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TRAFFIC ENGINEERING
TRANSPORTATION PLANNING
SIGNAL SYSTEMS/DESIGN

FINAL

MEMORANDUM

To: Brian Dickson – DeKalb-Sycamore Area Transportation Study (DSATS)
DSATS Technical and Policy Committee
DSATS Staff

From: Timothy P. Sjogren, P.E., PTOE – Metro Transportation Group
Sara Disney Haufe – Metro Transportation Group

Date: July 23, 2008

RE: 2008 ADT/ADTT Count Program

Metro Transportation Group, Inc., (Metro) was retained by DSATS to perform traffic counts for 45 roadway segments in the DeKalb/Sycamore area. Average daily traffic (ADT) and average daily truck traffic (ADTT) data were collected and compared with similar data gathered in the summers of 2005 and 2006 and in Spring 2007. The purpose of these counts has been to establish baseline traffic data for use in future planning efforts and to help build a database that can be used to identify growth trends and changing traffic patterns. The count methodology, data collection results, and summary analysis are presented following.

METHODOLOGY

Under the direction of DSATS staff, count locations were selected as shown on *Figure 1* (attached). For the first time, all count data was collected with Hi-Star inroad magnetic recorders, which both quantify and classify vehicles traveling in a given lane of traffic. This classification provides the ability to differentiate between vehicle types, such as private automobiles, school buses, and multi-axle tractor-trailers. Although the use of Hi-Star recorders to collect ADT and ADTT data is relatively new, their application in the 2007 DSATS count program proved to be highly successful in areas where difficulties were experienced with automatic traffic recorders (tubes). These isolated problems were largely due to the inability of tube counters to remain in place in areas of high-speed travel. In addition, automatic traffic recorders can occasionally experience vehicle classification errors on segments where traffic may stop on top of the tubes; these instances are rare, but are impossible to track in data output.



Because Hi-Star counters rest on the pavement in the center of the lane and count only one lane of traffic, these errors are less likely than with tube counters.

Data was collected over 72+ hours (3 days) at each location during the months of March, April, and May 2008, and the results were averaged to offset the impact of daily traffic variations. In places where physical factors (construction activity, vandalism, equipment malfunction) or excessive daily fluctuations were experienced, adjustments were made to the data to prevent disproportionate skewing of the 3-day average. In some locations, these factors were so significant that the count data was verified by an additional 72 hours of data collection. ADT and ADTT counts were conducted at the following locations; intersections and roadway segments that are new to the count program have been marked with an asterisk (*).

- Intersections (counts on all quadrants):
 - Annie Glidden Road @ Fairview Drive
 - Illinois Route 23 @ Illinois Route 38
 - Illinois Route 23 @ Gurler Road
 - Illinois Route 23 @ Plank/Peace Road
 - Illinois Route 38 @ Peace Road
 - Illinois Route 38 @ Annie Glidden Road*
 - Peace Road @ Fairview Drive
 - Peace Road @ Sycamore Road
 - 4th Street @ Taylor Road*
- Roadway segments
 - Illinois Route 64 west of Somonauk Street
 - Illinois Route 64 west of Motel Road
 - Illinois Route 64 east of Airport Road
 - Annie Glidden Road south of Illinois Route 64
 - Illinois Route 23 north of Barber Greene Road
 - Illinois Route 23 south of Barber Greene Road
 - Illinois Route 38 west of Annie Glidden Road
 - Illinois Route 38 west of 1st Street
 - 1st Street north of Illinois Route 38

Attached at the conclusion of this report are two tables that display the results of the 2008 ADT/ADTT counts. This data is also illustrated graphically on *Figure 2* and *Figure 3*. Data from the previous three years of the count program are also displayed for comparison, and the



relative increases or decreases for both ADT and ADTT are presented for the 2005-2008 and 2007-2008 periods. Heavy vehicle percentage (trucks as a percentage of total vehicles) is also shown for each study year.

