

North Yorkshire County Council
Business and Environmental Services

Executive Members

17 November 2017

Skid Resistance Policy

Report of the Assistant Director – Highways & Transportation

1.0 Purpose of report

- 1.1 For the Corporate Director, Business and Environmental Services (BES) in consultation with BES Executive Members to:
- i) Agree the amendments to the existing Skid Resistance Policy which currently exists as part of the Highway Maintenance Plan (HMP); and,
 - ii) Agree to the development of a new Skid Resistance Policy in line with the principles of the new Code of Practice; Well-managed Highway Infrastructure. This policy will form part of the North Yorkshire Highway Infrastructure Asset Management Policy.

2.0 Background

- 2.1 There is no national standard for Skid Resistance on local roads and in common with most other Local Highway Authorities the County Council has adapted the approach of HD28 from the Design Manual for Roads and Bridges - The standard for Skidding Resistance on the National Strategic Road Network (Trunk Roads and Motorways). HD28 is being withdrawn and its replacement will only be relevant for use on Trunk Roads and Motorways.
- 2.2 Currently the County Council's Skid Resistance approach is documented as six pages within the HMP which was adopted as Council Policy by the Executive in April 2006, which is now 11 years old and requires updating (see extract at Appendix A).
- 2.3 Well-managed Highway Infrastructure, the new Code of Practice, is designed to promote the adoption of an integrated approach to highway network infrastructure assets based on the establishment of local levels of service set through risk-based assessment. This includes investment, operations, prioritisation and repair process and requires an understanding of the likelihood and consequences of asset failure. The Department for Transport recommends that all local highway authorities should aim to comply with the new Code of Practice by October 2018.
- 2.4 The County Council on 22 July 2015 approved the Highway Infrastructure Asset Management Strategy (HIAMS), which included a governance framework with approval of individual Highway Asset Plans of this nature, within the overall HIAMS, being the responsibility of the Corporate Director, BES in consultation with the BES Executive Members

3.0 Current skid resistance approach

- 3.1 The approach is to SCRIM* survey (Sideways force Coefficient Routine Investigation Machine – Industry Standard skid resistance survey) all Cat 2, 3a and 3b roads (a length of about, 2184km or about 25% of the total NYCC network length) per year in each direction. This coverage includes all the A roads in the County.
- 3.2 All sites with Characteristic SCRIM Coefficient (CSC) at or below Investigation Level (IL): are investigated in accordance with HD28 (ie Site Investigation, by experienced personnel with pavement management and accident investigation skills) and the; Investigation seeks to identify:
 - a) If a treatment is required to reduce accidents;
 - b) Any other action;
 - c) If site should be monitored; and,
 - d) If the existing IL is appropriate
- 3.3 At Amber SCRIM sites (defective up to 0.1 CSC) the current approach is to erect warning signs as soon as practicable (after site investigation has shown a need to improve skid resistance).
- 3.4 At Red SCRIM sites (defective in excess of 0.1 CSC) the current approach is to erect warning signs as soon as practicable and programme a Surface Treatment.
- 3.5 The current approach is very resource intensive, and resulted in substantial costs being incurred to provide warning signs.

4.0 Proposals

- 4.1 Highway Operations local teams have been piloting a change to the NYCC process (see Appendix B) where signs are only erected on sites with defective SCRIM (red or amber), where there has been a history of traffic collisions in the wet or involving skidding. Otherwise monitor future SCRIM values and consider further action; full site investigation, surface treatment, lowering the site IL etc.
- 4.2 The pilot process has resulted in savings to the signing and lining budget which has allowed more signing and lining in other locations.
- 4.3 It is proposed that the pilot process identified in 4.1 and contained in Appendix B should be approved as an interim solution and a new NYCC Skid Resistance policy should be developed in accordance with the requirements of the new Code of Practice.
- 4.4 The risk of not developing a new skid resistance policy will be increasing difficulty in defending third party insurance claims and the likelihood of the Council's insurance premiums increasing as a result.

5.0 Equalities Implications

- 5.1 Consideration has been given to the potential for any adverse equality impacts arising from this decision and an Equalities Impact Assessment (EIA) screening form is attached at Appendix C.
- 5.2 The EIA screening form concludes that there are no known equality impacts and a full EIA is not required.

