

CSIR Licensed Products

The Crack Activity Meter (CAM)

CAM enables the road engineer to monitor cracks and their activity so that an appropriate maintenance or improvement strategy can be selected. It measures load-associated crack movements on an existing road surface.

A knowledge of the magnitude of crack movement helps in the selection of an appropriate new surfacing seal to accommodate crack movement.

Active cracks can reflect through a new surfacing if the new surfacing is unable to accommodate the crack movement.

This small instrument fits comfortably between the dual rear wheels of a test truck and measures the relative movement across the crack traversed by the dual wheels. Both vertical and horizontal movements are recorded.

The load used for testing is the standard 18kips (80kN) axle (9kips (40kN) dual wheel) and the test is performed at creep speed. The encoder reads the distance traveled by the wheel in relation to the CAM.

The portable interface is capable of running off its own battery power supply or 12v cigarette lighter option. Data is stored on the coupled laptop computer. The complete system excluding the computer fits into a aluminum suitcase for convenient transportation.



THE CRACK ACTIVITY METER

Dimensions of suitcase: 18x13x6in (46x33x15cm)

Approx mass: 27lb (12.3 kg)

The Laser Profilometer

The Laser Profilometer is used to measure the rutting of a test section accurately. The Laser Profiler consists of an aluminum beam, which is placed over the test section, resting on legs on either side of the test section.

A measuring head moves along the beam and takes readings every 0.4in (10mm) for a total length of 101in (2.56m).

Transverse profiles of the test section are taken at several test points along the section. From these profiles the average rut depth and other factors relating to the permanent deformation of the section can be determined.

Processing of the data allows, for example, a three dimensional plot of the surface deformation.



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Stress-in-Motion Pad (SIM) System

Tire/road interface stresses are those induced by vehicular traffic running on roads, and are the primary cause of surfacing problems.

Since the cost of asphalt layers is often the most significant in road construction and maintenance works, designing towards an optimum asphalt layer thickness in relation to the supporting road structure, and the expected axle loading and tire pressures, is therefore of great importance.

CSIR Transportek has developed a unique system that simultaneously measures the vertical, transverse and longitudinal vehicle tire/road interface stresses under a moving wheel load. This technology, dubbed Stress-in-Motion (SIM), provides some of the most important inputs into pavement design for optimising the cost of roads over their design life.

The SIM system has been developed since the early 1990s and an industrialized version is now available. As part of pavement research it is being introduced into vehicle monitoring stations in South Africa. SIM technology is available for specific client-defined measurement programs or as a complete system for the client.

The SIM pad has been used with the HVS and results indicate that under normal conditions the maximum vertical stress is in the tire center, exceeding the inflation pressure by up to 30% and in extreme cases, the bias (cross) ply tire side wall vertical stresses can be twice as high as the tire inflation pressure with maximum transverse stresses up to 70% of the inflation pressure.

THE SIM PAD IS USED TO MEASURE TIRE/ROAD INTERFACE STRESSES UNDER A MOVING WHEEL LOAD



THE STRESS-IN-MOTION PAD (VEHICLE ROAD SURFACE TRANSDUCER ARRAY)

