ADEPT
ASSOCIATION OF DIRECTORS OF ENVIRONMENT, ECONOMY PLANNING AND TRANSPORT

RSTA

SERVICE LIFE OF SURFACE TREATMENTS

BY

ADEPT/RSTA

May 2011

"I am delighted that ADEPT and RSTA have joined together in this initiative to establish the service life of various surface treatments. It is an excellent example of collaboration as Highway Authorities travel the road of Whole Government Accounting. To depreciate the network it is essential that Authorities, at the outset, have a nationally agreed baseline for how long surface treatments should be expected to last."

George Batten, President, ADEPT

"This document will provide invaluable information for any Asset Manager dealing with highway maintenance. It has been produced by industry experts with considerable knowledge in the field and should be regarded as the definitive view on the durability of surface treatments that are properly specified, designed and executed".

Howard Robinson, Chief Executive, RSTA

ADEPT is the Association of Directors of Environment, Economy, Planning and Transport www.adeptnet.org.UK

RSTA is the Road Surface Treatments Association www.rsta-uk.org

EXECUTIVE SUMMARY

Having an agreed service life for surface treatments is an essential element of lifecycle planning for the highway practitioner with regard to asset management and the requirements for depreciation, valuation and Whole of Government Accounts (WGA).

The work undertaken by a joint working group of ADEPT and RSTA representatives has provided an agreed baseline of service life values that can be promoted to Highway Authorities for use. They will be recommended to the Chartered Institute of Public Finance and Accountancy (CIPFA) and the Highway Asset Management Financial Information Group (HAMFIG) as the service life values to be used unless other specific performance data is available to justify alternative figures.

The following summarises the agreed figures:

SURFACE TREATMENT	**SERVICE LIFE**
Surface dressing • Low to medium traffic • Medium to high traffic	 15 years 10 years
Microsurfacing • Carriageway • Footway	 10 years 15 years
Slurry surfacing • Carriageway • Footway	 6 years 10 years
High friction surfacing • Hot applied • Cold applied	 4 years 8 years

Service life is the ‘average’ or ‘typical’ life of a treatment and as such can be used for asset management purposes. On any given road the treatment may have a greater or lesser life depending upon circumstances. The ‘life’ of a treatment is the time at which significant maintenance becomes necessary.

INTRODUCTION

All Highway Authorities should be producing lifecycle plans for their assets in order to calculate the annual depreciation of those assets; this will be reported in Whole of Government Accounts (WGA) and, from 2012/13, will be formally audited and scrutinised. A key part of any lifecycle plan is understanding what the treatment options are and how long they will typically last. In the absence of robust, long-term records based on actual performance, which few authorities currently have, reliable estimates of treatment lives will be needed for the foreseeable future to allow the production of lifecycle plans. All Highway Authorities are, however, encouraged to collect and analyse data as part of their asset management in order to build up their own, locally derived, service life information. This will enable them to verify that they are on target to achieve the service lives quoted or indeed to enhance the information from actual data.

Each Highway Authority will be reporting at network level hence considering averages when historically there have actually been wide variations in service life. Guidance of this type, produced by experienced industry practitioners will be a lot more robust and consistent, and therefore auditable, than estimates produced by individual asset managers or treatment providers. It is recognised that there will be instances where locally engineers have information related to service life and will utilise this data. The work undertaken by a group of ADEPT and RSTA members in defining service lives is very helpful to asset management in general and valuation in particular.

It is recommended that authorities use the figures published in this report where relevant in producing lifecycle plans to support WGA financial reporting unless, or until, robust local data is available that demonstrates a different level of performance on their roads.

The above will be recommended to HAMFIG (Highway Asset Management Financial Information Group) and CIPFA (Chartered Institute of Public Finance and Accountancy) as the way forward and the basis for lifecycle planning and asset valuation regarding these surface treatments.

WORKSHOP

A group consisting of key members of RSTA and their relevant Sector Committees together with members of ADEPT representing both materials technical specialists and asset managers met in a workshop in November 2010 to discuss service life. The aim of the workshop was to seek agreement as to the expected service life of three surface treatments; surface dressing, microsurfacing (including slurry) and high friction surfacing.

