

Intelligent Pavement Assessment Vehicle for Structural and Functional Evaluation of Road Pavements

Roads are generally designed and built based on strength characteristics or bearing capacity, but generally managed according to their functional condition, as strength is difficult and expensive to measure on a routine basis. Until now, overall pavement condition has been largely determined using evenness, or IRI, which assumes that if a road is smooth, the pavement is not in a state of structural distress and has not exceeded its bearing capacity. However, experience shows that the inverse can also be true.

Having a complete dataset, incorporating information of the pavement below and above the surface, enables the road asset manager to better understand its condition. This dramatically improves decision making in managing the road network. Road agencies in North America, Europe, South Africa, China, Australia and New Zealand are now using iPAVe as a tool to collect pavement stiffness properties, at traffic speed, on a yearly basis, along with associated synchronized and simultaneous collected surface condition data.

Combining pavement structural and surface data, enables the identification and cause of pavement failure much easier, providing a powerful tool, in managing pavement condition and providing a solid background for robust infrastructure maintenance strategies.

The unique capability of continuous high accuracy and high-resolution data enables infrastructure managers to pinpoint areas where pavement structure is subject to failure. The collection of structural and surface condition data simultaneously, at traffic speed, provides a comprehensive assessment of infrastructure condition, enabling an effective and intelligent management of road infrastructure assets.

The paper presents:

- The ability and benefit of collecting structural (pavement strength) and functional (surface condition) in a single pass.
- How integrated structural and functional pavement characteristics can be presented in a user- friendly application.
- How structural and functional data sets can be filtered to enable the identification of critical areas in road infrastructures.

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