

0-7188: Synthesis: Pavement Widening Best Practices

Background

Premature pavement failures have occurred on several widening projects, including shoulder widenings, conversion of two-lane roadways to Super 2 sections, and other safety enhancements. Repairing these early failures is time consuming and expensive, disrupts traffic, and poses safety hazards. Key contributing factors include poor-quality materials, poor joint construction, and inadequate drainage. These issues could have been avoided through proper pavement condition assessment, design, and construction practices; but detailed guidance on the methods to employ, which can be project specific, is not readily available to district personnel. Therefore, there is a need to document and implement better widening practices across the Texas Department of Transportation.

What the Researchers Did

The research team performed a literature review to determine the current state of the practice and emerging approaches on the following pavement widening topics:

- Pre-design pavement evaluation, sampling, and testing.
- Pavement layer and cross-section design practices.
- Material performance, availability, and selection practices.
- Plans, specifications, and estimates (PS&E) development.
- Construction methods and sequencing.

A survey of district personnel was performed to document experiences with pavement widening. Finally, four widening projects were evaluated: two narrow (less than 7 feet) and two Super 2 projects with one each in good and poor condition.

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What They Found

The research team assembled guidelines to document the best practices for pavement widening. The guidelines include the following:

- Typical failure mechanisms.
- Pre-design project evaluation.
- Pavement design.
- Materials.
- PS&E requirements.
- Construction considerations.

A plan for further research was developed.

What This Means

The results of this research will provide information that enables the districts to evaluate, design, and construct long-lasting widened pavements. Future research needs were identified to further improve the quality of pavement widening projects.

For More Information

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