It is important to note that the segment of Annie Glidden Road south of Illinois Route 38, which was included in this count program for the first time, was counted several times as a part of this study, but each data collection effort for this location returned no data or erroneous results. Due to this intersection's important role in the City's transportation infrastructure, however, it is recommended that this location be repeated in future count programs in an effort to include it in the DSATS database.

ANALYSIS

As with last year's study, it is difficult to draw direct conclusions between some of the data due to the varied traffic conditions of summer 2005/2006 and spring 2007/2008. As such, the majority of analysis will focus on comparing the results of the 2007 and 2008 count programs, which both took place while Northern Illinois University and other area schools were in session. It is extremely important to note, however, that comparisons based on only two years of data do not lend themselves to in-depth analysis or concrete conclusions. Because two points do not make a reliable trend line, several more Spring count programs will likely be required before meaningful conclusions can be drawn. Comparisons will also be made between 2005 and 2008 (particularly where 2007 data was not collected) and for the four-year length of the count program in order to evaluate progress noted over this time period, but these relationships should only be used to draw broad conclusions and should not be used for trend line analysis or future projections. With these key points in mind, the comparisons shown in the attached data table can be examined from a more general perspective, and with a proper understanding of the data's limitations, may provide some points of interest that can be more closely examined during future studies.

Generally speaking, traffic volumes throughout the study area show a decrease from last year's count program. Among the 2008 count locations that were also counted in 2007, 23 of the 25 (or 92 percent) had no growth or negative growth in ADT. Key locations that experienced an overall decrease in traffic volume include IL 23/IL 38, IL 23/Gurler Road, and the roadway segment pair of IL 38 west of 1st Street and 1st Street north of IL 38. While less widespread, a general reduction in ADTT between 2007 and 2008 was also noted; 17 of the 25 locations counted both years (68 percent) are shown with stable or reduced truck traffic. Additionally, all



but two of the 34 locations counted in 2005 show decreased ADTT, some with reductions of 50 percent or greater. At IL 23/Gurler Road, for example, all intersection legs show decreased ADTT from 2007 to 2008 for an average of 45 percent less trucks. A total reduction of nearly 20 percent is also seen at IL 23/IL 38, despite an increase in ADTT on the south leg. As a result, it can be broadly concluded that ADT and ADTT have decreased within the study area over the last year.

Several segments showed larger than typical changes and warrant further discussion.

- **Peace Road:** An increase in ADTT was noted for this roadway north of Fairview Drive and north and south of IL 38. This change could indicate an increased attractiveness of this route to trucks, particularly when compared to decreased ADTT in many locations along the parallel truck route of IL 23.
- **Annie Glidden Road/Fairview Drive:** Although this location was not counted in 2007, there is a significant increase in ADT for the south and west intersection legs from 2005 to 2008. This trend is not mirrored in the comparison of 2005 and 2006 counts. Additional ADT on the south leg indicates an increased utilization of the Annie Glidden interchange with I-88, which is likely due to the recent reconstruction of this interchange and Annie Glidden Road. The west leg of Fairview Drive was also shown with a significant increase in ADT (31 percent). After discussing this change with DSATS staff, the only potential cause that was identified was the possibility that Nelson Road (and thereby Fairview Drive) may be used to bypass Annie Glidden Road on the way to NIU in an effort to avoid congestion and several traffic signals.
- **IL 38 and IL 64:** Both of these east-west State routes, which travel through the downtown areas of DeKalb and Sycamore, revealed less ADTT than in 2007 at all counted locations. This reduction could be a result of reduced traffic overall or may indicate an increased utilization of nearby I-88 by trucks.
- **Fairview Drive west of Peace Road:** This roadway segment reveals a consistent increase in ADT and ADTT (up a respective 16 and 17 percent from 2007). The new 3M distribution center (opened Summer 2007) and increased activity at the other adjacent warehousing facilities are likely the source of this change.
- **IL 23 south of IL 38:** As stated previously, ADTT on this segment increased 11 percent from 2007. Because truck traffic for the remainder of this intersection has



declined in the last year, the source of this increase is not readily apparent. It should be noted, however, that ADTT on this segment was notably decreased in 2007 from that in earlier count programs. In addition, 2008 ADTT for this portion of IL 23 is still substantially less than that collected in 2005 or 2006.

