

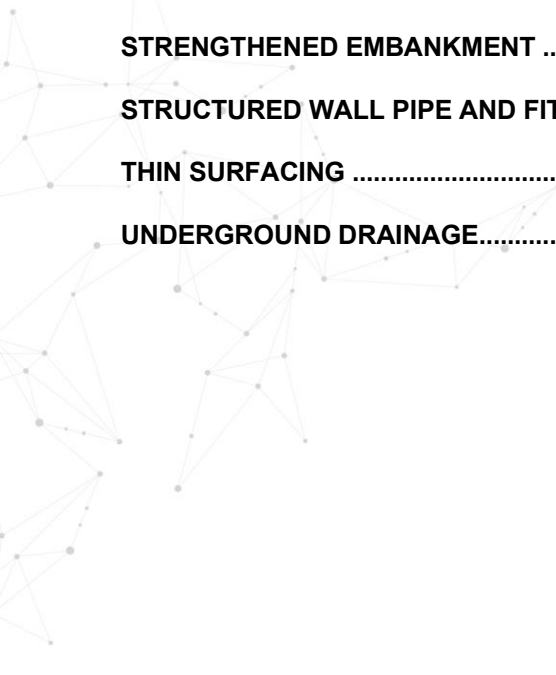


HAPAS

Note: This is a BBA document and should only be used in its entirety. Use of a part of the document could be misleading.

Contents

INTRODUCTION.....	4
ANTI-CORROSIVE METALLIC COATINGS	5
ASPHALT SURFACE TREATMENT.....	9
BINDER / ROADBASE BITUMINOUS MIXTURE	10
BITUMEN MODIFIERS.....	11
BITUMINOUS SURFACE COURSE.....	12
BRIDGE DECK WATERPROOFING.....	14
CRACK SEALING SYSTEMS	15
CULVERT.....	18
EMERGENCY AREAS	19
FIN DRAIN.....	20
FOOTWAY / FOOTPATH SURFACE TREATMENT.....	21
GABION (EARTHWORKS).....	22
GROUTED MACADAM	23
GULLY AND PIPE JUNCTION	24
HIGH FRICTION SURFACES.....	25
INTERLAYER REINFORCEMENT SYSTEM.....	26
KERBING	27
LAP AND JOINT (REINFORCEMENT).....	28
LOCALISED SURFACE REPAIR SYSTEM	29
MANHOLE REINSTATEMENT.....	30
NON-MAN ENTRY INSPECTION CHAMBER.....	31
PATCH REPAIR PRODUCT	32
PERMANENT COLD-LAY	34
PERVIOUS PAVEMENT	35
PIPE FOR DRAINAGE AND SERVICE DUCT (INCLUDING GULLIES).....	36
REINFORCED EARTH STRUCTURE.....	38
RETAINING WALL	40



SOIL REINFORCEMENT	41
STRENGTHENED EMBANKMENT	44
STRUCTURED WALL PIPE AND FITTING.....	45
THIN SURFACING	48
UNDERGROUND DRAINAGE.....	50

INTRODUCTION

The Highways Authorities Product Approval Scheme (HAPAS) was developed by the BBA, the Highways Agency (now National Highways) and the County Surveyors' Society (now ADEPT). It is supported by the Highways Technical Advisory Committee (HiTAC) and a number of Specialist Groups for product areas, including members representing Government, professional bodies and industry.

The BBA HAPAS Scheme is a certification system that assesses products against the requirements of the Manual of Contract Documents for Highways Works (MCHW), the Design Manual for Roads and Bridges (DMRB), and the Guideline Documents produced by the Specialist Groups.

The **BBA HAPAS Certification Scheme Document** ([31-01-001](#)) sets out the principles and processes for the Scheme, and this companion document details the technical specifications for each product type covered by the Scheme. Documents containing criteria will be updated from time to time, and this document will be amended as required to reflect these changes. Assessments carried out under this Scheme will be against the latest version of each Standard, subject to the note below.

Note: In the MCHW and DMRB, a Standard referred to with a year of issue refers to that specific version; a Standard referred to without a year of issue refers to the latest / current version. For Standards referred to in SG Guideline documents, the version applied shall be that called up in the MCHW or DMRB, whether a year of issue is given in the Guideline or not.

ADDITIONAL SURFACING LAYER PRODUCT

Product code(s): AJ

Test method / standard	Performance characteristic assessed	Acceptability limits / criteria
Additional Surfacing Layer for Non-SRN Use		
BS EN 13036-1:2010	Initial and retained texture depth (Installed and measured on site or following Resistance to permanent deformation)	Initial texture depth: ≥0.9 mm Retained texture depth: ≥0.7 mm
BS EN 13036-4:2011	Initial and retained Skid Resistance Value (SRV) (Installed and measured on site or following Resistance to permanent deformation)	Initial SRV: ≥60 Retained SRV: ≥50
BS EN 12697-22:2020 Method A @ 45C	Resistance to permanent deformation	Conditioning
TRL Report 176, Appendix J	Tensile bond strength at 23C, 40C and -10C	Declared Value
BS EN 12697-40:2005	In-situ drainability	Impermeable
Aggregate characteristics		
BS EN 933-1:2012	Particle size distribution	Characterisation
BS EN 1097-8:2009	Polished stone value	Characterisation
BS EN 1097-8:2009	Aggregate abrasion value	Characterisation
Binder characteristics		
BS EN 1426:2015	Needle penetration at 25°C	Characterisation
BS EN 1427:2015	Softening Point	Characterisation
BS EN 13880-1:2003	Density	Characterisation
BS EN 13880-5:2004	Flow resistance	Characterisation
BS EN 12697-47:2010	Ash content	Characterisation

Optional characterisations to be determined based on product type/application area, justification for such to be provided within the APTracker.

Date of latest update:	29/07/2025
------------------------	------------

ANTI-CORROSIVE METALLIC COATINGS

Product code(s): AC (metallic) and AO (organic)

Test method / standard	Performance characteristic assessed	Acceptability limits / criteria
<i>Requirements as defined in the SG12 Guidelines Document for the HAPAS Assessment and Certification of Paints</i>		
Liquid paints applicable to single-pack products, individual components of two-pack products and mixed two-pack products		
BS EN ISO 2811-1	Determination of density (Pycnometer method)	Within Applicant's declared range or within 3% of Applicant's declared single value (where $p \leq 1.4$), or within 4% (where $p > 1.4$)
ISO 1516, BS 3900-A8, BS 6664-1	Flashpoint (Closed cup equilibrium method)	As declared by the Applicant
BS EN ISO 3233-1	Determination of percentage solids	Within Applicant's declared range, or within 3% of Applicant's declared single value
BS EN ISO 2884, BS 3900-A7.1 or method declared by the manufacturer	Determination of Viscosity (Cone and plate viscometer or other)	Within Applicant's declared range, or within 3% of Applicant's declared single value
BS EN ISO 11890-1, BS EN ISO 3251	Determination of Volatile Organic Compound (VOC) content	As declared by the Applicant
BS EN ISO 9514	Determination of pot life	As declared by the Applicant
BS 3900-B4, ISO 6503	Determination of total Lead and similar materials.	No lead, cadmium or chromium pigmentation, lead and tin contents to both be <0.4% by weight, no coal tar pitch
BS 3900-B5, ISO 6713	Preparation of acid extracts	No asbestos, no free aluminum pigment in finish
Applied Coating		
BS EN ISO 16862	Resistance to sagging	Not less than maximum wft (wet film thickness declared by Applicant) x 1.3
Visual assessment for Primer and Undercoat.	Opacity (not required for transparent products) for primer/ adhesion promoter, and undercoat	Complete obliteration at minimum dry film thickness (Primer/adhesion promoter and undercoat) $\geq 85\%$
BS 3900-D4, BS EN ISO 2814 for Topcoat	For topcoat	
BS 4800, BS 381C	Colour designation	Colour range to be defined by reference to this standard
Visual assessment BS EN ISO 3668, BS 3900-D1	Colour comparison against the declared standard (Including primer/ adhesion promoter, undercoat and topcoat)	Class 1 or 2 (Primer/adhesion promoter and undercoat) Class 1 (Topcoat)
BS EN ISO 2813	Specular gloss of non-metallic paint films at 20°C and 60°C	At 60°: Matt: 5 ± 5 GU Low sheen: 30 ± 5 GU Semi-gloss: 45 ± 10 GU At 20°C: Full gloss >75 GU

