



Project Summary

Texas Department of Transportation

0-5531: An Assessment of a Traffic Monitoring System for a Major Traffic Generator to Improve Regional Planning

Background

When a new, large traffic generator is constructed in an area, local and regional traffic patterns are impacted. Regional planners and engineers need accurate, adequate data in order to understand the location and magnitude of the impact. This project focused on a single, new major traffic generator in the San Antonio metropolitan area. The city gained a Toyota Motor Corporation automobile manufacturing facility in the southern area of its metropolitan region. The opening of this facility provided an opportunity to analyze the impact on transportation in the immediate area and across the region. Since the new traffic generator is located in an isolated area where traffic volumes are light, researchers could easily monitor changes in traffic characteristics and apply lessons learned to future mega-traffic generator sites.

What the Researchers Did

The first year of the project focused on defining the study area around the manufacturing plant, estimating the data collection sites required for an effective monitoring system, and purchasing and installing equipment. The research team worked with the Texas Department of Transportation (TxDOT) Transportation Planning and Programming Division (TPP) and San Antonio District personnel in the design, construction, and testing for 29 new vehicle-monitoring sites in the study area. For TPP, this was the first time contractors were used to install permanent data sites for a monitoring network and the first time to include many off-system locations in the TPP statewide monitoring network. The phasing for this site installation work was much more involved than researchers initially anticipated during proposal development. As a result, none of the new sites began collecting data before the plant opened, preventing true “before/after” analysis.

The project provided an opportunity to test new data collection technology. Two site locations on the border of the study area were designated to collect data using Wavetronix® microwave radar sensors mounted adjacent to the travel lanes. Researchers manually polled the two sites at their physical locations as travel permitted.

Research Performed by:

Texas Transportation Institute (TTI),
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Data collection and analysis were conducted using three sources. One, the traffic data from the new collection sites and historical data provided by Bexar County and the City of San Antonio were gathered. Two, mobility measurements using travel time data collection in nine corridors in the study area were completed by the research team in May 2007 and 2008. As part of this analysis, travel rate indices were calculated for each corridor and links within the corridors. Finally, the research team gathered data on travel patterns of employees of the Toyota plant through a two-page travel survey.

A half-day workshop was developed based on project experience and conducted in El Paso and San Antonio. The research team created the *Guidebook for Development of Traffic Monitoring Systems for Major Traffic Generators in the State of Texas*. The purpose of the guide is to aid TxDOT, metropolitan planning organizations (MPOs), and other state and local agencies to develop effective traffic monitoring systems for new major traffic generators in their regions.

What They Found

The data collected at the sites used in the traffic monitoring system established for this project indicated that the road network successfully absorbed the traffic impacts from the major traffic generator in the first three years of operation. Increases in peak-period volumes and congestion in corridors adjacent to the plant were recorded, while corridors on the edge of the study area showed no significant increases in total vehicle volume, truck volumes, or congestion that could be linked to the major generator.

TTI researchers compared the data received from the two different technologies used at the same collection site, inductive loop detectors and Wavetronix radar-based machines. The data from the Wavetronix sites very closely matched inductive loop detector data. The main difference in volume counts occurred during peak periods with the Wavetronix machines recording up to 5 percent more vehicles than the inductive loop site.

What This Means

The experience in developing a traffic monitoring system for a major traffic generator in San Antonio is transferable to other cities and areas in the state. Regional planners should strive to implement a system before the major traffic generator is operational to allow for robust analysis of impacts. Developing a monitoring system provides TxDOT with opportunities to enhance its statewide traffic monitoring network and test new technologies.

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