- **IL 23/Plank Road/Peace Road:** Over the course of the DSATS count program, much of the data collected at this intersection has revealed erratic changes from that of previous years. In 2008, the north leg of IL 23 shows a 27 percent decrease in ADT and an 83 percent drop in ADTT when compared with 2007. Because 2007 data for this intersection leg was substantially higher than earlier counts, the reduction in ADT is not terribly surprising. 2008 ADTT counts, however, are significantly less than that from the three previous years. Alternately, ADTT on the east leg of Plank Road revealed a 15 percent increase from 2007, when ADTT was considerably down. Possible explanations for these wide fluctuations should be further explored between Metro and DSATS staff.

While some of the conclusions drawn have established interesting potential for future trends (such as the increased use of Peace Road as a truck route), many of them simply present intriguing changes in data that could reveal a pattern as additional count programs are performed.

CONCLUSIONS

The 2008 count program has revealed an overall reduction in ADT and ADTT compared to 2007. Two significant contributors to the reduction in area traffic are the changes in the economy and the increase in gas prices over the last year. With economic conditions declining, Americans are making efforts to save money where possible. Because of the cost of regular gas going up roughly 25 percent between April 2007 and April 2008, reducing one's driving habits is an apparent way to reduce personal spending. The cost of diesel is also exceedingly high, causing the cost of interstate tolls to pale in comparison to the cost of driving several additional miles. The theory that truck traffic currently prefers I-88 to local routes like IL 38 and IL 64 may therefore be a realistic estimate. As these social conditions continue to change, their influence on the results of these count programs should be considered and noted in future memoranda. Specific construction activities in the area are also likely factors in the decrease of daily traffic volumes in the DeKalb area. During data collection for this study, the Illinois Route 38 bridge over the Kishwaukee River (located directly east of the 1st Street intersection) was under repair



and only provided one travel lane in each direction. Additionally, the downturn of the homebuilding industry has caused a decrease in related truck activity, an occurrence that likely contributes to the reduction in overall truck traffic.

While Metro has a very high confidence level in the quality of the data provided, few meaningful conclusions can or should be drawn from the comparison of 2007 and 2008 volume data or the relationship of Spring 2008 data with that collected in the summers of 2005 or 2006. As the program continues (and presumably maintains a spring schedule), it will become easier to identify patterns and draw reliable conclusions. As the count program continues, it is recommended that this study be designed to ensure that a solid foundation of count data be established for all count locations. Because two spring count programs have been performed already, it would be advisable to plan to collect ADT/ADTT data for all study locations in Spring 2009. In doing so, Metro and DSATS staff may work together in an effort to begin identifying noticeable trends in traffic growth and travel patterns in the study area.

