Why the right road treatments matter

In the first in a series of articles, Howard Robinson from the Road Surface Treatments Association (RSTA), describes best practice in the area of surface dressing.

Over recent years it has been well reported in the media that crumbling roads are costing the national economy around £20 billion every year and councils an annual £53 million in compensation claims, according to the Local Government Association.

It is the poor condition of local roads that is most noticed by road users. A report from the RAC found that 89% of its members are ‘frustrated’ at the condition of their local A and B roads with only 2% believing that local roads are adequately maintained. Motorists pay £46 billion a year in taxes but just £2.7 billion of this is spent on road maintenance. Meanwhile, it is estimated by the Asphalt Industry Alliance that there is a pothole every 120 yards and that the cost to carry out the necessary backlog of repairs is some £10 billion.

Despite the fact roads represent the biggest asset under the control of local authorities this neglect is likely to continue for the foreseeable future as councils need to make budgetary savings across the board.

However many councils are aware that surface dressing is the most economic maintenance option for sealing the road surface whilst restoring skid resistance and helping to prevent pothole formation. Yet despite the economic downturn we haven’t yet seen a major increase in the use of surface dressing across the UK since the market fell by around 40% in the early to mid 1990s coinciding with the introduction of asphalt thin surfacings. As the asphalt market has declined over the past decade surface dressing could have been expected to make a comeback but this hasn’t yet materialised which is somewhat surprising.

Regular maintenance

Undertaking regular and timely maintenance of roads using surface treatments such as surface dressing in the current economic climate is a far more sustainable and cost effective approach than allowing roads to deteriorate to a poor condition requiring more costly intervention. There are a wide range of surface treatments now available to ensure optimum performance of roads that are fast to apply, generate no or minimum waste, lower the carbon footprint of roads and provide cost economies that allow local authorities to get the best value from their pressurised highways budgets.

Timely intervention by selecting and applying the right surface treatment for the job will significantly extend the service life of roads, delaying the time to when structural maintenance will be required. Surface treatments should be embodied in the highway asset management planning process.

Despite the cut backs in expenditure the public will still expect roads to
be maintained and not hinder their journeys. Because surface treatments can be applied relatively quickly they afford minimal disruption to moving traffic thereby helping to reduce traffic congestion. In future climate change may mean more surface maintenance is required to rectify problems associated with loss of surface course texture depth due to fatting up (binder bleeding to the surface). Surface treatments make a considerable contribution towards Government policy on sustainable travel by decarbonising roads (reducing CO₂ emissions). More efficient use of finite mineral reserves is another key benefit because surface treatments use the minimum amount of bitumen and aggregate to restore the surface condition.

Background to surface dressing

Surface dressing is a long established proven highway maintenance technique with its introduction pre-dating World War Two. Indeed the Road Surface Dressing Association (now part of RSTA) was formed in 1942 to help maintain Britain’s roads during an earlier period of austerity. 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.

To the highway engineer, surface dressing offers a quick, efficient and cost-effective way of maintaining skid-resistance and waterproofing road surfaces. To obtain the best results it is necessary to give careful consideration to a wide range of detail and to plan and design the work carefully. The speed of the surface dressing operation and the short duration of time during which motorists are inconvenienced is also an important issue.

The importance of surface texture as provided by surface dressing has been highlighted by TRL report LR 286, which stresses that texture depth is important under both wet and dry conditions. Up to date guidance is available in the Design Manual for Roads and Bridges (DMRB): Volume 7 HD 28. The DMRB is available online at www.dft.gov.uk/ha/standards/dmrb/.

A useful way of comparing the effectiveness of a dressing, or other maintenance work, is to express it in terms of a ‘cost life index’. This is the cost per square metre of the work divided by the service life in years. It provides a measure of the “value for money” which the highway authority is achieving. A low ‘cost life index’ and “high value for money” is the result of high-quality work.

The Code of Practice for Surface Dressing published by RSTA (Road Surface Treatments Association) and endorsed by ADEPT (Association of Directors Environment, Economy, Planning, Transportation) aims to identify the important aspects of the process, and to refer to other documents relating to good surface dressing practice and so give practical guidance on achieving high quality.

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 and pothole formation
- Arrests the deterioration of the road surface and underlying road pavement structure by helping to keep water out of the pavement structure
- Restores the necessary level of skid resistance to the road surface with the resultant benefits of reduction in skid related traffic accidents
- Timely intervention will enable worn out road surfaces to last longer thereby increasing the time to when structural maintenance is required
- Maximises the cost effectiveness of limited highway maintenance budgets.

When to surface dress

- Before the road surface deteriorates to the stage at which expensive major patching and/or resurfacing is required
- Before surface skidding levels fall below the nationally accepted intervention level for the class of road in question.

Cost effectiveness

- Low initial cost - in the region of £1.20 per m² for routine single dressings to £2.50 per m² for specialist multi-layer dressings for higher speed roads
- Low cost/life index. When done properly, at the right time, surface dressing is a cost effective treatment costing around £0.2 per m² per annum (assuming a 10 year service life)
- Surface dressing can be likened to painting one’s house. It needs doing before serious deterioration occurs and means that expensive preparation or replacement costs can be delayed for years.

Which roads can be surface dressed?

- All classes of road, from single track, unclassified roads and footpaths to principal routes and even motorways have been successfully treated.

Important technical considerations

- Surface dressing can be specified in accordance with the specification for highway works clauses 919 (recipe) and 922 (performance design)
- Surface dressing, when designed and installed by the contractor, is regarded as a ‘product’ regulated by the new construction products regulations (CPR) that came into force on 1 July 2013. This means that these surface dressing ‘products’ must be CE marked and have a declaration of performance stating the products characteristics in accordance with BSEN12271. National guidance document PD6689 provides guidance on the level of performance required for the UK market.

www.dft.gov.uk/ha/standards/dmrb/