GUIDANCE ON ASPHALT SURFACE COURSE PRESERVATION TREATMENTS
Foreword

This guidance note has been produced by the RSTA Asphalt Preservation Sub-Committee to capture and illustrate best industry practice for Asphalt Preservation treatments.

In this context Asphalt Preservation is a process whereby a proprietary treatment is applied onto a bituminous bound road surface course to seal the surface to restrict water ingress and inhibit binder oxidation thereby extending the service life of the road pavement.

These treatments can be specified using clause 950 in the Specification for Highway works.

The information contained herein is intended to represent industry best practice. No liability is accepted by RSTA for any damages caused to property or personal injury resulting from using the guidance contained within this document.

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

1.1 **General**

For the Highway Engineer Asphalt Preservation provides an efficient and cost effective treatment method for protecting road surfaces against the effects of weather and oxidation thus prolonging the life of an asphalt pavement. In nearly all cases the application of Asphalt Preservatives requires minimal plant and personnel.

Asphalt Preservation has been used in the UK since the early 1990’s and the main purpose is to cost effectively extend pavement life.

The key benefits of prolonging the service life of the pavement is achieved by:

- Helping to seal the existing surface against the ingress of water unless the surface course is designed to be porous.
- Providing a protective layer for the surface course binder thereby slowing down the oxidation and embrittlement process, improving surface aggregate retention.

The purpose of this guidance note is to define best industry practice for achieving a successful outcome using an Asphalt Preservation treatment. It will assist in areas such as site selection and operationally how to best deliver the treatment.

The nature of preservation treatments requires consideration to be given to several factors regarding the existing condition of the pavement and its structure, possibly including some technical evaluation of the properties of the surface course binder.

1.2 **Health, Safety and Environment**

All personnel involved in planning, preparing, execution and application of Asphalt Preservation operations have a legal duty of care for the health and safety both of the operatives carrying out the works and those who come into contact with or will be affected by the works whilst in progress. This same duty of care is equally as applicable to any aftercare operations.

The planning and organising for health, safety and environmental issues must be considered as soon as an Asphalt Preservation programme is envisaged.

Asphalt Preservation operations will be undertaken under the framework provided in the Construction Design and Management Regulations 2007 (CDM). Clients are urged to follow the advice in the relevant Approved Code of Practice as they have the responsibility under the new version of the Regulations for initiating safe working practices.

The CDM Co-ordinator and Principal Contractor will plan and prepare the information and documentation necessary to ensure that specific hazards are identified on individual sites and the associated risks are managed effectively. This must take into account the nature of the site, the materials being used, the traffic
management requirements and any special health, safety and environment issues that have become evident during the tender stage.

The client should employ a competent and approved contractor. It is recommended that the simplest way for a client to achieve this is to select at tender stage contractors registered to National Highways Sector Scheme 13 as recommended in the Specification for Highway Works. Once the contractors have been selected, the pre-construction information contained in the tender document should be detailed enough for the prospective contractors to take account of the health, safety and environment issues in their tender submission.

On the appointment of the Principal Contractor to carry out the Asphalt Preservation operations, it will be their duty to prepare a detailed Health and Safety Plan for that particular contract or works from the Pre-construction information supplied by the Client, Designers and CDM-Coordinator. This must itemise the methods to be employed to overcome the specifically identified hazards and risk reduction measures that will be in force on this contract. They must also ensure adequate welfare is provided from the start of the contract.

Once the works commence the Principal Contractor has the control of health, safety and environment matters but liaison with the client, police and the general public on issues of congestion, diversions or closures must be ongoing throughout the contract.

The Principal Contractor has additional duties under other legislation to look after the health and safety not only of his own employees but of other persons who work alongside them and also of the passing public. Written specific risk assessments must be prepared which can be used to identify control measures for both physical and chemical hazards. The measures must form the Contractor's safe systems of work which enhance the safe behaviour of the workforce as well as protect the general public during the various stages of the works. These measures must be communicated to all involved in the project.