The “service life” of a surface treatment is its expected lifetime, or the acceptable period of use in service. It is the projected life remaining (in years) of a newly installed treatment under normal loading and environmental conditions before replacement or major rehabilitation is expected. Service life is the ‘average’ or ‘typical’ life of a treatment and as such can be used for asset management purposes. On any given road the treatment may have a greater or lesser life depending upon circumstances. The ‘life’ of a treatment is the time at which significant maintenance becomes necessary.

The Group reached consensus on the service life that each treatment could attain if everything was undertaken in accordance with required practice. Each surface treatment is considered against the following headings:

- Description/Definition
- Service life
- Guidance to follow to achieve life
- Key compromising factors
- Failure modes
- Notes

The Group considered the issue of “designed” and “evolved” roads, designed roads being those that were constructed following a pavement design process whereas evolved relates to those roads that have been historically treated in some way over time. It was determined that evolved compared to designed roads for surface treatments was not deemed a differentiator and hence an issue. It could, however, warrant mention within the guidance or compromising factor section.

SURFACE DRESSING

DESCRIPTION/DEFINITION

What is surface dressing?

Surface Dressing is a long established and proven highway maintenance technique. In simple terms it involves the even spray application of an emulsion bituminous binder through a purpose built spray tanker onto the existing road surface followed immediately by the even application of aggregate chippings to ‘dress' the binder.

What are the benefits?

Surface dressing offers many advantages:

- Seals the road surface against ingress of water which is known to be one of the major causes of asphalt pavement deterioration including pothole formation.
- Arrests the deterioration of the road surface and underlying road pavement structure.
- Restores a consistent level of skid resistance to the road surface with the resultant benefits of reduction in skid related traffic accidents.
- By timely intervention it will enable worn out road surfaces to last longer thereby increasing the time to when structural maintenance is required.
- Can help to reduce spray caused by vehicles travelling on wet road surfaces.
- Maximises the cost effectiveness of limited highway maintenance funds.

When to Surface Dress

- Before the road surface deteriorates to the stage at which expensive major patching and/or reconstruction is required.
- Before surface skidding levels fall below locally published investigatory levels to be found in an Authority’s Skid Resistance Strategy or those in the Code of Practice Well Maintained Highways for the class of road or location in question and are identified as needing remedial action.

Cost effectiveness

- Low initial cost - in the region of £1.20 m2 for routine single dressings to £2.50 m2 for specialist multi-layer dressings for high speed roads. These illustrative cost figures only include the cost of plant, labour and materials. Depending on specific site circumstances there may be additional costs for Site

Preparation i.e. pre-patching works, Traffic Management and replacement of road markings.

- Low cost/life index (the cost/ life index is the initial cost per m^2 divided by the service life). When done properly, at the right time, surface dressing is a very cost effective treatment.
- The product can be likened to painting one's house. It needs doing before deterioration occurs and as a result expensive preparation or replacement is significantly delayed.

Which roads can be Surface Dressed?

- All classes of road, from single track, unclassified roads and footpaths to national high speed motorways can, and have been, successfully treated.

Some important considerations

- Surface Dressing can be specified in accordance with The Specification for Highway Works Clauses 919 (recipe) and 922 (performance design).
- From 2013 all performance surface dressing is covered by CE marking to comply with BS EN 12271. Use of this standard will be mandatory under the Construction Products Regulations 2011.
- The dressing required must be designed for the conditions of the road surface on which it is to be laid and the traffic expected on it. The latest version of Road Note 39, 6th Edition, gives guidance on all aspects of design. The RSTA run regular training courses on surface dressing covering tuition on design www.rsta-uk.org/calendar .
- The work should be carried out by a fully experienced contractor who can demonstrate that he has a record of quality work. All RSTA surface dressing member companies are accredited to ISO 9001 Quality Standard and most have achieved accreditation to the QA National Sector Scheme 13 for Surface Treatments. Clients are urged to specify such quality accreditation requirements in their Contract Documents.
- Early Contractor involvement in the design and preparation process is extremely beneficial.
- Surface dressing binder technology has developed enormously over the last 20 years or so. It is important to specify the binder quality required to give the optimum end product. Failures will be minimised by the proper binder selection which for end performance specifications will be made by the Contractor.
- Proper "aftercare" is essential. This, together with the correct design and binder specification, will minimise any loose chipping problem.
- The Code of Practice on Surface Dressing available from RSTA covers every aspect of the process and should be regarded as representing best practice. In determining the service life it has been assumed that work has been carried out in accordance with this

Code of Practice. There is also a joint CSS/RSDA Code of Practice on Traffic Management and Signage relating to Surface Dressing works. Note: The RSDA (Road Surface Dressing Association) was incorporated into RSTA in 2008 and no longer exists as a separate trade body. The CSS (County Surveyors' Society) is now known as ADEPT.

