



SURFACE SYSTEMS & INSTRUMENTS, Inc.

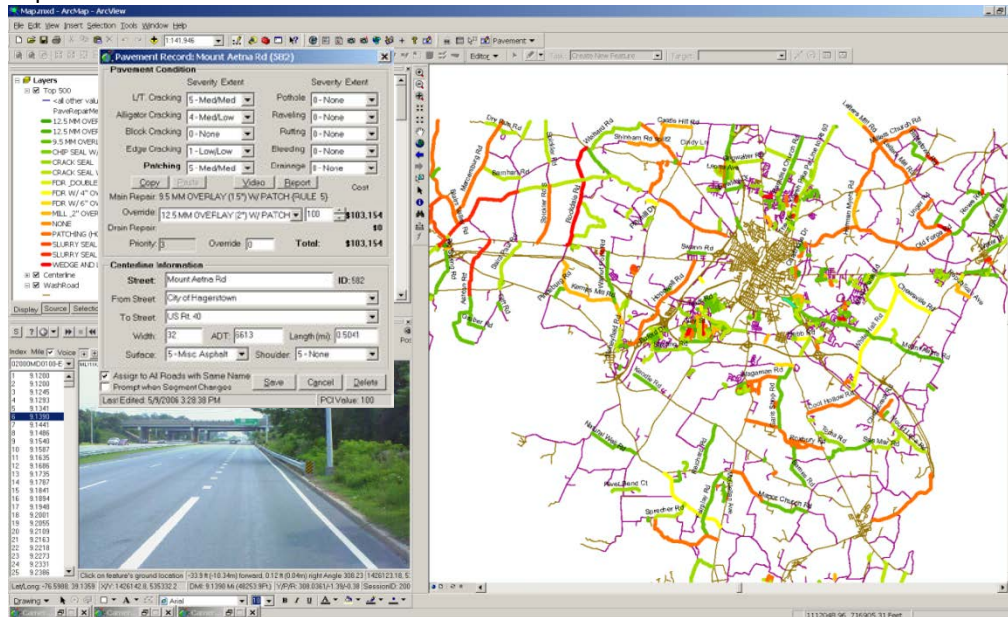


ENTERPRISE INFORMATION SOLUTIONS, INC.

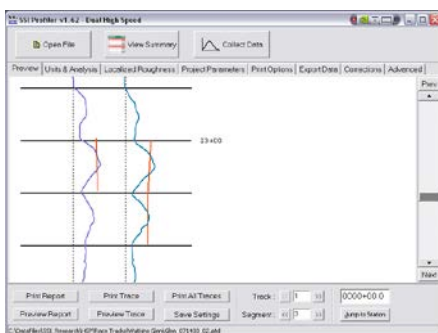
eRoadInfo Pavement Management Solutions

Overview. “eRoadInfo Pavement” is an automated pavement management system offered as a service through a technology partnership between Enterprise Information Solutions, Inc. and Surface System & Instruments, Inc.. The eRoadInfo Pavement system handles pavement management related tasks from road inventory and data collection to data analysis, decision support, budgeting and reporting. Users have the option to manually enter the pavement rating or use automated devices to detect and analyze distress conditions. Interfaces are provided for entering pavement ratings either in the field or by viewing the pavement video captured by the high-speed digital cameras. The fully automated option uses a high-speed line-scan imaging device to collect images, detect crack conditions, and produce road condition data in AASHTO or PMIS standard formats. The system also includes a high-speed road profiling subsystem to collect longitudinal surface profile data for calculating International Roughness Index (IRI), Profile Ride Index (PRI), and precise detection of areas of localized roughness. Additional optional instrumentation for rutting and cross-slope statistics is available.

Pavement Management Decision Support Software. eRoadInfo Pavement includes intelligent software to evaluate road repair methods, prioritize repair work, and generate repair budgets based on user selected parameters. Users can configure a repair decision tree matrix defining repair methods based on distress conditions. The system automatically applies the decision tree to all road segments, recommending a repair method according to the road condition. The system also calculates the repair cost based on user definable unit costs. The repair work can then be prioritized according to user defined weight factors, traffic volume, and road conditions. Annual repair plans are created based on the specified budget. On fully configured systems, the eRoadInfo Pavement data is fully integrated with ESRI ArcGIS. ArcGIS users can click on a road to view the road condition data, roadway images. Users can also produce color-coded maps based on road condition and repair methods.

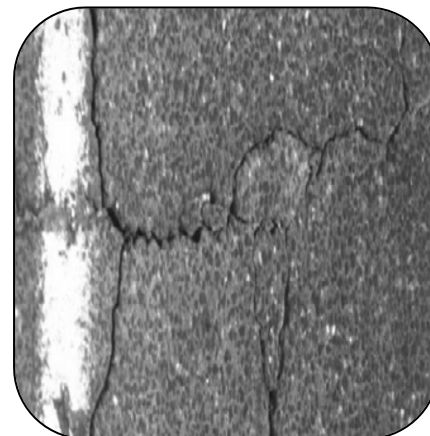
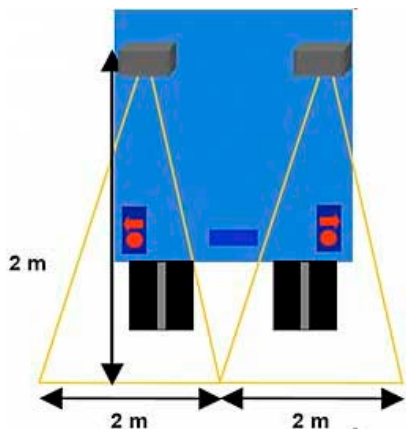


High Speed Profiling System for Roughness and Rutting Statistics. The eRoadInfo Pavement hardware includes an ASTM E950-98 Class I inertial profiling sub-system that complies with DOT specifications and certification requirements, including compliance with AASHTO PP51-02 standards. The profiling system generates test results under several profile indexes, including IRI, PRI, and Ride Number (RN). The profile data is compatible with FHWA ProVal software. Rutting and cross-slope statistics are optionally available. Profile reports and traces are output on-screen, in electronic text, PDF, spreadsheet formats, or in hard copy.