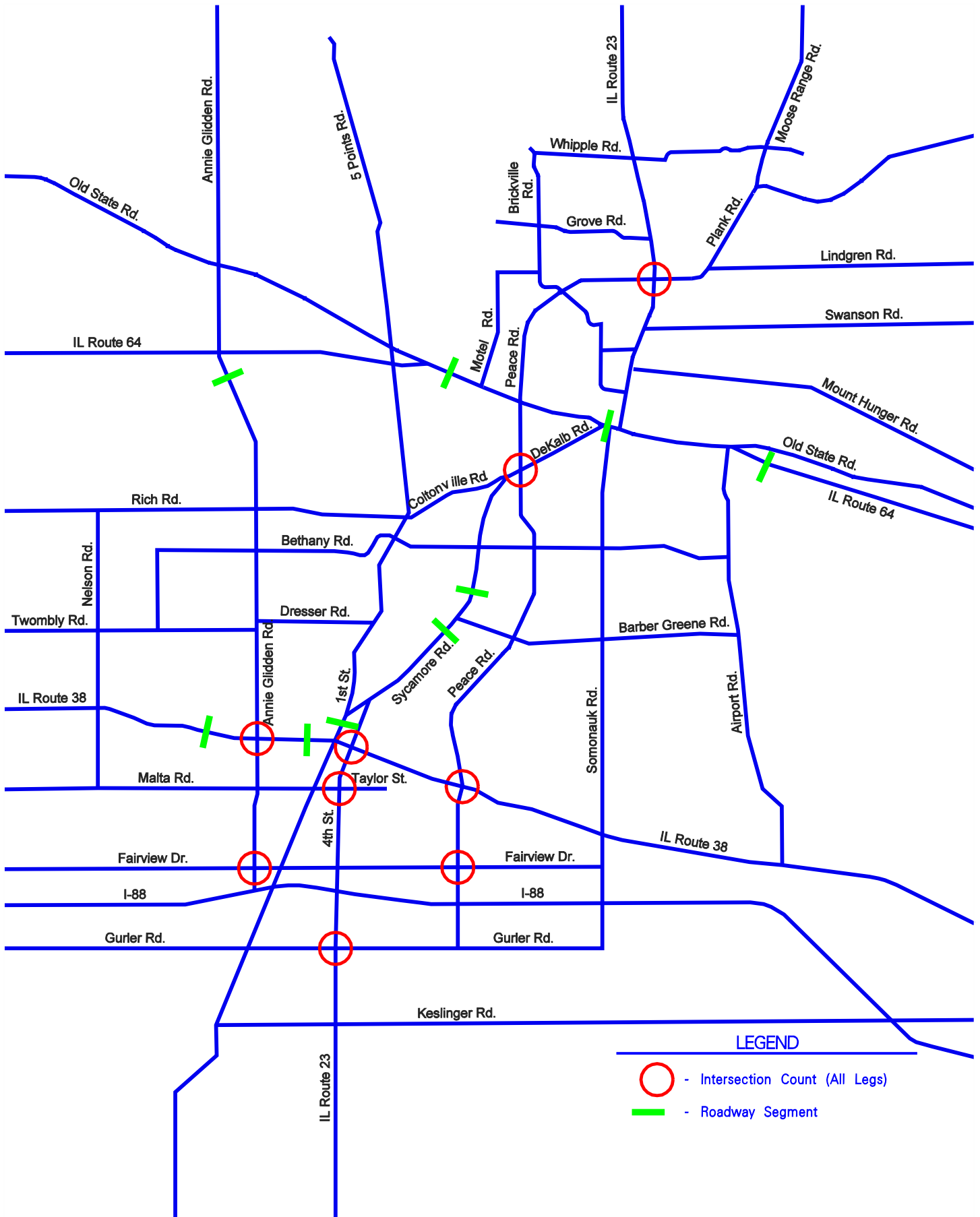
Please feel free to contact this office with any questions or comments regarding the data, analysis, or conclusions contained within this memorandum.

