

Project Summary

Objective

The objective of this study is to improve the quality and increase the quantity of monitored traffic data (volumes, classifications, and weights) at the Long-Term Pavement Performance (LTPP) Specific Pavement Study (SPS) -1, -2, -5, -6, and -8 test sites. There are a total of 64 SPS-1, -2, -5, and -6 test sites and 20 SPS-8 sites throughout North America. This multi-year study will attempt to collect **research quality data** by installing a Bending Plate, Load Cell, or Quartz Sensor at as many of these SPS sites. For the purpose of this study, *research quality data is defined to be at least 210 days of data (in a year) of known calibration meeting LTPP's precision requirements for steering and tandem axles, gross vehicle weight, speed, and axle spacing.*

Technical Approach for Meeting Objective

Due to the magnitude of this work, the study will be divided into two concurrent phases. Phase I will consist of assessing existing Weigh-in-Motion (WIM) equipment that has the potential for meeting LTPP's precision requirements and performing annual field validations on newly installed and existing WIM equipment. Phase II will involve determining if a site is suitable for installing a WIM system, installing and maintaining a new WIM system, performing the initial calibration for a newly installed WIM system, downloading and performing validation checks for the previous day's data for the site, and providing a five-year warranty of the system after acceptance of the site by the Federal Highway Administration (FHWA). Two contractors will be selected to perform the Phase I and Phase II activities.

From a performance perspective, the preference is to have every WIM installed in 400-feet of rigid pavement. The rigid pavement will provide the smoothness needed as vehicles pass over the WIM. Smoother pavements provide more accurate and less variable measurements. The pavement needs to remain free of any surface distress (such as rutting) that might influence the motion of vehicles as they pass over the WIM, hence affecting the quality of data collected by the system. Regardless of the type of pavement (flexible or rigid) the WIM is installed in, the smoothness of the WIM location must be checked each year. One method that can be used to check the WIM location's smoothness is to use a high speed profiler. The results from the high speed profiler can then be entered into the LTPP WIM Smoothness Index software to verify the pavement's smoothness.

Use of Funding Contributions

This pooled fund study offers a unique opportunity for highway agencies to participate in an effort to significantly advance the state of the practice for traffic data collection. It is uncharacteristic for a pooled fund study in that an agency's contribution to this work will be used at that agency's SPS test site(s).

The highway agency will have the option to contribute funds for the Phase I and Phase II activities, and the construction of the concrete slab. The design and construction of the concrete slab is the responsibility of the highway agency. An agency can contribute to Phase I without contributing to Phase II as long as the agency-installed WIM system meets LTPP's precision requirements for providing research quality data. However, an agency that contributes to have a new WIM system installed (under Phase II) must also contribute to the annual field validations of the system (under Phase I).

Although the study is targeted to the SPS-1, -2, -5, -6, and -8 highway agencies, participation by non-SPS agencies is encouraged considering the benefits to be derived will be of value to every highway agency. Contributions by non-SPS agencies will be used to help defray the national cost for this work. Such costs will include holding an annual meeting of the appointed Technical Advisory Committee (TAC) members to discuss the progress of the study and to make any necessary adjustments in order to meet the objective of the study. Participating agencies are authorized to use 100 percent of State Planning and Research (SP&R) funding for this study (including the construction of the concrete slab for the WIM system).