-1 [Ref 15.N] and BS 8500-2 [Ref 16.N].

8.61 The frequency of air content identity testing of concrete for in situ concrete kerbs shall be once per load.

8.62 The requirements for "Verification" in Section 14 of GC 101 [Ref 23.N] shall apply to air content identity testing of concrete for in situ concrete kerb units.

8.63 Verification shall be undertaken for consistence of concrete for in situ concrete kerb units by testing in accordance with BS EN 206 [Ref 11.N], BS 8500-1 [Ref 15.N] and BS 8500-2 [Ref 16.N].

8.64 The frequency of consistence identity testing of concrete for in situ concrete kerbs shall be once per load.

8.65 The requirements for "Verification" in Section 14 of GC 101 [Ref 23.N] shall apply to consistence identity testing of concrete for in situ concrete kerb units.

8.66 Verification for testing of concrete for in situ concrete kerb units shall be undertaken by an accredited testing laboratory in compliance with "Accredited laboratory" in Section 16 of GC 101 [Ref 23.N].

8.67 Concrete for in situ concrete kerb units shall be cured and protected in accordance with BS EN 13670 [Ref 20.N] for a minimum of 14 days.

8.68 The surface finish of concrete for in situ concrete kerb units shall be Class U4 in accordance with "Concreting for structural concrete" in Section 6 of CC 482 [Ref 46.N].

Installation of polymeric kerb units

8.69 Polymeric kerb units shall be installed in accordance with the manufacturer's installation instructions.

Surface levels, horizontal alignment and longitudinal surface regularity for kerb units

8.70 The surface level of kerb units shall be at the design level within the following tolerances: ± 5 mm.

8.71 Verification shall be undertaken for the surface level of the kerb units by measurement against the datum level at not more than 10 m spacing.

8.72 The frequency of measurement of surface levels shall be once prior to opening to traffic.

8.73 The requirements for "Verification" in Section 14 of GC 101 [Ref 23.N] shall apply to the measurement of the surface level of kerb units.

8.74 The surface level of channels constructed prior to the adjacent road pavement surface shall be at the design level within the following tolerances: ± 5 mm.

8.75 The surface level of channels constructed after the adjacent road pavement surface shall be at the level of the adjacent road pavement surface + 0 mm / - 10 mm.

8.76 Verification shall be undertaken for the surface level of channels by measurement against the datum level at not more than 10 m spacing.

8.77 The frequency of measurement of surface levels shall be one prior to opening to traffic.

8.78 The requirements for "Verification" in Section 14 of GC 101 [Ref 23.N] shall apply to the measurement of surface levels of channels.

8.79 The horizontal alignment of kerb units shall be within the following tolerances: ± 13 mm.

8.80 Verification shall be undertaken for the horizontal alignment of kerb units by measurement against the datum at not more than 10 m spacing.

8.81 The frequency of measurement of horizontal alignment shall be once prior to opening to traffic.

8.82 The requirements for "Verification" in Section 14 of GC 101 [Ref 23.N] shall apply to the measurement of horizontal alignment of kerb units.

8.83 The regularity of the kerb units, measured as the difference between the top of the kerb unit and the underside of a straightedge shall not exceed 3 mm.

8.84 Verification shall be undertaken for the regularity of the kerb units by testing at 300 m intervals using a 3 m straightedge and wedge in accordance with BS 8420 [Ref 28.N].

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

8.86 The requirements for "Verification" in Section 14 of GC 101 [Ref 23.N] shall apply to the testing of the regularity of kerb units.

9. Access step construction

General requirements for access step construction

9.1 General requirements for access step construction shall be as specified in CC 207/WSR/009.

General requirements for access step construction			
Drawing/model number	**Design level document number**	**Detail/model number**	**Location**
(a)	(b)	(c)	(d)

a) Enter text, to define the drawing or model number which contains the location where the access steps are to be constructed.
b) Enter text, to define the documentation which contains the design level information.

c) Enter text, to to define the detail or model number which contains the detail for the access steps, including materials and dimensions.

d) Enter text, to define the location of the access steps [e.g. GPS coordinates].

9.2 The access steps shall achieve a 50 years working life without maintenance, excluding repairs of the structure resulting from accidental damage.