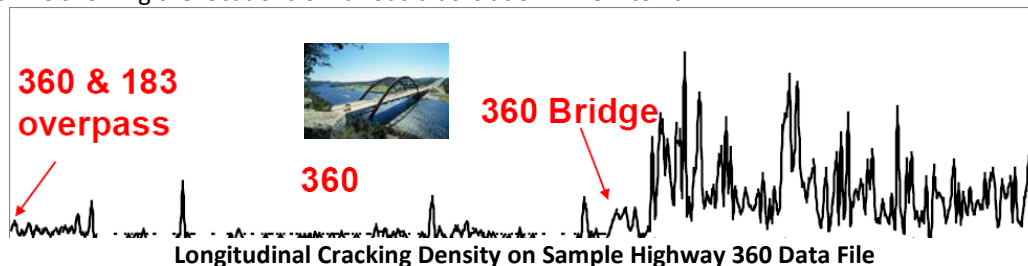


Station	IRI	PRI	RN	Other Metrics
1	150.0	150.0	150.0	...
2	150.0	150.0	150.0	...
3	150.0	150.0	150.0	...
4	150.0	150.0	150.0	...
5	150.0	150.0	150.0	...
6	150.0	150.0	150.0	...
7	150.0	150.0	150.0	...
8	150.0	150.0	150.0	...
9	150.0	150.0	150.0	...
10	150.0	150.0	150.0	...
11	150.0	150.0	150.0	...
12	150.0	150.0	150.0	...
13	150.0	150.0	150.0	...
14	150.0	150.0	150.0	...
15	150.0	150.0	150.0	...
16	150.0	150.0	150.0	...
17	150.0	150.0	150.0	...
18	150.0	150.0	150.0	...

Automated Pavement Surface Imaging and Distress Rating System. When configured with high resolution road-bed scanning sub-system, eRoadInfo Pavement system provides an automated pavement distress rating system consisting of a digital line scan camera, high speed frame grabber, computer, custom-design LED light bar, and proprietary distress analysis software. eRoadInfo Pavement is able to perform real-time pavement inspection with 100% distance coverage at travel velocities from 5 to 70mph. The line-scan camera and the light bar cover a 10ft wide lane, and the image has 1.5mm/pixel resolution. The light bar enables the system to avoid the variations of the ambient light and to perform nighttime survey.



The on-board computer processes the scanned images at real-time and recognizes different types of road cracks such as longitudinal, transverse and alligator cracking. The eRoadInfo Pavement system can differentiate flexible and rigid pavements, and classify the distresses into two distinct rating summary formats. The system reports the data in both the PMIS and AASHTO ACP formats. The PMIS data includes the count and percentage of transverse and longitudinal cracks, spalled cracks and punch-outs, as well as alligator and block cracking, while the AASHTO data include crack densities in four separate paths. The system can output snapshot images, crack maps, and a graphical file showing the locations of various cracks at 0.1 mile interval.



Additional Features & Options:

- **Roadway Data Collection Services.** SSI can perform full-service data collection using SSI’s survey vehicle with experienced data collection personnel. Using the eRoadInfo Pavement system, SSI can collect the road surface and image data and deliver the final images and associated database to customers on a removable hard drive, DVD, or other specified format.
- **Flexibility and Data Productivity.** eRoadInfo Pavement allows third party consultants or the customers themselves to configure the system to collect any data type they need. There is no limit on the possible use of the video image to collect any point or linear asset feature data. The system automatically populates many data fields such as location, orientation, mile point and etc. The data collection effort is about one fifth of what is required using traditional back-pack GPS method.
- **High Quality Images.** eRoadInfo Mobile can use up to 4 cameras capturing at up to 1920x1080 resolution at 25 foot intervals. On fully systems, the images are associated with location information from an inertial navigation system that can provide accurate positioning information even after GPS signal is temporarily lost.
- **Direct Integration with the ESRI ArcGIS Platform.** When configured with GPS and inertial guidance instrumentation, the eRoadInfo ArcGIS Extension integrates directly with the ESRI ArcGIS/Arc Map platforms. The user works directly in the ArcMap/ArcView GIS environment they are familiar with. The data is collected directly into the ESRI GeoDatabase format running either as a personal GeoDatabase or on top of ArcSDE running on a powerful relational database such as Microsoft SQL Server or Oracle.
- **Pavement Management Integration.** eRoadInfo Pavement provides a pavement management system that allows the video data to be used to perform pavement condition ratings and provide repair decision support.
- **MicroPaver Integration.** The eRoadInfo Pavement Management Module exports pavement condition data for use in the MicroPaver software application for modeling and reporting. MicroPaver users can quickly collect pavement data from video images.
- **Web Publishing Capability.** The eRoadInfo Web module allows the images to be distributed over the Intranet or Internet, allowing the data to be easily shared with other users.

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