6.0 Legal Implications

- 6.1 Under Section 41 of the Highways Act 1980, a highway authority has a statutory duty to maintain highways maintainable at the public expense. Section 58 of the 1980 Act provides a special defence for highway authorities faced with an action for damages arising from a failure to maintain a highway maintainable at the public expense. The authority has a defence in such legal proceedings if it is able to prove that it had taken such care as in all the circumstances was reasonably required to secure that the part of the highway to which the action relates was not dangerous for traffic and the burden of proof is therefore on the authority to establish that it has taken such reasonable steps. It has also been established that differences in the standard of maintenance apply between roads carrying vehicular rights of way, depending on the amount of traffic which they carry and the purposes that particular roads serve.
- 6.2 Section 58(2) of the 1980 Act specifies that when considering a third party claim against an authority, the Court shall in particular have regard to the following matters:
- (a) the character of the highway, and the traffic which was reasonably to be expected to use it;
 - (b) the standard of maintenance appropriate for a highway of that character and used by such traffic;
 - (c) the state of repair in which a reasonable person would have expected to find the highway;
 - (d) whether the highway authority knew, or could reasonably have been expected to know, that the condition of the part of the highway to which the action relates was likely to cause danger to users of the highway;
 - (e) where the highway authority could not reasonably have been expected to repair that part of the highway before the cause of action arose, what warning notices of its condition had been displayed.
- 6.3 Further development of the NYCC policy will not only provide documentary evidence of the Council's proactive approach to skid resistance management and support the aims and objectives of the North Yorkshire Highway Infrastructure Asset Management Policy, but will also contribute towards defending any third party claims (as described in Paragraph 6.1 above).
- 6.4 There is a risk of an increase in 3rd party highway claims, which would be difficult to defend without an up to date NYCC policy which is in line with the recommendations of the new Code of Practice.

7.0 Financial Implications

- 7.1 Any third party claims which resulted from a lack of adopted Skid Resistance Policy would result in additional costs to the authority. Further development of the NYCC policy will be in line with the risk based approach recommended in the new Code of Practice.

8.0 Recommendation

- 8.1 It is recommended that the Corporate Director (BES), in consultation with BES Executive Members agree to develop a NYCC Skid Resistance Policy; and,
- 8.2 Agree to the interim approach detailed in appendix B regarding erection of warning signs at sites with skidding collisions or collisions that have taken place during wet weather.

BARRIE MASON
Assistant Director Highways & Transportation

Author of Report: Neil Leighton

Background Documents: NYCC Highway Maintenance Plan
HD28/15: Skidding Resistance
Well-managed Highway Infrastructure - A Code of Practice

Extract from NYCC HMP

6.9 SKID RESISTANCE

Policy

The Council's policy on skid resistance aligns current legal requirements, procedures and technology.

The Highways Agency Design Manual for Roads and Bridges Volume 7 HD28/04* and Interim Advice Note IAN 49/03* have been utilised to develop this policy.

Current concerns regarding the early life skid resistance and horses slipping on negatively textured new surfaces will be addressed in the future after national guidance has been published.

The Council as highway authority has a duty under the Highways Act 1980 to maintain the highway in a condition that is safe and fit for purpose.

An important aspect of maintaining the safe condition of the road is to provide an adequate wet road surface condition. Studies have shown that accident rates can be reduced by improving skid resistance at targeted wet road accident locations. As a consequence, the Council routinely monitors high priority routes within the highway network and in addition carries out investigation at specific locations where problems have been identified, in line with road safety policy.

Network Monitoring of Skid Resistance

The highway carriageway network is sub-divided into eight categories for highway maintenance purposes. Monitoring on a routine basis is carried out on the three important elements of the network i.e. category 2 (Strategic Routes), category 3a (Main Distributor) and category 3b (Secondary Distributor).

Skid resistance is the frictional property of a road surface and is measured by specific techniques.