DSATS Count Data Comparison - Intersections

Roadway Segment	05 ADT	05 ADTT	05 HV%	06 ADT	06 ADTT	06 HV%	07 ADT	07 ADTT	07 HV%	08 ADT	08 ADTT	08 HV%	ADT 07-08	ADT 05-08	ADTT 07-08	ADTT 05-08
IL 23 N Gurler Road	5,450	870	16%	5,015	650	13%	5,530	835	15%	4,854	458	9%	-12%	-11%	-45%	-47%
IL 23 S Gurler Road	6,160	1,110	18%	5,605	685	12%	5,870	895	15%	5,247	513	10%	-11%	-15%	-43%	-54%
Gurler Road E IL 23	1,750	175	10%	1,840	175	10%	1,890	165	9%	1,700	72	4%	-10%	-3%	-56%	-59%
Gurler Road W IL 23	1,225	145	12%	1,275	100	8%	1,555	200	13%	1,359	92	7%	-13%	11%	-54%	-37%
Intersection	7,293	1,150	16%	6,868	805	12%	7,423	1,048	14%	6,580	568	9%	-11%	-10%	-46%	-51%
Peace N Sycamore	14,440	1,445	10%	15,795	1,250	8%	-	-	-	16,760	1,017	6%	-	16%	-	-30%
Peace S Sycamore	9,660	1,255	13%	11,625	1,165	10%	-	-	-	11,507	884	8%	-	19%	-	-30%
Sycamore E Peace (2)	17,895	2,145	12%	19,615	1,495	8%	-	-	-	18,454	923	5%	-	3%	-	-57%
Sycamore W Peace	23,140	1,545	7%	23,820	1,395	6%	-	-	-	23,397	735	3%	-	1%	-	-52%
Intersection	32,568	3,195	10%	35,428	2,653	7%	-	-	-	35,059	1,780	5%	-	8%	-	-44%
Somonauk N Bethany	-	-	-	-	-	-	6,590	540	8%	-	-	-	-	-	-	-
Somonauk S Bethany	-	-	-	-	-	-	5,040	375	7%	-	-	-	-	-	-	-
Bethany E Somonauk	-	-	-	-	-	-	2,295	205	9%	-	-	-	-	-	-	-
Bethany W Somonauk	-	-	-	-	-	-	4,655	195	4%	-	-	-	-	-	-	-
Intersection	-	-	-	-	-	-	9,290	658	7%	-	-	-	-	-	-	-
Glidden N Fairview	9,245	460	5%	7,525	500	7%	-	-	-	7,188	455	6%	-	-22%	-	-1%
Glidden S Fairview	7,960	635	8%	6,525	535	8%	-	-	-	9,173	422	5%	-	15%	-	-34%
Fairview E Glidden	4,775	620	13%	4,755	575	12%	-	-	-	4,798	441	9%	-	0%	-	-29%
Fairview W Glidden	955	105	11%	1,045	95	9%	-	-	-	1,252	90	7%	-	31%	-	-14%
Intersection	11,468	910	8%	9,925	853	9%	-	-	-	11,206	704	6%	-	-2%	-	-23%
IL 23 N IL 38	7,155	570	8%	7,560	435	6%	7,270	485	7%	7,122	306	4%	-2%	0%	-37%	-46%
IL 23 S IL 38	8,290	680	8%	8,525	610	7%	7,035	455	6%	7,002	506	7%	0%	-16%	11%	-26%
IL 38 E IL 23	9,980	900	9%	8,500	710	8%	10,005	800	8%	9,130	728	8%	-9%	-9%	-9%	-19%
IL 38 W IL 23	9,275	335	4%	8,255	735	9%	10,395	995	10%	9,550	686	7%	-8%	3%	-31%	105%
Intersection	17,350	1,243	7%	16,420	1,245	8%	17,353	1,368	8%	16,402	1,113	7%	-5%	-5%	-19%	-10%
Glidden N IL 38	-	-	-	-	-	-	-	-	-	20,307	541	3%	-	-	-	-
Glidden S IL 38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IL 38 E Glidden	-	-	-	-	-	-	-	-	-	20,144	941	5%	-	-	-	-
IL 38 W Glidden	-	-	-	-	-	-	-	-	-	16,137	998	6%	-	-	-	-
Intersection	-	-	-	-	-	-	-	-	-	28,294	1,240	4%	-	-	-	-
4th N Taylor	-	-	-	-	-	-	-	-	-	7,764	470	6%	-	-	-	-
4th S Taylor	-	-	-	-	-	-	-	-	-	11,078	514	5%	-	-	-	-
Taylor E 4th	-	-	-	-	-	-	-	-	-	4,076	180	4%	-	-	-	-
Taylor W 4th	-	-	-	-	-	-	-	-	-	5,567	282	5%	-	-	-	-
Intersection	-	-	-	-	-	-	-	-	-	14,243	723	5%	-	-	-	-
Peace N IL 38	16,765	2,345	14%	18,145	1,675	9%	18,445	1,600	9%	17,693	2,533	14%	-4%	6%	58%	8%
Peace S IL 38	11,545	2,845	25%	12,095	1,355	11%	12,635	1,180	9%	12,571	1,238	10%	-1%	9%	5%	-56%
IL 38 E Peace	11,145	1,335	12%	11,950	1,180	10%	12,540	1,105	9%	11,600	788	7%	-7%	4%	-29%	-41%
IL 38 W Peace	12,755	1,660	13%	12,680	1,125	9%	13,865	1,040	8%	13,592	1,001	7%	-2%	7%	-4%	-40%
Intersection	26,105	4,093	16%	27,435	2,668	10%	28,743	2,463	9%	27,728	2,780	10%	-4%	6%	13%	-32%
IL 23 N Plank	8,885	1,245	14%	9,575	1,750	18%	12,045	3,865	32%	8,754	663	8%	-27%	-1%	-83%	-47%
IL 23 S Plank	8,700	1,220	14%	8,900	1,150	13%	8,330	655	8%	8,335	613	7%	0%	-4%	-6%	-50%
Plank E IL 23	8,480	1,020	12%	8,925	670	8%	9,795	465	5%	9,487	533	6%	-3%	12%	15%	-48%
Plank W IL 23	10,565	635	6%	11,025	860	8%	11,865	565	5%	11,917	515	4%	0%	13%	-9%	-19%
Intersection	18,315	2,060	11%	19,213	2,215	12%	21,018	2,775	13%	19,247	1,162	6%	-8%	5%	-58%	-44%
Peace N Fairview	12,055	1,810	15%	11,680	1,355	12%	12,490	1,310	10%	12,416	1,376	11%	-1%	3%	5%	-24%
Peace S Fairview	11,775	1,415	12%	11,785	1,330	11%	12,930	1,535	12%	12,924	1,359	11%	0%	10%	-11%	-4%
Fairview E Peace	1,620	80	5%	1,640	85	5%	1,590	55	3%	1,682	58	3%	6%	4%	5%	-28%
Fairview W Peace	6,225	1,620	26%	5,585	960	17%	5,375	810	15%	6,215	949	15%	16%	0%	17%	-41%
Intersection	15,838	2,463	16%	15,345	1,865	12%	16,193	1,855	11%	16,619	1,871	11%	3%	5%	1%	-24%

