RESEARCH
PROJECT CAPSULE [12- 1SS]

October 2013

DOTD Support for UTC Project: Traffic Counting Using Existing Video Detection Cameras

POINTS OF INTEREST:

Problem Addressed / Objective of Research / Methodology Used Implementation Potential

This project is associated with the Louisiana Transportation Research Center (LTRC) partnership with the National Center for Intermodal Transportation for Economic Competiveness (NCITEC). The NCITEC is a university transportation center housed at Mississippi State University funded by the Research and Innovative Technology Administration (RITA) of the U.S. Department of Transportation (DOT).

PROBLEM

The Louisiana Department of Transportation and Development (DOTD) continuing program of collecting 24 hours of traffic volume at specific locations once every three years does not provide sufficient real-time data in the time frame when it is needed. It does not deliver annual average daily traffic (AADT) nor allow for the development of adjustment factors for daily, monthly, seasonal, or other factors. Using these factors, it would be possible to develop an actual ADT for a specific day and time at a specific location.

The increasing use of video detection cameras by both state and local agencies presents an ideal method of collecting traffic count data on a continuous hour by hour, 24 hours per day for 365 days each year. Most of these camera systems can store a large amount of traffic count data on site to be downloaded later. For those locations that are part of a computer-monitored system, the data can be downloaded during low volume times. For other locations, the data can be downloaded to a computer periodically (e.g., once every month or two) by agency personnel and sent to the central location.

OBJECTIVE

This study will evaluate the video detection technologies currently adopted by the city of Baton Rouge, LA, and DOTD with the purpose of establishing design guidelines based on the detection needs, functionality, and cost. The study will also develop a mechanism for integrating traffic count data from video cameras at intersections in the Baton Rouge Metropolitan Area into a database that can be used to supplement traffic count information.

METHODOLOGY

The objectives of this research will be accomplished by performing the following tasks:

1. Conduct a review of similar studies by other researchers with an emphasis on the type of video detection technology used and the ability of the system to retrieve, edit, and analyze data as well as how the information is used.
2. Make an inventory of the intersections in the Baton Rouge Metropolitan Area where video

cameras are installed. Information on the mounting type, technology used, geometric characteristics of the intersection, lighting condition, and turning movements/lanes will be collected to include in the evaluation process.

3. Select a sample of intersections from the inventory. The sample size will be determined based on the factors outlined in Task 2.
4. Collect traffic data from the selected signalized intersections using the video detection system installed on site and another reliable method (inductive loops, video recording, or manual observations) to provide ground truth data.
5. Assess the capabilities of the existing video detection systems used to analyze the data and the quality of the data collected under different settings (nighttime, mounting angle, turning movements, etc.).
6. Determine the accuracy of the video detection system through a comparison with the ground truth data.
7. Develop design guidelines for the selection of the appropriate video detection system based on detection need, functionality, ease of use, and cost, and make final recommendations.

IMPLEMENTATION POTENTIAL

This study investigates the effectiveness of video detection technology in traffic data collection at signalized intersections in Baton Rouge and attempts to integrate the traffic count data from video cameras into a database that can be accessed to extract the required information at any time, which, in turn, will provide state and local agencies better opportunities to collect traffic counts on a continuous basis.