Research Project

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Capsule

LTRC

Technology Transfer Program

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Analysis of User Waiting Costs for Construction Projects on Louisiana's Interstate Highway System

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LTRC

Louisiana Transportation Research Center

Sponsored jointly by the Louisiana Department of Transportation and Development and Louisiana State University

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Problem

The Louisiana Department of Transportation and Development (LADOTD) uses life-cycle cost analysis techniques when making decisions for the investment of taxpayer funds in transportation systems.

LADOTD is using a new innovative bidding technique incorporating user delay times and life cycle costs to determine the most appropriate pavement surface, asphalt or concrete. In A+B+C bidding, the low bidder for the contract and thus the pavement alternative constructed is determined by adding together the contract construction cost (A), the daily road user cost (B), and the life-cycle adjustment cost relative to the pavement alternate (C). The contractor determines the bid for part "A" based on material and labor costs for his chosen pavement alternate. The number of days the contractor will need to construct the project is designated as part "B". This number is multiplied by an LADOTD daily road user cost to determine the bid price associated with the disrup-

Congestion in the work zone.

tion of traffic due to construction. Part "C" is the life-cycle cost associated with maintaining the pavement for the design life of the project, such as costs for repairs and overlays. The pavement life-cycle cost is determined by LADOTD for each pavement alternate. The user delay cost for part "C" is calculated by LADOTD using a Federal Highway Administration (FHWA) model.

The purpose of this study is to determine the suitability of using the FHWA model to accurately represent user delay costs for interstate highways in Louisiana. This study will evaluate user delay at designated interstate highway construction projects.

Objectives

The objective of this study is to assess whether the FHWA model accurately determines user delay costs on interstate highways in Louisiana. The results of this study will enable LADOTD personnel to evaluate the suitability of current procedures for determining the user delay component of contract costs.

Description

To accomplish the objective of this study, traffic flow data will be collected at several interstate highway construction sites using moving vehicle or floating car techniques. Traffic data will be collected before and after construction to allow evaluation of the effect of vehicles using alternate routes to bypass the construction zone.

The data collection effort will also allow validation of work zone capacity at congestion. At congestion, an increase in traffic density typically results in a capacity decrease, as vehicles are essentially forced to stop before proceeding individually into the work zone. Allowances for total blockage of the work zone will also be incorporated.

The knowledge gained from these data collection efforts will allow calculation of user delay costs for the encountered field situations. Results from the FHWA model will be compared to field data for validation of the model. Since the conditions for which a model is developed may not be appropriate for all situations, model validation is important.

Implementation Potential

Based on study findings, the suitability of using the FHWA model for determining user delay costs on Louisiana interstate highway construction projects will be evaluated. If appropriate, recommendations for improvements to the model will be made for use in the assessment of user delay costs for highway construction projects in Louisiana.