Test method / standard	Performance characteristic assessed	Acceptability limits / criteria
BS EN ISO 9117-1, BS EN ISO 9117-3	Surface drying test - Ballotini method	As declared by the Applicant
BS EN ISO 9117-1	Determination of through-dry-state and through-dry-time	As declared by the Applicant
CG 303, Appendix B, Clause B1	Application and appearance	Application to be practicable in accordance with the manufacturer's recommended methods to provide a dry film, free from defects such as brush marking, cracking, cissing, rivelling, orange peel, sagging, cratering, blooming, pinholes, crocodiling, flowing from edges, etc.
CG 303, Appendix B, Clause B2	Overcoating	As declared by Applicant
BS EN ISO 2808, BS 3900-C5	Determination of dry film thickness	Using methods 6 to 8, dry film thickness within Applicant's declared range or within 20% of declared single value.
BS EN ISO 6860, BS EN 3900-E11	Flexibility (Topcoat) - Conical mandrel test	The topcoat applied at required minimum thickness, and tested after 28 days curing, to show no cracks or disbondment beyond 20 mm from small radius
Complete System		
BS EN ISO 16474	Artificial Weathering- Exposure of coatings to artificial weathering. Exposure to fluorescent UV and water	After total exposure of 5000 hours using Method A, type 3 (UVA340) lamp, no appreciable embrittlement, crazing or loss of adhesion. After rinsing with clean water, chalking (to BS EN ISO 4628-6) ≤ rating 2 Any colour to be tested
BS EN ISO 2813	Artificial Weathering- Classification	Loss of gloss- measured at 60°C Class 1 < 35 GU Class 2 < 50 GU Class 3 no requirement
ISO 7724-1 to 3, BS 3900-D8 & D10, BS 950-1, BS 6923	Artificial Weathering	Change of colour using artificial daylight source illuminant D65, spectrophotometer with gloss trap, observer angle 10°, calculated using the CMC (2:1) equation Class 1 ≤ 2.0 units ΔE Class 2 > 2.0 units ΔE, ≤ 2.5 units ΔE
BS EN ISO 1518	Scratch test (Single pack topcoat & Two-pack topcoat)	No penetration of topcoat under 1 kg load after 7 days curing (Single pack) No penetration of topcoat under 2 kg load after 7 days curing (Two-pack)
BS 3900-E7	Resistance to impact- falling ball test	After 7 days air drying, condition at 0°C for 2 hours – no cracking, flaking, detachment from the substrate, or intercoat adhesion failure with direct impact

Test method / standard	Performance characteristic assessed	Acceptability limits / criteria
BS EN ISO 2409	Cross-cut adhesion test for Systems of thickness <250 µm	No inter-coat adhesion failure, no detachment from substrate, classification of 0 or 1
ASTM D 4541	Pull-off adhesion test- Systems of thickness >250 µm	No detachment or failure below 5.17 MPa (750 psi)
Either BS EN ISO 9227 and / or BS EN ISO 12944-6 and 9	Determination of resistance to neutral salt spray (fog)	Corrosion creep from a horizontal scribe after 5000 hours exposure, calculated in accordance with BS EN ISO 12944-6, shall not exceed 5 mm Corrosion creep from horizontal scribe after 10 cycles shall not exceed 3 mm
BS EN ISO 3231, BS 3900-F8	Determination of resistance to humid atmospheres containing sulphur dioxide	No blistering, staining or loss of adhesion after 50 cycles (0.2 litres SO ₂ in 2 litres of water)
BS 3900-F2	Determination of resistance to humidity (Cyclic Condensation)	No blistering, swelling, softening or loss of adhesion after 5000 hours
Optional Tests		
EN 13501-1	Fire tests on building materials and structures Fire classification of construction products and building elements- reaction to fire	Classification declared.
BS 476-6	Method of test for fire propagation for products	I<12 I ₁ <6
BS 476-7	Method of test to determine the classification of the surface spread of flame of products	Class 1
BS EN 45545-1 to 7	Code of practice for fire precautions in the design and construction of passenger carrying trains	Ao(On) <2(abs) m ² /burn area Ao(On) <3(abs) m ² /burn area
BS EN ISO 2812-1	Resistance to chemicals and contamination- Determination of resistance to liquids. General methods	Chemicals/contaminants as declared by Applicant Method, duration of test and Evaluation criteria to be agreed between the BBA, test house and Applicant.
Network Rail Spec RT98 RT/CE/S039, Appendix C, Method 2	Resistance to graffiti	Removal of graffiti over 15 cycles of application, removal, and reapplication with a minimum of 24 hours between each application using red, blue and black permanent marker pens, acrylic aerosol spray paint and the Applicant's recommended graffiti remover.

Date of latest update:	13/11/2024
------------------------	------------

ASPHALT SURFACE TREATMENT

Product code(s): AR

Test method / standard	Performance characteristic assessed	Acceptability limits / criteria
On-site tests		
BS EN 13036-1:2010	Texture depth, initial and retained (after application and after min. 28 days trafficking)	Post-treatment and post-trafficking texture depth is maintained compared to untreated surface
BS EN 13036-4:2011	Skid resistance value, initial and retained (after application and after min. 28 days trafficking)	Post-treatment and post-trafficking skid resistance value is maintained compared to untreated surface
TRL Road note 39	Road hardness initial and retained (after application and after min. 28 days trafficking)	Post-treatment and post-trafficking road hardness is maintained compared to untreated surface
Laboratory performance tests		
BBA SG3 GL App A1 (SMA) and BS EN 12697-22:2020 (HRA)	Wheel tracking (resistance to permanent deformation) at 60°C. From cores extracted on site	Treated samples must meet requirements of PD 6691:2022, Classification no.2 of Table D2 (for SMA substrates) / Table C4 (HRA substrates)
BBA SG3 GL App A3	Torque bond form cores extracted on site	Treated samples must achieve ≥ 400 kPa
URS Scott Wilson, 2/1308 Task 395 (1308) MOTT Effectiveness of Asphalt Preservatives, D134663	Preservative properties when applied to short-, mid- and long-term aged binder	Reduced complex modulus and increased penetration after medium term ageing compared to untreated control
BBA Method	Chemical resistance (hydraulic fluid, antifreeze, petrol, diesel, other oils)	Resistance of treated surface compared to existing surface (improved or unaffected) (Relevant to preservatives only)
BD 47/99 Appendix B, 4.2(e)	Resistance to water penetration	Improved or unaffected compared to untreated control
BBA Method	Setting and trafficking time	Confirm Applicants' defined opening to traffic time at lowest test temperature
Laboratory characterisation tests		
BS EN 12591, BS 434-1, BS 3690-1, BS EN13808 or BS EN 13522 depending on type	Binder characterisation	Characterisation
From technical literature or through XRF	Chemical composition	Characterisation
EN 13043-1:2002	Grading for aggregates	Characterisation

Date of latest update:	25/11/2022
------------------------	------------

BINDER / ROADBASE BITUMINOUS MIXTURE

Product code(s): BM

Requirements are derived from:

- MCHW Volume 1, Series 900, Clause 901

Detailed criteria will be added at the next document update.

Date of latest update:	25/11/2022
------------------------	------------

BITUMEN MODIFIERS

Product code(s): ME

Test method / standard	Performance characteristic assessed	Acceptability limits / criteria
<i>Requirements for this product type are from HAPAS Specialist Group 4 Guideline Document for the Assessment and Certification of Modified Bitumens for Surface Dressings, Micro-surfacings and Bond Coats for Highways</i>		
Modified bitumen emulsions for surface dressings, micro-surfacings and bond coats		
BS EN 1426:2015	Penetration (at 25°C, 100g, 5 seconds)	Classification as per BS EN 13808:2013 – Table 4
BS EN 1426:2015	Penetration (at 5°C, 200g, 60 seconds)	Declared Value
BS EN 1427:2015	Softening point	Classification as per BS EN 13808:2013 – Table 4
BS EN 13588:2017	Peak cohesion value	Classification as per BS EN 13808:2013 – Table 4
BS EN 13588:2017	Peak cohesion temperature	Classification as per BS EN 13808:2013 – Table 4
BS EN 14770:2023	Rheology by DSR	Declared Value
Modified cutback/flux binders for surface dressings		
BS EN 1426:2015	Penetration (at 25°C, 100g, 5 seconds)	Classification as per BS EN 13808:2013 – Table 4
BS EN 1426:2015	Penetration (at 5°C, 200g, 60 seconds)	Declared Value
BS EN 1426:2015	Penetration (at 5°C, 100g, 5 seconds)	Declared Value
BS EN 13588:2017	Peak cohesion value	Classification as per BS EN 13808:2013 – Table 4
BS EN 13588:2017	Peak cohesion temperature	Classification as per BS EN 13808:2013 – Table 4
BS EN 14770:2023	Rheology by DSR	Classification as per BS EN 13808:2013 – Table 4
Modified bitumen emulsions for surface dressings, micro-surfacings and bond coats characterisation tests		
BS EN 12846:2022	Viscosity	Characterisation
BS EN 1428:2012	Minimum binder content	Characterisation
BS EN 1429:2013	Sieve residue	Characterisation
BS EN 12274-4:2018	Mix setting time	Characterisation
BS EN 12274-4:2018	Mix cohesion time	Characterisation
Modified cutback/flux binders for surface dressings characterisation tests		
BS EN 12846:2022	Viscosity	Characterisation

