DAMA
CONSULTANTS, INC.

ILLINOIS STATEWIDE CONGESTION ANALYSIS STUDY - *CROSS-AGENCY DATA ANALYSIS*

STATEWIDE CONGESTION ANALYSIS STUDY

CLIENT:
Illinois Department of Transportation

CONTACT:
Karen Shoup, AIA, LEED AP
Bureau Chief, Urban Program Planning

CONTRACT:
PTB 168, Item 29 - $1.49 million

PROJECT PURPOSE:
- Develop Methods to Use and Analyze 20 million Record Data Sets
- Identify Data Gaps and Potential Conditions Leading to Outliers
- Use GPS Vehicle Tracking Data to Calculate Performance Measures
- Use Multiple Data Sources to Identify Traffic Trends Across Modes
- Use Multiple Sources to Develop Understanding of Crash Incidents

DAMA Consultants, Inc., conducted a survey of federal, state, and regional transportation data sources in Illinois. The data sources included estimates of freight volumes, transportation routes, and modes; corridor volumes and estimated speeds along roadway segments; infrastructure conditions, lane counts, alignments, and geometrics; projected volumes and planned changes; and safety and crash data. DAMA developed methods to analyze and align these data sources and to identify how to identify similar conditions across several sources.

The DAMA team focused on measurements provided by the Federal Highway Administration (FHWA) National Performance Management Research Data Set (NPMRDS), a GPS sourced data set that estimates speeds across individual roadway segments in each direction at intervals of 5 minutes. NPMRDS reported 100 million records across 5 months. DAMA developed methods to align NPMRDS geographies with roadway segments and roadway records provided by IDOT and other agencies and estimate performance measures at the IDOT District level, Illinois County level, and according to roadway functional class and NHS categories. Estimates from NPMRDS provided time sensitive performance measurements at a segment level resolution.

DAMA developed applications for the NPMRDS including the identification of crash incidents and the conditions occurring before, during, and after the incidents; response times by first responders; clearance times until the roadway could return to normal operations; identification of traffic and roadway impacts of highway-rail grade crossings; and identification of freight and NHS intermodal connector performance characteristics and how these characteristics compared to similar roadways.