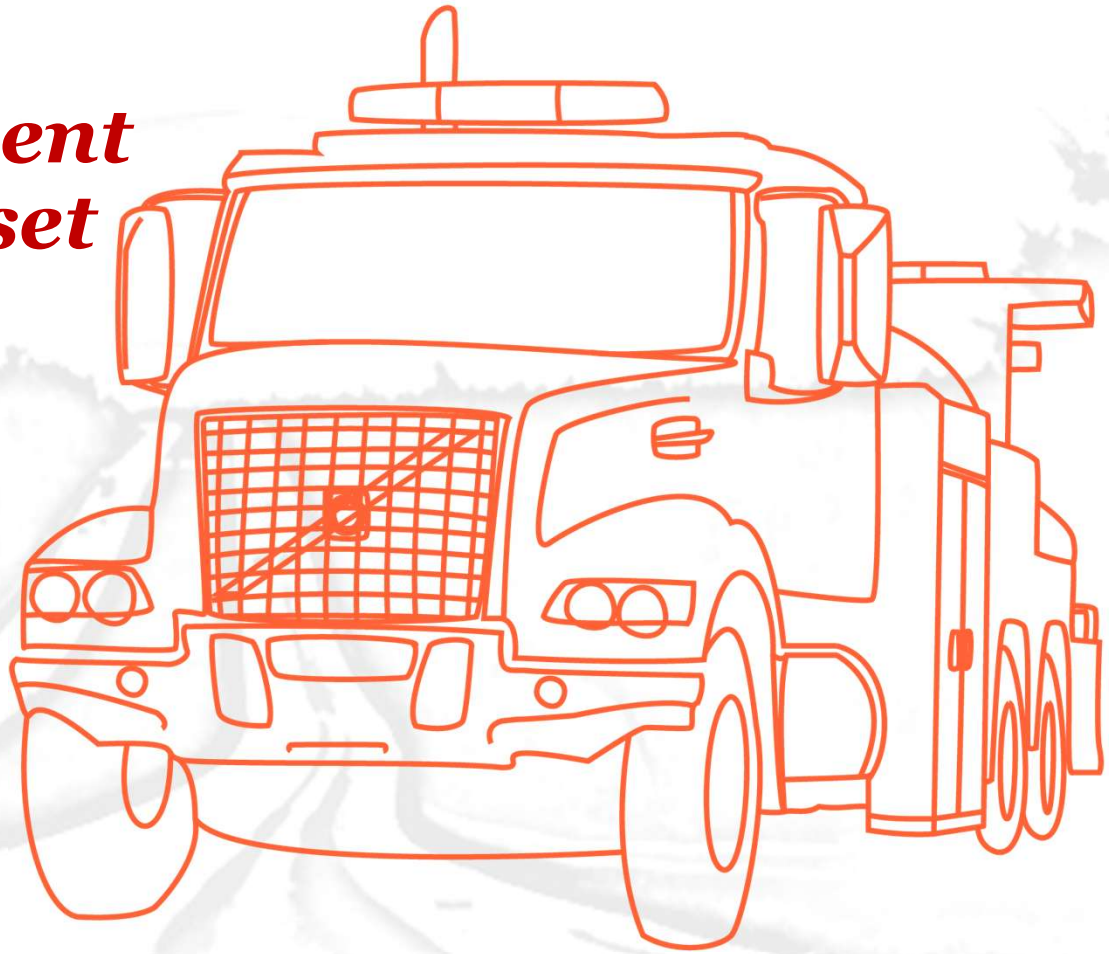
Uniting Safety and Pavements for Pavement Friction-Informed Asset Management: International/US Success Stories



August 27, 2025
Andy Mergenmeier, P.E.
WDM-USA

Agenda

International Experiences:

- Roland Spielhofer, Austrian Institute of Technology, Austrian and German Experiences
- Mark Stephenson, WDM, The Scottish and New Zealand Experiences