Date of latest update:	20/09/2024
------------------------	------------

BITUMINOUS SURFACE COURSE

Product code(s): BC

Test method / standard	Performance characteristic assessed	Acceptability limits / criteria
<i>Requirements as defined in the SG3 Guidelines Document, MCHW Vol 1 Series 900 and PD 6691:2022</i>		
	UKCA Marking or CE Marking	Must be UKCA or CE Marked
BS EN 13108-21	Factory Production Control	As required for UKCA or CE Marking
MCHW Clause 901	System constituents	System constituents must comply with MCHW Clause 901
BS EN 12591 BS EN 14023 BS EN 13808	Binder	As BS EN 12591 (PG Bitumen) As BS EN 14023 (PMB)
BS EN 13043:2002 MCHW Clause 901	Coarse aggregates	As BS EN 13043:2002 and MCHW Clause 901
BS EN 1097-8	Coarse Aggregate PSV	As BS EN 1097-8
BS EN 1097-8	Coarse Aggregate AAV	As BS EN 1097-8
BS EN 1097-2	Coarse Aggregate - Resistance to Fragmentation - LAAV	LA ₃₀ – For natural aggregate LA ₅₀ – For blast furnace slag
BS EN 933-1	Aggregate PSD	As BS EN 933-1
BS EN 933-3	Aggregate Flakiness index	As BS EN 933-3
BS EN 1097-6	Water Absorption	As BS EN 1097-6
BS EN 13043	Freeze and Thaw resistance	As BS EN 13043
MCHW Clause 902	Reclaimed Asphalt (if applicable)	As MCHW Clause 902
BS EN 14023 BS EN 13808	Bond Coat or Tack Coat	As MCHW Clause 920 and BS 594987
MCHW Clauses 903, 942 BS 594987	Installation Instructions	Compliant with requirements
BS 594987	Transporting	Compliant with requirements
BS 594987 MCHW Clause 903	Site preparation, placement, and compaction	Installation Method Statement compliant with requirements
WMA-specific		
BS EN 12697-13	Production Temperatures	As MCHW Clause 908.5 Table 9/1A
MCHW Clauses 903, 908.	WMA Installation requirements	Complies with MCHW
Documented and declared	WMA Minimum rolling temperatures	As MCHW Clause 908 Table 9/1C
Installed characteristics		
BS EN 12697-22	Resistance to permanent deformation	As PD 6691:2022
BS EN 13036-1	Surface macrotexture depth – initial (at opening to traffic)	As SG3 Guideline Table B.2
BS EN 13036-1	Surface macrotexture depth – retained (12mths and 24mths after opening to traffic)	As SG3 Guideline Table B.2
SG3 Appendix A.3 MCHW Vol 1, Clause 951	Bond to substrate	≥400 kPa Between 28 and 56 days after installation

Test method / standard	Performance characteristic assessed	Acceptability limits / criteria
BS EN 12697-12 Method A	Water Sensitivity	ITSR _{min} 70 Hot Mix ITSR _{min} 80 Warm Mix
BS EN ISO 11819-1	Road/Tyre Noise level (optional)	MCHW CI 942 Table 9/17
BSEN 12697-8	Void Content	Declared
Declared	Designed target layer thickness	Declared, <100mm
SG3 Appendix A.10 and Appendix E	Visual assessment of trial sites	Good or Excellent at opening to traffic, after 12 months and 24 months.
SG3 Appendix A.10 and Appendix E	Durability: Independent Panel trial sites inspection – BBA HAPAS Inspection Panel	Good or Excellent after 24 months

Date of latest update:	25/11/2022
------------------------	------------

BRIDGE DECK WATERPROOFING

Product code(s): BD

Requirements for this product type are all detailed in:

- *HAPAS Specialist Group 7 Guidelines Document for the Assessment and Certification of Waterproofing Systems for use on Concrete Decks of Highway Bridges*
- *DMRB document CD 358*

Date of latest update:	25/11/2022
------------------------	------------

CRACK SEALING SYSTEMS

Product code(s): SO (Overbanding) and FO (Fill and Overband)

Options for Certification:

1. Overbanding system
2. Fill and overband system
3. Inlaid

Test method / standard	Performance characteristic assessed	Acceptability limits / criteria
Binder tests (all system types)		
<i>Requirements for bituminous base binder for fill and overband crack-sealing systems as defined in the Guidelines Document for the Assessment and Certification of Crack Sealing Systems for Highways.</i>		
BS EN 13880-2:2003	Cone penetration (mm) Control heat aged	≥35 (overband, fill and overband) ≥ 25 (inlaid Grade F), ≥10 (inlaid Grade H), ≥60% of control value
BS EN 13880-3:2003	Resilience (%) Control heat aged	Record value ≥60% of control value
BS EN 13880-5:2003	Flow resistance (mm)	≤ 2 (overband) Record value (fill and overband, inlaid)
System Tests (Overbanding)		
<i>Requirements as defined in the SG2 Guidelines Document for the Assessment and Certification of Crack Sealing Systems for Highways.</i>		
SG2 Appendix A, Method 1	Skid resistance value (SRV) - Initial	≥60
Appendix A, Method 2	- retention after the wheel tracking at 60°C	≥50
Appendix A, Method 2	- spread and thickness after wheel tracking at 60°C	Record value
TRL Report 176 Appendix J	Tensile bond (N·mm ⁻²) on asphalt and concrete* substrates - control - heat aged (70°C, 28 days) *concrete is optional	≥0.5 ≥60% of control value

System Tests (Fill and overband)		
SG2 Appendix A, Method 1	Skid resistance value (SRV)	≥60
Appendix A, Method 5	Texture depth* (mm)	≥1.5
Appendix A, Method 3 & Method 5	Retention of SRV and texture depth* after wheel tracking at 60°C	≥50 ≥0.75
Appendix A, Method 3	Spread and thickness of overband component after wheel tracking at 60°C *only where overband component is applied >40 mm wide	Record value
TRL Report 176 Appendix J	Tensile bond (N·mm ⁻²) on asphalt and concrete* substrates - control - heat aged (70°C, 28 days) *concrete is optional	≥0.5 ≥60% of control value
SG2 Appendix A, Method 7	Elongation (for 'fill' component only)	≥30 %
System Tests (Inlaid)		
SG2 Appendix A, Method 1	Skid resistance value (SRV)	≥60
Appendix A, Method 5	Texture depth* (mm)	≥1.5
Appendix A, Method 3 & Method 5	Retention of SRV and texture depth* after wheel tracking at 60°C	≥50 ≥0.75
SG2 Appendix A, Method 4	Rut rate (mm·h ⁻¹) Rut depth (mm)	≤5.0 ≤10.0 (Grade F), ≤7.0 (Grade H)
TRL Report 176 Appendix J	Tensile bond (N·mm ⁻²) on asphalt and concrete* substrates - control - heat aged (70°C, 28 days) *concrete is optional	≥0.5 ≥60% of control value
SG2 Appendix A, Method 7	Elongation (Grade 'F', flexible materials only)	≥30 %
SG2 Appendix A, Method 7	Yield strain (Grade 'H', high modulus materials only)	≥2.5 %
Installation Trial Site Requirements (all system types)		
BS EN 13036-4:2011	Initial skid resistance value (SRV)	≥60
BS EN 13036-1:2010	Initial texture depth* (mm)	≥1.5
BS EN 13036-1:2010 and BS EN 13036-1:2010	Retention of SRV and	≥50 ≥0.75

	texture depth* 6 months trafficking	
	*not required for overbanding. Not required for fill and overband where overband is applied ≤ 40 mm wide	
Return to site visit by BBA Assessor	Visual condition after 6 months trafficking	Good or Excellent

Date of latest update:	25/11/2022
------------------------	------------

CULVERT

Product code(s): CU

Requirements for this product type are all detailed in:

MCHW Series:

- *Volume 1, 500 Drainage and service ducts and specifically Clause 501*
- *Volume 1, 600 Earthworks and specifically Clause 623*
- *Volume 1, 2500 Special structures and specifically Clause 2501*
- *Volume 2, NG600 Clause NG 623*
- *Volume 2, NG 2500 Clause NG 2501*

DMRB Series:

