



Project Summary

Texas Department of Transportation

0-6668: Synthesis of Microsurfacing Successes and Failures

Background

This project sought to identify and analyze best practices regarding the use of microsurfacing in Texas. Microsurfacing has been studied over the last thirty years and best practices have been developed, but have never been synthesized and analyzed specifically for application on Texas roadways. Texas Department of Transportation (TxDOT) understandably desired to determine whether microsurfacing is an efficient, effective and worthwhile preventative maintenance treatment for pavements which they are required to maintain. Experiences with microsurfacing in Texas have been interestingly mixed with the majority of TxDOT personnel regarding it as a worthwhile treatment in the right applications, but with a few strong opponents to the treatment. In order to understand the true state of microsurfacing performance in Texas, develop best practices specific to the state, and create suggestions for future direction with the treatment, this synthesis study was commissioned and tasked with accomplishing the aforementioned goals.

What the Researchers Did

The research team initiated this project by conducting a thorough review of literature. From this review, pertinent information was summarized and then used to create a survey on the topic of microsurfacing. Assistance in developing the survey was sought and received from members of the microsurfacing community in Texas, both on the agency side and contractor side. Two versions of the survey, one for TxDOT personnel and one for contractors, were developed and distributed. Once the results were gathered, four locations for site visits to existing microsurfacing projects were identified, and the visits were accomplished. Finally, the research team synthesized all of the data and reported their findings, conclusions and recommendations.

What They Found

The research team found that microsurfacing performs well in Texas when applied to the right pavement for the right distress at the right time. Spectacular failures of cape seals that occurred in Texas in the 1990's negatively impacted the understanding of microsurfacing in Texas, but the majority of personnel currently report positive experiences with the treatment. Microsurfacing is particularly well suited for correcting surface friction characteristics, rutting, bleeding and raveling. Microsurfacing will not effectively address fatigue or reflection cracking, potholes, delamination, permeability, poor construction joints or corrugation.

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Similar to national best practices, microsurfacing in Texas needs a structurally sound pavement upon which it is applied in order to perform well.

As a preventative maintenance treatment, project selection, contractor experience and workmanship are the most important factors in the success of a microsurfacing. Interestingly, however, the contract structure and technical requirements of microsurfacing result in TxDOT personnel feeling inadequate in selecting appropriate projects, thereby placing them in a vulnerable position by relying on contractors for input into the selection of projects. Increased education of TxDOT personnel will lead to greater agency control over the success of microsurfacing projects by empowering employees to make informed decisions regarding when and where to apply the treatment.

What This Means

Based upon the results of this project, the research team recommends the establishment of more specific criteria for roadways that are acceptable candidates for microsurfacing. Additionally, it is recommended that TxDOT implement a course on microsurfacing to educate relevant personnel on project selection, construction and equipment practices, materials and mix design methods, and contract structure for microsurfacing. This course would benefit the agency in ensuring that microsurfacing is applied to the right pavement for the right distress at the right time. Lastly, it is also recommended that more microsurfacing be utilized earlier in the life of a roadway in order to prevent deterioration, resulting in savings over time for the agency as these roads will last longer. If these recommendations are followed, microsurfacing will be a useful tool in the TxDOT toolbox.

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