- (a) The Sideways Coefficient Routine Investigation Machine (SCRIM) is utilised on the motorway and trunk road network for the Highways Agency# and is used to monitor category 2, 3a and 3b roads within the County. The machine is operated in accordance with BS 7941 Part 1. A single annual survey with benchmark method is carried out on category 2, 3a and 3b roads during the summer season (1 May–30 September) to obtain a Characteristic SCRIM Coefficient (CSC). SCRIM takes a continuous measurement following a single line, typically within the nearside wheel path. For multiple lanes, the lane carrying the greatest number of heavy vehicles is surveyed.
- (b) Griptestter monitoring is carried out for investigatory purposes on the highway carriageway network. The machine is operated in accordance with BS 7941 Part 2. A single annual survey is carried out during the summer season (1 May–30 September).
- (c) Additional ad-hoc targeted skid resistance surveys are carried out on all fatality accident sites on the highway network. These surveys are carried out at any time of the year soon after the event utilising the Griptestter operated in accordance with BS 7941 Part 2. Further ad-hoc investigation surveys are carried out by Griptestter.

Investigatory Levels

Investigatory levels have been set in accordance with the Highways Agency Design Manual for Roads and Bridges, Volume 7, Section 3 (HD 28/04) for the surveyed parts of the highway network. In addition to the site category, traffic statistics and accident data also are considered as part of investigatory level setting process.

Investigatory levels shall be re-assessed every three years as well as after significant changes to the network i.e. installation of traffic lights, pedestrian crossing or roundabout or when the geometry or layout of road markings are altered.

Site Categorisation Table for SCRIM and Griptester Surveys

Site Category	Situation	SCRIM CSC/Grip Number Investigatory Levels at 50km/hr							
		0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65
		0.35	0.41	0.47	0.53	0.59	0.65	0.71	0.76
A	Motorway								
B	Dual Carriageway non-event								
C	Single Carriageway non-event								
Q	Approaches to and across minor/major junctions, approaches to roundabouts								
K	Approaches to pedestrian crossings and other high risk situations								
R	Roundabout								
G1	Gradient 5–10% longer than 50m								
G2	Gradient > 10% longer than 50m								
S1	Bend radius <500m Dual Carriageway								
S2	Bend radius <500m Single Carriageway								

Scrim = 0.85 x Grip Number

Notes:

- Investigatory levels are for the mean skidding resistance within the appropriate averaging length
- Investigatory levels for site categories A, B and C are based on 100 metre averaging lengths or the length of the feature if it is shorter
- Investigatory levels and averaging lengths for site categories Q, K, G and S are based on the 50 metre approach to the feature but this shall be extended when justified by local site characteristics
- Investigatory levels for site category R are based on 10 metre length
- Residual lengths less than 50% of a complete averaging length may be attached to the penultimate length, provided that the site category is the same.

Site Investigation

All sites having a skid resistance at or below the Investigatory Level shall be investigated as soon as practicable in accordance with DMRB HD 28/04 as included in Skid Resistance Operational Procedure – May 2005/Site Investigation. Site Investigations shall be prioritized and carried out by experienced personnel with pavement maintenance and accident investigation skills.

The objectives of the site investigation shall be:

- a) To determine whether a surface treatment is justified to reduce the risk of accidents; specifically accidents in wet conditions or involving skidding
- b) To determine whether some other form of action is required
- c) To determine whether the site should be kept under review
- d) To determine if the Investigatory Level is appropriate.

Warning Signs

Where the skid resistance is substantially below the Investigatory Level (0.10 CSC units or 0.11 Grip number), slippery road signs (ref 557) shall be erected as a matter of urgency. In other cases, slippery road signs shall be erected as soon as practicable at all locations where a site investigation has shown that there is need for treatment to improve skid resistance.

Slippery road signs shall be removed as soon as they are no longer required. This shall be after the remedial action has been taken and skid resistance levels have returned to an appropriate standard. In some cases this will not be immediately after treatment, for example at sites where surface binder has to be worn off before skid resistance becomes adequate.

Prioritisation and Treatment

Where skid resistance is determined as being substantially below the investigatory level (0.10 CSC or 0.11 Grip number units), and there are clear indications that improving the condition of the surfacing is likely to significantly reduce the risk of accidents occurring, then remedial treatment shall be prioritized as a relatively urgent task.

Priority shall be given to treating the following sites:

- Where skid resistance is at least 0.05 CSC units/0.05 Grip number units below investigatory level
- Where low skid resistance is combined with low texture depth
- Where the accident history shows there to be a clearly increased risk of wet skidding accidents.