Contractor design requirements for access step construction

9.3 Access steps shall be Contractor designed.

9.4 The following items of access steps shall be Contractor designed: steps, landings and guardrails (including handrails and kneerails).

9.5 The design of access steps shall be in accordance with CD 239 [Ref 22.N].

9.6 The requirements for "Contractor design" in Section 17 of GC 101 [Ref 23.N] shall apply to access steps.

Product requirements for access steps

9.7 Access steps shall comply with BS EN ISO 14122-1 [Ref 40.N] and BS EN ISO 14122-3 [Ref 41.N].

9.8 Handrails and kneerails shall be galvanised steel guardrails in accordance with BS EN 10255 [Ref 31.N].

9.9 For in situ construction of access steps, fill material shall be Class 1 general fill in accordance with "General requirements for earthworks" in Section 2 of CC 601 [Ref 18.N].

9.10 For in situ construction of access steps, ancillary concrete shall be GEN 2 concrete complying with concrete for ancillary purposes in Section 2 of CC 495 [Ref 29.N].

9.11 For in situ construction of access steps, engineering bricks shall be compliant with BS EN 771-1 [Ref 44.N].

9.12 The engineering bricks for in situ construction of access steps shall meet the performance characteristics as stated in table 9.14.

9.13 The requirements of "Designated standards" in Section 10 of GC 101 [Ref 23.N] shall apply to engineering bricks for the in situ construction of access steps.

9.14

Table 9.14 Engineering bricks requirements for the in situ construction of access steps

Material	Requirements
Engineering bricks	Class B Minimum compressive strength - 75 N/mm^2 Maximum water absorption - 7% Freeze/thaw resistance - F2 Active soluble salts content - S2

9.15 For in situ construction of access steps, mortar shall have a durability designation of M or S in accordance with BS EN 1996-2 [Ref 19.N] and BS EN 998-2 [Ref 45.N].

9.16 For in situ construction of access steps, paving slabs shall comply with "Modular paving" in Section 6 of this document.

9.17 For in situ construction of access steps, precast concrete edgings shall comply with "Kerb unit construction" in Section 8 of this document.

9.18 For in situ construction of access steps, concrete landings shall be compliant with BS 8500-1 [Ref 15.N] and BS 8500-2 [Ref 16.N].

9.19 The concrete landings for in situ construction of access steps shall meet the performance characteristics as stated in table 9.21.

9.20 The requirements of "Designated standards" in Section 10 of GC 101 [Ref 23.N] shall apply to concrete landings for in situ construction of access steps.

9.21

Table 9.21 Concrete landing requirements for the in situ construction of access steps	
Material	Requirements
Concrete landings	Reinforced - exposure classes XC3, XC4, XD3 or XF2 Unreinforced - exposure class XF2 Minimum strength class - C25/30 Maximum aggregate size - 20 mm

9.22 Preformed concrete steps for access steps shall be compliant with BS EN 14843 [Ref 35.N].

9.23 The preformed concrete steps for access steps shall meet the following performance characteristics: strength class C30/37 or higher.

9.24 The requirements of "Designated standards" in Section 10 of GC 101 [Ref 23.N] shall apply to concrete steps for access steps.

9.25 Preformed stairs for access steps shall be compliant with BS 4592-0 [Ref 21.N].

Installation requirements for access steps

9.26 Step goings and landings of access steps shall be solid and free of gaps, holes or perforations.

9.27 Risers of access steps shall be closed without gaps, holes or perforations.

9.28 No areas of the access steps shall permit standing water.

9.29 The distance between stanchions for handrails shall be in accordance with BS EN ISO 14122-3 [Ref 41.N].

9.30 The maximum distance between stanchions shall be 1500 mm.

9.31 The height of handrails shall be 1100 mm from the surface of the base.

9.32 The height of the kneerails shall be 500 mm below the top of the handrails.

9.33 For in situ construction of access steps, the flanges or sockets of the guardrails shall be cast in the base or bolted down with a minimum of two M12 grade 8.8 anchors for each flange or socket.

9.34 For in situ construction of access steps, the forward fall shall be 1 in 50.

9.35 For in situ construction of access steps, the mortar joint shall have a weathered finish.

9.36 For in situ construction of access steps, the compacted subsoil shall be graded to the profile of steps.

9.37 For in situ construction of access steps, the ancillary concrete shall be levelled to the top of the engineering bricks.

9.38 For in situ construction of access steps, the steps shall have an overlap on the brick riser between 0 and 25 mm with the depth of overlap between 25 and 50 mm.

9.39 For in situ construction of access steps, the edging shall be laid at the slope of batter with the top edge not more than 50 mm above the adjacent ground level.

9.40 For in situ construction of access steps, the maximum protrusion of edgings above ground shall be the step rise height plus 50 mm.

9.41 Precast access steps shall be installed in accordance with the manufacturer's requirements.

10. Detector loops

Product and installation requirements for detector loops for paved areas

10.1 Hot poured compound for detector loops shall be compliant with BS EN 13304 [Ref 4.N].

10.2 The hot poured compound for detector loops shall meet the following performance characteristics: grade S85/40 or grade S85/25.

10.3 The requirements of "Designated standards" in Section 10 of GC 101 [Ref 23.N] shall apply to hot poured compound for detector loops.

10.4 The encapsulant for detector loops shall be detector loop sealant.

10.5 Detector loops crossing a kerb line shall be placed under or through the kerb in a duct.

10.6 Internal corners of slots that are 90 degrees or less to receive detector loops shall be cross cut with the edge of the slot coinciding with the corner.

10.7 Slots to receive detector loops shall accommodate a cable with a minimum 72 mm bend radius.

Detector loops in flexible carriageways

10.8 The minimum width of the slot for detector loops in flexible carriageways shall be 10 mm.

10.9 The maximum width of the slot for detector loops in flexible carriageways shall be 11 mm.

10.10 The depth of detector loop slots for flexible carriageways shall be as stated in CC 207/WSR/010.

SI.10.10 The depth of detector loop slots for carriageway shall be [enter a number] .

10.11 The depth of detector loops within slots for flexible carriageways shall be as stated in CC 207/WSR/010.

SI.10.11 The depth of detector loops within slots shall be [enter a number] .

10.12 Detector loops slots in flexible carriageways shall be filled with encapsulant to 10 mm above the detector loops with the remaining void filled with hot poured compound.

Detector loops in concrete carriageways

10.13 The minimum width of the slot for detector loops in concrete carriageways shall 23 mm.

10.14 The maximum width of the slot for detector loops in concrete carriageways shall be 25 mm.

10.15 The depth of the slot for detector loops in concrete carriageways shall be 32 mm.

10.16 The depth of the detector loops within slots for concrete carriageways shall be 25 mm from the surface to the top of the detector loops.

10.17 Detector loop slots in concrete carriageways shall be filled with encapsulant to 10 mm above the detector loops with the remaining void filled with hot poured compound.

11. 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 13043, 'Aggregates for bituminous mixtures and surface treatments for roads, airfields and other trafficked areas (Designated Standard - CPR)'
Ref 2.N	BSI. BS EN 13242, 'Aggregates for unbound and hydraulically bound materials for use in civil engineering work and road construction (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 13304, 'Bitumen and bituminous binders — Framework for specification of oxidised bitumen'
Ref 5.N	BSI. BS EN 12591, 'Bitumen and bituminous binders. Specifications for paving grade bitumens. (Designated Standard - CPR)'
Ref 6.N	BSI. BS EN 13108-1, 'Bituminous mixtures – Material specifications. Asphaltic concrete. (Designated Standard - CPR)'
Ref 7.N	BSI. BS EN 13108-4, 'Bituminous mixtures. Material specifications. Hot Rolled Asphalt (Designated Standard - CPR)'
Ref 8.N	BSI. BS EN 12697-48, 'Bituminous mixtures. Test methods. Interlayer Bonding '
Ref 9.N	BSI. BS EN 1344, 'Clay pavers. Requirements and test methods (Designated Standard - CPR)'
Ref 10.N	BSI. BS 5931, 'Code of practice for machine laid in-situ edge details for paved areas'
Ref 11.N	BSI. BS EN 206, 'Concrete - specification, performance, production and conformity'
Ref 12.N	BSI. BS EN 1340, 'Concrete kerb units. Requirements and test methods. (Designated Standard - CPR)'
Ref 13.N	BSI. BS EN 1338, 'Concrete paving blocks. Requirements and test methods. (Designated Standard - CPR)'

