



DATA COLLECTION LIMITED

PAVEMENT CONDITION TESTING



PAVEMENT CONDITION TESTING

BENEFITS

- » Innovative, market leading technology
- » Surveying at traffic speed; no traffic management required
- » Vehicle Survey; no need for physical road inspections
- » Rating assets from the office
- » Simultaneously collecting and synchronising all data sets from one survey.
- » All datasets are collected and only the information required will be processed and analysed. Option of acquiring additional datasets at a later date without the need to resurvey.

Pavement condition data is essential to prioritise and manage maintenance activities on pavement surfaces - whether it's main arterials, back country rural roads, runways or ports.

Data Collection Limited specialises in surveying roads, airports, ports, railways, and providing data and information on the assets surface and sub-surface condition.

We operate a fleet of survey vehicles dedicated to collecting accurate, reliable and relevant data used in making sound engineering judgements and network level maintenance decisions.

Our services are ideal for those who require the high accuracy and variety of data needed to manage modern roads.

Applications

- » Annual surveys along sealed and unsealed pavements, forms part of forward works programme
- » Inventory and assets record
- » Budgetary decisions for pavement maintenance and repair

DELIVERABLES

Project and Network level testing

Longitudinal profile and Roughness	Rut data	Macrotexture
Pavement surface rating	Asset Inventory Rating	Road Geometry
Video imagery	Laser based pavement imaging	GIS Information



SURVEY: HIGH SPEED DATA SURVEY

BENEFITS

- » Multitude of datasets collected in one survey: additional data can be obtained by further processing at a later date
- » The ability to reprocess data using a variety of parameters without the need to resurvey
- » Quality Control Sites surveyed before testing commences
- » Skilled operational staff ensuring accurate and reliable data is delivered
- » LCMS laser imagery; can be operated day or night

High Speed Data (HSD) surveys typically require roughness, rutting, texture and geometry data at network level. Equipped with the latest Pavemetrics' Laser Crack Measurement System (LCMS) scanners, our HSD survey vehicle can simultaneously collect these data sets along with cracking and pothole detection, and a multitude of other surface defects in one survey.

LCMS combined with ROMDAS controller, videos cameras, GPS and distance measuring equipment, allows for video imagery that can be used to identify defects, monitor assets and undertake road safety audits, all in the safety of the office.

This HSD survey vehicle collected data can be easily imported into pavement management systems (like RAMM) to use the collected data, in conjunction with other data sets for maintenance and planning.

Applications

- » Perform forward works programme and undertake asset valuation.
- » Plan maintenance activities and maintain the network to a high standard.
- » Annual survey allows pavement deterioration to be assessed and therefore determine modelling.

Standards

- » AUSTRROADS Test Methods
- » ASTM Standards
- » AASHTO Standards
- » ISO Standards



LCMS: KEY HIGHLIGHTS

Our HSD survey vehicle is one of the most advanced, integrated and multi-functional road surveying system. It records a 4m wide profile every 5mm along the road at normal traffic speed. The high frequency of profiles allows for automatic identification of a range of critical pavement attributes. Because LCMS images are laser image-based they are completely unaffected by ambient light conditions (which is problematic in traditional video-based pavement imaging systems). This allows us flexibility to conduct survey during the day and at night.

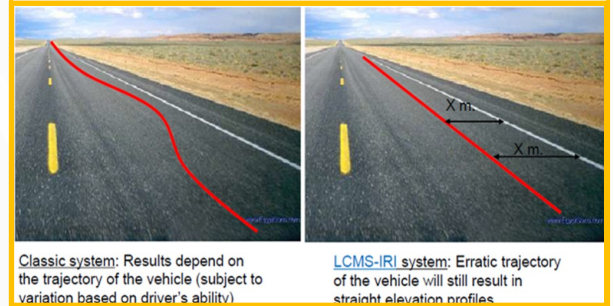
LCMS: Unique Features

» Lane Tracking

- » Eliminates the influence of vehicle wander
- » True representation of pavement changes; references data to lane markings and kerb position instead of the vehicle's position.

