



case studies

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Project

I-75/I-96 Ambassador Bridge Gateway Maintenance of Traffic Simulation (MOTSIM) (Detroit, MI), 2006

Organization

T-Concepts Corp./ Michigan Department of Transportation (MDOT)

Sector

Freeway Reconstruction/ Operational Assessment

Objective

To develop a large-scale freeway network and perform a freight mobility analysis with the model

Highlights

- Work Zone Mobility
- Large-Scale Network
- Data Collection Plan
- O-D Trip Tables

Contact Point

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I-75/I-96 Ambassador Bridge Gateway Maintenance of Traffic Simulation (MOTSIM)

T-Concepts was chosen by the Michigan Department of Transportation (MDOT) to analyze traffic impacts from the I-75/I-96 Ambassador Bridge Gateway reconstruction project. The I-75/I-96 Ambassador Bridge Gateway Maintenance of Traffic Simulation (MOTSIM) is the first project in Michigan to develop systematic consideration and management of work zone impacts in accordance of the new FHWA Work Zone Mobility and Safety Rule.



The Ambassador Bridge in southwest Detroit connecting Detroit, Michigan and Windsor, Canada, ranks as the busiest commercial crossing on the U.S.-Canada border.

During the reconstruction of the Ambassador Gateway area, the I-75 mainline and I-75/I-96 system interchange will be simultaneously closed for months.

A large-scale simulation model was developed in order to analyze system-level as well as local-level work zone impacts. The study area limits and roadway selections were strategically determined to be large enough to capture impacts on regional traffic patterns and detailed enough to address changes in local traffic patterns. The model includes 25-mile long I-75, 18-mile long I-94, and 13-mile long I-96 freeway corridors, in addition to about 100 miles of arterials. In total, the Gateway model had 440 zones. Three vehicles types were used in the simulation—auto, domestic trucks and international trucks. The model was simulated for two peak periods—AM (6:00 to 9:00) and PM (3:00 to 7:00). The pattern O-D trip tables were extracted from a local MPO model and refined based on available traffic data. A strategic data collection plan was developed to capture system-wide traffic patterns.

The Gateway model was used not only to evaluate the impacts of closures but also to develop mitigation measures. Measures of effectiveness generated by Paramics, such as travel time, VMT, VHT, average speeds and delays were used for quantitative analysis. The hotspot snapshots were used for qualitatively validating the model as well as for presenting results to the stakeholders.

