LONG-TERM PAVEMENT PERFORMANCE
Knowledge into Action... Performance Data for Pavement Innovation

FHWA LTPP Specific Pavement Study (SPS) Traffic Data Collection Pooled-Fund Study, TPF-5(004)

Objective
The objective of this study is to improve the quality and increase the quantity of monitored traffic data (volumes, classifications, and weights) at select LTPP SPS-1, -2, -5, and -6 test sites. Bending Plate, Load Cell, and Quartz Sensor Weigh-in-Motion (WIM) systems are being used to collect this research quality data. For the purpose of this study, research quality data is defined to be at least 210 days of data (in a year) of known quality meeting LTPP’s precision requirements for steering and tandem axles, gross vehicle weight, vehicle length, speed, and axle spacing.

Annual calibration (Phase I) of the WIM systems is an extremely important component of this study. The calibrations are performed to ensure that the systems are operating at peak performance. In addition, the data collected by these systems are examined daily to make sure there are no drifts or unexpected changes in the data (Phase II).

Timeline

<table>
<thead>
<tr>
<th>Phase I</th>
<th>Phase II</th>
<th>14 WIM Installations</th>
<th>New Phase I</th>
<th>2012 TAC Annual Meeting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contract Awarded</td>
<td>Contract Awarded</td>
<td>Installations To Date</td>
<td>Contract Awarded</td>
<td>Annual Meeting</td>
</tr>
<tr>
<td>Proposal to Nationalize WIM</td>
<td>34 Sites Assessed for WIM</td>
<td>1st WIM Installation</td>
<td>All 26 WIM Installations Completed</td>
<td>New Phase II Contract Awarded</td>
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<td>10/2012</td>
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<tr>
<th>Phase II Contract Awarded</th>
<th>Pooled-Fund Study Ends</th>
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Weight Data Before: 2001

- Empty and Loaded Peaks Shifted
- Loaded Trucks Weights Too Heavy
- Sensors that are Temperature Sensitive
- Ceramic Piezo Error (95% Confidence)
  - Gross Weight: ranges from -18% to +30%
  - Tandem Axles: ranges from -26% to +41%
  - Single Axles: ranges from -31% to +38%
- Items of Concern

Weight Data After: 2005

- Loaded and Unloaded Peaks consistent
- Sharp drop of overweight trucks
- Very little variance by temperature
- Much better accuracy:
  - Gross Weight: 0.2% +/- 8.2%
  - Tandem Axles: 0.0% +/- 10.2%
  - Single Axles: 1.2% +/- 10.0%

Areas of Improvement

- Leveraging the LTPP Experience for Collecting Quality WIM Data - Did you know that LTPP has quality WIM data ready for you to use? Collecting high quality traffic data requires time and money. That’s why FHWA wants you to know we are doing this and we may have the traffic data for your particular design or research needs. Get this high quality traffic data by contacting LTPP Customer Support Service Center at ltppinfo@dot.gov.