Where investigations show that treatment is necessary, consideration shall be given to whether surface treatment or other measures are appropriate. Surface treatment may not always be a necessary response and other measures, for example to reduce accident risk of the site may be both cost effective and consistent with local transport policy.

Texture and Polished Stone Value (PSV)

Both the texture depth and the polishing characteristics of the stone (PSV) have an effect on the in-service skid resistance of the road surface. It is important therefore that the correct standards are achieved when any surfacing material is laid and maintained thereafter. The following tables shall be applied for texture depth and PSV selection for new works and maintenance. Standards for minimum texture depth of bituminous surfacings

Appendix A

Site Category	Speed	Minimum Texture Depth (Sand Patch mm)	
		New Works	Investigatory Level
High Texture	High Speed (85th percentile greater than 55mph)	1.5	0.95
Low Texture	Low Speed (85th percentile less than 55mph)	0.9	0.65

Early Life Skid Resistance

It is known that newly laid surfacings can exhibit lower skid resistance than the same surfacings after a period of trafficking although the effect is not completely understood. Guidance provided by the HA Interim Advice Note 49/03 indicates that temporary warning signs may be required in certain situations.

In North Yorkshire, slippery road signs shall be erected for a period of 12 months on all surfacings and stone mastic asphalt surfacings laid in rural situations outside a 40mph speed restricted area.

* This advice has been withdrawn and slippery road signs are no longer erected at newly laid asphalt surfacing sites.

Minimum Polished Stone Value required for new wearing course

IL Band	Default IL	Site Categories	Site Definitions	Traffic (cv/lane/day) at design life									
				0 - 250	251 - 500	501 - 750	751 - 1000	1001 - 2000	2001 - 3000	3001 - 4000	4001 - 5000	5001 - 6000	over 6000
I	0.35	A, B	Motorway (mainline), Dual carriageway (non-event)	50	50	50	50	50	55	60	60	65	65
Ia	0.35	A 1	Motorway mainline, 300m approaches to slip roads	50	50	50	55	55	60	60	65	65	65
II	0.40	C, D	Single carriageways (non-event), dual carriageway approaches to minor junctions	50	50	50	55	60	65	65	65	65	68+
III	0.45	E, F, G1, H1	Single carriageway minor junctions, approaches to and across major junctions, gradients 5.10%>50m (dual, downhill only; single, uphill and downhill), bends <250m radius >40mph	55	60	60	65	65	68+	68+	68+	68+	70+
IV	0.50	G2	Gradients >50m long >10%	60	68+	68+	70+	70+	70+	70+	70+	70+	70+
V	0.55	J, K	Approaches to roundabouts, traffic signals, pedestrian crossings, railway level crossings and similar	68+	68+	68+	70+	70+	70+	70+	70+	70+	70+
VI	0.55 (20kph)	L	Roundabouts	50 – 70+	55 – 70+	60 – 70+	60 – 70+	60 – 70+	65 – 70+	65 – 70+			
VII	0.60 (20kph)	H2	Bends < 100m radius	55 – 70+	60 – 70+	60 – 70+	65 – 70+	65 – 70+	65 – 70+	65 – 70+			

Where 68+ material is listed in this table, none of the three most recent results from consecutive tests relating to the aggregate to be supplied shall fall below 68.

Throughout this table 70+ means that specialized high friction surfacing will be required at these locations.

For site categories L and H2, a range is given and the PSV should be chosen on the basis of local experience of material performance.

Proposed Interim Action

The following replaces Highway Maintenance Plan 6.9 - Skid Resistance; paragraphs, Site Investigation, Warning Signs and Prioritisation and Treatment.

A detailed site investigation will only be undertaken where there is evidence of collisions, specifically collisions in wet conditions or involving skidding. If no evidence exists then the site will be kept under review.

The objective of the investigation is to determine whether a surface treatment is justified to reduce the risk of collisions, specifically collisions in wet conditions or involving skidding, whether some other form of action is required, or whether the site should be kept under review.

