

# Road Evaluation

## Kentucky Transportation Center Conducts Interstate Condition Assessment

### The Project

**The Kentucky Department of Transportation requested pavement assessment of a questionable section of Interstate 65. The information from the five mile area to be inspected would be used to assist designers in the event this section of roadway had to be reconstructed or rehabilitated.**

### Project Description

GSSI's GPR was selected as the best method to determine pavement layer thickness, sub-grade thickness, and an approximation of the sub-grade moisture variability.

Two 900 MHz antennas were used to collect data at three scans per foot. With this method, the data collected was used to show degrees of moisture saturation within the pavement. GPR was also used to determine concrete thickness on three of the six highway lanes. The depth of the sub-grade material and its material composition was also measured with the system.

### Outcome

Several sections of the concrete paving surface on I-65 were identified to be areas of concern. GPR showed many areas to have less than four inches of dense grade aggregate (D.G.A.) beneath the concrete surface, which is a concern because they could become saturated in the future and require extensive repair. Differential settlement was also shown to occur between different driving lanes. Therefore, it was expected that the existing tie assemblies between lanes would not provide adequate support to deter further settlement.

Positive conclusions were also drawn from the GPR assessment. The transverse dowel bars were found to be in good condition, and most areas appeared to have adequate depths of D.G.A. material. The load-transfers over the transverse joints were also found to be in an acceptable range for the tested section. Lastly, the concrete thickness for the project was an average of 10.5 inches or greater.

With GPR as an aid, the overall analysis by the researchers revealed that joint spalling and inadequate drainage were the main issues. It was also recognized that these issues were not caused by inadequate D.G.A., load-transfers or thin concrete. The recommended procedure was to use an unbonded concrete overlay instead of asphalt since it would provide the best results.



**The World Leader in  
Subsurface Imaging™**

Courtesy: University of Kentucky,  
Transportation Research Center  
Lexington, Kentucky USA  
[www.engr.uky.edu](http://www.engr.uky.edu)