



Pavement Design and Management Guide



Table 2.6 Criteria for identifying low friction pavement surfaces

[NCHRP 83]

Category	Skid Number (SN ₄₀)	Accident Problem	Action by Engineering District
A	Less than 31	yes	Improvements considered for programming on the Betterment or General Maintenance Programs in a prudent manner consistent with District priorities
B	31-34	yes	Maintain surveillance and take corrective action as required
C	34 or less	no	Maintain surveillance and take corrective action as required
D	35-40	–	Maintain surveillance and take corrective action as required
E	Greater than 40		No further action required

A comprehensive actual standard for surface friction of roads was issued in January 1988 by the British Department of Transport [BDT 87]. It uses the results of SCRIM surveys and provides for adjustment of surface friction to a level appropriate to accident risk, as shown in Table 2.7. After monitoring with the SCRIM, detailed investigations are carried out at sites at or below the “investigatory level” shown in Table 2.7. These investigatory levels are for mean summer SCRIM coefficient (MSSC) values at 50 km/h for 11 site categories and at 20 km/h for 2 site categories involving relatively sharp bends and roundabouts. It is claimed that introducing this standard has led to somewhat higher expenditures on remedial maintenance treatments but these are outweighed by the benefits [Rogers 91].

2.6.5 Pavement Surface Ruts

Pavement surface ruts can also pose a major safety concern. Ruts affect the handling characteristics of a vehicle. No absolute standards exist for relating excessive ruts to safety. Factors such as rut shape and depth, vehicle speed, type of vehicle, type of tire, tire wear, porosity of the pavement surface, duration of rainfall, cross slope of the surface, etc., all impact on safety.

Ruts are categorized as either traffic load associated deformation, wear related, or a combination of the two. The causes include abrasion and/or studded tire related wear in wheel paths from vehicles, and deformation of either the entire pavement structure in wheel paths (structural ruts), or instability in the form of compaction of one or more asphalt layers in wheel paths (instability ruts). Measurement of pavement ruts can vary from simple visual assessments to automated techniques that use lasers or ultrasound techniques to measure transverse pavement profiles at full highway speeds.

Table 2.7 British Department of Transport standard for investigatory levels of road surface friction resistance

[BDT 87]

Site Category	Site definition	(i) Investigatory Levels $MSSC_{50}$ (at 50 km/h) or Equivalent							
		(ii) Corresponding risk rating							
		0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65
		1	2	3	4	5	6	7	8
A	Motorway (mainline)		•						
B	Dual carriageway (all purpose) -non event sections		•						
C	Single carriageway - non event sections			•					
D	Dual carriageway (all purpose) - minor junctions			•					
E	Single carriageway - minor junctions				•				
F	Approaches to and across major junctions (all limbs)				•				
G1	Gradient 5% to 10%, longer than 50m. dual (downhill only) single (uphill and downhill)				•				
G2	Gradient steeper than 10%, longer than 50 m. dual (downhill only) single (uphill and downhill)					•			
H1	Bend (not subject to 40mph or lower speed limit) radius ≤ 250 m				•				
J	Approach to roundabout						•		
K	Approach to traffic signals, pedestrian crossings, railway level crossings or similar						•		
Site Category	Site definition	(i) Investigatory Levels $MSSC_{20}$ (at 20 km/h) or Equivalent							
		(ii) Corresponding risk rating							
		0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75
		1	2	3	4	5	6	7	8
H2	Bend (not subject to 40mph or lower speed limit) Radius ≤ 100 m					•			
L	Roundabout				•				

• Investigatory Levels

Notes

- Investigatory levels are for the mean skidding resistance within the appropriate section length.
- Investigatory levels for site categories A,B and C are based on 100 metre section lengths.
- Investigatory levels for site categories D,E,F,J and K are based on the 50 metre approach to the feature.
- Investigatory levels for site categories G and H are based on 50 metre section lengths, or for H the length of the curve if shorter.
- The investigatory level for site category L is based on 10 metre section lengths.
- Residual section lengths less than 50% of a complete section should be attached to the penultimate section.
- Individual values within each section should be examined and the significance of any values which are substantially lower than the mean value assessed.
- No precise definitions of Major/Minor Junctions have been included as judgement will have an important input.