RESEARCH
PROJECT CAPSULE [14-1PF]
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TECHNOLOGY TRANSFER PROGRAM

Best Practices for Achieving and Measuring Pavement Smoothness, a Synthesis of State-of-Practice

JUST THE FACTS:

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POINTS OF INTEREST:

Problem Addressed / Objective of Research / Methodology Used Implementation Potential

The RAC Region II has initiated a collaborative research program consortium through the Transportation Pooled Fund (TPF) Program. The research program is called the Southeast Transportation Consortium (STC) and is intended to encourage coordination among member states, as well as provide resources and management of collaborative studies. The consortium intends to address high priority transportation research topics of common interest to the southeastern and adjoining states. Louisiana serves as thelead agency in the STC.

PROBLEM

Pavement smoothness specifications have evolved significantly over the past decade. More and more states are moving away from profilograph-based smoothness specifications to IRI-based specifications. Unfortunately, a limited history with the usage of IRI-based specifications has led to some confusion over how best to structure a specification in terms of test methods and profiling equipment, thresholds for full pay/incentive/disincentive, and requirements for localized roughness or "must correct" areas. This limited history has also led to contractors who were used to profilograph-based specifications struggling to achieve the same level of quality under IRI-based specifications. Therefore, there is a need to synthesize best practices for achieving desired smoothness levels under IRI-based specifications, and a further need to synthesize best practices for structuring IRI-based specifications such that they can be incorporated as needed into local practice.

OBJECTIVE

The objective of this research is to provide a synthesis of state-of-practice that will summarize existing practices for achieving the desired ride quality for asphalt and concrete paving. The specific goals of this synthesis will be to document and summarize ongoing and completed research in this

area; best construction practices/techniques for achieving required pavement smoothness; agencies' specifications and criteria for pavement smoothness (e.g., test methods and requirements for measuring IRI, payment thresholds, must correct criteria, etc.); and educational and training best practices for DOT and contractor personnel.

METHODOLOGY

The synthesis will be generated by mining information from various sources. A literature search will be conducted to first identify any ongoing and completed research related to ride quality and the current state-of-the-practice for measurement of IRI, data processing, payment thresholds, and localized roughness. Along with the literature search, the project team will document current agency practices with respect to specifications and test methods. The researchers will begin with a survey of the Southeastern Transportation Consortium (STC) states, followed by a survey of other agencies (state and federal) using IRI-based smoothness specifications. Key information to be gathered from the literature search and surveys will be any lessons learned through previous research and agency practice under actual construction contracts. This information will help to supplement the next aspect of the synthesis, which will be documentation of best practices for construction. While best practices for constructing smooth pavements have been well documented for both asphalt and concrete paving, there are certain aspects of paving operations that have implications for paving under IRI-based specifications, and they must be addressed and documented. The information gathered from each of these components of the proposed research will be summarized into a final synthesis report.

IMPLEMENTATION POTENTIAL

If it is found that particular states have reaped the benefits of smoother pavement as a result of effective IRI-based smoothness requirements, test methods, and contractor and DOT training, the others within the STC may wish to adopt similar standards and practices. These benefits may include a reduction in disincentives and must-correct areas on projects, fewer complaints about ride quality from the traveling public, and overall improvement to pavement system performance. Implementation of the findings may include adjustments to current specifications, test methods and/or profiling equipment requirements, or simply improved training programs for contractors and DOT personnel to help ensure success in achieving smoothness requirements.