Environmental considerations

- Surface dressing minimises the use of scarce natural aggregate resources - Most of the aggregate used is in direct contact with the vehicle tyre, not buried below the road surface.
- Accident levels will be reduced by restoring adequate and consistent skid resistance.
- By careful design 'quiet' surface dressings can be installed to reduce road noise generated by traffic.
- The rapid speed of the process means that disruption to road users, local businesses and emergency services is minimised.
- Surface dressing provides a very low carbon footprint solution as measured using ProTECT (Pavement Treatment Embodied Carbon Tool), the RSTA/ADEPT Carbon Calculator for Surface Treatments, developed by The University of Nottingham (2011).

SERVICE LIFE

The Group gave due consideration to service life on carriageways and the resultant consensus is as below:

SERVICE LIFE

Low to medium traffic = 15 years

Medium to high traffic = 10 years

Low to medium traffic = RN39 traffic categories F to H (majority being evolved roads)

Medium to high traffic = RN39 traffic categories A to E (some designed roads)

It is recognised that various Highway Authorities around the UK utilise surface dressing on footways providing similar life to carriageways however the Group did not address footways and this will be rectified at the first revision.

GUIDANCE TO FOLLOW TO ACHIEVE LIFE

- Design to RN39 with early contractor involvement – critical issues;
    - Applicability of site
    - Seasonal latitude
    - Road hardness
    - Traffic categories
    - Binder type and spread rate/aggregate PSV and AAV selection
    - Site severity/characteristics
- Pre-surface dressing requirements to be determined
- Determine specification – cl.922 (Design, Application and End Product Performance) or cl.919 (recipe)
- For performance dressing in accordance with BS EN 12272, PD 6689 gives specific national guidance on the relative classes of performance to be specified and achieved.
- ADEPT and RSTA believe that performance surface dressing, which is the one most widely used in the UK, provides the best procurement procedure as it correctly identifies the roles and responsibilities of the parties and encourages innovation and high quality work.
- Contractors must be compliant with National Highway Sector Scheme (NHSS) 13 (13A and 13B now combined)
- RSDA/CSS Code of Practice for Traffic Management to be referenced
- Early life monitoring and end of guarantee period inspection to complete feedback loop
- Supply chain quality management
- Trained workforce – contractors must demonstrate their workforce competency is up to date by attending the RSTA surface dressing training course every 5 years in accordance with NHSS 13 and obtain the Silver Certificate
- RSTA Code of Practice must be referenced and followed:
    - Preparation
    - Aftercare
    - Workmanship
    - Traffic management

KEY COMPROMISING FACTORS

The key compromising factors are the factors most likely to affect the service life figures quoted above and will not be an issue if the guidance is followed.

FACTOR	AFFECT ON LIFE
Cleanliness of aggregate (particularly if instructed to use Client owned chippings)	-75%
Wrong time of year	-75%
Traffic management/aftercare	-75%
Low traffic volume road <100vpd	+75% to +100%
Any others e.g. binder selection, low binder spread rate, poor surface preparation, Contractor not Sector Scheme compliant	-10%

NOTE: The acceptable tolerances for binder and chippings as described in PD 6689 Table 3 will lead to some variation in service life but this is not expected to exceed 5% in total.

FAILURE MODES

The following are failure modes that occur with surface dressing:

- Polishing
- Loss of texture/excess embedment
- Chipping loss/stripping

Visual assessment of defects listed in EN 12272 Part 2:2003

- Fatting up
- Tracking
- Bleeding
- Scabbing
- Tearing
- Fretting
- Streaking

The extent to which each of these defects is acceptable after the guarantee period depends on the site as described in PD 6689 Table 4.

