



Florida Department of Transportation Research

Mobile Geographic Information System Solution for Pavement Condition Survey BDR76

The State Materials Office (SMO) of the Florida Department of Transportation (FDOT) performs annual Pavement Condition Surveys (PCS) of the Department's extensive pavement network. This work is performed by single-person crews in inertial roadway profilers capable of measuring rutting, faulting, and ride quality while traveling at prevailing traffic speeds. Information from these measurements along with the inspector's evaluations and notations of pavement distresses are entered into a Microsoft Excel spreadsheet located in an onboard computer. The template for this spreadsheet contains macros to perform basic error checking and integration of the automated and visual data.

Among the drawbacks of the current system is that it requires the inspector to drive, navigate, collect data, and perform the initial data verification. Also, survey routes are not optimized, and supporting geographic information, such as cross streets or important landmarks, are not available to inspectors. On the data side of the operation, survey progress can only be reported as incomplete or complete, and after the data have been collected, there are difficulties in uploading to FDOT's GIS system for viewing or analysis.

FDOT contracted with Applied Research Associates, Inc., (ARA) of Camp Hill, Pennsylvania, to develop software that would address shortcomings of the current system and interface more smoothly with the GIS system being developed by FDOT. The result was a software package, XPCS (Extended Pavement Condition Survey), which features three components: a new database structure which contains historical as well as current PCS data and which integrates more easily with the GIS; a mobile component of the software used by the inspectors to navigate to the test sites, collect, verify and store data in the onboard computer; and an office desktop application that serves as a user interface between the mobile component and the database and is used for data synchronization,



The Pavement Condition Survey is conducted by operators using specially equipped vans.

analysis, and reporting.

Software development proceeded by standard stages. First, ARA conducted interviews with SMO staff and participated in survey ride-alongs to gain a full understanding of the daily work and operation of the data collection system. Interviews with lead staff at SMO helped to identify the desired improvements and functionality the software needed to meet, which were formalized in a Software Requirements Document (SRD). After discussion and revision of the SRD, the ARA team developed the Software Design Document (SDD), which defines the data structure and specifications necessary for creating the software system and defines how each requirement in the SRD will be met. The ARA team developed the office and mobile components of the software, followed by a testing phase of these software components.

The streamlined operation of this new software promises to make the Pavement Condition Survey more efficient and accurate, leading to better planning and more timely maintenance of Florida roads.

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For more information, visit <http://www.dot.state.fl.us/research-center>