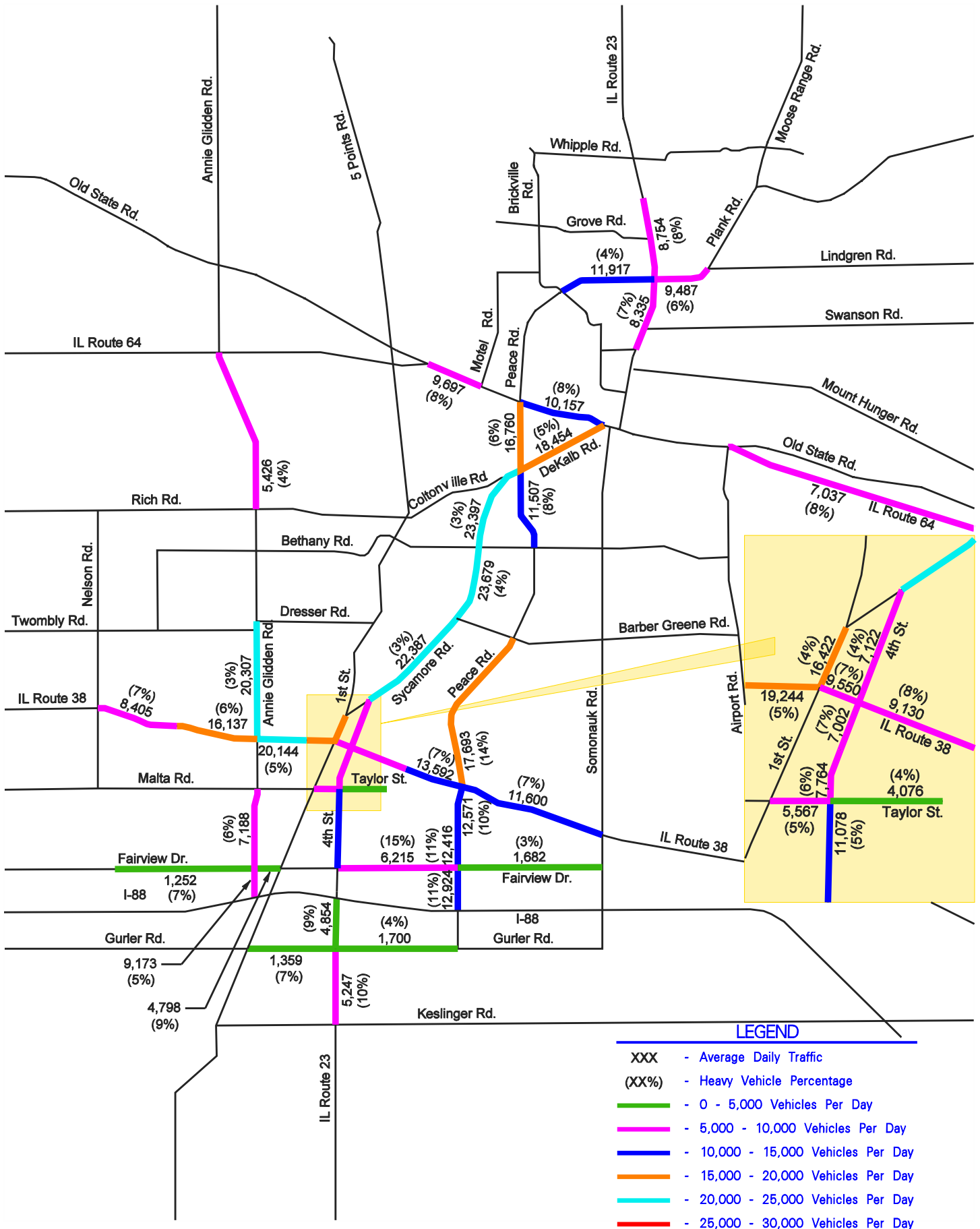
DSATS Count Data Comparison - Roadway Segments

