

Implementation of HD28 in England

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ABSTRACT

The skid resistance policy for UK trunk roads was reviewed after fifteen years of operation and as a result, a revision to the policy was implemented in 2004. This resulted in changes to the survey strategy, use of slippery road warning signs and on going monitoring of the effectiveness of the policy. Advice on determining Investigatory Levels of skid resistance was also strengthened to promote better engineering judgement of skid resistance requirements and more robust site investigations. The implementation of this policy through the Standard HD28 by the Highways Agency and their Service Providers on motorways and trunk roads in England is described in this paper.

1. INTRODUCTION

The UK has implemented a policy for managing the skid resistance of its trunk road network since 1988. The policy was developed following observation of a link between skid resistance and the risk of wet skidding accidents on a 1000km sample of roads and aims to equalise the risk of skidding accidents across the network by providing levels of skid resistance appropriate to different locations. It consists of two elements:

- Routine measurement of skid resistance using SCRIM, plus associated advice about the interpretation of these measurements. This includes advice on Investigatory Levels (ILs) for skid resistance and the process for investigating sites where the skid resistance falls at or below this threshold.
- Specification of surfacing material characteristics that will deliver the required level of skid resistance in different situations.

By 1999, a number of developments were pointing to the need for a review: several significant research projects had been concluded, e.g. on high speed friction and texture depth. Improvements in road design and vehicle performance had also occurred since the introduction of the policy and it was therefore relevant to re-examine the link between skid resistance and accident risk. Furthermore, some maintenance schemes being proposed to rectify low skid resistance as a result of this policy were felt to be poorly justified in terms of the likely safety benefits. Engineers making unduly conservative decisions about the need for maintenance treatment out of fear of litigation, contributed to this effect. Consequently it was recognised that there was a need for clearer advice on interpretation of skid resistance and accident data, which could be robustly defended if necessary.

Following a detailed review HD28 was re-issued in 2004 and this paper examines the practical issues and benefits associated with implementing the latest version of the UK skid resistance policy on trunk roads and motorways in England.

2. PROVISION OF SKID RESISTANCE DATA

SCRIM measurements for the motorway and trunk road network in England are procured under a centrally managed contract (with the exception of DBFO routes which have differing contractual arrangements). The network in England is divided into four regions for the purpose of the survey contract and surveys are provided by two contractors, WDM and Jacobs, who each provide surveys across two of the four regions. The use of a centrally managed contract ensures that the Highways Agency is better able to control the timing and quality of surveys which is critical to the successful implementation of the Single Annual Survey Method specified in HD28.

Under the Single Annual Survey Method the whole network is tested once every year, with each route being tested in rotation during the early, middle or late parts of the survey season. The rotation of each area (or route) within the early, middle or late parts of the season is planned centrally to ensure that sufficient data is available to calculate Local Equilibrium Correction Factors (LECF's) whilst enabling each contractor to maintain an ongoing programme of surveys throughout the whole of the survey season.

3. RESPONSIBILITY FOR IMPLEMENTATION

Implementation of HD28 is shared between the Highways Agency and their Service Providers, with each having specific responsibilities as set out in the Standard. Service Providers have specific responsibility for:

- ensuring that each section of the network has been assigned a site category and Investigatory Level (IL),
- reviewing the IL assigned on a 3 year cycle,
- identifying those sites where the CSC falls below the assigned IL,
- undertaking detailed investigations at those sites where the CSC is below IL,
- prioritising maintenance treatments.

Following publication of HD28/04, a bulk update of IL within the Highways Agency's Pavement Management System (HAPMS) was undertaken to bring them broadly in line with the new site categories. This captured the majority of sites which had changed but significant input was still required from Service Providers to check each location and re-assign IL's where necessary. Feedback from Service Providers indicated that engineers were experiencing difficulties in defining site categories and also setting the most appropriate IL within the specified range for each category.

It is critical to the success of the policy that site categories and IL's are correctly assigned and recorded within HAPMS to ensure that treatments are effectively targeted. A site which has low skid resistance could be overlooked and not flagged as requiring further investigation if the IL is too low. Similarly, a site which has an IL which has been set too high may undergo treatment at the expense of higher risk sites. Also critical to the success of the policy are thorough and detailed site investigations, and the robust and consistent recording of these investigations. This is important to ensure that the most worthy sites are being targeted for maintenance, but also to provide sufficient evidence (should it be required) to demonstrate that a site which has not been treated was assessed in accordance with the Standard.

The prioritisation of maintenance treatments on the network, including SCRIM sites identified as a result of the application of HD28, is undertaken through Value Management (VM). A prioritised list of SCRIM sites, typically assembled following a number of detailed site investigations, would be used support the VM process. Due to budget limitations it is often not possible to treat all sites identified as requiring treatment within any given year. Priority is therefore given to treating those sites in the prioritised list where the skid resistance is substantially below IL (at least 0.05 units below), or low skidding resistance is combined with low texture depth, or where the accident history shows there to be a clearly increased risk of wet skidding accidents. Such prioritisation ensures that the skid resistance policy will have the greatest possible impact in terms of accident reduction.

4. ACCIDENT DATA

Two of the areas requiring most improvement in respect of maximising the efficiency of HD28 are those of accident data quality and accident data availability. Accident records can be incomplete and/or inaccurate, particularly in terms of location

referencing and these shortcomings may have a detrimental effect on the ability of the policy to best target maintenance where it will have the biggest impact on accident reduction.

There are currently two sources of STATS19 injury accident data available:

- data collected by the local highway authority (which is likely to be more up-to-date and may have been subject to differing local validation processes), or
- data stored in HAPMS derived from the DfT STATS19 database, that has been 'snapped' to the HA network (data from the previous year is usually loaded each summer).

It is apparent that this area of the policy has the most scope for improvement and further work is being undertaken to try and improve the quality of accident data.

5. USE OF SLIPPERY ROAD WARNING SIGNS

HD28 provides advice on the use of slippery road warning signs for areas of the network which have fallen below IL. Only those sites which have been identified as requiring treatment following a detailed site investigation should be signed, and the signs should be removed as soon as possible following treatment. The implementation of this new advice in the update to HD28 in 2004 led to a reduction in the number of signs on the network. This strategy was intended to provide a more targeted use of signs and avoid a proliferation which may have undermined their effectiveness.

6. MONITORING AND FUTURE DEVELOPMENTS

Monitoring of the success of the policy following its initial implementation resulted in additional guidance being published in Interim Advice Note 98 (IAN 98) in 2007. This provides more detailed advice to Service Providers to assist them in applying the procedures described within the Standard. Early feedback indicates that this has led to an improved understanding of the application of the policy. Continued monitoring of the success of the policy and the additional advice is ongoing and it is anticipated that HD28 and IAN 98/07 will be amalgamated into an updated version of HD28 in 2009.

The survey strategy used within the Standard has raised some interesting findings and work is currently ongoing which examines the early, middle and late survey seasons and the effect that climate change may be having on the seasons and the SCRIM readings taken within these survey periods. The Highways Agency measures a series of SCRIM 'benchmark' sites across the network and as well as the early, middle and late SCRIM runs, an additional, 'very late' run was measured in 2007. This will be repeated in 2008 to gain a better understanding of any possible impact and to help inform any potential changes.

7. SUMMARY

The revisions to HD28 in 2004 built on existing skid policy with the aim of providing more effective targeting of maintenance treatments to improve skid resistance at those locations with the greatest accident risk. Continued monitoring is now needed to measure the success of the policy in achieving these objectives, and also to ensure continued and consistent application of the Standard.

8. REFERENCES

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