

APPENDIX B3 – GUIDANCE DOCUMENTS ON MATERIALS AND PAVEMENT DESIGN

B3.1 PREVENTATIVE MAINTENANCE

Title	Commentary	Availability/reference
Manual of Highway Design and Management	A comprehensive manual covering all facets of highway engineering including sections on materials, design, management and maintenance of highway assets	ISBN 978-0-7277-4111-0 Available from http://www.icevirtuallibrary.com/icemanuals/MOHD
Footways and cycle route design, construction and maintenance	The first parts of the guide cover structural design. Maintenance, including defects and treatment options, is described in Part 3 (for footways) and Part 4 (for cycle routes).	ISSN 1365-6292 (AG26v2) Available from www.trl.co.uk or www.emeastore.ihs.com
Design Guide for Road Surface Dressing, Transport Research Laboratory (TRL) Road Note 39	A guide for the design of surface dressing for all classes of roads in its sixth edition. Covers design, control, supervision and aftercare which are critical for successful and durable surface dressings as an effective maintenance treatment.	ISBN 978-1-84608-693-9 (2008) Available from www.trl.co.uk or www.emeastore.ihs.com
Code of Practice for Surface Dressing, the Road Surface Treatment Association (RSTA) and Association of Directors of Environment, Economy, Planning and Transportation (ADEPT)	A set of codes of practice for surface dressing including: Introduction (Pt1); Binders (Pt2); Aggregates (Pt3); Types and Design (Pt4); Surface preparation (Pt5); When to surface dress (Pt6); Spray tanker operation (Pt7); Quieter road surface dressings (Pt8) and Delivery of binder to sprayers (Pt9).	http://www.rsta-uk.org/publications.htm

Title	Commentary	Availability/reference
Best Practice Guidelines for Durability of Asphalt Pavements, TRL Road Note 42	<p>Contains valuable practical guidance including:</p> <ul style="list-style-type: none"> Planning of the works to reduce risk, use of high binder content asphalt is good, smaller sizes of aggregate in asphalt is good, low air void, content in asphalt is good, the pavement should act as a single layer, and importantly: Water ingress is bad All joints are weaknesses 	<p>ISBN 798-1-84608-709-7 (2008)</p> <p>Available from www.trl.co.uk or www.emeastore.ihs.com</p>
Potholes and Repair Techniques for Local Highways	<p>Although related to pothole repair (see below) also includes information on considerations and prospective techniques for Maintenance treatments (Chapter 4) and Managing the asset (Chapter 5)</p>	<p>http://www.adeptnet.org.uk/assets/userfiles/documents/000079.pdf</p>
Best Practice Guidelines for Negative Texture Surfacing	<p>A methodology for site evaluation and Negative Texture Surfaces (NTS) selection to ensure that the right material is installed in the right site. Checklists and flow charts for a structured approach to the factors which have a bearing on distress mechanisms</p>	<p>http://www.ukroadsliasongroup.org/en/utilities/document-summary.cfm?docid=5F3A1531-9879-40D0-9D699E0B0E0DC34C</p>
Required Strength of a pavement to receive a Negatively Textured Surfacing	<p>Evaluation of the effectiveness of NTS for local authority roads with guidance to ensure reasonable durability in a scientific way based on measurements</p>	<p>Report not displayed on ADEPT website. Please request copy, if available, through ADEPT 'Contact us' link:</p> <p>http://www.adeptnet.org.uk/contact</p>