Panel Discussion:

- John Senger, ILDOT
- Jeff Shaw, HNTB
- Sarah Tamayo, ARDOT
- Roland Spielhofer, Austrian Institute of Technology
- Mark Stephenson, WDM

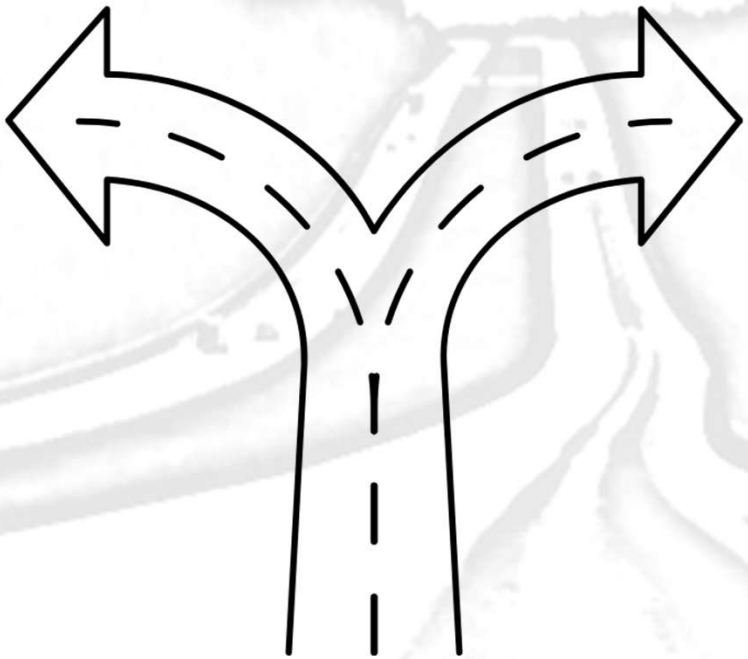
Open Q&A

Conclusion

The 1960s Fork in the Road: Diverging Global Paths in Friction Testing

U.S. Approach: Locked-Wheel Skid Tester (LWST)

Source: Center for Sustainable Transportation Infrastructure (CSTI)/ Virginia Tech Transportation Institute (VTTI).