NOTES

1. Consider road hierarchy related to traffic levels
2. Determine the reason to surface dress – ensure it is the correct solution
3. Failure can be a result of a change in site circumstance e.g. a new development
4. Correct binder type and quantity is essential to achieve life
5. Consider affinity to substrate
6. Need to apply surface dressing at the right time. HRA gave a good indication of future failure hence time to plan whereas SMA can be more instant and will require patch and hold pending surface treatment in the coming season. This affects maintenance planning and contract preparation to ensure all the necessary sites can be included
7. Consider drainage at site location i.e. whether the defect is a consequence of water ponding or flowing over the surface. This will need attention prior to dressing if the dressing is to survive the service life

SLURRY SURFACING AND MICROSURFACING

DESCRIPTION/DEFINITION

What is Slurry/Microsurfacing?

These materials are cold-applied, thin bituminous surface courses incorporating bitumen emulsion and fine graded aggregate with fillers.

From 2013 all slurry surfacing and microsurfacing is covered by CE marking to comply with BS EN 12273. Use of this standard will be mandatory under the Construction Products Regulations 2011.

What are they used for?

These materials can be used to restore the surface condition on roads, footways, cycleways, car parks, playgrounds, central reservations, traffic islands, amenity areas.

Is there a difference between Slurry and Microsurfacing?

Slurry Surfacing is a mixture of non-modified bitumen emulsion and fine aggregate with either 3mm or 3-5 mm aggregate laid as one layer with negligible regulating properties. It can sometimes contain a polymer modified binder and is usually laid manually up to a dried film thickness of 6mm.

Microsurfacing is a mixture of graded aggregates up to 10mm, but more commonly 6mm, with polymer modified emulsion binder which may contain fibres or other performance enhancing additives. Typically it is laid in one or two layers on the carriageway with good regulating properties and can be laid mechanically or manually to a maximum total dried film thickness of 15mm. These materials are also referred to as “Micro-Asphalts”.

What are the benefits?

- Rapid curing characteristics – some products are able to receive traffic in 20 minutes.
- High daily output means less traffic disruption.
- Restores surface texture and improves skid resistance.
- Able to provide a consistent textured finish.
- Impervious membrane prevents ingress of water into the pavement.
- Seals and preserves existing surfaces.
- Suitable for overlay on wide range of existing surfaces.

- Micro-surfacing has the ability to reshape and re-profile surface.
- Can be available in a range of coloured finishes.

When to Use Slurry-Microsurfacing

- Before the footway or carriageway surface deteriorates to the stage at which expensive major patching and/or reconstruction is required.
- Before surface skidding levels fall below locally published investigatory levels to be found in an Authority's Skid Resistance Strategy or those in the Code of Practice Well Maintained Highways for the class of road in question and are identified as needing remedial action.
- When the road surface profile needs minor restoration such as can happen with deformed service trenches.

Cost effectiveness

- Low cost in the region of £2.50 per m² on average for footway Slurry surfacing and £3.00 to £4.00 per m² for carriageway Microsurfacing. These illustrative costs only include plant, labour and materials. Depending on specific site circumstances there will be additional costs for surface preparation i.e. patching works, ironwork adjustment, traffic management plus replacement road markings on carriageways.

Where can Slurry-Microsurfacing be used?

- Slurry surfacing is ideal for any type of surfacing receiving mainly pedestrian traffic e.g. footways and cycleways.
- Microsurfacing is ideal for use on urban roads and roads carrying up to 250 commercial vehicles per lane per day.

Some important considerations

- Slurry-Microsurfacing can be specified in accordance with the Specification for Highway Works Clause 918.
- Performance requirements for Slurry-Microsurfacings are contained within BSEN 12273:2008 Table 1.
- The Slurry-Microsurfacing must be designed by the contractor to meet the requirements of the road surface on which it is to be laid and to satisfy the performance criteria for the class of road in PD 6689

- The work should be carried out by a fully experienced contractor who can demonstrate that he has a record of quality work.
- All Slurry-Micro Contractors who are members of RSTA have achieved registration to the NHSS 13 – Surface Treatments. Clients should specify such quality requirements in their Contract Documents.
- Good preparation and "aftercare" are essential. These, together with the correct material design, will minimise the risk of early life failure.