- *CD 375, Design of Corrugated Steel Buried Structures*

Date of latest update:	04/11/2024
------------------------	------------

EMERGENCY AREAS

Product code(s): EA

Test method / standard	Performance characteristic assessed	Acceptability limits / criteria
<i>Requirements as defined in Design Guide Annex E1.14 – Places of Relative Safety (PRS)</i>		
On-site tests		
BS EN 13036-1:2010	Texture depth, on HFS, initial (application of topcoat) and retained (after min. 12 months trafficking)	Base HFS and initial, ≥ 1.4 mm Retained, ≥ 1.0 mm mean with individual values ≥ 0.8 mm
BS EN 13036-4:2011	Skid resistance value, on HFS, initial (application of topcoat) and retained (after min. 12 months trafficking)	SRV ≥ 65 at all stages
BS 5252: 1976 or BS 4800: 2011	Colour, initial (application of topcoat) and retained (after min. 12 months trafficking)	Initial: Delta E < 7 units from reference colour '08 E 55' Retained: Delta E < 7 units from reference colour '08 E 55' and Delta E < 7 units from 'Initial' value
Laboratory performance tests		
SG1 Guideline Appendix H	Scuffing test (45°C) to measure: Initial texture depth Retained texture depth Erosion index	≥ 1.4 mm ≥ 1.2 mm ≤ 3
BS 5252: 1976 or BS 4800: 2011	Colour	Delta E < 7 units from reference colour '08 E 55'
BS EN 1871:2020	UV stability by accelerated weather testing	Delta E < 7 units from the pre-testing colour, Delta E < 7 units from reference colour '08 E 55'
Laboratory characterisation tests		
Applicant-defined	Viscosity	Characterisation
Applicant-defined	Gel time	Characterisation

Date of latest update:	25/11/2022
------------------------	------------

FIN DRAIN

Product code(s): FN

Requirements for this product type are all detailed in:

MCHW Series:

- *Volume 1, 500 Drainage and service ducts and specifically Clauses 514 and 515*
- *Volume 2, NG500 Clauses NG514 and NG515*
- *Volume 3, Drawings F18-20*

DMRB Series:

- *CG 501, Design of highway drainage systems*

Date of latest update:	04/11/2024
------------------------	------------

FOOTWAY / FOOTPATH SURFACE TREATMENT

Product code(s): MT

Test method / standard	Performance characteristic assessed	Acceptability limits / criteria
On-site tests		
BS EN 13036-1:2010	Texture depth, initial and retained (after 6 months)	≥1.0 mm initial ≥0.5 mm retained
BS EN 13036-4:2011	Skid resistance value, initial and retained (after 6 months)	≥60 initial ≥50 retained
Laboratory performance tests		
TRL Report 176 Appendix J	Tensile bond to asphalt (and concrete, which is optional)	≥0.5 MPa
BS EN 12274-4:2018	Cohesion of the mix	Must achieve either N (normal) or S (solid) from visual assessment
BBA SG3 GL App A1 (SMA) and BS EN 12697-22:2020 (HRA)	Wheel tracking (resistance to permanent deformation) at 60°C. From cores extracted on site	Treated samples must meet requirements of PD 6691:2022, Classification no.1 of Table D2 (for SMA substrates) / Table C4 (HRA substrates)
Laboratory characterisation tests		
BS EN 12591, BS 434-1, BS 3690-1, BS EN13808 or BS EN 13522 depending on type	Binder characterisation	Characterisation
From technical literature or through XRF	Chemical composition of aggregate	Characterisation
EN 13043-1:2002	Grading for aggregates	Characterisation
BS EN 1097-8:2020	Polished stone value and aggregate abrasion value of aggregate	PSV ₅₀ (min 50) AAV ₁₅ (max 15)
BS EN 12274-3:2018	Consistency of slurry surfacing	Characterisation
BS EN 12274-5:2018	Resistance to wear	Characterisation

Date of latest update:	28/11/2022
------------------------	------------

GABION (EARTHWORKS)

Product code(s): GA

Test method / standard	Performance characteristic assessed	Acceptability limits / criteria
<i>General requirements as defined in MCHW, Vol1, Series 600, BS 8002 and BS EN 1997-1 and its UK National Annex</i>		
BS EN 10245-2 : 2011	Wire PVC coating	In accordance with specifications of the Standard
BS EN 10245-1 : 2011	Polimac coating	In accordance with the specifications of the Standard
BS EN 10223-3 :2013	Tensile strength Minimum elongation rupture	In accordance with the Standard requirements
BS EN ISO 16120-1: 2017 BS EN ISO 16120-2:2017	Wire / rods characteristics	In accordance with the Standard requirements
BS EN 10244-2: 2009	Coating alloy characteristics	In accordance with the Standard requirements: Coating class Minimum coating thickness

Date of latest update:	25/11/2022
------------------------	------------

GROUTED MACADAM

Product code(s): GH

Test method / standard	Performance characteristic assessed	Acceptability limits / criteria
On-site tests		
BS EN 13036-1:2010	Texture depth, initial and retained (after 6 months trafficking)	Matches or exceeds that of the surrounding / adjacent pavement
BS EN 13036-4:2011	Skid resistance value, initial and retained (after 6 months trafficking)	Matches or exceeds that of the surrounding / adjacent pavement
Laboratory performance tests		
BS EN 12697-12:1028	Sensitivity to water Sensitivity to diesel	ITSR _{min} 70 ITSR _{min} 60
BBA SG3 GL App A1 (SMA) and BS EN 12697-22:2020 (HRA)	Wheel tracking (resistance to permanent deformation) at 60°C. From cores extracted on site	Treated samples must meet requirements of PD 6691:2022, Classification no.2 of Table D2 (for SMA substrates) / Table C4 (HRA substrates)
BBA SG3 GL App A3	Torque bond form cores extracted on site	Treated samples must achieve ≥200 kPa
BBA SG1 GL App H	Erosion index: Control After diesel immersion After freeze/thaw	0 ≤3 ≤3
Laboratory characterisation tests		
BS EN 12591, BS 434-1, BS 3690-1, BS EN13808 or BS EN 13522 depending on type	Binder characterisation	Characterisation
From technical literature or through XRF	Chemical composition of aggregate	Characterisation
EN 13043-1:2002	Grading for aggregates	Characterisation

Date of latest update:	28/11/2022
------------------------	------------

GULLY AND PIPE JUNCTION

Product code(s): GP

Requirements are derived from:

- MCHW Volume 1, Series 500 Drainage and Service Ducts, Clauses 504, 506, 508
- MCHW Volume 2, NG504, NG506, NG 508

Detailed criteria will be added at the next document update.

Date of latest update:	25/11/2022
------------------------	------------

HIGH FRICTION SURFACES

Product code(s): HF

Requirements for this product type are all detailed in:

- *MCHW Volume 1, Series 900, Clause 924*
- *HAPAS Specialist Group 1 Guidelines Document for the Assessment and Certification of High Friction Surfacing Systems for Highways*

Date of latest update:	25/11/2022
------------------------	------------

INTERLAYER REINFORCEMENT SYSTEM

Product code(s): IL

Requirements are derived from:

- MCHW Volume 1, Series 900, Clause 936

Detailed criteria will be added at the next document update.

Date of latest update:	25/11/2022
------------------------	------------

KERBING

Product code(s): KK

Requirements are derived from:

- MCHW Volume 1, Series 1100, Clause 1118

Detailed criteria will be added at the next document update.

Date of latest update:	25/11/2022
------------------------	------------

LAP AND JOINT (REINFORCEMENT)

Product code(s): LI

Requirements are derived from:

- MCHW Volume 1, Series 1700, Clauses 1714.1 and 1716
- MCHW Volume 2 NG1716
- DMRB Volume 3, Highways Structures: Inspection and Maintenance, Section 4 Assessment, Part 14 – BD 44/15

Detailed criteria will be added at the next document update.

Date of latest update:	25/11/2022
------------------------	------------

LOCALISED SURFACE REPAIR SYSTEM

Product code(s): LS

Requirements are derived from:

- *Specification for the Reinstatement of Opening in Highways SROH 4th Edition*

Detailed criteria will be added at the next document update.

