

## JUST THE FACTS

**Implementation of Rolling Weight Deflectometer (RWD) in PMS and Pavement Preservation****Start Date:**

July 1, 2009

**Duration:**

15 months

**End Date:**

September 30, 2010

**Funding:**

State

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225-767-9162**PROBLEM**

The current pavement management system for the Louisiana Department of Transportation and Development (LADOTD) is based on pavement condition data that are collected bi-annually using the Aran System, which provides a continuous assessment of the road network. Conditions of the pavement are assessed using cracking, rutting, roughness, patching, and faulting data. Collected data are then analyzed to calculate a composite performance index on a scale from 0 to 100. A number of threshold values are also used to trigger a specific course of maintenance and rehabilitation (M&R) actions.

The LADOTD pavement management system may be substantially improved if the structural conditions of in-service pavements are considered in selecting suitable treatment methods. This may help to avoid applying routine preventive treatment techniques on structurally deficient pavements. Surface deflection is a popular method used to determine the structural capacity of in-service pavement without the need to remove or disturb the existing pavement. Deflection measurements have also been widely used in pavement management activities. At the project level, deflection measurements are used to identify distressed pavement locations and for overlay pavement design. At the network level, deflection testing has mainly been used to identify uniform and homogeneous pavement sections. However, due to the cost and slow falling weight deflection (FWD) testing process, the use of deflection testing in network pavement management system (PMS) activities has been limited. In addition, delays due to lane closures



**Figure 1**  
Rolling Weight Deflectometer  
and Falling Weight  
Deflectometer

**SPECIAL POINTS OF INTEREST:**

- Problem Addressed
- Objectives of Research
- Methodology Used
- Implementation Potential

may compromise the safety of the traveling public and highway workers, which may not justify the worth of the collected data.

The use of the rolling wheel deflectometer (RWD), which measures deflections at highway speeds, offers the potential to characterize the structural capacity of the road network without major delays and in a cost-effective way. LADOTD is in the process of conducting RWD continuous deflection measurements in District 05. Through the proposed research activities, evaluation of the RWD in Louisiana will be conducted and collected data will be analyzed to incorporate measured deflection into the existing PMS via the geographic information system (GIS). Proposed research activities will also assess the potential use of RWD to characterize the structural conditions of the road network and to identify structurally deficient pavements.

### **OBJECTIVES**

The objective of this project is two fold. First, this project will develop a methodology to integrate collected RWD data into the existing pavement management system via the geographic information system. Second, collected data will be used to validate RWD technology and assess structural conditions of existing pavements using the RWD and to identify structurally deficient pavements.

### **METHODOLOGY**

To achieve the aforementioned objectives, the proposed research activities are divided into two phases. In the first phase, RWD and FWD measurements will be collected and incorporated into the existing PMS by developing graphs and deflection-based GIS maps that may be used in identifying structurally deficient pavements. In the second phase, a relationship between FWD deflection data and RWD measurements will be established and an analysis scheme will be developed for using RWD measurements as a tool to select treatment methods for structurally deficient pavements.

### **IMPLEMENTATION POTENTIAL**

The research results from this project can be used by the state of Louisiana to update current practices used in pavement management and in the selection of cost-effective treatments in rehabilitated pavements. To encourage implementation of the results, the research team will present their findings at the Louisiana Transportation Conference as well as national meetings.