Account must also be taken of environmental factors. Disposal of waste and protection from spillage and contamination are other considerations when looking at the overall preservation activity.

All Preservation products are dispersed within a carrying agent which can be water or solvent based. For product specific information contact the contractor/installer.

1.3 Training

It is the Association’s view that a competent qualified workforce makes a fundamental contribution to achieving high quality application. RSTA recommends that the application of these products is undertaken by installers registered or working towards Sector Scheme 13.

1.4 Quality Assurance

The Road Surface Treatments Association continues its commitment to quality assurance and has been instrumental in producing and managing Sector Scheme 13 for Road Surface Treatments including the chairing of the Sector Scheme.
Technical Advisory Committee.

Products used for Asphalt Preservation must be manufactured under BS EN ISO 9001.

Additionally Asphalt Preservation treatments can be independently certificated under the Highway Authorities Product Approval Scheme (HAPAS).

1.5 Planning and Co-ordination

Careful and detailed planning before work commences is an essential element of successful Asphalt Preservation. There needs to be close co-ordination between contractors and their clients at every stage, commencing with a pre-works meeting, the purpose of which is to ensure total understanding of the way the programme will proceed.

Planning will also assist in the correct budgeting for the projects. Where possible accurate measurement of the area to be treated should be made and agreed by the client and the contractor in advance of the works.

2. SITE SUITABILITY

Preservatives should be used to preserve the road surface in the condition it is in at the time of application. They cannot improve a road surface.

In deciding whether Asphalt Preservation is appropriate for a particular project, it is necessary for the end-user to understand what needs to be achieved by the application and the limitations of the product.

For example the Client may consider the adoption of an ongoing preservation strategy starting at the construction stage to help maintain the new surface course condition for as long as possible.

The system installer must be involved in site selection to determine the appropriate treatment.

2.1 Surface Binder Composition

Asphalt Preservatives will work on bituminous bound surfaces only. If the surface is non-bituminous then Asphalt Preservation is not appropriate.

2.2 Site Location

Where available the local authority should provide site information to the installer referring to texture and skid resistance. All treatments are seasonal and should be typically applied between April and September.

2.3 Skid Resistance

It is important that current skid resistance data is available when considering the application of a preservation treatment to a high speed road.
Preservatives should only be considered where readings are adequately above the relevant investigatory level/s as there is usually a temporary decrease in skid resistance post application. However the skid resistance levels will return to their original values, the rate of this is proportional to the site's traffic levels. The installer will determine if additional measures are needed to maintain adequate skid resistance.

If the skidding resistance is at or below the investigatory level then the road surface will need to be pre-treated to restore adequate skid resistance before applying a preservation treatment. There are a range of Re-texturing processes available that may be suitable as a pre-treatment.

Any surface defects identified must be repaired before using a preservation treatment e.g. sealing cracks, filling open joints, repairing potholes, patching.

3. SITE PREPARATION

The amount of site preparation required will depend on the condition and nature of the existing surfacing course. All treatments must be applied onto suitable prepared road surface i.e. free of surface defects and clean.

4. MATERIALS

There are two types of Preservation treatments, Penetrative and non-Penetrative.

4.1 Penetrative treatments

These are solvent based and as such soften the existing surface on application to facilitate some penetration of the binder coating. They comprise a blend of bitumen and/or, hydrocarbon resins, diluents, plasticisers and may be fortified with natural based bitumen.

4.2 Non-Penetrative treatments

These are bituminous emulsions. They comprise of proprietary blends of bitumen, polymers and other additives designed to seal and protect the road surface.

5. POST APPLICATION AND AFTERCARE

The road can normally be re-opened to traffic after the preservative has cured (typically within 1-2 hours).
REFERENCES

MANUAL OF CONTRACT DOCUMENTS FOR HIGHWAY WORKS
VOLUME 1: SPECIFICATION FOR HIGHWAY WORKS SERIES 900, Clause 950
Road Pavements – Bituminous Bound Materials

CONSTRUCTION DESIGN AND MANAGEMENT REGULATIONS 2007 (CDM)