Date of latest update:	25/11/2022
------------------------	------------

MANHOLE REINSTATEMENT

Product code(s): MR

Options for Certification:

1. Bedding mortar component only
2. Bedding mortar and backfill material
3. Bedding mortar, backfill material and adjacent surfacing material

Test Method / Standard	Performance characteristic assessed	Acceptability limits / criteria
Bedding mortar component		
BBA internal method	Pot life and workability	Minimum 15 minutes MCHW Vol1 SHW CI507.24
BS 6319-7	Tensile strength	> 5N/mm ² @3hrs MCHW Vol1 SHW CI507.24
	Tensile strength at applicants defined lowest and highest conditioning temperatures	> 5N/mm ² @3hrs MCHW Vol1 SHW CI507.24
BBA internal method	Shrinkage	<0.5% over 48 hours
BS 6319-2 / Other appropriate methods*	Compression strength	> 30N/mm ² in 3hrs MCHW Vol1 SHW CI507.24
	Effect of freeze / thaw on compression strength	Characterisation test
	Compression strength at applicants defined lowest and highest conditioning temperatures	> 30N/mm ² in 3hrs MCHW Vol1 SHW CI507.24
BS 6319-3	Flexural strength and modulus	Characterisation test / design value
BBA method based on BS EN 124-1:2015 clause 8.3	Full-scale load testing with D400 access cover	No effect (no failure in the bedding mortar)
Backfill material		
BS 6319-2 / Other appropriate methods*	Compression strength	> 30N/mm ² in 3hrs MCHW Vol1 SHW CI507.24
	Effect of freeze / thaw on compression strength	Characterisation test
BBA internal method	Shrinkage	<0.5% over 48 hours
Adjacent surfacing material		
BS EN 12697-22	Resistance to permanent deformation	Classification No.1 as per PD 6691 Table D2 (similar requirements to patch repairs as defined in MCHW Vol1 SHW Clause 946.15)
System testing (where bedding mortar is specified)		
	Full-scale load testing with D400 access cover	Frame deformation before mortar damage
Engineering Bricks / Frame supporting structure		
BBA Method	Repeated Load Creep Test (RLAT)	Characterisation
BBA Method	Static Creep Test	Characterisation
BBA Method	Indirect Tensile Fatigue Test	Characterisation
BBA Method	Compressive Strength	Characterisation

*Comparable standards may be used where appropriate for material type/chemistry.

Date of latest update:	25/07/2025
------------------------	------------

NON-MAN ENTRY INSPECTION CHAMBER

Product code(s): NM

Requirements are derived from:

- MCHW Volume 1, Series 500, Clause 507
- MCHW Volume 2, NG507

Detailed criteria will be added at the next document update.

Date of latest update:	25/11/2022
------------------------	------------

PATCH REPAIR PRODUCT

Product code(s): PU

Test method / standard	Performance characteristic assessed	Acceptability limits / criteria
MCHW Volume 1, Clause 946, Proprietary materials <1m2		
BS EN 12697-26:2004 (ITSM Method 20C) after 28 days	Stiffness	≥ 1 GPa after 28 days
BS EN 12697-22:2020 (Small device, Proc B)	Wheel Track (Resistance to permanent deformation)	Classification No.1 as defined in Table D.2 of PD 6691
BS EN 13036-1:2010	Initial and retained texture depth (Installed and measured on site)	Initial texture depth: ≥0.9 mm Retained texture depth: ≥0.7 mm
BS EN 13036-4:2011	Initial and retained Skid Resistance Value (SRV) (Installed and measured on site)	Initial SRV: ≥60 Retained SRV: ≥50
Non-SRN Patch Repair materials		
BS EN 13036-1:2010	Initial Texture Depth	Initial texture depth: ≥0.9 mm
BS EN 13036-1:2010	Retained Texture Depth	Retained texture depth: ≥0.7 mm
BS EN 13036-4:2011	Initial Skid Resistance Value	Initial SRV: ≥60
BS EN 13036-4:2011	Retained Skid Resistance Value	Retained SRV: ≥50
BS EN 12697-22:2020 (Small device, Proc B)	Wheel Track (Resistance to permanent deformation)	WTSAIR: Info. only Initial texture depth: 0.9 mm Retained texture depth: ≥ 0.75 mm Initial SRV: ≥ 60 Retained SRV: ≥ 50
TRL Report 176, Appendix J	Tensile bond strength to asphalt	≥0.5 N/mm²
TRL Report 176, Appendix J	Tensile bond strength to concrete (Only if Concrete Specified as an acceptable substrate)	≥0.5 N/mm²
Deferred Set materials		
BS EN 13036-1:2010	Initial Texture Depth	Initial texture depth: ≥0.9 mm
BS EN 13036-1:2010	Retained Texture Depth	Retained texture depth: ≥0.7 mm
BS EN 13036-4:2011	Initial Skid Resistance Value	Initial SRV: ≥60
BS EN 13036-4:2011	Retained Skid Resistance Value	Retained SRV: ≥50
BS EN 12697-22:2020 (Small device, Proc B)	Wheel Track (Resistance to permanent deformation)	WTSAIR: Info. only Initial texture depth: 0.9 mm Retained texture depth: ≥ 0.75 mm Initial SRV: ≥ 60 Retained SRV: ≥ 50
Aggregate characteristics		
BS EN 933-1:2012	Particle size distribution	Characterisation
BS EN 1097-8:2009	Polished stone value	Characterisation
BS EN 1097-8:2009	Aggregate abrasion value	Characterisation
Thermosetting binder characteristics		
Internal TRL method	Gel time (manufacturer's declared activator content)	Characterisation

Test method / standard	Performance characteristic assessed	Acceptability limits / criteria
-	Infrared spectroscopy	Characterisation
BS EN 13880-1:2003	Density	Characterisation
BS EN 13880-5:2004	Flow resistance	Characterisation
BS EN 12697-47:2010	Ash content	Characterisation
Thermoplastic binder characteristics		
-	Infrared spectroscopy	Characterisation
BS 2000-58:2007 or BS EN 1238:2011	Softening point (Control and following heat ageing)	Characterisation
BS EN ISO 1183-1:2012 or BSEN ISO 1183-2:2004	Density	Characterisation
BS EN ISO 3451-1:1997	Ash content	Characterisation
BS 2499-3:1993	Flow resistance (control and following heat ageing)	Characterisation
BS 6319-7:1985	Tensile strength and elongation	Characterisation
Bituminous binder characteristics		
BS EN 1426:2015	Needle penetration at 25°C (control and following heat ageing)	Characterisation
BS EN 1427:2015	Softening point (control and following heat ageing)	Characterisation
BS EN 12607-1:2014	Rolling thin film oven test (heat ageing)	Conditioning

Optional Characterisations to be determined based on product type/application area, justification for such to be provided within the APTracker.

Date of latest update:	03/10/2024
------------------------	------------

PERMANENT COLD-LAY

Product code(s): HB, HM, HW

Options for Certification:

1. Permanent Cold-Lay Basecourse
2. Permanent Cold-Lay Material
3. Permanent Cold-Lay Wearing Course

Requirements for this product type are all detailed in:

- *HAPAS Specialist Group 8 Guidelines Document for the Assessment and Certification of Permanent Cold Lay Surfacing Material for the Reinstatement of Openings in Highways*
- *MCHW Volume 1, Series 700 and 900*
- *Specification for the Reinstatement of Openings in Highways SROH 4th Edition*
- *Specification*

Date of latest update:	25/11/2022
------------------------	------------

PERVIOUS PAVEMENT

Product code(s): BP

Test method / standard	Performance characteristic assessed	Acceptability limits / criteria
BS 598 -105 BS EN 13036-1	Texture depth	>1.5mm
BS EN 13043 BS EN 1097-8	Aggregate PSV	>45
BBA Thin Surfacing Guidelines method	Torque bond	>400kPa
BS EN 12697-22	Resistance to deformation	WTS _{AIR} <1
BS EN 12697-19	Hydraulic conductivity	>5000mm/hr
Guide for the design of drainage pavements and CIRIA C753 The SuDS Manual	Hydraulic properties	Suitable product in terms of required properties (BP Only)
BS EN 12697-12	Water sensitivity	>0.9
User Survey	User Survey	Satisfactory responses
BBA Thin Surfacing Guidelines method	Witnessed installation trial	Satisfactory installation and on-site quality control procedures
BS EN 13108-8	Material specification	For Asphalt layer/ Receiving course
MCHW Vo I1 Series 1000		For Grout

Date of latest update:	28/11/2022
------------------------	------------

PIPE FOR DRAINAGE AND SERVICE DUCT (INCLUDING GULLIES)

