

LEICESTERSHIRE COUNTY COUNCIL

SKID RESISTANCE STRATEGY



v2.9 - 2013

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SKID RESISTANCE POLICY

1. INTRODUCTION

This policy sets out Leicestershire County Council's approach to setting and monitoring skid resistance levels of road surfaces. The Highways Agency's Standards HD 28/04 and HD 36/06 have been considered in its preparation. IANs 154, 5, 6 and 7 have also been considered, but their recommendations are more appropriate for incorporation in a specification.

The intention is to provide adequate grip by specifying the appropriate aggregate for use in the surfacing material, or surface treatment.

This policy applies to all surfaced roads and surfaces designed to be shared with pedestrians. Surfaces used only by pedestrians are not covered by this policy.

The procedures adopted to monitor skid resistance on the network are risk based and rely on an integrated approach involving Pavement, Maintenance and Accident Investigation Engineers.

In this document, the term "skid resistance" refers to the frictional properties of the road surface measured using a specified device under standard conditions. The term always refers to measurements made on wet roads; dry skidding is not covered within this strategy. These measurements are used to characterise the road surface and assess the need for maintenance, but cannot be related directly to the grip available to a road user making a particular manoeuvre at a particular time.

2. STANDARD VALUES

The standard values for aggregate used in surfacing materials, or surface treatments, are a polished stone value (PSV) of 55 and an aggregate abrasion value (AAV) of 12.

These standard values shall be used on the network, apart from the Defined Network and special sites, where the requirements of Table 1 can be applied.

3. THE DEFINED NETWORK

For the purposes of this strategy, the defined network comprises all roads that are Strategic Routes, Main Distributor or Secondary Distributor Roads as defined in the County Council's "[Highways Management Policy and Strategy](#)" document. A record of the defined network is held by the Technical Services Group.

4. SITE CATEGORIES

The Defined Network is divided up into the site categories shown in Table 1. The highway network in Leicestershire does not exhibit the same characteristics as trunk roads and motorways. Traffic speeds are lower and the investigatory levels which have been adopted in Table 1 are different from those shown in HD 28/04. Grip Numbers are shown in Table 1, not the equivalent Sideways Force Coefficient.

A target PSV for the surface course aggregate is given for each category. The target PSV is the desired value of the aggregate at the time of installation.

Table 1 - Leicestershire's Site categories, Investigatory Levels and Target PSV.

Site category for the Defined Network		Grip Number Investigatory Level at 50kph (20 kph on roundabouts)							
		0.3	0.4	0.45	0.5	0.55	0.6	0.65	0.7
Target PSV		55	55	55	60	63	65	N/A	N/A
B	Dual carriageway non-event								
C	Single carriageway non-event								
Q	Approaches to roundabouts and to and across junctions.								
K	Approaches to pedestrian Xing's and other high risk sites.								
R	Roundabout								
G1	Gradient 5-10% longer than 50m								
G2	Gradient >10% longer than 50m								
S1	Bend radius <500m – dual carriageway								
S2	Bend radius 250m - 500m – single carriageway								
S3	Bend radius <250m – single carriageway								

Notes

'K' Local speed limit ≤ 40mph/65kph IL = 0.5, > 40mph/65kph IL = 0.55 shall generally apply. The 0.55 target PSV 63 shall be considered for a downhill approach.

'Q', 'R', 'S3' –The paler boxes shall generally apply unless there is recent accident history. The higher requirement can be used for special sites on all classes and categories.

5. METHOD OF SURVEY

Routine monitoring of skid resistance is carried out on a rolling proportion of the defined network using a [Grip Tester](#) machine. The procedure follows the principles outlined in [HD28/04](#).

Sensor Measured Texture Depth (SMTD) data is also collected annually as part of the traffic-speed [SCANNER](#) survey system. However TRL work from 2006 concluded that this data cannot be compared with measurements obtained from SCRIM or Grip Tester.'

Pendulum test results together with sand patch texture depths shall be used where verification of machine test results is needed.

6. DATA STORAGE AND PROCESSING

Annual Grip Tester results are received in CD data format. The Council's computerized Pavement Management System (PMS) is used to store and process this data.

7. CONCERNS ABOUT SKID RESISTANCE

All concerns about skid resistance will be examined to an appropriate level of detail. In some cases a surface condition report for the site will be prepared by a pavement engineer, in consultation with accident investigation and maintenance engineers. Annual Grip Tester and other condition survey results will be the basis for responding to any enquiry about skid resistance on the defined network. Annual condition survey results will be the basis for responding to an enquiry about skid resistance on any road which is not on the defined network.