Title	Commentary	Availability/reference
Effect of elevated temperatures combined with high rainfall on evolved pavements	Evaluation of climate change impacts on the evolved road network, consisting mainly of C class and Unclassified roads. A guide for engineers on design and remedial techniques, and management decision strategies	http://www.adeptnet.org.uk/assets/userfiles/documents/000078.pdf
Pavement design method for local roads	A framework for the economic design of pavements for local roads comprising a methodology for application to the routine design of pavements for main distributor roads and lower categories only.	Report not displayed on ADEPT website. Please request copy, if available, through ADEPT 'Contact us' link: http://www.adeptnet.org.uk/contact
Service Life of Surface Treatments	Joint publication by ADEPT and RSTA	http://www.rsta-uk.org/downloads/RSTA-ADEPT-Service-Life-document.pdf
HD31/94 'Maintenance of Bituminous Roads' (Design Manual for Roads and Bridges Volume 7 Section 4)	Describes Highways Agency requirements for Surface Treatments (Chapter 2) and Major Maintenance (Chapter 4). [Published some time ago and understood that it may be updated in the future]	http://www.dft.gov.uk/ha/standards/dmr/vol7/section4.htm
HD36/06 'Surfacing Materials for New and Maintenance Construction' (Design Manual for Roads and Bridges Volume 7 Section 5)	Describes Highways Agency requirements for surfacing options and road surface characteristics.	http://www.dft.gov.uk/ha/standards/dmr/vol7/section5.htm

Title	Commentary	Availability/reference
HD37/99 `Bituminous Surfacing Materials and Techniques` (Design Manual for Roads and Bridges Volume 7 Section 5)	Describes Highways Agency requirements for surfacing materials including surface dressing, slurry surfacing and micro surfacing [Published some time ago and understood that it may be progressively updated in the future – see IAN157 for revised Chapter6]	http://www.dft.gov.uk/ha/standards/dmr/vol7/section5.htm
IAN 157/11 Thin Surface Course Systems – Installation and Maintenance	Highways Agency Interim Advice Note which supersedes Chapter6 of HD37 and covers Installation and Maintenance of Thin Surface Course Systems	http://www.dft.gov.uk/ha/standards/ians/pdfs/ian157.pdf
Manual of Contract Documents for Highway Works	Highways Agency Specification Clauses and Notes for Guidance covering 'Road Pavements - Bituminous Bound Materials' in Series 900 and Series NG900 respectively. Various Specification Clauses apply in alignment with HD31,HD36 and HD36	http://www.dft.gov.uk/ha/standards/mchw/vol1/index.htm http://www.dft.gov.uk/ha/standards/mchw/vol2/index.htm
Code of Practice for Slurry Surfacing and Micro-surfacing (RSTA and ADEPT)	A code of practice which includes guidance on site assessment, works planning, materials, joints, installation, methods of working and aftercare.	http://www.rsta-uk.org/downloads/RSTA-ADEPT-Code-of-Practice-for-Slurry-Surfacing-incorporating-Microsurfacing-2011.pdf
Maintenance Surfacing Guidelines (Title and scope varies)	Some local highway authorities (LHA's) have their own 'Guidelines for Maintenance Surfacing' which describes which material/process is to be used in differing situations.	Varies – refer to individual LHA

Title	Commentary	Availability/reference
British Board of Agrément Highway Authorities Product Approval Scheme (BBA HAPAS) – Thin Surfacing Systems	HAPAS is a certification scheme set up in 1995 for innovative products and systems used in highway works. Currently in the Product Sector ‘Thin Surfacing’ forty two certificates have been awarded. Each Thin Surfacing product is evaluated against a published ‘Guideline Document for the Assessment and Certification of Thin Surfacing Systems for Highways’ and each Certificate contains technical details.	http://www.bbacerts.co.uk/hapas/hapas_guidelines.aspx

