Analysis of Alternatives for Accommodating Trucks on Urban Freeways in Southern Nevada

Project Team
Hualiang (Harry) Teng, PI
Assistant Professor, Department of Civil and Environmental Engineering
Transportation Research Center
University of Nevada, Las Vegas
Howard R. Hughes College of Engineering
4505 Maryland Parkway, Box 454007
Las Vegas, NV 89154-4007

Mohamed Kaseko, Co-PI
Associate Professor, University of Nevada Las Vegas
Department of Civil & Environmental Engineering
Transportation Research Center
4505 Maryland Parkway, PO Box 454015
Las Vegas, NV 89154-4015

Valerian Kwigizile
Postdoc Researcher, Department of Civil and Environmental Engineering
University of Nevada, Las Vegas
Howard R. Hughes College of Engineering
4505 Maryland Parkway, Box 454007
Las Vegas, NV 89154-4007

and

Saidi Siuhi
Graduate Student, Department of Civil and Environmental Engineering
University of Nevada, Las Vegas
Howard R. Hughes College of Engineering
4505 Maryland Parkway, Box 454007
Las Vegas, NV 89154-4007

External Project Contact
None
**Project Objective**
The objective of this research study is to evaluate short-term operational strategies (e.g., truck restriction, truck only lane) in dealing with existing and near-term growth in truck traffic and long-term strategies (truck only toll and truckways with toll) to accommodate the future truck traffic on urban freeways in Las Vegas. In the evaluation, the mobility and safety benefits of various strategies on accommodating the existing and projected truck traffic in Las Vegas urban freeways will be quantified. Based on the comparison of the strategies with different truck flow forecasts in future, the best strategy for short-term and long-term on accommodating truck traffic on congested urban freeways will be recommended.

**Project Orientation**
Truck operation alternative evaluation

**Project Abstract**
To achieve the objective of the study, it is proposed to conduct both field observations and traffic simulation study. The field observation will quantify the safety hazards when truck and passenger vehicles are operated on mixed use lanes. In performing the field observations, videos of traffic including both trucks and general traffic cameras will be recorded at selected locations on the freeways in the Las Vegas area. Visual observations can be made based on the videos for hazard situations for accidents (e.g., a passenger vehicle running beside a truck, between two trucks, before a truck, or after a truck). The data derived from visual observations can than be analyzed. Traffic simulation can be used for evaluating both the safety impact and the mobility impact of different truck strategies. From the simulation model, the same type of data as those collected based on videos can be derived because simulation model can display the animated traffic. In addition, other criteria related to safety such as speed can be derived for longer period of time. To addition to evaluating safety impact, the traffic simulation model can be used to evaluate the operation situations and mobility performance of different strategies based on analyzing the relevant measures of effectiveness from the model.

**Project Task**
Task 1 Literature Review  
Task 2 Conduct Surveys  
Task 3 Forecast Demands  
Task 4 Field Study  
Task 5 Conduct Simulation  
Task 6 Final Report

**Project Milestones**
Literature review was completed  
Field observation data collection and analysis was completed  
Surveys were designed

**Total Budget**
$98,900
**Project Duration**
Start Date : 2007-09-01  
End Date : 2009-06-30

**Student Involvement**
Saidi Siuhi  
Graduate Student, Department of Civil and Environmental Engineering  
University of Nevada, Las Vegas  
Howard R. Hughes College of Engineering  
4505 Maryland Parkway, Box 454007  
Las Vegas, NV 89154-4007

**Relationship to Other Project**
None

**Technology Transfer Activities**
None

**Potential Project Benefits**
The level of service on the freeway network will continue to deteriorate as freeway volumes, including large trucks continue to grow. Already many freeway segments operate at level E or F for several hours on weekdays. This growth in freeway traffic will result in higher traffic densities, lower traffic speeds, longer travel times, and increases in crash rates. Other adverse consequences include increased fuel consumption and deterioration of air quality, together with all the corresponding economic loses. This project will lead to a more rational and cost-effective process to invest highway funds, a task that gets harder and harder to achieve these days because of revenue short-falls.