



# RESEARCH PROJECT CAPSULE [ 20-2B ]

November 2019

TECHNOLOGY TRANSFER PROGRAM

## Feasibility and Performance of Low-Volume Roadway Mixture Design

### JUST THE FACTS:

**Start Date:**

August 19, 2019

**Duration:**

24 months

**End Date:**

August 18, 2021

**Funding:**

SPR: TT-Fed/TT-Reg

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### POINTS OF INTEREST:

Problem Addressed / Objective of  
Research / Methodology Used /  
Implementation Potential

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### PROBLEM

An asphalt mixture for low-volume roadways must be easy to lay down and compact as well as have adequate durability and enough strength to withstand vehicular traffic. The Louisiana Department of Transportation and Development (DOTD) has introduced an asphalt mix design specification for roadways with average annual daily traffic under 1000 vehicles.

The specification reduces the number of roller passes needed to achieve acceptable density of the compacted asphalt mixture, thereby providing savings of time and cost. This specification also contains a payment adjustment schedule based on the average roadway density of the asphalt lot, rather than the percent within limits (PWL) pay schedule.

It is important to evaluate the performance of these recently paved low-volume roadways and assess the effect of the new payment adjustment schedule.

### OBJECTIVE

The objective of this research is to evaluate the production practices and construction feasibility of the DOTD low-volume roadway mixture design and to analyze the performance of pavements constructed with these mixtures. Analysis of the payment adjustment schedule will also be performed.



Figure 1

A low-volume roadway entering Vermilion Parish, LA  
Reference: [https://en.wikipedia.org/wiki/Louisiana\\_Highway\\_82#/media/File:LA82wRoad-EnterVermilionParish.jpg](https://en.wikipedia.org/wiki/Louisiana_Highway_82#/media/File:LA82wRoad-EnterVermilionParish.jpg)



Figure 2

A drum roller compacts a freshly laid asphalt roadway  
Reference: <http://www.stpgov.org/residents/news/item/4096-st-tammany-parish-government-chooses-bond-firm-for-infrastructure-investments>

## METHODOLOGY

Multiple resources will be used to obtain the data needed for sufficient analysis of the low-volume mixtures. Roadway conditions prior to paving with the low-volume mixture will also be considered.

Data will be collected from LaPave, the DOTD online pavement management system, and samples will be collected from various contractors for laboratory testing. An assessment of construction feasibility will be made based on these findings.

Performance data for these low-volume roadways will be obtained by visual inspections. A correlation between performance and the payment adjustment schedule may be established based on these findings.

## IMPLEMENTATION POTENTIAL

The low-volume mixture design has already been included in the DOTD standard specifications. Evaluation of its performance and cost effectiveness may result in recommendations for revision of the payment adjustment schedule.



Figure 3

A construction crew operates an asphalt paver

Reference: <https://www.forconstructionpros.com/asphalt/pavers/article/21026879/what-to-know-when-buying-an-asphalt-paver>