

Pavement Video

Pavement View Digital Images

The ARAN can be equipped with a variety of production-proven and reliable pavement imaging subsystems according to the user's application and budget.

With the ARAN's pavement imaging subsystem, planer-view digital pavement images (JPEG format) are recorded directly to disk for 100% of the driven lane (up to 14 feet or 4.3 meters). Digital storage is configured to create a complete back-up of every collected image to guard against data loss and the avoid time consuming rework.

All pavement imaging subsystems offered by Roadware incorporate artificial lighting in order to provide better consistency and resolvability of pavement images which in turn results in more accurate distress determination. Through the ARAN architecture, pavement-view images are specially-encoded to allow for subsequent distress analysis using either semi-automated or fully-automated distress analysis software.

Available system configurations include:

2mm Resolution with Strobe Lighting

Optimally angled and camera-synchronized strobe lights provide intense artificial lighting even in the presence of natural sunlight. The quality and intensity of light provided by strobe systems is superior to that provided by standard incandescent systems which

tend to require filming during low-light periods of the day to ensure optimal image quality. High-intensity strobe systems permit pavement imaging throughout all hours of the day and under all lighting conditions (e.g. overcast, full sun, etc.).

Left and right cameras are synchronized and real-time software properly overlaps and "stitches" left and right frames to provide an uninterrupted view of the full lane width (~4.3 m maximum width). The resultant images each represent a continuous 1/100th mile of road.

1mm Resolution with Infrared Lighting

Roadware's 1 mm Pavement Imaging System provides high resolution imagery of the pavement surface. Cracks down to 1 mm in width can typically be seen in images of hot mix asphalt roadways (JPEG format) and may be rated visually or through Roadware's automated crack detection software (WiseCrax®).

Left and right cameras are synchronized and real-time software



Pictured here: 1mm resolution pavement video image

Features

- Available in resolutions for 2mm and 1mm crack detection
- Real-time monitoring of image quality during collection
- Adjustable compression for optimizing image quality and storage efficiency
- Intuitive directory structure
- Easily accessible through image viewing software
- Calibrated images for performing distress extraction with Roadware's D/VRate and WiseCrax software

properly overlaps and "stitches" left and right frames to provide an uninterrupted view of the full lane width (~3.9 m maximum width). The resultant images each represent a continuous 1/100th mile of road.

Illumination of the pavement surface is provided through laser lighting which is not discernable to the naked eye. The incident illumination angle of the laser causes cracks to project shadows which improve visibility and contrast. The laser illumination is immune to shadows and variations in ambient lighting, allowing consistent collection of quality images in all light conditions.

The collected imagery may serve as a stand-alone video inventory of collected sections, or may be used in conjunction with additional Roadware software applications. Additional functionality may be found through:

VisiData®

Roadware's image viewing software. Display all collected views concurrently. 'Visit' sections on demand through a section inventory list, map interface, or graphs of pertinent associated data.

D/V-Rate®

Perform windshield distress rating surveys from the office.

WiseCrax®

Using pavement images and advanced image recognition algorithms, WiseCrax automatically detects, classifies, and rates visually apparent cracking at widths as low as 1 millimeter (0.03 inches).

Pictured below: 1mm resolution pavement system



Pictured above: 2mm resolution pavement system

SYSTEM COMPONENTS

Digital Camera(s)

Cameras are available in resolutions capable of capturing fine cracks from widths of 2 millimeters (0.07 inches) down to 1 millimeter (0.03 inches) in width on hot mix asphalt surfaces.

System Control

Cameras and captured images are controlled by the Digital Video Storage (DVS) system. Through the DVS graphical user interface (GUI) image adjustments may be made prior to or during collection.

Distance Measuring Instrument

The ARAN DMI is able to measure distances accurate to within +/- two-thousandth (0.002) mile per mile (or +/- 0.2%) and displays the distance in miles/kilometers to three decimal places. The DMI is a non-contact optical encoder that divides each wheel revolution into 2,000 pulses. Using this methodology, distance measurement is not speed dependent so all linear measurements retain accuracy through the reality of fluctuating traffic conditions.

ACCURACY

Using Roadware's ARAN DMI, image location is reported to within 10 cm (3.94 inches) of actual linear position.

ADDITIONAL SYSTEM INTEGRATION

Digital images will be linked to data from other available ARAN subsystems, including Roughness, Rutting, Faulting, Texture, Vertical Clearance and GPS position.

OUTPUT

All images are written into an intuitive directory structure organized by the collected file name and linear reference point at which each image is collected. The JPEG images are named according to the lineal distance point where they were captured.