TEXAS STATE UNIVERSITY
SAN MARCOS
The rising STAR of Texas

PROJECT SUMMARY

Texas Department of Transportation

0-6677: Costs Associated with Conversion of Surfaced Roads to Unsurfaced Roads

Background

Conversion of roadways from a surfaced type to an unsurfaced type in order to achieve agency cost savings is currently being studied and practiced in select regions in other states. Conversion from surfaced to unsurfaced may be a more economical option for low-volume roads. In Texas, the Texas Department of Transportation (TxDOT) manages tens of thousands of miles of low-volume roads, and wishes to know if conversion of those roadways could save significant money in maintenance over time. Currently TxDOT has no unsurfaced roads, but low-volume roads often carry less than 200 vehicles per day, prompting interest in agency cost saving if these roads were converted to a gravel surface.

What the Researchers Did

The research team first had to determine and obtain relevant cost data related to building and maintaining both types of roads. Because there are many different costs to consider, it was first verified with the sponsoring organization that the research included *only* agency costs and did not include user costs. The research team worked with TxDOT to establish a realistic construction plan, complete with schedule, equipment list, and a general maintenance plan for 1 lane-mile. Once all of the production elements were established, cost data were gathered and baseline construction costs were calculated. Using road deterioration modeling program HDM-III, annual maintenance costs were generated over a 25-year analysis period. Using real average daily traffic (ADT) for each district as the independent variable, the point at which it was the same cost to maintain both a surfaced and unsurfaced road was established for each district (see Figure 1). This allowed the research team to see at what ADT a surfaced road in a particular district could be maintained for less than the cost of an unsurfaced road.

Research Performed by:
Texas State University–San Marcos

Research Supervisor:
Soon-Jae Lee, TSUSM

Researchers:
Steven Cade Humphries, TSUSM
Benjamin Broughton, TSUSM
Evan Humphries, TSUSM

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What They Found

For the state of Texas as a whole, when all districts are averaged together, the ADT break-even point is around 150 ADT. Beyond 150 ADT, it is more cost effective to maintain a surfaced road than an unsurfaced road. However, this number can be deceptive, as it varies greatly by district, and each district needs to be looked at on an individual basis for decision-making purposes. The cost of reconverting a road can easily outweigh the benefits obtained via maintenance cost savings to an unsurfaced road. There do seem to be places where conversion could be a viable option; however, these locations would have to be analyzed more exactly before any decision to convert could be made. Additionally, it should be noted that while this project pertained only to agency costs, feedback obtained during data gathering indicated that the conversion from surfaced to unsurfaced would be extremely unpopular with the public (users).

What This Means

It may be possible for the agency to save money on maintaining certain low-volume roads as unsurfaced roads. Each district would need to do an analysis similar to the one done in this study according to its specific materials and cost information, as this study used a general grade 4 rock to estimate costs, and it is understood that some districts may use other materials.

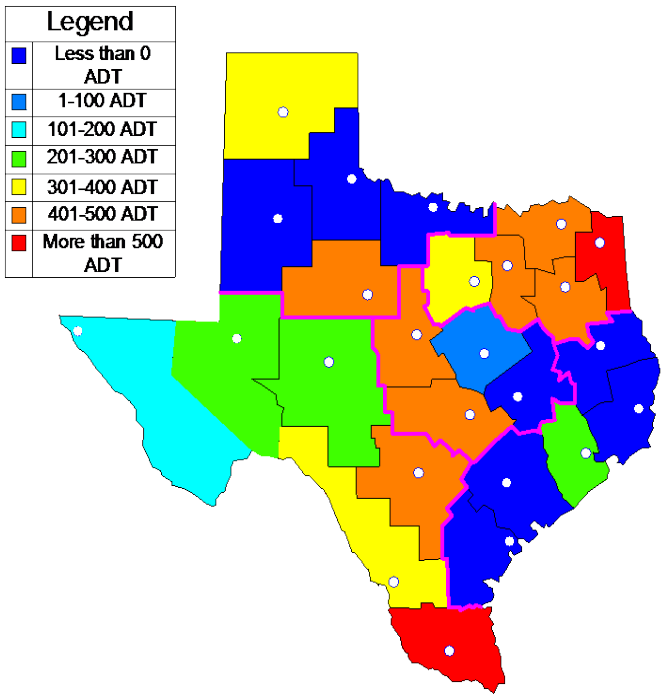

Figure 1. ADT Break-Even Point by District.

For More Information

Project Manager:
German Claros, TxDOT, (512) 416-4738

Research Supervisor:
Soon-Jae Lee, TSUSM, (512) 245-8525

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Research and Technology Implementation Office
Texas Department of Transportation
125 E. 11th Street
Austin, TX 78701-2483

www.txdot.gov
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