



EFFECTS OF WORK ZONE DETOURS ON RURAL  
HIGHWAY TRAFFIC OPERATIONS

by

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THESIS

Presented to the Faculty of the Graduate School of  
The University of Texas at Austin  
in Partial Fulfillment  
of the Requirements  
for the Degree of

MASTER OF SCIENCE IN ENGINEERING

THE UNIVERSITY OF TEXAS AT AUSTIN

December 1992



## ABSTRACT

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An evaluation of the effects traffic operations at two work-zone sites along a 4-lane divided rural highway was carried out using infrared sensors and retro-reflectors. Traffic studies about vehicle volume and speed characteristics during (1) construction activities and (2) after construction, revealed that the effects were different under two different work zone strategies, i.e. (a) permanent lane closures using concrete barrier, (b) temporary lane closures using barrel-type barrier. Vehicle speeds through work zones were influenced by truck volumes, total volume of traffic, and varies at different hours during weekday or weekend. Effects of lane closures and detours on additional road-user cost is small where congestions at rural highway work-zones seldom arise. Evaluation of traffic control signs proved them to be effective in reducing accident risks.

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## CHAPTER 1

### INTRODUCTION

#### ROAD DETOURS

Road detours are necessary to service traffic during lane closures. They are introduced during times when highways need to be maintained or rehabilitated, or when sections of the highway are in a condition not favorable to road users. Maintenance and repair operations which demand extensive roadwork involving lane closures and detours can adversely affect traffic flow and safety of road users and workers. These effects result when the introduction of lane detours reduces the level of service to a value less than that provided for normal highway operation.

Studies have shown that in construction zones, a lane closure creates traffic congestion in the zone and then restores capacity on the open roadway beyond the zone. This eventually leads to an increase in danger to drivers facing inconsistent and unfamiliar traffic and road situations. Workers and vehicle drivers alike at this so-called 'danger zone' will be exposed to severe accident risk if precautions are not taken to ensure the safety of all road users and workers in the construction areas. Delay of traffic in the congested lanes very often results in an increase in the vehicle operating cost and vehicle emissions. These issues are currently being emphasised by various government agencies.

Thus there is a need to address these problems in work zones especially

lacking. The study can be carried out with the purpose of improving the overall management of roadworks for the safety of long distance travelers to minimize inconvenience and reduce accident risks. In addition, study of traffic operations at these work zones can also be aimed at resolving potential conflicts that may exist between roadwork activities and the motorists' needs.