CASE STUDY

PORTSMOUTH, UK

ASISOLUTIONS.CO.UK

Colas Ensign selected three sites for RHiNOPHALT® preservation in 2018; all were SMA surfaces considered to be ‘end of life’ at 10 – 11 years old. All sites were in built up urban areas with on street parking. This limited the choice of surface treatments available as surface dressing and micro surfacing require secondary compaction through vehicle trafficking and also repeat day time site visits. This compares to a single visit for RHiNOPHALT®, applied in a safer working environment using only two operatives.

SMA DURABILITY

Performance life of surface course
Stone Mastic Asphalt (SMA) is very popular in the UK and its use has increased since its introduction in the early 1990’s. It is seen as a cost-effective alternative to hot rolled asphalt (HRA).

SMA requires less compaction to install than HRA and is typically laid 10-20mm thinner. The requirement for less plant and labour, and a reduced layer thickness with lower binder content lowers the cost of road resurfacing quite dramatically.

Early SMA materials did not meet expectations in term of durability. Of further concern was the manner of failure in that there was a rapid deterioration once a defect occurred. Aggregate loss becomes apparent very quickly once the surface course loses its integrity.

LIFE CYCLE PLANNING

Local Authorities understand the performance life of asphalt surfacing on their network and preventative maintenance is important for keeping roads, and particularly resilient routes, open to traffic for longer before more costly interventions become necessary.

Asset Management Plans consider the expected service life of pavement construction materials so timely maintenance can be efficiently planned.

Preventative maintenance is a planned strategy of cost-effective treatments to an existing road surface to help prevent ingress of water and reduce the rate of future deterioration resulting in an increased service life.

It is typically applied to road surfaces with some remaining service life and comprises road surface treatments that include preservation, crack sealing, surface dressing, slurry or micro-surfacing and thin and hot-mix asphalt inlay and overlay.

RHiNOPHALT® preservation is a preventative maintenance system designed to hold the condition of road surfaces that are in suitable condition i.e. 1-2 years prior to reactive maintenance. It can be applied on any asphalt surface and where surface dressing and/or micro surfacing is not a preferred option.

ASPHALT PRESERVATION

RHiNOPHALT® preservation is a preventative maintenance system designed to hold the condition of road surfaces that are in suitable condition i.e. 1-2 years prior to reactive maintenance. It can be applied on any asphalt surface and where surface dressing and/or micro surfacing is not a preferred option.

It provides a tough durable seal, preventing water ingress and locking in the lighter oils and fractions which are essential to retain both the flexibility and cohesiveness of the existing asphalt mortar. RHiNOPHALT® reduces the rate of binder oxidisation caused by weathering and UV degradation and significantly improves resistance to abrasion and aggregate loss.

Hydraulic Conductivity Testing on recent SMA sites show no water permeability on treated surfaces.

WATER OUTFLOW (SECONDS)

	M4	A1(M)
Untreated	214.8	211.3
Treated	>600*	>600*

*Test stopped after 10 mins as no leakage was found.

FAST PROCESS MINIMISES DISRUPTION

The sites selected for treatment were all 10mm SMA surface course, laid between 2007 and 2008. All were in built up urban areas and at 10 – 11 years old, considered to be approaching ‘end of life’.

Surface dressing or micro surfacing was considered not suitable for these sites, and resurfacing would be expensive and disruptive.

RHiNOPHALT® was chosen to preserve the surface in its current condition and extend its in-service life. Treatment commenced in July 2018. Two sites were completed in the day, and one was a night time application.

Each site was approximately 3,500m2 and took less than 1 hour to spray. They were touch dry in 30 minutes and fully cured after 90 minutes. The fast treatment time allowed work to be completed within restricted closures.

Once the preservative had cured the white lines were refreshed in the same shift. The kerb height was not affected, and no ironwork needed raising.

FRICTION RECOVERY

An application of RHiNOPHALT® will cover the aggregate micro-texture and can reduce the SCRIM (Skid Resistance) value on a treated site by typically 10%, similar to SCRIM reductions experienced when laying fresh asphalt surface course.
Fine Rhino-Dust was applied at the same time as the RHiNOPHALT® to help minimise any grip reduction levels. It also helps to abrade the RHiNOPHALT® from the aggregate surface under trafficking. Once the aggregate micro-texture is exposed, the grip values are returned to pre-application levels.

EXTENDED PAVEMENT LIFE

RHiNOPHALT® treatment makes the asphalt surface appear like new and as found in other case studies can double the service life of SMA.

The treated surface will become more resistant to abrasion, stone loss, water ingress and the severe ageing effects of extreme temperatures.

It provides an alternative for maintaining ‘high hierarchy’ resilient routes where surface dressing isn’t the preferred option and allows night time working.

KEY BENEFITS

The client was pleased with the speed of the RHiNOPHALT® treatment within the restricted working windows.

- Substantial financial benefits are achieved through improved asset management because RHiNOPHALT®:
- Supports life cycle planning to keep roads in a green condition and maintain Incentive funding Band 3.
- Extends the life of a surface course by up to 100% (Connect Roads A50).
- Provides proven whole-life cost savings of over 30 – 40%.
- Reduces maintenance costs by 65%.
- Reduces potholes which increases road user satisfaction and leads to fewer insurance claims.
- Does not affect kerb height and there is no need to raise iron work.
- Makes the treated road surface look new and retains the original surface characteristics e.g. texture and reduced traffic noise (SMA).
- Can be applied overnight, be re-marked, and be open to traffic within the shift.
- Greatly reduces the number of site visits (only one required) so less disruption to road users
- Provides a safer working environment
- Significantly reduces risk of claims

- Needs no remedials
- Can be re-applied every 5 years to provide prolonged life extension.