Successful Implementation of A GPS Enabled Handheld-based Pavement Coring and Condition Evaluation System

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Evaluating pavement surface distress and sub-surface structural conditions is a crucial step towards determining the appropriate rehabilitation treatment. Cores and surface condition surveys are routinely used to determine the condition of the road, so as to provide recommendations, which may include milling, inlaying, or full-depth reconstruction, for example. In addition, maps, annual Computerized Pavement Condition Evaluation System (COPACES) surface distress ratings, historical records of pavement treatments, and traffic data are also essential in developing options for proposed rehabilitation treatments. All this data are currently placed in data silos, which are difficult to access. Integrating this wealth of information into a single repository with the use of geographic-based co-ordinates is the most logical long-term goal to provide a shareable database for the entire Georgia Department of Transportation.

The Pavement Management Branch (PMB) of the Georgia Department of Transportation (GDOT) has begun this integration by taking the first step by developing an enhanced pavement coring and condition evaluation system using a handheld GPS data collector and GPS digital camera. The system has been developed on a TrimbleTM GeoXH handheld device with sub-foot GPS accuracy to streamline the data collection of pavement coring and pavement surface distress evaluation. Through its successful implementation, the data quality and productivity has been improved. To integrate the on-site images of cores and surface distresses with the collected data, a prototyped real-time image transfer was also developed by using a RicohTM 500SE digital camera with built-in Wi-Fi capability. The integrated data transfer system eliminates the efforts for image browsing and automatic image processing to automatically extract pavement layer thickness, type of materials and cracking types and depths in the future research.