Product code(s): PD

Test method / standard	Performance characteristic assessed	Acceptability limits / criteria
<i>Requirements defined in MCHW Volume 1, Series 500 Drainage and Services Ducts, and MCHW Volume 2, NG 500.</i>		
Thermoplastics solid wall		
General: BS 4660 BS EN 13598 Or specific to material:	Specification	Complies
Unplasticised polyvinyl-chloride (PVC-U): BS 3506 (Class C) or BS EN 1401, BS EN ISO 1452-1 to 5 as appropriate class PN10.	Specification	Complies
Polypropylene (PP): BS EN 1852-1	Specification	Complies
Polyethylene (PE): BS EN 12666-1	Specification	Complies
Thermoplastics single wall		
BS EN 61386-24	Specification	Ducts to BS EN 61386-24 shall be classified as normal duty, corrugated have a degree of protection against ingress of foreign objects classification rating of 3 or 4 and a degree of protection against ingress of water classification rating of 7. Resistance to bending requirements shall be as stated in contract specific Appendix 5/2.
Thermoplastics structured wall		
BS EN 61386-24 MCHW Clause 518	Specification	Ducts to BS EN 61386-24 shall be classified as normal duty, corrugated have a degree of protection against ingress of foreign objects classification rating of 3 or 4 and a degree of protection against ingress of water classification rating of 7. Resistance to bending requirements shall be as stated in contract specific Appendix 5/2.
TS 12-24	Static friction coefficient	Pass (as given in MCHW Clause 518, Table 5/9)
BS EN ISO 9967 MCHW Clause 518	Creep at elevated temperature Test to be carried out at 45°C	Creep ratio to be less than 2 times the values
MCHW sub-Clause 518.13	Resistance to point loads	No perforation at 10% rod travel
General		
MCHW Clauses 503, 505	Installation	Complies

Test method / standard	Performance characteristic assessed	Acceptability limits / criteria
MCHW Claus3 509 BS 4660	Testing	Complies
MCHW Clause 520	Maintenance	Complies

Date of latest update:	25/11/2022
------------------------	------------

REINFORCED EARTH STRUCTURE

Product code(s): RS

Test method / standard	Performance characteristic assessed	Acceptability limits / criteria
<i>Requirements as defined in MCHW Volume 1, Series 2500, Clause 2502, and BS 8006:2010+A1:2016</i>		
Mechanical Properties		
SHW 1701	Concrete facing panels	Manufacture and Specification in accordance with EN206 / BS 8500-1 and BS 8006-1
BS EN 771-3	Concrete facing panels	UKCA / CE Marked to EN 771-3
SHW 1702	Constituent materials - cement and possible combinations	Cement types as per SHW 1702.1, UKCA / CE marked to BS EN 197-1
SHW 1702	Constituent materials - aggregates	UKCA / CE Marked to EN 12620
EN 933-3	Constituent materials - aggregates - Flakiness index	BS EN 12620 Fl ₃₅ or better
EN 1097-2	Constituent Materials - aggregates - LA	BS EN 12620 LA ₄₀ or better
BS EN 1744-1	Chloride content	SHW 1704 Table 17/1
BS 8006-1 3.3.3.1	Constituent materials - pigments	Conforms to BS EN 12878
BS 8006-1 Annex B	Concrete compressive strength	40N/mm ² at 28 days
BS 8006-1 3.3.3.1	Concrete density	2100 kg/m ³
BS EN 14475	Concrete - water absorption	max 6%
BS EN 14475	Minimum cement content	365 kg/m ³
SHW 1704	Maximum cement content	550 kg/m ³
BS EN 14475	Water/Cement ratio	Max 0.5
BS EN 771-3	Dimensional tolerances of facing panels	BS EN 771-3 Table 1
BS EN 771-3	Reaction to fire	Class A1
BS 8006-1	Steel for reinforcement of facing panel	Tensile, Shear and Bearing strength as per BS 8006-1 3.2.1.1 and Table 3
BS EN 14475	Steel for reinforcement of facing panel	Bar Thickness - at least 1.5mm
BS EN ISO 1461	Steel for reinforcement of facing panel - galvanised coating	Local coating thickness 70µm
SHW 600	Structural fill material	Table 6/1
BS EN 13251	Geosynthetic soil reinforcement straps	UKCA / CE Marked
BS 8006-1	Geosynthetic soil reinforcement straps	Designed and Manufactured in accordance with BS 8006-1
BS EN 1997-1	Geosynthetic soil reinforcement straps	Designed and Manufactured in accordance with BS EN 1997-1 and NA to BS EN 1997-1
BS EN 14475	Geosynthetic soil reinforcement straps	Designed and Manufactured in accordance with BS EN 14475

BS EN 13738 : 2004 ASTM D6638*	Connection strength (soil reinforcement to Facing Panel)	No reduction in tensile strength - Testing method subject to BBA approval
PD ISO/TR 20432	Short-term tensile strength	N/A - Characteristic. Data from client verified through testing
BS EN 13738 : 2004 ASTM D6638*	Soil/reinforcement interaction - pull out test	N/A - Characteristic. Verified through witnessed testing. * Testing method subject to BBA approval
BS 8006-1 Annex A	Partial reduction factors for reinforcements	Calculated in accordance with BS 8006-1 and declared in Certificate
BS 8006-1 Annex A	Installation damage RF_{ID}	Calculated in accordance with BS 8006-1 and declared in Certificate
BS 8006-1 Annex A	Weathering RF_w	Calculated in accordance with BS 8006-1 and declared in Certificate
BS 8006-1 Annex A	Chemical/environmental effects RF_{CH}	Calculated in accordance with BS 8006-1 and declared in Certificate
Design		
BS 8006-1	Soil reinforcement straps	Satisfactory verification of Client provided Geotechnical design report to BS8006-1
Durability		
BS 8006-1 Annex A	Design life(Permanent Walls and Bridge abutments)	120 years
BS 8006-1 Annex B	Concrete Exposure Class	XF2

Date of latest update:	28/11/2022
------------------------	------------

RETAINING WALL

Product code(s): RA

Test method / standard	Performance characteristic assessed	Acceptability limits / criteria
<i>Requirements as detailed in MCHW Volume 1, Series 1700, Clauses 1701-1708, 1712, MCHW Volume 1, Series 2500, Clause 2502, MCHW Volume 2, NG1701-1708, NG1712, NG2702, BS 8006:2010+A1:2016, TD 19/06 DMRB Volume 2, Highway Structures: Design (Substructures and Special Structures) Materials : Section 2, Special Structures: Part 8, Requirement for Road Restraint Systems, BD 70 (DMRB 2.1.5).</i>		
Mechanical Properties		
Appropriate testing to Material Used to create wall.		
SHW 600	Structural fill material	Table 6/1
BS 8006-1 Annex A	Partial Reduction factors for reinforcements	Calculated in accordance with BS 8006-1 and declared in Certificate
BS 8006-1 Annex A	Installation damage RF _{ID}	Calculated in accordance with BS 8006-1 and declared in Certificate
BS 8006-1 Annex A	Weathering RF _w	Calculated in accordance with BS 8006-1 and declared in Certificate
BS 8006-1 Annex A	Chemical/environmental effects RF _{CH}	Calculated in accordance with BS 8006-1 and declared in Certificate
Design		
BS 8006-1	Soil reinforcement straps	Satisfactory verification of Client provided Geotechnical design report to BS8006-1
BD 68/97	Connection capacity	N/A - Characteristic. Data from client verified through testing
BS 8002 and EC7	Structural design	Calculated in accordance with BS 8002 and EC7. Declared in Certificate
Durability		
BS 8006-1 Annex A	Design life(Permanent Walls and Bridge abutments)	120 years
BS 8006-1 Annex B	Concrete Exposure Class	XF2

Date of latest update:	28/11/2022
------------------------	------------

SINGLE LAYER SURFACE TREATMENT PRODUCT

Product code(s): AQ

Test method / standard	Performance characteristic assessed	Acceptability limits / criteria
Characterisations		
BS 6319-7 : 1985	Tensile strength and elongation (briquette) (control and following heat ageing)	$\geq 1 \text{ N/mm}^2$
BS EN 1427 : 2015	Softening point (control and following heat ageing)	Characterisation
BS EN 13880-5 : 2004	Flow resistance (control and following heat ageing)	Characterisation
BBA Method	Thermogravimetric Analysis	Characterisation
Performance characteristics		
TRL Report 176, Appendix J	Tensile bond strength to asphalt (high and low application temperatures)	$\geq 0.5 \text{ N/mm}^2$
TRL Report 176, Appendix E	Skid resistance (control, following scuffing, following heat ageing, following freeze/thaw, following wheel tracking)	Initial: ≥ 60 Retained (Scuffing): ≥ 50 Heat ageing: Maintained Freeze/Thaw: Maintained Retained (Wheel Tracking): ≥ 50
BS EN 13036-1 : 2010	Texture depth (control, following scuffing, following heat ageing, following freeze/thaw)	Value Achieved
TRL Report 176, Appendix G	Scuffing at 35°C	Conditioning
TRL Report 176, Appendix K	Heat ageing resistance	Conditioning
TRL Report 176, Appendix L	Freeze/thaw resistance	Conditioning
TRL Report 176, Appendix F	Erosion index following heat ageing and freeze/thaw	Value Achieved
BBA HAPAS Guidelines for the Assessment and Certification of Crack Sealing Systems for Highways	Wheel tracking	Conditioning

Optional characterisations to be determined based on product type/application area, justification for such to be provided within the APTracker.