» Extremely high accuracy transverse profiles

- » High accuracy transverse profiles with 4000+ points across lane compared to traditional (up to) 17 single transverse profile.



Classic system: Results depend on the trajectory of the vehicle (subject to variation based on driver's ability)

LCMS-IRI system: Erratic trajectory of the vehicle will still result in straight elevation profiles



» Macrotexture

- » Traditional laser profilers only measure macro-texture in a single line, while LCMS can calculate macrotexture across the lane width.
- » The LCMS can provide 5 longitudinal bands (the 5 AASHTO bands are central band, two wheel path bands, and two outside bands)

» Roof mounted equipment

LCMS equipment is mounted 2.2m above the ground; less vulnerable to accident and damage than traditional multipoint laser rut bars mounted at bumper height.

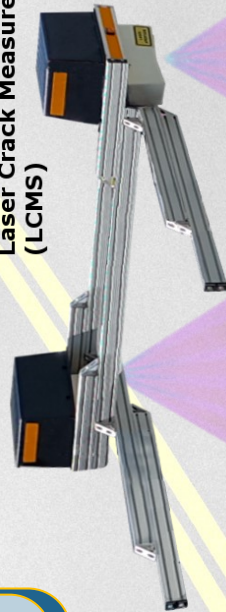
DELIVERABLES

Cracking (width, depth, length, type and sealed or unsealed)	Rut Depth, Width and Cross-sectional	Longitudinal Profile and Roughness (IRI)
Texture (MPD, ETD, SPTD)	Bleeding	Shoving
Raveling	Pothole Detection	Concrete Joints and Faulting
Sewer and Storm Drain Detection	Pavement Marking Detection	Edge and Kerb Detection
Surface Defect Rating	Asset Inventory Rating	Road Geometry
Video Imagery	Laser based Pavement Imaging	GIS Centreline Data

High Speed Network Survey:

Pavement Condition Testing with high speed network vehicle to collect 3d profiles and images of the pavement surface using the latest technology Laser Crack Measurement System (LCMS). Simultaneously collect automated defects such as cracking, potholes, roughness, rutting, and texture data along with many other surface defects.

Laser Crack Measurement System (LCMS)



High Resolution Odometer (HRDMI)
- High Accuracy Distance/Chainage

Collected data referenced with Chainage:

All data collected is referenced with distance/chainage whether it is 3d profiles, surface defects, or right of way images.

Video Imagery:

High resolution cameras to collect pavement surface condition for visual inspections. Helps to minimise the need for personnel to be on the field.

Video Logging Modules

- Right of Way with high resolution cameras

Geo-reference collected data:

Collected data is easily referenced with sub-meter GPS coordinates as per client's project needs.

GPS/GNSS Modules



SURVEY: VIDEO IMAGERY

BENEFITS

- » Data in non-proprietary formats (JPEG and AVI) mean it can be viewed with standard software
- » Compatible with JunoViewer; images can be easily uploaded
- » Minimises risk for engineers being out on the field
- » RAMM Condition Rating:
 - » Trained personnel to perform RAMM Condition Rating
 - » Surface defects via video imagery and / or automatically rated by the laser based pavement imagery software
 - » The laser based pavement imagery is unaffected by ambient light conditions (which is a limitation of the traditional camera-based pavement imaging systems); data can be collected day or night

Video imagery captures the current pavement surface condition; a snapshot in time. This might be required before major construction commences as evidence of pavement condition at that time and/or used to help minimise the need for Engineers to be out on site and work in a safer environment. Our videos could also be used, in conjunction with our LCMS pavement images, to rate surface defects as well.

Our survey vehicles can be configured with one or multiple high-resolution cameras, positioned and angled as per the project's demands. Our typical set up, though, includes right of way (ROW) and kerb and channel (front left) videos. The cameras are usually mounted on the roof of the vehicle for optimal view and image quality. The image is triggered by our distance measuring equipment which allows for distance-based capture, defined by the user.

