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Department of Transportation



UNIVERSITY OF
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SUMMARY REPORT

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Columbia, SC 29202

DEVELOPMENT OF PROFILER- BASED RIDEABILITY SPECIFICATIONS FOR ASPHALT PAVEMENTS AND ASPHALT OVERLAYS

This report summarizes a study undertaken to develop new asphalt concrete pavement rideability specifications for the South Carolina Department of Transportation (SCDOT). The study included a review of current SCDOT rideability testing equipment, specifications and test procedures, a literature review and survey of state highway agency practice, purchase of two non-contacting inertial profilers, and data collection and analysis. Current SCDOT rideability specifications are based on Mays Ride Number (MRN).

An outcome of this research is proposed draft profiler-based rideability specifications and general guidelines for rideability testing for new asphalt concrete pavements and new asphalt concrete overlays. International Roughness Index (IRI) is used to quantify rideability.

The proposed specifications are based largely on correlations with MRN and current SCDOT Mays Ride Meter specifications, consideration of IRI-based specifications used by other agencies, and, to a lesser degree, past performance of SCDOT contractors. It is not known if the proposed specifications are optimal in terms of the SCDOT's rideability testing resources or most effective in terms of pavement life-cycle costs.

For new asphalt concrete pavements the proposed IRI value for full payment is 65 inches/mile. One tenth of a mile (528 ft) segment lengths are recommended. Consistent with current SCDOT Mays Ride Meter specifications, payment adjustments are proposed for final IRI values below 55 inches/mile or above 65 inches/mile. For new asphalt concrete overlays the proposed IRI value for full payment varies with the measured smoothness of the existing (pre-overlay) pavement. Consistent with current SCDOT Mays Ride Meter specifications, payment penalties are proposed for final IRI values exceeding the allowed maximum value established by the pre-overlay IRI.

For reasons discussed in the final report, it is recommended that the SCDOT implement the proposed draft specifications on a trial basis. Refinements to the proposed specifications may be deemed necessary or desirable during or after the trial implementation period. Despite some reservations about the repeatability and reproducibility of profiler output, profilers are believed to hold great promise for efficient construction quality control.

This research project was conducted at the University of South Carolina by Ronald L. Baus, Ph.D. and Wei Hong.
For further information, contact Terry Swygert at SCDOT: (803) 737 6652; swygerttl@scdot.org