Environmental considerations

- Slurry-microsurfacing provides a very low carbon footprint solution as measured using ProTECT, the RSTA/ADEPT Carbon Calculator for Surface Treatments, developed by The University of Nottingham (2011).
- The rapid speed of the process means that disruption to road uses, local businesses and emergency services is minimised.

SERVICE LIFE

The Group gave due consideration to service life and the resultant consensus is as below:

SERVICE LIFE

Slurry c'way, low traffic = 6 years

Micro c'way, medium to high traffic = 10 years

Slurry footway = 10 years

Micro footway = 15 years

GUIDANCE TO FOLLOW TO ACHIEVE LIFE

- Take cognisance of thresholds and falls
- Remove road markings by scabbling
- Define the required values for the parameters for the site based upon the 'failure modes listed below as give in PD 6689 Table 7
- Use bond coat for high stress areas; concrete substrate; polished substrate
- Trained workforce – contractors must demonstrate their workforce competency is up to date by attending the RSTA training course every 5 years in accordance with NHSS 13 and obtain the Silver Certificate
- Good planning of seasonal programme
- Choose correct material; early contractor involvement
- Comply with RSTA Code of Practice 2011
- Climatic conditions are key to success and in some parts of the country which have higher levels of rainfall the laying period may be very short. This must be considered as a risk factor hence the inclusion within Compromising Factors below.

KEY COMPROMISING FACTORS

The key compromising factors are the factors most likely to affect the service life figures quoted above and will not be an issue if the guidance is followed.

FACTOR	AFFECT ON LIFE
Incorrect design of material	-5%
Use of non-Sector Scheme registered contractor	-10%
Incorrect preparation of works	-5%
Inclement weather conditions (notes 4 and 5)	-20%
Surface conditions (note 6)	-5%

NOTE: The acceptable tolerances for binder and chippings as described in PD 6689 Table 8 will lead to some variation in service life but this is not expected to exceed 5% in total.

FAILURE MODES

Wearing out

- Material worn away by action of traffic

Delamination

- “Plates” break off surface leaving sharp step at edges
- Due to water ingress; frost wedging; poor bond

Texture loss

- Loss of 6mm stone

NOTES

1. The appearance of microsurfacing initially and in the first few weeks can cause some concern as visually the material does not look the same as a surface dressing. Generally the surface will settle down to a uniform homogenous appearance and the performance should be assessed against PD 6689 at the end of the guarantee period.
2. Slurry – used in housing estates; on low traffic and low stress sites with reasonable shape and good substrate (minimum deterioration)
3. Micro – used on more heavily trafficked sites including A and B road network; sites that need reshaping with limited patching requirements; to restore skid resistance and for footways needing re-profiling, regulating or having high traffic levels.
4. Use Slurry when +4°C and rising; in general terms this means footway all year and carriageway March to November
5. Use micro when +4°C and rising; in general terms this means March to November, although some products are designed to be laid outside this working window.
6. Surface conditions must be right such as no standing water; no residual salt; no detritus, footways must be vegetation free

HIGH FRICTION SURFACING

DESCRIPTION/DEFINITION

What is High Friction Surfacing?

There are two types of system, hot applied and cold applied. Hot applied works by adhesion through heat application to the road surface whilst cold applied works by adhesion to the road surface through chemical bond. Cold applied systems remain workable for longer periods during installation compared to hot applied thus giving the contractor more time to ensure all workmanship issues and quality requirements are managed. The cold applied technique involves the even application of a tough polymeric liquid binder onto the road surface followed by the application of calcined bauxite aggregate. The hot applied systems involve the application of a hot pre-mixed material consisting of a resin binder matrix incorporating calcined bauxite aggregate.

What are the benefits?

High Friction Surfacing has a long history of proven use in saving lives by imparting the highest level of skid resistance onto a road surface. The concept was first investigated in the USA during the 1950's using epoxy resin binders and was first known as “Anti-skid Surfacing”. In the UK, the first evaluation trials were conducted in 1967 for the Greater London Council. The study over a period of 12 months demonstrated a 50% reduction in accidents and casualties on roads treated with High Friction Surfacing.