B3.2 POTHOLE REPAIR

Title	Commentary	Availability/reference
Potholes and Repair Techniques for Local Highways	<p>Engineering focus which describes the mechanism of pothole formation and repair aspects using hot asphalt. Includes process charts for:</p> <ul style="list-style-type: none"> • Pothole formation catalysts • Infill repair material selection (Matrix dominated asphalt is the preferred infill repair material) • Pothole progression evaluation. 	http://www.adeptnet.org.uk/assets/userfiles/documents/000079.pdf
Best Practice Guidelines for Durability of Asphalt Pavements TRL Road Note 42	<p>The core principles for durability are equally valid for repair of potholes as they are for maintenance works (see above)</p>	<p>ISBN 798-1-84608-709-7 TRL Publications available from www.trl.co.uk or IHS www.emeastore.ihs.com</p>
HD31/94 `Maintenance of Bituminous Roads` (Design Manual for Roads and Bridges Volume 7 Section 4)	<p>Describes Highways Agency requirements for Minor Maintenance (Chapter3) which includes patching. [Published some time ago and understood that it may be updated in the future]</p>	http://www.dft.gov.uk/ha/standards/dmr/vol7/section4.htm
IAN 157/11 Thin Surface Course Systems – Installation and Maintenance	<p>Highways Agency Interim Advice Note. Describes 'End of Service Life' (Para 6.5.3 onwards) as a three stage deterioration and defect repairs to be carried out in accordance with the BBA HAPAS Certificate for the relevant proprietary TSCS.</p>	http://www.dft.gov.uk/ha/standards/ians/pdfs/ian157.pdf

Title	Commentary	Availability/reference
Manual of Contract Documents for Highway Works	Highways Agency Specification Clause 946 'Patching and Repairs to Potholes and Depressions' [Published some time ago and understood that it may be updated in the future]	http://www.dft.gov.uk/ha/standards/mchw/vol1/index.htm
British Board of Agrément Highway Authorities Product Approval Scheme (BBA HAPAS) – Thin Surfacing Systems (Repair)	HAPAS is a certification scheme set up in 1995 for innovative products and systems used in highway works. Currently in the Product Sector 'Thin Surfacing' forty two certificates have been awarded. Each Certificate describes the procedure for repairs of the particular Thin Surfacing System in the event of a defect such formation of a pothole	http://www.bbacerts.co.uk/hapas/hapas_guidelines.aspx
British Board of Agrément Highway Authorities Product Approval Scheme (BBA HAPAS) - Permanent Cold-Lay Surfacing Materials (PCSM)	Five Certificates have, currently been awarded in the Product Sector 'Permanent Cold-Lay Surfacing Materials (PCSM)' Each PCSM is evaluated against a published 'Guidelines Document for the Assessment and Certification of Permanent Cold-Lay Surfacing Material for the Reinstatement of Openings in Highways' and each Certificate contains technical details	http://www.bbacerts.co.uk/hapas/hapas_guidelines.aspx

Title	Commentary	Availability/reference
British Board of Agrément Highway Authorities Product Approval Scheme (BBA HAPAS) - Infra-red Asphalt Surface Repair System	Two Certificates have currently been awarded in the Product Sector 'Infra-red Asphalt Surface Repair System'. There is no 'Guidelines' document available and these systems have been assessed through the 'one-off' assessment procedure.	http://www.bbacerts.co.uk/hapas/hapas_guidelines.aspx
British Board of Agrément Highway Authorities Product Approval Scheme (BBA HAPAS) - Patch Repair Products	Two Certificates have currently been awarded in the Product Sector 'Patch Repair Products'. There is no 'Guidelines' document available and these systems have been assessed through the 'one-off' assessment procedure.	http://www.bbacerts.co.uk/hapas/hapas_guidelines.aspx
Code of Practice for undertaking velocity patching (RSTA and ADEPT)	A code of practice which includes guidance on site information, planning, materials, installation and aftercare.	http://www.rsta-uk.org/downloads/RSTA-ADEPT-Code-of-Practice-for-Undertaking-Velocity-Patching2.pdf
Specification for Reinstatement of Openings in Highways	Prepared by the Department for Transport, the 'Specification for the Reinstatement of Openings in Highways' sets out the statutory requirements for materials, performance and standards of workmanship for use in association with street works by utilities and other undertakers with apparatus in the street.	ISBN 9780115531415 (Third edition 2010) Available at http://www.tsoshop.co.uk/bookstore.asp?Action=Book&ProductId=9780115531415
Compliance testing of street works reinstatements	A survey of all English Highway Authorities conducted to see how many have reinstatement coring programmes and how successful these have been	http://www.adeptnet.org.uk/assets/userfiles/documents/000039.pdf