Some form of treatment will be justified if:

- based on a collision analysis, the number of collisions observed is higher than average for the type of site being considered;
- based on a collision analysis, the site has a higher than average proportion of collisions in wet conditions or involving skidding for the type of site being considered; or,
- the nature of the individual site suggests that a higher collision risk (compared with other sites in the same category) might be expected with the skid resistance at its current value. In this case, preventive treatment is justified to pre-empt a potential increase in collision risk.

If none of the above are true then there is currently no justification for treatment to increase the skid resistance. If the site remains below the IL at the next measurement, then it will automatically be subject to a further investigation; that is, sites with skid resistance remaining below the IL are automatically kept under review.

If the skid resistance and collision pattern remain stable for 3 years, then lowering the IL should be considered.

If, as a result of the site investigation a surface treatment is justified then Slippery Road signs must be erected as soon as possible and mitigation works planned.

If the site investigation identifies any characteristic that suggests other road safety engineering measures could be appropriate, then the appropriate specialist dealing with safety schemes must be consulted before deciding upon the best course of action. In the interim however, Slippery Road signs must be erected as soon as possible

If it is found that there is a need for other types of routine maintenance, for example grass-cutting, drain cleaning, re-application of road markings or additional road sweeping, then this must also be addressed as soon as possible. In the interim however, Slippery Road signs must be erected as soon as possible

<p>Initial equality impact assessment screening form (As of October 2015 this form replaces 'Record of decision not to carry out an EIA')</p> <p>This form records an equality screening process to determine the relevance of equality to a proposal, and a decision whether or not a full EIA would be appropriate or proportionate.</p>			
Directorate	BES		
Service area	H&T		
Proposal being screened	Development of an NYCC Skid Resistance Policy.		
Officer(s) carrying out screening	Neil Leighton		
What are you proposing to do?	Develop a Skid Resistance Policy in line with the Code of Practice; Well-managed Highway Infrastructure.		
Why are you proposing this? What are the desired outcomes?	To seek approval to formally adopt the current pilot approach to Skid Resistance and to develop a new policy that will comply with the new Code of Practice which requires all Local Highway Authorities to identify Highway policy using a risk based approach. The Department for Transport recommends that all authorities should aim to comply with the new Code of Practice by October 2018.		
Does the proposal involve a significant commitment or removal of resources? Please give details.	No – Resources will be within the existing Capital Highway Maintenance budget.		
<p>Is there likely to be an adverse impact on people with any of the following protected characteristics as defined by the Equality Act 2010, or NYCC's additional agreed characteristics?</p> <p>As part of this assessment, please consider the following questions:</p> <ul style="list-style-type: none"> • To what extent is this service used by particular groups of people with protected characteristics? • Does the proposal relate to functions that previous consultation has identified as important? • Do different groups have different needs or experiences in the area the proposal relates to? <p>If for any characteristic it is considered that there is likely to be a significant adverse impact or you have ticked 'Don't know/no info available', then a full EIA should be carried out where this is proportionate. You are advised to speak to your Equality rep for advice if you are in any doubt.</p>			
Protected characteristic	Yes	No	Don't know/No info available
Age		✓	
Disability		✓	
Sex (Gender)		✓	
Race		✓	
Sexual orientation		✓	
Gender reassignment		✓	
Religion or belief		✓	
Pregnancy or maternity		✓	

Appendix C

Marriage or civil partnership		✓	
NYCC additional characteristic			
People in rural areas		✓	
People on a low income		✓	
Carer (unpaid family or friend)		✓	
Does the proposal relate to an area where there are known inequalities/probable impacts (e.g. disabled people's access to public transport)? Please give details.	The proposal is for a review of the NYCC current approach to skid resistance and development of a new policy. No inequalities or probable impacts are known.		
Will the proposal have a significant effect on how other organisations operate? (e.g. partners, funding criteria, etc.). Do any of these organisations support people with protected characteristics? Please explain why you have reached this conclusion.	No.		
Decision (Please tick one option)	EIA not relevant or proportionate:	✓	Continue to full EIA:
Reason for decision	This is a largely technical issue which will affect all road users; there are no reasons to believe that anybody – including those with protected characteristics - would see any negative impact from the change to policy.		
Signed (Assistant Director or equivalent)	<i>Barrie Mason</i>		
Date	<i>7 November 2017</i>		