The use of High Friction Surfacing was fairly limited in the 1970's due to its relative high cost and limited highway budgets. Applications grew steadily in the 1980's when Highway Engineers could balance the cost of High Friction Surfacing against a broader savings strategy. Effectively, budgets were allocated for Accident Investigation and Prevention, demonstrating returns on the investment in High Friction Surfacing at Accident Black Spots compared with the savings in casualty reduction.
The growth of High Friction Surfacing accelerated in the late 1980's and early 1990's, largely in parallel with the Traffic Calming Act and the development of alternative resin processes to the original epoxy resin systems.

When to Use High Friction Surfacing

- At sites where there is high risk of accidents resulting from collisions between vehicles or between vehicles and pedestrians e.g. on approaches to pelican crossings, roundabouts, junctions and crossings. This will be in accordance with any locally published Authority’s Skid Resistance Strategy or the Code of Practice Well Maintained Highways and is undertaken using calcined bauxite aggregate in order to achieve a level of skid resistance not achievable

with normal aggregates. It may also include “event” sites where there is a proven risk of skid related accidents such as certain bends.
- Prior to the use of High Friction Surfacing the characteristics of the site need to be evaluated to determine if other highway engineering issues should be addressed to reduce the hazard.

Cost effectiveness
- Tragic loss of life or serious injury has an immeasurable cost to the accident victims, their families and friends.
- Financially, there are major cost consequences for emergency services, local and national governments. It is estimated that one fatality on a non-motorway road costs £1.4M and on a motorway £1.7M.

Which roads can be treated with High Friction Surfacing?
- All classes of road, from single track, unclassified roads to high speed urban routes, trunk roads and motorways can and have been successfully treated.
- High Friction Surfacing can be specified in accordance with the Specification for Highway Works Clause 924.

Some important benefits and features
- Designed to enhance the skid resistance of trafficked surfaces
- A high strength veneer surfacing, typically 3-5mm thick
- Toughness and tenacity such that it is able to withstand high braking and shearing forces
- Should only be applied onto sound substrates that have been well prepared and are in fair to good condition and be free from cracking and joints
- Accredited for substrates with a texture depth up to 2mm
- Can be specified by referring to the Specification for Highway Works Clause 924.
- Regulated in the UK under the BBA HAPAS scheme
- Accredited by the British Board of Agrément (BBA) certification scheme covering products and approved installers. Only approved installers should be used
- BBA "Type 1" High Friction Surfacing is the highest classification attained ("Type 3" lowest classification)
- Design Manual for Roads and Bridges deals with the design standards for Highways. The relevant standards for High Friction Surfacing in these documents are;
    - HD37/99 (Abridged): High Friction Surfacing (PDF)
    - HD28/04: Skid Resistance (PDF)

Environmental considerations
- Accident levels will be reduced by imparting the appropriate skid resistance for the location
- The rapid speed of the process means that disruption to road uses, local businesses and emergency services is minimised.

SERVICE LIFE

SERVICE LIFE

Hot applied = 4 years

Cold applied = 8 years

In this particular instance the service life is a mid-point for high friction surfacing hence for hot applied life is 3-5 years and for cold applied it is 5-11 years. Specifiers should refer to the Code of Practice published by RSTA in spring 2011 and be requesting a 5 year guarantee.

GUIDANCE TO FOLLOW TO ACHIEVE LIFE

- Follow new Code of Practice
- Time of installation (season)
- BBA installer certificate
- Design Guidance
- Materials
- Depends on substrate condition
- Client choice is critical
- Trained workforce – Code of Practice recommends operatives attend the RSTA training course to maintain skills and knowledge. For information on training courses email: enquiries@rsta-uk.org

KEY COMPROMISING FACTORS

The key compromising factors are the factors most likely to affect the service life figures quoted above and will not be an issue if the guidance is followed.

FACTOR	AFFECT ON LIFE
Workmanship (NVQ)	-7.5%
Site selection (location and skid policy)	-7.5%
Substrate condition/Time to overlay asphalt	-7.5%
Time of year/time of day (season)	-7.5%

FAILURE MODES

- Longitudinal cracking of the underlying asphalt surfacing leading to cracking of the High Friction Surfacing and ever increasing cracks in the sub-strate
- Unlike hot mix systems cold systems do not delaminate
- Uneven installation and wear of cold mix systems leading to ridges and an uneven surface

