PROJECT NUMBER: 07112

PROJECT TITLE: Characterization of Arterial Traffic Congestion

PRINCIPAL INVESTIGATORS:
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PROJECT OBJECTIVES:
The objective of the proposed project is to conduct long-term monitoring of an oversaturated arterial for the purposes of characterizing recurring versus non-recurring congestion. Specifically, the project will collect and analyze field measurements of operational parameters such as gap acceptance, start-up lost time, queue spillback, lane distribution, lane changing, merging, control adherence, etc. In addition to the specific operational characteristics, it is intended that the proposed data collection and analysis will provide insight into travel time uncertainty (predictability) along an oversaturated arterial.

PROJECT ABSTRACT:
The project will collect operational parameters over a two-mile segment of McFarland Boulevard in Tuscaloosa, Alabama. The study segment is a six-lane facility that stretches between two major arterials (15th Street and Skyland Boulevard) and includes an Interstate interchange (I-20/59) with two signalized junctions. The corridor experiences recurring congestion on a daily basis and exhibits severe non-recurring congestion events due to local incidents on McFarland, major incidents on the intersecting Interstate, and special events (e.g., University of Alabama football games).

The project directly supports the management of traffic flow and mitigation of congestion theme of UTCA. Of equal importance, the project is directly responsive to national surface transportation research needs and goals. By addressing current needs (and initiatives) established by the FHWA, the project will position UTCA researchers to contribute to congested-related research on national level. The data and
findings associated with activities proposed in this project will enhance the understanding of congestion in Alabama and the results will be transferable and of interests to other researchers.

PROJECT TASK DESCRIPTIONS:
Task 1 – Review and synthesize literature to clearly define issues and challenges associated with characterizing arterial traffic congestion.
Task 2 – Identify data needs for arterial and signal system monitoring and modeling.
Task 3 – Identify additional field data collection equipment needed (video cameras, AUTOSCOPE, radar detectors, etc.) and locations for deployment.
Task 4 – Finalize data collection plan and coordinate with Tuscaloosa DOT.
Task 5 – Begin collecting and archiving data.
Task 6 – Analyze data.
Task 7 – Document results in a final report.
Task 8 – Seek opportunities to present and publish project results and promote use of data to developers of traffic analysis tools.

MILESTONES AND DATES:
Task 1: January 2007 – March 2007
Task 2: March 2007 – May 2007
Task 4: April 2007 – August 2007
Task 5: August 2007 – March 2008
Task 7: May 2008 – August 2008
Task 8: May 2008 – August 2008

TOTAL BUDGET:
This is a 20-month project that will encumber a total of $ 186,822 funds ($93,411 UTC, $93,411 match).

STUDENT INVOLVEMENT:
Two graduate students will be involved in the project.

RELATIONSHIP TO OTHER RESEARCH PROJECTS:
The project is directly related to UTCA Projects 04116 and 06121.

TECHNOLOGY TRANSFER:
The project results will be presented to a national audience. In addition, the data will be made available to traffic analysis tool developers and user communities for use in validation/calibration efforts.

POTENTIAL BENEFITS OF THE PROJECT:
By addressing current needs (and initiatives) established by the FHWA, the project will position UTCA researchers to contribute to congested-related research on national level. The data and findings associated with activities proposed in this project will enhance the understanding of congestion in Alabama and the results will be transferable and of interests to other researchers.

TRB KEYWORDS:
arterial congestion, recurring traffic congestion, non-recurring traffic congestion, data collection, traffic management