SOIL REINFORCEMENT

Product code(s): SR

Test method / standard	Performance characteristic assessed	Acceptability limits / criteria
<i>Requirements are detailed in MCHW Volume 1, Series 600 Earthworks, Clauses 609, 621, 622, 639, 640, MCHW Volume 1, Series 2500 Special Structures, BS 8006:2010+A1:2016, CIRIA SP123:1996, BD70/03 (DMRB 2.1.5)</i> <i>Facing units must have a mechanical interlock with the mass of soil being retained to avoid separation of the facing units from the retained earth. Where supplementary products are used to achieve this, these must be included within the scope of the certificate, or alternatively have an appropriate BBA HAPAS certificate.</i>		
Mechanical Properties		
SHW 600	Structural fill material	Table 6/1
BS EN 13251	Geosynthetic soil reinforcement straps	UKCA / CE Marked
BS 8006-1	Geosynthetic soil reinforcement straps	Designed and manufactured in accordance with BS 8006-1
BS EN 1997-1	Geosynthetic soil reinforcement straps	Designed and manufactured in accordance with BS EN 1997-1 and NA to BS EN 1997-1
BS EN 14475	Geosynthetic soil reinforcement straps	Designed and manufactured in accordance with BS EN 14475
PD ISO/TR 20432	Short-term tensile strength	N/A - Characteristic. Data from client verified through testing
BS EN ISO 13431	Creep test report	N/A - Characteristic. Data from client verified through testing
BS EN 13738 : 2004 ASTM D6638*	Soil/reinforcement interaction - Pull out test	N/A - Characteristic. Verified through witnessed testing. * Testing method subject to BBA approval
BS 8006-1 Annex A	Partial reduction factors for reinforcements	Calculated in accordance with BS 8006-1 and declared in Certificate
BS 8006-1 Annex A	Installation damage RF _{ID}	Calculated in accordance with BS 8006-1 and declared in Certificate
BS 8006-1 Annex A	Weathering RF _w	Calculated in accordance with BS 8006-1 and declared in Certificate
BS 8006-1 Annex A	Chemical/environmental effects RF _{CH}	Calculated in accordance with BS 8006-1 and declared in Certificate
Design		
BS 8006-1		Satisfactory verification of Client provided Geotechnical design report to BS8006-1
Durability		
BS 8006-1 Annex A	Design life(Permanent Walls and Bridge abutments)	120 years

Bagwork for facing units		
Dimensions Weight		For characterisation
BS EN ISO 10319	Tensile strength and elongation at maximum load in both directions	MD >7 kN•m ⁻¹ Max load elongation <60% CMD >7 kN•m ⁻¹ Max load elongation <60%
BS EN ISO 12236	Resistance to static puncture Displacement	≥ 1.5kN Value Achieved
BS EN ISO 13433	Dynamic perforation resistance (Cone Drop Test)	< 30 mm
BS EN ISO 12956	Characteristic opening size	Declared Value
BS EN ISO 11058	Water permeability normal to the plane Water permeability, mean velocity index Minimum velocity index Maximum velocity index Flow rate	Declared Value
BS EN 12224 (PD ISO/TS 20432)	Weathering	<i>Calculated $F_{r,w}$ Value (Ratio of tensile strength of Unexposed Material to that of exposed material)</i> Retained strength MD >60% Retained strength CMD >60%
BS EN 12225	Resistance to Microbiological In accordance PS ISO/TS 20432:2022 section 9.5	Value Achieved
Plastic Connection Plates		
BS EN ISO 11357-6 (Isothermal OIT)	Oxidative Induction Time	Values Achieved (Time and °C)
	Polymer characterisation test	Values achieved (as per QP)
ASTM D6916 – 06c(2011) Or equivalent specification	Shear connection strength between the geogrids and geotextile bagwork	Evidence for fitness for purpose (not in certificate) Value for T19mm kN (SI units)
Design		
BS 1377-2:2022	Grading of fill material	Grading of the fill material must be proportional to the declared value of the characteristic opening size
Durability		
BS 8006-1:2010 Annex A	Design life (Permanent Walls and Bridge abutments)	To align with the soil reinforcement product

Date of latest update:	04/09/2025
------------------------	------------

STRENGTHENED EMBANKMENT

Product code(s): SK

Requirements are derived from:

- MCHW Volume 1, Series 600 Earthworks, Clause 621
- MCHW Volume 1, Series 2500 Special Structures
- BS 8006:2010+A1:2016

Detailed criteria will be added at the next document update.

Date of latest update:	25/11/2022
------------------------	------------

STRESS ABSORBING MEMBRANE INTERLAYER (SAMI) PRODUCT

Product code(s): IL

Test method / standard	Performance characteristic assessed	Acceptability limits / criteria
Polymer Modified Bitumen for SAMI		
BS EN 1426:2024	Penetration at 25°C	65-105 or 75-130
BS EN 1427:2015	Softening point	≥70°C
BS EN 13398:2017	Elastic recovery at 25°C	≥70°C
BS EN 13589:2018	Cohesion using the force ductility method (50mm/min traction)	≥2 at 5°C
Performance Requirements for SAMI		
BS EN 12697-8:2018	Minimum target design binder content	B _{min} 8.5
BS EN 12697-8:2018	Design air void content	V _{MAX} 4
BS EN 12697-22:2020 (Small device, Procedure A)	Resistance to permanent deformation	WTR _{AIR} 5.0 at 45°C
		RD _{AIR} 5 at 45°C

Specification determined in line with CC 205.21

Further requirements include:

- System Installation Performance Trial (SiPT) to confirm the installation method.
- No allowance for the use of Reclaimed Asphalt.
- Polymer Modified Bitumen to be compliant with BS EN 14023.

Date of latest update:	03/07/2025
------------------------	------------

STRUCTURED WALL PIPE AND FITTING

Product code(s): SP

Test method / standard	Performance characteristic assessed	Acceptability limits / criteria
<i>Requirements as defined in MCHW Vol 1, series 500, cl 518 – thermoplastics structured wall pipes and fittings</i>		
Pipes requirements (Table 5/9)		
BS EN ISO 2897-1, BS EN ISO 2897-2 BS ISO 11922-1	Dimensions to be specified	Specify
MCHW Vol 1, Clause 518.2 MCHW Vol 2, NG 500, Appendix 5/7	Material characteristics	As per relevant standards
BS EN ISO 9969	Ring stiffness	6 kN.m ⁻² minimum. Lower stiffness values are permitted if design calculations to BS EN 1295-1 (UK national annex), based on site specific installation conditions, indicate satisfactory performance.)
BS EN ISO 9967	Creep Ratio	PVC-U – maximum 2.5 PP and PE – maximum 4.0
WRc Jetting Test Method	High volume low pressure jetting	Minimum acceptable failure pressure 137 bar.
sub-Clause 518.11	Longitudinal bending	Pipes with nominal diameters ≤ 350 mm to have a difference in dimensions when measured in the vertical axis of less than 5% of the pipe length and no local permanent deformation occurs during the test.
BS EN ISO 11173	Impact resistance at 0°C with d25 striker of 1 kg	Preliminary test – test 10 pieces, dropping the striker from a height of 1m. If any test pieces fail, subject the pipe to the full test as per standard, starting the striker from a drop height of 400 mm. The mean minus 1.64 times the standard deviation must exceed 1m. No failure.
BS EN ISO 11173	Impact resistance at 23°C with d25 striker of 1 kg	Preliminary test – test 10 pieces, dropping the striker from a height of 1m. If any test pieces fail, subject the pipe to the full test as per standard, starting the striker from a drop height of 400 mm. The mean minus 1.64 times the standard deviation must exceed 1m. No failure.
sub-Clause 518.12	Rodding resistance	Pipes with nominal diameters ≤ 350 mm to have an average failure energy >3 joules
TS 12-24	Static friction coefficient (ducts)	Pass
BS EN ISO 9967 Test to be carried out at 45°C	Creep at elevated temperature(ducts)	Creep ratio to be less than 2 times the values to BS EN ISO 9967
sub-Clause 518.13	Resistance to point loads (ducts)	No perforation at 10% rod travel