8. REVIEW OF INVESTIGATORY LEVEL

Investigatory Levels (IL) will be reviewed:-

- When Grip Tester results indicate that a section lies below the current IL and the site investigation provides information that suggests the current IL is inappropriate;
- Where analysis of injury accident records for the previous 36 months show there are a significant number of wet/damp road accidents; or
- When changes are made to the defined network.

8.1 Objectives

The objectives will be to:

- Determine whether the current IL is appropriate;
- Determine whether a surface treatment is justified to reduce the risk of accidents in wet/damp conditions;
- Determine whether some other form of action may be required;
- Determine not to carry out any works, but to keep the site under review.

The procedure detailed in this document, site investigation and Annexes 4 & 5 of HD28/04 shall be followed.

8.2 Procedure

The review will be led by pavement engineers, supported by maintenance and accident investigation engineers. The following information will be obtained as a minimum:-

- The latest Characteristic Grip Coefficient ([CGC](#)) and Investigatory Level data from the Pavement Management System;
- Any changes that have taken place in the site use, surfacing material or road layout e.g. the installation of traffic signals, pedestrian crossings or roundabouts;
- Any relevant local factors such as non-injury accidents, complaints or repeated reports of damage;

- Details of injury accidents, particularly those where the road surface was wet, or damp;
- Site investigation.

All recommendations about Investigatory Levels shall be submitted to the Team Manager – Technical Services who will discuss and agree them with the Highways Manager.

Any adjustments to Investigatory Levels, that are deemed appropriate, will be made in steps of 0.05 units of Grip Number.

9. ROADS NOT ON THE DEFINED NETWORK

Routine testing will not be carried out on roads which are not on the defined network. Site specific testing may be done following repeated personal injury incidents involving vehicles in wet conditions, regular damage to street furniture, or customer concerns. Testing will only be undertaken if an assessment of the current data, a site visit and consultation with a Materials Consultant indicate that it is warranted.

10. SLIPPERY ROAD WARNING SIGNS

When the need for remedial measures has been established these measures should be incorporated into the appropriate work programme.

At all sites where surface treatment is recommended slippery road warning signs shall be erected and maintained until the treatment is carried out. This shall be done as soon as practicable after the identification of such sites.

11. EARLY LIFE SKID RESISTANCE OF SURFACINGS

Leicestershire County Council's Environment and Transport Department undertook a series of Grip Tester surveys on new thin surface course treatments in the summer of 2012. The aim was to understand both what level of grip is provided by a new surface and how it improves through trafficking. The results demonstrated that adequate grip was available immediately from new surfacing.

[IAN 49/ 13](#) was published on 1st March 2013. It states “*while some increase in accident risk does occur on new asphalt surfacings, it is relevant to all material types (not just thin surfacings) and has always existed. The overall increase in accident numbers while surfacings are new (typically <6 months) is accompanied by a significant decrease in the number of fatal accidents. The increase in risk tends to occur on low-risk sites, not high-risk areas as had previously been envisaged.*

1.4 These findings have provided the basis for a substantive review of the advice given in IAN 49/03. The actual risks are smaller and different to those envisaged when IAN 49/03 was developed and options for mitigation are limited and would not be cost-effective. The actions proposed by IAN 49/03 are not appropriate so this IAN supersedes the earlier advice by withdrawing the use of warning signs.”

12. MONITORING ROAD TRAFFIC ACCIDENT LEVELS

The frequency of accidents occurring on a wet/damp road surface can be an indicator of inadequate grip. The County Council holds a record of all injury accidents reported to it by the police and this will be interrogated annually to identify locations where the frequency of such accidents is a cause for concern. The locations will be examined by a pavement engineer and maintenance engineer in accordance with the procedure outlined in Section 7.

13. REFERENCES

[Design Manual for Roads and Bridges](#), TSO, London

[HD28/04](#)

Skid Resistance (Volume 7, Section 3, Part 1)

[HD36/06](#)

Surfacing Materials for New and Maintenance Construction
(Volume 7, Section 5, Part 1)

[Interim Advice Note Ian 49/13](#)

Use of Warning Signs for New Asphalt Road Surfaces (Volume 7, Section 5)

[Interim Advice Note 98/07](#)

Guidance for HA Service Providers on implementing the skid
Resistance policy (HD28/04)

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