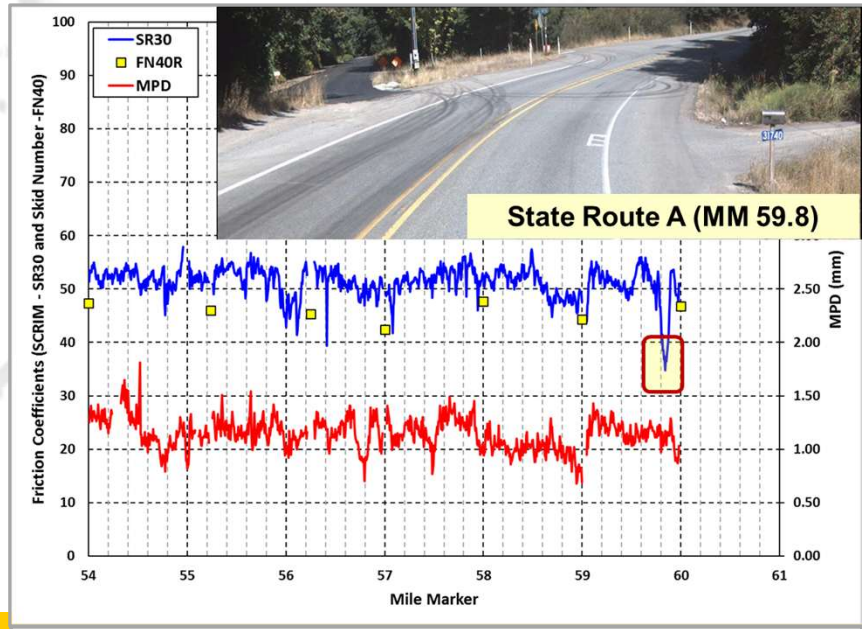


UK-Led Innovation: Continuous Pavement Friction Measurement (CPFM) System

NCHRP Report 37, Published in 1967,

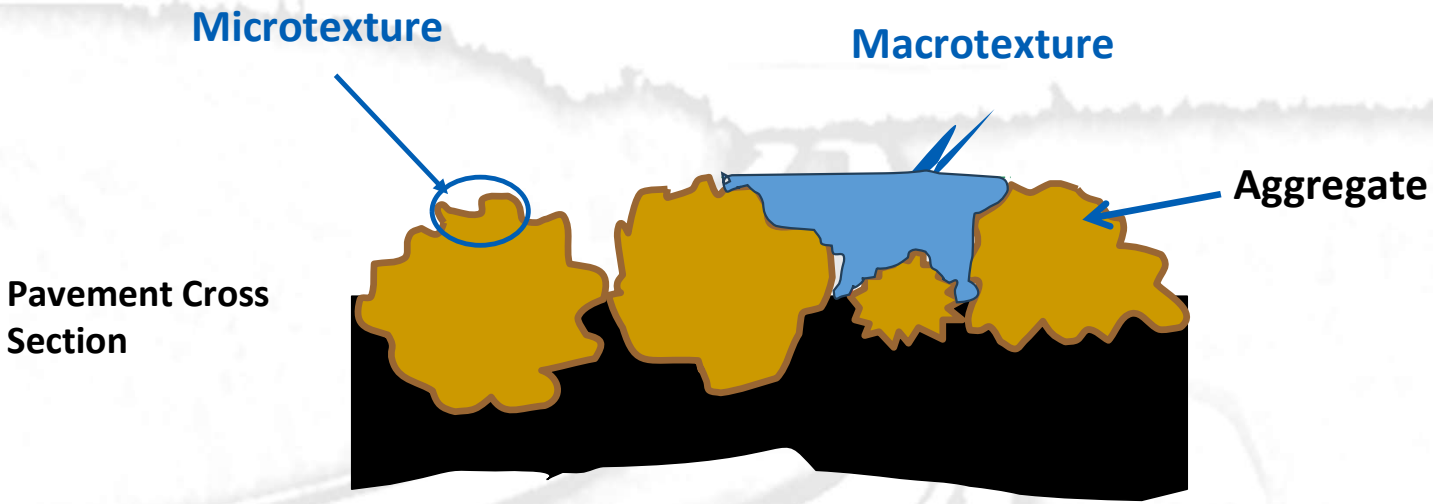
TENTATIVE SKID-RESISTANCE REQUIREMENTS FOR MAIN RURAL HIGHWAYS:

- "…Because the intensity of the polishing process increases markedly with tread element slip, all other factors being equal, the lowest friction levels are found on high-speed roads, curves, and approaches to intersections; in short, in locations at which high friction values are needed most."



Source: Federal Highway Administration.

What is Texture?



Source: Center for Sustainable Transportation Infrastructure (CSTI)/ Virginia Tech Transportation Institute (VTTI).

Friction Demand - Investigatory Levels (UK)

Site category and definition		Investigatory level (50 or 80 km/h)							
		0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65
A	Motorway								
B	Dual carriageway non-event								
C	Single carriageway non-event								
Q	Approaches to and across minor and 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								

Source: United Kingdom CS 228 Skidding Resistance Revision 0, August 2019.

Summary

- Highway CPFM Systems have been used for over 50 years
- All other factors being equal: Pavement Friction (Friction Supply) varies along the road and is lowest where Friction Demand is highest
- Pavement Friction is within Engineering (Infrastructure) of the 4 E's for Safety (Engineering, Enforcement, Education, Emergency Response)
- Agencies integrating CPFM have realized safety benefits

1st presentation:

- Roland Spielhofer, Austrian Institute of Technology, The Austrian Experience