

Tools to Detect Pavement Surface Irregularities During Construction

New tools measure concrete pavement smoothness

Ride smoothness is an important performance measurement of user satisfaction, as well as a good measure of concrete pavement durability. Specifications used by state and local departments of transportation (DOTs) include this quality requirement for their concrete pavements. Measuring pavement smoothness during construction, rather than after the concrete sets, allows immediate remediation, resulting in a better quality product and reduced need for expensive grinding.

Real-Time Smoothness Measurements on Portland Cement Concrete Pavements During Construction

The Solution

A project of the second Strategic Highway Research Program (SHRP2) evaluated tools to measure concrete pavement smoothness in real time during construction and developed model specifications and construction guidance to expedite the implementation of these technologies.

These tools have the potential to improve process control. In addition, they allow adjustments of equipment and operations to correct surface irregularities while the concrete is still workable. The results are **higher quality, lower cost, and faster construction, with less impact on the traveling public.**

The Benefits

State and local DOTs, contractors, and the traveling public will benefit from these tools. Smooth concrete pavements have been shown to be more durable, with reduced maintenance and rehabilitation costs. In addition, DOTs recognize that smooth-riding pavements minimize collisions from vehicles losing control on rough pavements. **When contractors do not have to grind rough areas or replace sections of concrete pavement, costs, time, and driver delays are minimized.**

Who has tested these tools?

Seven potential measurement devices were identified and studied. Two of the devices were found to warrant subsequent evaluation and demonstration: the GOMACO Smoothness

Real-time measurements help build smoother concrete pavements

FOCUS AREA: Renewal (R06E)

Tools to measure concrete pavement smoothness during construction were evaluated. Model specifications and guidelines were developed.

Save Lives

- Eliminating pavement grinding and remediation means less exposure to work zone hazards for drivers and workers.

Save Money

- Measuring smoothness during construction avoids costly correction solutions such as grinding.

Save Time

- Correcting smoothness during construction prevents time-consuming rework in the future.

Indicator and the Ames Engineering Real-Time Profiler. The devices were evaluated during concrete paving projects in Georgia, Arkansas, Texas, Michigan, and New York.

How can you learn more?

The final report for this project will be available through the TRB bookstore in 2013 at www.trb.org/SHRP2/publications. For more information, contact Gary Crawford at FHWA, Gary.Crawford@dot.gov or Greta Smith at AASHTO, gsmith@ashto.org.

About SHRP2 Implementation



The second Strategic Highway Research Program is a national partnership of key transportation organizations: the Federal Highway Administration, the American Association of State Highway and Transportation Officials, and the Transportation Research Board. Together, these partners conduct research and deploy products that will help the transportation community enhance the productivity, boost the efficiency, increase the safety, and improve the reliability of the Nation's highway system.

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