

Evaluating the Effect of Heavy Sugar Cane Truck Operations on Repair Cost of Low Volume Highways

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Problem

A 1999 study performed for the Louisiana Governor's Oversize and Excess Weight Vehicle Task Force showed that the cost of roadway damage produced by trucks hauling overweight loads of sugar cane far exceeds the \$100/year/vehicle charged for the harvest overweight permits. Damage is greatest on roads designed for light land-access traffic. Since the cost of damage to these roads exceeds

the price paid to travel on them, these overweight vehicles are essentially subsidized by the Louisiana legislature, which regulates vehicle weight as well as cost of overweight permits. At the present time, the magnitude of this subsidy is unknown. However, the burden of roadway repair payments is borne by the Louisiana Department of Transportation and Development (LADOTD) and parish police juries, in the case of parish roads.



Sugar cane truck on low volume highway



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Solutions to control the damage produced by these legally overweight vehicles may include the following: a) increasing the number of axles per truck in order to reduce the magnitude of individual axle loads carried by the pavement, b) reducing allowable gross vehicle loads from 100,000 pounds to 80,000 pounds, eliminating permits for overweight trucks (this solution requires legislative approval), c) increasing pavement structure to handle 100,000 pound loads, and d) decreasing the time between major rehabilitations of the roadways.

Each of the aforementioned options has an economic cost associated with implementation. This research project will determine the magnitude of the costs associated with each option.

Objective

This research will a) assess damage to low volume roads caused by heavy sugar cane trucks, b) estimate costs to rehabilitate the roadways, c) develop truck axle configurations that produce less pavement damage, and d) perform economic analysis and impact assessment for alternate pavement management plans.

Description

After identifying the roadways that are most affected by the transport of sugar cane, researchers will assemble models for predicting pavement dis-

tress based on anticipated loads. These model predictions will be coupled with a logic system that will select maintenance/rehabilitation options best suited to rectify each distress. The unit cost of each maintenance/rehabilitation option will be included. The models will be assembled into a computer program that will produce net present costs of the various strategies for repair or reconstruction.

In an effort to identify methods for reducing roadway damage caused by heavy truck loads, alternative trailer axle configurations will be considered. Trailer manufacturers will be consulted to estimate costs that would result from potential axle modifications. The estimated costs for repair/reconstruction of the roadways and possible modification of trailers will be included in the economic analysis.

Implementation Potential

LADOTD will be able to use the computerized pavement distress prediction model to estimate future maintenance/rehabilitation costs for roadways used to haul sugar cane. With this data, the state legislature may make more informed decisions regarding appropriate assessment of roadway user fees.