BS EN ISO 13262	Tensile strength of a seam	As given in BS EN 13476
Fittings requirements (Table 5/10)		
BS EN ISO 2897-1, BS EN ISO 2897-2 and BS EN ISO 11922-1	General	Dimensions to be specified
ISO 13967	Ring stiffness (excluding couplers)	6 kN.m ⁻² minimum.
sub-Clause 518.12	Rodding resistance	Fittings with nominal diameters ≤ 350 mm to have an average failure energy >3 joules
BS EN ISO 13264	Strength and flexibility of fabricated fittings	BS EN ISO 13264, no leakage
BS EN ISO 13263	Impact resistance (drop test)	Fall height 1000mm at a temperature of 0°C. Product less than ND 300 shall show 'no damage'. Others may fail but must be identified as 'handle with care'
BS EN ISO 13254	Watertightness of fabricated fittings	0.5 bar for 1 minute, no leakage
Systems requirements (Table 5/11)		
BS EN ISO 13259, Condition B Temperature (23 ± 2)°C	Leaktightness of joints – diameter distortion (watertight joints)	As per default values in the standard. No leakage
BS EN ISO 13259, Condition C Temperature (23 ± 2)°C	Leaktightness of joints – angular deflection (watertight joints)	As per default values in the standard. No leakage
sub-Clause 509.7	Leakage rate from partially watertight joints	Less than 20 times the square of the ID of the pipe in metres shall flow through the joint in litres per minute
BS EN ISO 13260 (adapted to suit NH loading conditions)	Resistance to wheel loads	Less than 5% deformation when loaded to 100 kN (for unequal branches only)
MCHW Clause 502	Excavation	Complies
MCHW Clauses 503, 504, 505, 518.8-9	Installation	Complies
MCHW Clause 509 BS 4660	Testing	Complies
MCHW Clauses 520.1-4, 521	Maintenance	Complies

Date of latest update:	25/11/2022
------------------------	------------

THIN SURFACING

Product code(s): TH

Options for Certification:

1. Thin surface course systems
2. Cold Applied Ultra-Thin Surfacing (CAUTS)

Test method / standard	Performance characteristic assessed	Acceptability limits / criteria	
		TH - CL #942	TH - CAUTS – CL #923
Requirements as defined in SG3 Guideline for the assessment and certification of thin surfacing systems for highways, MCHW Vol 1, series 900, and PD 6691:2022			
All system constituents shall comply with requirements of MCHW Clause 901			
Materials and processes			
BS EN 13108-1, -2 or -5 or BS EN 12273:2008	Thin surface course mixture compliance	UKCA or CE marked to EN 13108-1, -2 or -5	UKCA or CE marked to EN 12273:2008
BS EN 13108-21	Thin surface course mixture FPC	FPC to EN 13108-21	UKCA or CE marked to EN 13108-21
BS EN 13808	Cationic emulsion compliance	---	UKCA or CE marked to EN 13808
BS EN 12591 PG Bitumen	Binder compliance	BS EN 12591	---
BS EN 14023 PMB	PMB compliance	BS EN 14023	---
BS EN 13043	Coarse aggregates compliance	UKCA or CE marked to BS EN 13043	UKCA or CE marked to BS EN 13043
BS EN 1097-8	Coarse aggregate PSV	As DMRB CD236 Table 3.3b	As MCHW Clause 923
BS EN 1097-8	Coarse aggregate AAV	As DMRB CD236 Table 3.3b	As MCHW Clause 923
BS EN 1097-2	Coarse Aggregate - Resistance to fragmentation - LAAV	LA ₃₀ – For natural aggregate LA ₅₀ – For blast furnace slag	As MCHW Clause 923
BS EN 933-1	Aggregate PSD	As BS EN 13043:2002	As BS EN 933-3
BS EN 933-3	Aggregate flakiness index	Fl ₂₀	As MCHW Clause 923
BS EN 1097-6	Water absorption	WA ₂₄₂	Not required
BS EN 13043	Freeze / thaw resistance	MS ₂₅	Note required
MCHW Clause 902	Reclaimed asphalt (if applicable)	As BSI PD 6691	---
BS EN 14023	Bond coat or tack coat	As MCHW Clause 920 and BS 594987	As MCHW Clause 920 and BS 594987
BS EN 13108 BS 594987	Installation instructions	As MCHW Clauses 903, 942 BS EN 13108 BS 594987	As MCHW Clauses 903, 942 BS EN 13108 BS 594987
BS 594987	Transport	As BS 594987	As BBA AIMS
BS 594987 and MCHW Clause 903 MCHW Clause 923	Site preparation, placement, and compaction	IMS complies with BS 594987 and MCHW Clause 903	IMS complies with BS 594987 and MCHW Clauses 903, 923
WMA-specific requirements			
BS EN 12697-13	Production temperatures	As in MCHW Clause 908.5 Table 9/1A	---

Test method / standard	Performance characteristic assessed	Acceptability limits / criteria	
		TH - CL #942	TH - CAUTS – CL #923
MCHW Clauses 903, 908.	WMA installation requirements	As in MCHW Clauses 903, 908	---
MCHW Clause 908	WMA minimum rolling temperatures	As in MCHW Clause 908 Table 9/1C	---
Test requirements			
BS EN 12697-22	Resistance to permanent deformation	PD 6691:2022, N/A for BSEN 13108-2	Not required
BS EN 13036-1	Surface macrotexture depth – initial (at opening to traffic)	As MCHW Clause 942	As MCHW Clause 921
BS EN 13036-1	Surface macrotexture depth – retained (12mths and 24mths after opening to traffic)	As MCHW Clause 942	As MCHW Clause 921
SG3 Appendix A.3	Bond to substrate	≥400 kPa between 28 and 56 days after installation	≥400 kPa 12 Months after the installation
MCHW Vol 1, Clause 951	Bond to substrate	≥400 kPa between 28 and 56 days after installation	---
BSEN 12697-12 Method A	Water sensitivity	As MCHW Clause 942.9 (hot Mix) As MCHW Clause 908 (warm mix)	---
BS EN ISO 11819-1	Road/tyre noise level (optional)	As MCHW Clause 942 Table 9/17	As MCHW Clause 923 Table 9/5
BS EN 12697-8	Void content	Declared – as MCHW Clause 942.33	---
---	Designed target layer thickness	Declared As MCHW Clause 942 Table 9/11	Declared
SG3 Appendix A.10 and Appendix E	Visual assessment of trial sites	---	Good or Excellent at opening to traffic, after 12 months and 24 months.
SG3 Appendix A.10 and Appendix E	Durability: Independent Panel trial sites inspection – BBA HAPAS Inspection Panel	Good or Excellent after 24 months	Good or Excellent after 24 months

Date of latest update:	25/11/2022
------------------------	------------

UNDERGROUND DRAINAGE

Product code(s): UD

Test method / standard	Performance characteristic assessed	Acceptability limits / criteria
<i>Requirements defined in MCHW Volume 1, Series 500 Drainage and Services Ducts, Table 5/1 and MCHW Volume 2, NG 500.</i>		
Unplasticised polyvinyl-chloride (PVC-U): BS 4660 or BS 5481 or BS EN 1401	Foul & surface water drains	See the UK national forward to the relevant BS EN. The grade appropriate for use without structural calculations shall be used i.e. SN8 for PP & PE and SN4 (SDR 41) for PVC-U
Polypropylene (PP): BS EN 1852-1	Foul & surface water drains	
Polyethylene (PE): BS EN 12666-1	Foul & surface water drains	
Unplasticised polyvinyl-chloride (PVC-U): BS EN 13598 (BS 4660 for cleaning eyes) or BS EN 1401	Filter drains	Perforated with not less than 1000mm ² of holes per metre length of pipe. The perforations shall not reduce the pipe stiffness by more than 5%. Circular perforations not greater than 10mm nor less than 3mm in diameter or rectangular slots not greater than 4mm nor less than 0.6mm in width
Polypropylene (PP): BS EN 1852-1	Filter drains	
Polyethylene (PE): BS EN 12666-1	Filter drains	
MCHW Clause 502	Excavation	Complies
MCHW Clauses 503, 504, 505, 518.8-9	Installation	Complies
MCHW Clause 509 BS 4660	Testing	Complies
MCHW Clauses 520.1-4, 521	Maintenance	Complies

Date of latest update:	29/07/2025
------------------------	------------

Document History

Issue No.	Issue Date	Product specifications updated / Other updates
1	1/12/2022	ALL
2	29/11/2024	General: Added product code references to Product Area Product Areas updated: Anti-corrosive Coatings – Updated to bring specification in line with the agreed Guideline. Bitumen Modifiers – Updated to bring specification document in line with the agreed Guideline. Culvert – Updated to reference relevant MCHW Clauses. Fin Drain – Updated to reference relevant MCHW Clauses. Manhole Reinstatement – Removal of Skid Resistance Value and Texture Depth requirements for 'Adjacent Surfacing Material' as previously agreed. Patch Repair Products – Splitting of the product area into three clear areas of assessment dependant on technology and intended.
3	29/07/2025	General edits for style and grammar. Missing Product Codes added. New entries for Additional Surface Layer Product, Single Layer Surface Treatment Product and Stress Absorbing Membrane Interlayer (SAMI) Product. Technical update for Manhole Reinstatement. Missing issue date added for Underground Drainage.
4	02/10/2025	Soil Reinforcement test method updated to include • Bagwork for facing units • Plastic connection plates