NOTES

1. For asset management use in right location
2. Do not use HFS where it is not necessary and do not use Type 1 system when Type 2 or 3 is correct solution
3. TRL data states 5 years for hot and 8 years for cold
4. BBA states 5-10 years service life and certification requires a 2 year trial
5. Cold binders – tensile strength is tested, more time for installation. Curing time is a significant issue in cold temperatures limiting the season for installation
6. Hot binders – strength is significantly affected if the material is heated excessively

TRAINING, SKILLS, RESOURCES

The BBA HAPAS Approved Installers Scheme document states that installers personnel should be adequately trained and have NVQ Level 2 (operative) and level 3 (supervisor) underpinning their CSCS cards. The Scheme also recommends that personnel involved with installation maintain competency and technical knowledge by attending the RSTA Training course and obtaining the Silver certificate every 5 years.

RECOMMENDATION

All Highway Authorities are recommended by ADEPT and the RSTA to use the service life for surface treatments as stated in the following table when producing lifecycle plans for asset management and to support WGA financial reporting unless, or until, robust local data is available that demonstrates a different level of performance on their roads:

SURFACE TREATMENT	**SERVICE LIFE**
Surface dressing • Low to medium traffic • Medium to high traffic	 15 years 10 years
Microsurfacing • Carriageway • Footway	 10 years 15 years
Slurry surfacing • Carriageway • Footway	 6 years 10 years
High friction surfacing • Hot applied • Cold applied	 4 years 8 years

The above will be recommended to HAMFIG and CIPFA by ADEPT as the way forward and the basis for lifecycle planning and asset valuation regarding these surface treatments.

REFERENCES

Road Note 39, 6th Edition (2008), published by TRL

BSEN 12271:2006 - Surface Dressing Requirements

BSEN 12272-2:2003 – Surface Dressing. Test Methods. Visual Assessment of Defects

RSTA Codes of Practice for Surface Dressing; Slurry-Microsurfacing and High Friction Surfacing

RSDA/CSS Code of Practice for Signing at Surface Dressing Sites

BSEN 12273 – Slurry Surfacing Requirements

BSEN 12274 Part 8 – Slurry Surfacing - Test Methods – Visual Assessment of Defects

BBA HAPAS Assessment and Surveillance Scheme for Installers of High Friction Surfacing for Highways (2010).

NHSS 13 – National Highway Sector Scheme for Quality Management in Highway Works 13 Surface Treatments

PD 6689 Surface treatments – guidance on the use of BSEN 12271 and BSEN 12273

Well Maintained Highways a Code of Practice for highway maintenance

GLOSSARY

ADEPT	Association of Directors of Environment, Economy, Planning and Transport
AAV	Aggregate Abrasion Value
BBA	British Board of Agrément
CIPFA	Chartered Institute of Public Finance & Accountancy
CSCS	Construction Skills Certification Scheme
EN	European Norm (Standard)
HAMFIG	Highways Asset Management Financial Information Group
HAPAS	Highway Authority Product Approval Scheme
HRA	Hot Rolled Asphalt
NHSS	National Highway Sector Scheme
NVQ	National Vocational Qualifications
PSV	Polished Stone Value
RN39	Road Note 39
RSTA	Road Surface Treatments Association
SMA	Stone Mastic Asphalt
WGA	Whole of Government Accounts

WORKING GROUP MEMBERS

ADEPT representatives

Alan Aistrup	Member, Asset Management Group
Chris Allen-Smith	Chairman, HAMFIG; Member, Asset Management Group
Steve Betteridge	Secretary, SMDS Group
Stephen Child	Chairman, SMDS Group
Harry Godwin	Member, HAMFIG
David O'Farrell	Member, SMDS Group
John Thorp	Member, SMDS Group
Ian Walsh	Member, SMDS Group

(SMDS = Soils & Materials Design & Specification)

RSTA representatives

Kevin Amos	Chairman. Slurry-Microsurfacing Committee
Ian Durant	Member, High Friction Surfacing Committee
Rob Gillespie	Chairman RSTA
Paul Goosey	Chairman, High Friction Surfacing Committee
David Rigby	Chairman, Surface Dressing Technical Committee
Howard Robinson	Chief Executive, RSTA
Dave Stannard	Vice-Chairman, Slurry-Microsurfacing Committee

This document has been peer reviewed by ADEPT SMDS, ADEPT Asset and RSTA Groups/Committees. It is proposed that the Group review the document on an annual basis.