Ref 14.N	BSI. BS EN 1339, 'Concrete paving flags. Requirements and test methods (Designated Standard - CPR)'
Ref 15.N	BSI. BS 8500-1, 'Concrete. Complementary British Standard to BS EN 206. Method of specifying and guidance for the specifier.'
Ref 16.N	BSI. BS 8500-2, 'Concrete. Complementary British Standard to BS EN 206. Specification for constituent materials and concrete.'
Ref 17.N	National Highways. CD 226, 'Design for new pavement construction'
Ref 18.N	National Highways. CC 601 'Earthworks (Series 600)'
Ref 19.N	BSI. BS EN 1996-2, 'Eurocode 6. Design of masonry structures. Design considerations, selection of materials and execution of masonry'
Ref 20.N	BSI. BS EN 13670, 'Execution of concrete structures'
Ref 21.N	BSI. BS 4592-0, 'Flooring, stair treads and handrails for industrial use. Common design requirements and recommendations for installation'
Ref 22.N	National Highways. CD 239, 'Footway and cycleway pavement design'
Ref 23.N	National Highways. GC 101 'General requirements for the Specification for Highway Works'
Ref 24.N	BSI. PD 6691, 'Guidance on the use of BS EN 13108, Bituminous mixtures. Material specifications'
Ref 25.N	National Highways. GG 101, 'Introduction to the Design Manual for Roads and Bridges'
Ref 26.N	BSI. BS EN 1343, 'Kerbs of natural stone for external paving. Requirements and test methods (Designated Standard - CPR)'
Ref 27.N	National Highways. LC 120 'Landscape and ecology [Series 3000]'
Ref 28.N	BSI. BS 8420, 'Methods of measuring irregularities on surfaces of roads, footways and other paved areas using straightedges and wedges'
Ref 29.N	National Highways. CC 495, 'Miscellaneous'
Ref 30.N	BSI. BS EN 1926, 'Natural stone test methods. Determination of uniaxial compressive strength'

Ref 31.N	BSI. BS EN 10255, 'Non-Alloy steel tubes suitable for welding, threading and other joining methods - Requirements and test methods (Designated Standard - CPR)'
Ref 32.N	National Highways. CC 201 'Pavement foundation construction'
Ref 33.N	BSI. BS 7533-101, 'Pavements constructed with clay, concrete or natural stone paving units. Code of practice for the structural design of pavements using modular paving units'
Ref 34.N	BSI. BS 7533-102, 'Pavements constructed with clay, natural stone or concrete paving units. Code of practice for the construction and maintenance of pavements using modular paving units'
Ref 35.N	BSI. BS EN 14843, 'Precast concrete products. Stairs. (Designated Standard - CPR)'
Ref 36.N	BSI. BS EN ISO 9001, 'Quality management systems. Requirements [Designated Standard - NLF]'
Ref 37.N	BSI. BS 9228, 'Recycling of roads and other paved areas using bitumen emulsion, foamed bitumen or hydraulic material. Materials, production, installation and product type testing. Specification. Specification for materials, production, installation and product type testing'
Ref 38.N	National Highways. CC 203 'Rigid pavement construction'
Ref 39.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 40.N	BSI. BS EN ISO 14122-1, 'Safety of machinery. Permanent means of access to machinery. Choice of fixed means and general requirements of access'
Ref 41.N	BSI. BS EN ISO 14122-3, 'Safety of machinery. Permanent means of access to machinery. Stairs, stepladders and guard-rails'
Ref 42.N	BSI. BS EN 1342, 'Setts of natural stone for external paving. Requirements and test methods. (Designated Standard - CPR)'
Ref 43.N	BSI. BS EN 1341, 'Slabs of natural stone for external paving. Requirements and test methods. (Designated Standard - CPR)'

Ref 44.N	BSI. BS EN 771-1, 'Specification for masonry units. Clay masonry units (Designated Standard - CPR)'
Ref 45.N	BSI. BS EN 998-2, 'Specification for mortar for masonry. Masonry mortar (Designated Standard - CPR)'
Ref 46.N	National Highways. CC 482 'Structural concrete [Series 1700]'
Ref 47.N	BSI. BS EN 14836, 'Surfaces for sports areas. Synthetic surfaces for outdoor sports areas. Test method for artificial weathering'
Ref 48.N	BSI. PD CEN/TS 15209, 'Tactile paving surface indicators produced from concrete, clay and stone'