Roadway Segment	05 ADT	05 ADTT	05 HV%	06 ADT	06 ADTT	06 HV%	07 ADT	07 ADTT	07 HV%	08 ADT	08 ADTT	08 HV%	ADT 07-08	ADT 05-08	ADTT 07-08	ADTT 05-08
Glidden S IL 64	4,950	345	7%	5,070	310	6%	-	-	-	5,426	195	4%	-	10%	-	-43%
IL 64 W Somonauk	9,070	1,000	11%	9,945	960	10%	-	-	-	10,157	800	8%	-	12%	-	-20%
IL 64 E Airport	7,385	740	10%	7,830	825	11%	7,640	630	8%	7,037	561	8%	-8%	-5%	-11%	-24%
IL 64 W Motel	-	-	-	-	-	-	10,450	980	9%	9,697	759	8%	-7%	-	-23%	-
IL 38 W Somonauk	10,980	990	9%	10,370	970	9%	11,510	930	8%	-	-	-	-	-	-	-
IL 38 W 1st	-	-	-	-	-	-	21,755	1,845	8%	19,244	963	5%	-12%	-	-48%	-
IL 23 N Barber Greene	28,220	1,975	7%	24,785	1,555	6%	24,390	930	4%	23,679	987	4%	-3%	-16%	6%	-50%
IL 23 S Barber Greene	21,975	1,320	6%	22,515	1,285	6%	-	-	-	22,387	592	3%	-	2%	-	-55%
Barber Green E IL 23	7,465	375	5%	6,550	675	10%	8,765	485	6%	-	-	-	-	-	-	-
1st N IL 38	-	-	-	-	-	-	17,915	860	5%	16,422	676	4%	-8%	-	-21%	-
1st S Fairview	3,355	535	16%	3,480	610	18%	3,441	553	16%	-	-	-	-	-	-	-
IL 38 W Glidden	9,405	1,225	13%	8,115	1,090	13%	-	-	-	8,405	589	7%	-	-11%	-	-52%