Applications

- » Capture network condition on a regular basis to reduce on-site visits
- » True and accurate record for construction projects - record pre- and post-construction pavement surface
- » Asset management and inventory
- » Unsealed condition survey
- » RAMM visual condition rating - surface defects

DELIVERABLES

Video imagery can be supplied on an external drive

Manual rating of surface defects

Location and condition of pavement defects, and kerb and channel defect



SURVEY: ROUGHNESS (NAASRA)

BENEFITS

- » Independent surveyor, receive a fair outcome
- » High accuracy data provided at required intervals
- » Skilled operators with sound understanding on good quality data
- » Processing is conducted in the office ensuring accurate, reliable data is delivered

Road Roughness Compliance Testing is required along pavement rehabilitations, new road construction and area wide treatments to ensure a smooth pavement surface. This is to ensure that the pavement surface complies with contract specification providing a smooth ride.

We conduct this test using either our response type roughness meter (ROMDAS Bump Integrator) or laser profilers. The survey is performed at traffic speed eliminating the need for temporary traffic management. Three replica survey runs / passes are undertaken along each lane and the average roughness is provided at the required intervals.

Applications

- » Ride quality, ensure pavement surface is smooth and safe for the public to drive on
- » Project sign-off, a key performance indicator for completion of projects

Standards

- » TNZ TM 7003 v1: Roughness Requirements for Finished Pavement Constructions
- » Laser Equipment:
 - » AUSTRROADS Test Method AG AM/T001: Pavement Roughness Measurement with an Inertial Laser Profilometer
 - » ASTM E950: Standard Test Method for Measuring the Longitudinal Profile for Travelled Surfaced with an Accelerometer Established Inertial Profiling Reference

DELIVERABLES

Average NAASRA (or IRI) reports at 10m, 20m or 100m intervals

Average NAASRA (or IRI) reports at 100m rolling average (based on 10m or 20m interval data)

Provision of all survey data as well as the average



OVERVIEW: SURVEY SERVICES

THE DCL ADVANTAGE

- » Leading-edge technology for accurate and comprehensive data for road maintenance prioritisation
- » Original manufacturers of the road survey technology
- » Unrivalled expertise to maximise capabilities and optimise system configuration
- » One stop shop solution with all required technical and operational experience
- » Pool of resources with offices in New Zealand and India

Data Collection Limited (DCL) is a New Zealand owned and registered company who perform highly technical highway surveys and manufacture ROMDAS equipment.

We have been manufacturing and providing advanced road survey equipment to clients for the past 30 years. From our origins in the early 1990s, we have a proven track record in the collection of highway and asset information, both in New Zealand and internationally.

DCL's Survey services specialises in providing innovative solutions for measuring and managing pavements. We invest in highly technical survey equipment that is designed to meet New Zealand and international standards.

Catering to the satisfaction of our clients, we provide data and information on assets, surface and sub-surface conditions. Our services can be applied to a wide spectrum of industries including roads, airports, ports and railways.

Our team has collective knowledge and technical skills with varied experience. We are dedicated to collect and report accurate, reliable pavement information which is critical to successfully prioritising budgets and maintaining a high standard of service.

Our Expertise

We have a dedicated team offering technical expertise for two types of surveys:

» Pavement Condition Survey

Information on the condition of the pavement surface and assets, visually and automatically

- » Pavement Surface Condition with video imagery
- » High speed survey with automatic pavement surface assessments
- » Automatic crack detection and mapping
- » GIS mapping
- » Roadside inventory and asset management
- » Road construction quality testing

» Structural Testing

Providing sub-surface structural data

- » Falling Weight Deflectometer Testing to determine pavement strength and identify failures
- » Heavy Weight Deflectometer Testing; for thicker pavements, airports and ports

