

ILLINOIS STATEWIDE CONGESTION ANALYSIS STUDY - TRAFFIC SIMULATION



CLIENT:

Illinois Department of Transportation

CONTACT:

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

CONTRACT:

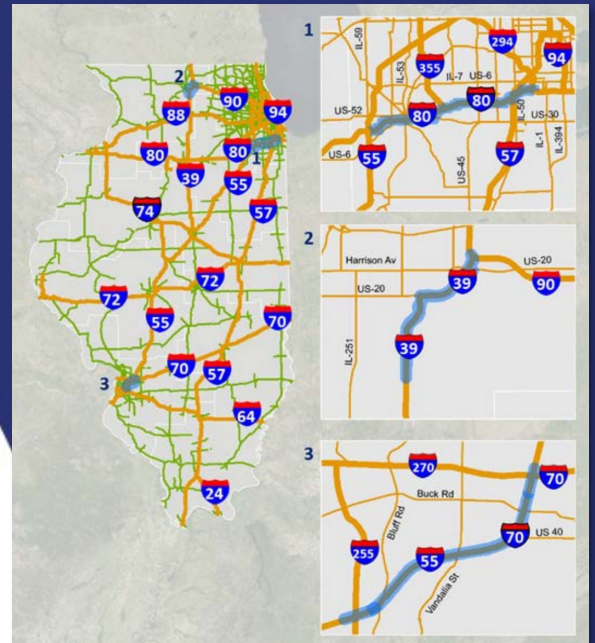
PTB 168 / Item 29 - \$1.49 million

PROJECT PURPOSE:

- Assess ITS Implementations Using Traffic Simulation
- Analyze and Model ITS Alternatives to Mitigate Congestion
- Assess Costs and Benefits of Potential Strategies

DAMA used the VISSIM Microsimulation software package to assess the potential impacts of congestion management strategies along three Illinois Interstate corridors in IDOT District 1 (I-80), IDOT District 2 (I-39), and IDOT District 8 (I-55/I-70). DAMA used VISSIM to model existing traffic conditions along these corridors and interactions between passenger vehicles and trucks. The simulations provided estimates of how different lane geometries, following practices, informed and directed decision making, and vehicle priorities can affect conditions along each corridor.

DAMA developed customized VISSIM .VAP logic files to evaluate the impacts of additional changes including implementing ITS strategies including Variable Speed Limits, Dedicated Truck Lanes, and Adaptive Ramp Metering. The VISSIM simulations provided estimates of Average and Maximum Queue Lengths, impacts to Travel Time and Vehicle Counts resulting from Variable Speed Limits, and the combined effects of Variable Speed Limits and Geometric Layout changes along each corridor.



Ramp Metering Analysis			Change in Travel Time (Seconds)	
Start	End		All Vehicles	Passenger Cars
0:45	1:00		-88.59	-88.43
1:00	1:15		-117.09	-116.97
1:15	1:30		-103.95	-103.96
1:30	1:45		-74.00	-73.97
1:45	2:00		-104.70	-104.66
2:00	2:15		-116.65	-116.39
2:15	2:30		-103.84	-103.88
2:30	2:45		-128.45	-128.40
2:45	3:00		-119.22	-119.29
		Average:	-106.28	-106.22
		Travel Time Index Before:	1.30	1.30
		Travel Time Index After:	0.68	0.68

Variable Speed Limit Analysis		Average Queue Length	
Scenario	Location	No VSL	VSL
1	I-80 (I-55 to I-294)	1,410.8'	989.6'
2	I-80 (I-55 to I-294)	1,484.0'	1,533.3'
3	I-39 (I-90 to Kishwaukee River)	55.2'	45.1'
4	I-55/I-70 (IL 157 to I-270)	41.2'	59.7'

