	TMC – Tinni Management Consulting	Issue No. 46
	PAVEMENT INFORMATION NOTE	
Edited by Arvo Tinni. Email arvo@tinni.com.au		13 07 2010

SKID RESISTANCE USING SCRIM
(Sideways-force Coefficient Routine Investigation Machine)

The following are brief explanatory notes on the operation and evaluation of SCRIM measured skid resistance results:

- The Sideways-force Coefficient (SFC) is a measure of resistance to skidding. Obviously it varies between dry and wet conditions;
- A freely rotating test wheel fitted with a standard smooth tyre is inclined at 20º angle to the direction of motion of the test vehicle to generate a measurable sideways-force on the surface requiring testing. The ratio of the force developed at right angles to the plane of the axis of the wheel to the load on the wheel, is the SFC; (The SFC value is expressed as the SCRIM reading divided by hundred;
- The test vehicle is driven at 50±4 km/h. In dangerous locations, this may be reduced to 20±4 km/h. The results are then differentiated as SFC_{50} or SFC_{20} ;
- The lane tested shall be used by majority of traffic generally this is the slow or kerbside lane in multi-lane rural situations.
- The pavement is always tested with a sprayed film of water under the test tyre(s) to simulate wet weather conditions;
- The lane numbering shall be in accordance with the local Asset Management lane referencing system or ROADLOCK.
- SCRIM must be calibrated after every 1000 km of testing or every work week, whichever occurs first;
- In RTA Contracts, skid resistance testing by SCRIM is nominated. RTA Test Method T189, amongst other, says that the procedures stated do not necessarily agree or correlate directly with those obtained by other pavement friction measuring methods;
- Skid resistance will depend on a number of factors:
    - Seasonal effects
    - Polishing
    - Surface texture
    - Aquaplaning
    - Aggregates used in the road surface
    - Physical layout of the site
    - Number and type of vehicles using the site.

- In1996, RTA and VicRoads agreed on a "Guide for the Measurement and Interpretation of Skid Resistance Using SCRIM". This Guide nominates the **Investigatory Skid Resistance Levels** (ILs) for both SFC_{50} and SFC_{20} for different geometric road conditions. These are actually called "Risk Ratings" that will trigger further investigations. Over the years, these levels have become,

incorrectly, the contractual requirements for handovers or interventions;

- **There is no hard and fast line between safe and dangerous and there is no skid resistance value above which there will be guaranteed freedom from wet skidding accidents (RTA & VicRoads Guide);**
- The following table summarises the required **Investigatory Levels** for further skid resistance investigations

Site Category	**Site Description**	**All Primary Roads and Secondary Roads with >2500 veh/lane/day**	**Roads with <2500 veh/lane/day**
1	Tfc light controlled intersections, Pedestrian/school crossings Railway crossings, Roundabout approaches	SFC_{50} – 0.55	SFC_{50} – 0.50
2	Curves with radius =< 250 m Gradients =>5% and =>50 m long Freeway/h'way on/off ramps	SFC_{50} – 0.50	SFC_{50} – 0.45
3	Intersections	SFC_{50} – 0.45	SFC_{50} – 0.40
4	Manoeuvre-free areas of undivided roads	SFC_{50} – 0.40	SFC_{50} – 0.35
5	Manoeuvre-free areas of divided roads	SFC_{50} – 0.35	SFC_{50} – 0.30
6	Curves with radius =<100 m	SFC_{20} – 0.60	SFC_{20} – 0.55
7	Roundabouts	SFC_{20} – 0.55	SFC_{20} – 0.50

Points to note:

- **Seasonal effects:** In Australia, the minimum skid resistance values may vary from year to year and occur during different periods depending on the prevailing weather conditions and extent of dry weather prior to testing.

- **Polishing:** At locations where severe braking, cornering or accelerating occurs, the polishing action of traffic is greater and the skid resistance reduces to a lower level than manoeuvre free sites.

- **Surface texture:** The micro texture (fine scale texture of <5 mm depth) of the surface aggregate is the main contributor to sliding contact resistance and is dependent on the tyre actually contacting the road. Micro texture is the dominant factor in determining wet skid resistance at low to moderate speeds. At high speeds macro texture (coarse texture range 0.5 mm to 15.0 mm) becomes dominant, providing rapid drainage routes between the tyre and the road surface, thus allowing micro

texture contact and also causing tyre rubber deformation even if intimate surface contact does not occur.

- **Aquaplaning:** Occurs when the vehicle tyres are completely supported by a layer of water and there is no contact with the road surface. Partial aquaplaning may exist when a high proportion of the tyre/road contact is lost. This occurs when a wedge of water builds up in front of the tyre contact area and extends back as speed increases, resulting in the loss of more and more tyre contact with the road.

- **Accident potential:** Accidents are usually the result of a combination of several factors (of which skid resistance **may be** one) and these can be difficult to isolate and identify. For a road surface to play its full part in reducing accidents, the resistance to skidding must be appropriate to the friction demand by the vehicles. As these demands vary from site to site, because of the presence of other variables, the corresponding required levels of skid resistance will also vary.