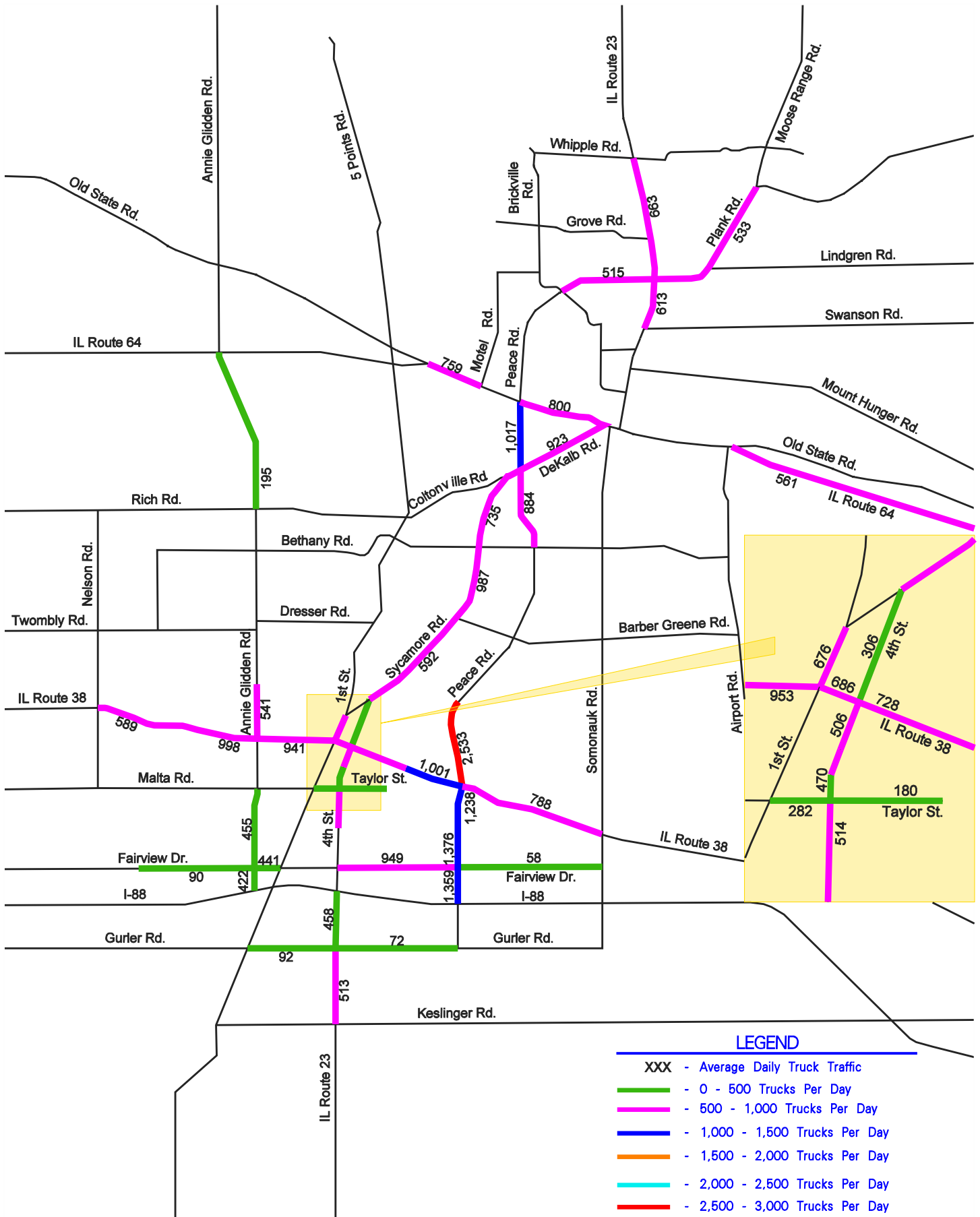
ADT/ADTT COUNT LOCATIONS

FIGURE: 1



2008 AVERAGE DAILY TRAFFIC (ADT)

FIGURE: 2



2008 AVERAGE DAILY TRUCK TRAFFIC (ADTT)

FIGURE: 3