UTC PROJECT DESCRIPTION

PROJECT NUMBER: 07204

PROJECT TITLE: Managed Lanes: Current Status and Future Opportunities

PRINCIPAL INVESTIGATOR:
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PROJECT OBJECTIVE:
The objective of the proposed project is to develop a better understanding of managed lanes and their potential to address congestion issues in urban settings. Specifically, the project will:

- Identify and address key issues related to planning, implementation, and operation of managed lanes;
- Utilize traffic analysis tools (micro simulation, dynamic traffic assignment, etc.) to predict the impact of managed lanes strategies on traffic operations in the Birmingham area; and
- Conduct technology transfer activities to advance the implementation of managed lanes as a strategy to enhance traffic management and congestion mitigation.

PROJECT ABSTRACT:
Transportation agencies around the world are seeking ways to better manage the flow of traffic on existing transportation facilities. Typically, this has been done by using lane management strategies that regulate demand, separate traffic streams to reduce turbulence, and utilize available and unused capacity. In the recent years, application of such operational policies is evolving into the notion of "managed lanes". Managed lanes apply one or more of these elements to enhance the efficiency of use of a freeway facility. This study examines the potential role of managed lanes strategies in addressing traffic congestion issues in the Birmingham, Alabama metropolitan area. More specifically, the study first reviews the state of practice and summarizes best practices and lessons learned from earlier deployments efforts. Then the study examines the operational and economic impact of managed lanes implementation along selected Birmingham facilities. This is done through traffic simulation modeling and cost/benefit analysis. High-Occupancy Vehicle lanes, value priced lanes, and truck-only lanes are among the strategies being considered. This project will assist transportation agencies in the state of Alabama to improve current demand management practices and better meet local mobility and accessibility needs.

PROJECT TASK DESCRIPTIONS:
Task 1 - Literature Review: Review and synthesize technical literature to clearly define issues and challenges associated with implementation of managed lanes.
Task 2 - Model Selection: Compare and select appropriate traffic analysis tools with the ability to model a variety of managed lane strategies, including high occupancy lanes (HOV), and truck-only lanes. Particular attention will be focused on micro-simulation packages (such as TSIS) and high-end packages with dynamic traffic assignment (DTA) capabilities such as VISTA.
Task 3 - Data Collection and Processing: Obtain data required (such as traffic volumes, lane geometry, Origin-Destination (O-D) Matrices, etc.) and develop a simulation model of selected transportation facilities in the Birmingham area.
Task 4 - Data Analysis: Utilize the simulation model developed in Task 3 to examine traffic operations with and without the presence of managed lanes. Measure the impact from implementation using selected MOEs such as travel speeds, travel times, delays, and fuel consumption.

Task 5 - Estimate Benefits and Costs of Managed Lane Strategies: Use the ITS Deployment Analysis System (IDAS) software to estimate potential benefits and costs from the implementation of managed lane strategies in Birmingham.

Task 6 - Technology Transfer: Develop a final report summarizing the findings. Present study findings at local and national transportation conferences including TRB, ITE, ALSITE, and the UTCA Symposium. Develop presentation materials to educate transportation professionals on the opportunities and challenges related to the implementation of managed lane strategies.

Task 7 - Final Report: The final report will document in detail the work done and the results obtained.

MILESTONES AND DATES:
Task 1 - Jan 07
Task 2 - Mar 07
Task 3 - Apr 07
Task 4 - Oct 07
Task 5 - Feb 08
Task 6 - Apr 08
Task 7 - Jun 08

TOTAL BUDGET:
Eighteen-month project: UTCA $134,105; total budget $268,370.

STUDENT INVOLVEMENT:
The project will fund a full time graduate Transportation Engineering student, preferably a minority.

RELATIONSHIP TO OTHER RESEARCH PROJECTS:
This project relates to a number of UTCA projects under the “Management” theme, including UTCA Projects 00110, 00470, 01101, 01225, 02217, 02413, 03114, 03226, 03415, 04203, and 06202.

TECHNOLOGY TRANSFER ACTIVITIES:
Plans include development of technical papers and delivery of presentations based on project results. The technology transfer activities in this project will benefit both the scientific community and authorities responsible for planning, designing, implementing, managing, and operating transportation facilities.

POTENTIAL BENEFITS OF THE PROJECT:
This project will provide a bridge between the expertise on managed lanes developed at the national level and current practices of transportation agencies in the state of Alabama. One benefit is the development of a set of best practices on managed lanes that can guide future deployment efforts in the state of Alabama and beyond. Moreover, the project will identify candidate corridors for deployment and will estimate potential benefits and costs associated with implementation. In the longer run, implementation of managed lanes in the Birmingham area will allow the operating agency to proactively manage demand and available capacity on selected facilities by applying new strategies or modifying existing strategies.

TRB KEYWORDS: