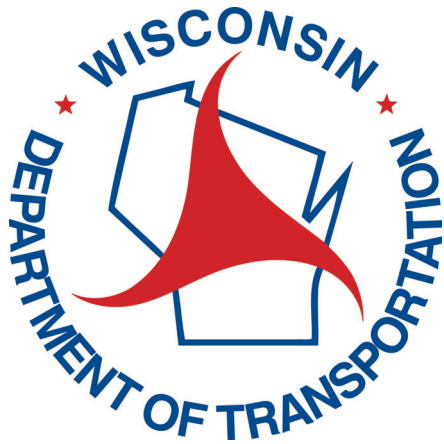


November 30, 2015



Signalized Intersection Capacity Data Collection

A Statewide Evaluation of Saturation Flow Rate and Right Turn on Red

PROJECT ID: 0072 - 40 - 57

PREPARED BY: TranSmart Technologies Inc. in association with WisDOT

PREPARED FOR: Wisconsin Department of Transportation (WisDOT)

Signalized Intersection Capacity Study

Executive Summary

The Wisconsin Department of Transportation (WisDOT) intends to expand upon and improve the current methodologies for determining the saturation flow rate and right-turn on red (RTOR) volumes used for traffic analyses at a statewide level. This evaluation includes data samples that span several different population groups, intersection types and local conditions throughout Wisconsin.

Results indicate that area population, intersection approach type and posted speed limit of the approach (indicative of roadway type and local conditions) are factors that significantly influence the saturation flow rate. Adjustment factors in the tables below are recommended for use with the *Highway Capacity Manual 2010* (HCM) methodology for calculating saturation flow rate. A base saturation flow rate of 1980 (pcphpl) is also recommended, which is higher than the base rate of 1900 (pcphpl) suggested by the HCM based on national data.

Urbanized Area / Cluster Population	Adjustment Factor	Total Approach Lanes	Adjustment Factor	Posted Speed Limit Of Approach	Adjustment Factor
< 2,000	0.91	1	0.88	25	0.94
2,000 - 4,499	0.92	2	0.94	30	0.96
4,500 - 8,999	0.93	3	0.96	35	0.98
9,000 - 18,999	0.94	4	0.97	40	1.00
19,000 - 39,999	0.95	5	0.97	45	1.02
40,000 - 82,999	0.96	6	0.98	50	1.04
83,000 - 170,499	0.97	7	0.98	55	1.07
170,500 - 347,499	0.98				
347,500 - 704, 499	0.99				
> 704,500	1.00				

RTOR data collection and analysis builds upon a previous R.A. Smith National report: *Right Turn on Red Methodology Evaluation*. Efforts focused on whether or not the conclusions of the R.A. Smith report are applicable at a statewide level. Findings reinforced two key conclusions of the R.A. Smith report:

- The most significant factor affecting the RTOR volume is the total volume of right-turning traffic
- More accurate results are obtained when evaluating intersection types separately (single right-turn intersections vs. single right-turn interchanges vs. dual right-turn intersection types)

This study also found that a slight difference exists between studies from WisDOT's northern regions versus the studies from WisDOT's southern regions (primarily conducted in the Milwaukee and Madison areas). However, the difference was not significant enough to recommend different methodologies or equations. The recommended equation for determining right-turn on red volume at an intersection with a single right-turn lane is: $V_{RTOR} = 0.38V_{RT}$, which is the same as R. A. Smith's recommendation. Since consistency was found with single right-turn lane intersections, it is also recommended that the other equations for RTOR volumes developed in the R.A. Smith report be used on a statewide level until further study can be conducted: $V_{RTOR} = 0.66V_{RT}$ (interchanges with single right-turn lane), $V_{RTOR} = 0.30V_{RT}$ (intersections and interchanges with dual right-turn lanes).

TABLE OF CONTENTS

1.0 INTRODUCTION..... 1

2.0 PROJECT BACKGROUND 2

 2.1 CURRENT WISDOT SATURATION FLOW RATE APPLICATIONS 2

 2.2 FLORIDA DEPARTMENT OF TRANSPORTATION (FDOT) REPORT 3

 2.3 R.A. SMITH RIGHT-TURN ON RED REPORT 3

 2.4 SATURATION FLOW STUDY PHASE 1 EFFORTS 4

3.0 SITE SELECTION AND DATA COLLECTION 5

 3.1 INTERSECTION APPROACH CONFIGURATIONS AND POPULATION GROUPS 5

 3.2 SITE SELECTION 6

 3.3 VIDEO DATA COLLECTION 8

 3.4 SATURATION FLOW STUDY METHODOLOGY 8

 3.5 RIGHT-TURN ON RED DATA COLLECTION METHODOLOGY 9

 3.6 SAMPLE SIZES 9

4.0 STUDY ANALYSIS & RESULTS 11

 4.1 SATURATION FLOW RESULTS SUMMARY 11

 4.2 SATURATION FLOW RESULTS BY WISDOT REGION 13

 4.3 SATURATION FLOW RESULTS BY APPROACH CONFIGURATION 14

 4.4 SATURATION FLOW RESULTS BY AREA POPULATION 15

 4.5 SATURATION FLOW RESULTS BY POSTED SPEED LIMIT 15

 4.6 SATURATION FLOW ANALYSIS 16

 4.7 RIGHT-TURN ON RED STUDY RESULTS 22

 4.8 RIGHT-TURN ON RED ANALYSIS 24

5.0 CONCLUSIONS..... 30

REFERENCES 32

Appendix A: Wisconsin Population Data

Appendix B: Data Collection Sheets

Appendix C: Confidence Level Tables

Appendix D: Saturation Flow Study Data

Appendix E: Right-Turn On Red Data

Appendix F: Normality and Outlier Test Results

Appendix G: Regression Analysis

1.0 Introduction

Traffic engineers utilize several tools to complete traffic modeling, microsimulation, signalized intersection performance analysis and other traffic analyses. Two inputs commonly used in these applications are saturation flow rate and right-turn on red (RTOR) volumes. The objective of this study is to expand upon the current methodologies used to predict saturation flow rate for through and shared through/right-turn lanes and right-turn on red volumes specific to the state of Wisconsin.

The *Highway Capacity Manual (HCM) 2010 (1)* defines saturation flow rate as a representation of the maximum rate of flow for a traffic lane, as measured at the stop line during the green indication. The *HCM* provides default saturation flow rates and several adjustment factors to account for the variety of conditions that might be present at a subject intersection. However, the adjustment factor for area type only addresses intersections in a Central Business District (CBD), and the lane utilization factor does not address the effect of the number of approach lanes on traffic flow. Using traffic data collected in the state, the Wisconsin Department of Transportation (WisDOT) seeks to estimate base saturation flow rates in Wisconsin and identify the local factors for population groups and approach configurations. This need stems from the desire to improve the accuracy of capacity analyses and the performance of signalized intersection operations in Wisconsin.

The current WisDOT methodology for determining the estimated volume of traffic turning right on red involves taking the lesser of two calculated values: 50% of the total right-turning traffic, or two vehicles per cycle. A report completed by R.A. Smith National, Inc., in 2009 provided an alternative to the current WisDOT approved methods for estimating the RTOR volume at an intersection. The R.A. Smith report focused on intersections in southeast and south central Wisconsin, but the scope of the study did not include intersections in other areas of the state. RTOR data for this study was collected in order to evaluate the validity of the R.A. Smith report's conclusions on a statewide level.

Saturation flow studies and RTOR data are typically collected in the field at each intersection. The process of collecting these data is both time consuming and labor intensive. This type of data collection is neither feasible nor cost effective on an individual project basis. As such, this current study aims to analyze saturation flow rate and RTOR conditions on a statewide level by collecting data from intersections in all five WisDOT regions. This data collection approach will provide a more robust dataset resulting in saturation flow rate and RTOR methodologies representative of intersections throughout the state of Wisconsin.

2.0 Project Background

The subject project arose from the need to more accurately identify the base saturation flow rate and adjustment factors for different areas and approach types throughout the State of Wisconsin. Prior to the start of saturation flow data collection, the need arose for additional RTOR data to be collected in areas of the state outside of the southeast (SE) region. This need led to a combination of saturation flow and RTOR data collection into a single study.

This project was split into two phases. Phase 1 was primarily investigative and focused on saturation flow, while Phase 2 included the data collection efforts and analyses for both saturation flow and RTOR.

This section of the report outlines current WisDOT applications of saturation flow rate and RTOR volumes and provides a summary of the following previous studies that were used as a guide for the analyses provided for this project:

- *Guidelines for Quantifying the Influence of Area Type and Other Factors on Saturation Flow Rate (2)* a 2005 study prepared by the Texas Transportation Institute (TTI) in cooperation with the Florida Department of Transportation (FDOT)
- *Right Turn on Red Methodology Evaluation (3)*, a 2009 report prepared by R.A. Smith

Additionally, this section provides a summary of efforts completed during Phase 1 of this project. The remainder of this report focuses on Phase 2 efforts.

2.1 Current WisDOT Saturation Flow Rate Applications

Saturation flow rate is typically used in traffic analysis, modeling, and microsimulation. WisDOT's *Traffic Signal Design Manual (TSDM) (4)* states:

"Ideal Saturation Flow Rate used for left-turn and through movements shall be 1900. If any other Saturation Flow Rate is used it must be supported by a study performed in a comparable location, with similar characteristics, and the same geographical area."

Collecting saturation flow data for individual projects is costly and can be inefficient. However, there are currently no other options other than using the base saturation flow rate. This current study seeks to provide guidance for estimating saturation flow rates in Wisconsin by collecting data from a cross section of different areas and lane configurations.

2.2 Florida Department of Transportation (FDOT) Report

The starting point for this study was the review of the report, *Guidelines for Quantifying the Influence of Area Type and Other Factors on Saturation Flow Rate*. The report, prepared in 2005, was a combined effort between the Texas Transportation Institute, Kittleson & Associates, and the Florida Department of Transportation (referred to hereafter as the FDOT report). Two main objectives listed in the report were as follows:

1. Quantify the base saturation flow rate for through movements
2. Develop adjustment factors that account for the effects of area type, number of lanes, and the presence of right-turn vehicles.

During the first part of the study, lane configurations were determined and population groups were formed. A potential intersection list was developed and screened based on minimum annual average daily traffic (AADT) values and other intersection characteristics. Saturation flow studies were conducted at 35 intersection approaches, resulting in a base saturation flow rate of 1950 passenger cars per hour per lane (pcphpl). The study concluded that the approach configuration, area type (population size) and posted speed limit (as indicative of traffic pressure) did affect the saturation flow rate, and factors were developed and recommended for use within FDOT's *Quality/Level of Service Handbook*.

This current study for WisDOT follows a similar procedure to the FDOT report in terms of data reduction and analysis. The same lane configurations were utilized, while population thresholds were selected to generate a reasonable distribution and grouping of urbanized areas for the State of Wisconsin.

2.3 R.A. Smith Right-Turn on Red Report

R.A. Smith collected data for RTOR volumes at 44 intersections in southeastern and south central Wisconsin, with a majority of the intersections located in the metropolitan Milwaukee area. Results were presented in 2009 in the report *Right Turn on Red Methodology Evaluation*. An analysis of the data recommended the use of "manually adjusted hybrid equations" for determining RTOR volumes at single lane locations and at dual lane locations with the conclusion that "the recommended equations provide greater accuracy than the current WisDOT methodologies."

This current study focused on additional data collection of RTOR volumes. An existing archive of videos recorded for intersection turning movement counts was combined with videos at intersections collected specifically for saturation flow and RTOR studies. The aim was to expand on the data that was previously collected by R.A. Smith by primarily focusing on collection of new data from other portions of Wisconsin outside of the Milwaukee and Madison metropolitan areas, although new data were collected at four additional sites in the Madison urbanized area.

2.4 Saturation Flow Study Phase 1 Efforts

The first part of this study focused on determining the feasibility of using video at intersections to collect saturation flow and RTOR data. Phase 1 also provided guidance for the larger data collection effort that would take place during Phase 2. Phase 1 utilized an existing archive of videos that were originally recorded to complete turning movement counts at locations primarily in WisDOT's Southwest (SW) and Southeast (SE) regions. Videos were screened for use based on criteria described in the next section of the report. Phase 1 concluded that:

- Existing videos originally collected for turning movement counts could be used to collect saturation flow data and/or RTOR data provided that there was an adequate view of the intersection (necessary turning movements, stop bar, signal indication visible as necessary), met the conditions outlined in Section 3.2, and provided a sufficient number of cycles for collecting a statistically significant sample size.
- At new intersections, camera view and placement is crucial to collecting good data for saturation flow studies
- Multiple days of video may be required to collect an adequate sample of cycles for saturation flow studies

Archived video data from seven of the intersection approaches evaluated as part of Phase 1 were included as part of the saturation flow calculations for this study.

3.0 Site Selection and Data Collection

All saturation flow and RTOR studies completed as part of this project used video of traffic operations at the subject intersection. Phase 1 confirmed that the use of video to complete saturation flow and RTOR studies was feasible. During Phase 2, intersections were identified where cameras could be set up for the specific purpose of collecting saturation flow and/or RTOR data. The following sections discuss criteria for intersections and how sites were selected for study.







3.1 Intersection Approach Configurations and Population Groups

A goal of the study was to collect sufficient saturation flow data from each of the five WisDOT regions: North Central (NC), Northeast (NE), Northwest (NW), Southeast (SE), and Southwest (SW). New RTOR data was collected in the NC, NE, NW, and SW regions only. No new SE region RTOR data was collected due to the R.A. Smith report’s heavy focus on the SE region. The R.A. Smith data was incorporated into the statewide results. In addition to WisDOT region, the following characteristics were used to classify intersections:

- Intersection approach configuration (saturation flow)
- Intersection type (RTOR)
- Population group (saturation flow)

The six approach configurations studied were chosen based on the FDOT report referenced earlier. The FDOT report identified a minimum AADT value (in vehicles per day per lane, or vpdpl) for each approach configuration that would maximize the chances of successfully completing a saturation flow study. The approach configurations and associated minimum AADT values (utilized in site selection, discussed in Section 3.2) are shown in Table 1.

Table 1: Intersection Approach Configurations for Saturation Flow Studies

Number	Approach Configuration	Recommended Minimum AADT (vpdpl)
1		4000
2		3200
3		2900
4		4000
5		3200
6		2900

Saturation flow data were collected for all six approach configurations. However, only through lanes and shared through / right-turn lanes were utilized for the studies. Approach configurations 1, 2, and 3 each contain a shared through/right-turn lane. All left-turn movements and right-turn only movements (in configurations 4, 5 and 6) were excluded from the saturation flow studies.

The approach configurations used to classify intersections for saturation flow studies are different than the intersection type used to classify RTOR studies. RTOR intersections were first classified as either an intersection or an interchange and then by either single exclusive right-turn lane or dual exclusive right-turn lanes. The number of intersections available for RTOR studies was smaller than the number available for saturation flow studies because approach configurations 1, 2, and 3 could not be utilized for RTOR studies, due to the presence of shared, rather than exclusive, right-turn lanes.

Four population groups were chosen to classify intersections for saturation flow studies:

- Group 1: < 25,000
- Group 2: 25,000 to 100,000
- Group 3: 100,000 to 250,000
- Group 4: > 250,000

These four population groups were determined by examining Wisconsin population data from the *Population and Housing Unit Counts (5) 2010 Census* report published by the U.S. Department of Commerce. The break points for the population groups were selected based on Wisconsin Urbanized Areas and Urban Clusters (see Appendix A). Most of the urban clusters fit into group 1 (less than 25,000), along with any areas not classified as urban clusters. The Milwaukee and Madison urbanized areas were separated into group 4 (greater than 250,000). The remaining urbanized areas and clusters were split between population groups 2 and 3. Table 2 lists the population groups and the urbanized areas and clusters where data was collected for the saturation flow study.

Table 2: Saturation Flow Study Urbanized Areas and Clusters by Population Group

< 25K	25K to 100K	100K to 250K	> 250K
Johnson Creek	Fond du Lac	Appleton	Milwaukee
Hudson	Stevens Point	Eau Claire	Madison
Menomonie	Wausau	Green Bay	
Minocqua	Wisconsin Rapids		

3.2 Site Selection

After the approach configuration and population groups were determined a list of prospective intersections was developed for new data collection. Both WisDOT staff and consultants from all five WisDOT regions submitted intersections that were deemed as good candidates for completing saturation flow studies. Ninety intersections were proposed. These 90 intersections were combined with approximately 75 signalized intersections in the existing video archive.

Most of the intersections within the existing video archive were eliminated through initial screening; saturation flow studies were obtained for only seven of the locations in the existing video archive. The primary reason intersections were eliminated from use was if the existing video did not have an adequate view of the intersection, or critical portions of the intersection, to ensure accurate data collection. Additional reasons included:

- There was not enough video available to obtain an adequate number of useable cycles (saturation flow studies)
- There were not an adequate number of queues of more than eight vehicles at the intersection (saturation flow studies)
- The approach configuration at the intersection contained only a shared through/right-turn lane (RTOR studies)

A database was created for intersections that were studied. Information in the database included: WisDOT region, county, AADT, approach configuration, nearest municipality, population group, and posted speed limit. AADT values were obtained from WisDOT's *Roadrunner* website (6) and the City of Madison (7). Speed limits for the studied approaches were primarily obtained utilizing imagery from Google Maps or field notes. WisDOT knowledge of operations at recommended intersections was an important factor in determining which intersections (and in some cases which intersection approaches) to study. In addition, AADT was a useful piece of information in choosing intersection approaches. The FDOT report had determined minimum AADT values per lane that would theoretically produce the best chance of collecting saturation flow studies with a minimal time investment. These values were used to focus on (or eliminate) a specific approach when setting up the camera at a new video location. If the minimum AADT value was not met it did not mean that a study could not be completed, rather, more video time would be needed to obtain an adequate sample size.

In addition to the recommended minimum AADT, several other factors were used to determine if intersections would be good candidates for saturation flow studies:

- 10 foot minimum lane widths
- Minimal conflicts from pedestrians/bikes
- No parking maneuvers
- No bus stops
- Minimal approach grades
- Low percentages of heavy vehicles
- No influences from extraneous factors

The factors listed above are all adjustment factors that the HCM uses in its equation for determining the base saturation flow rate at an intersection. An intersection meeting the above criteria would have minimal adjustments per the HCM method.

3.3 Video Data Collection

Videos for data collection were recorded using portable, solar-powered camera units that could be mounted on existing poles/infrastructure at intersections. Ideally, cameras were installed such that:

- The stop bar was visible (saturation flow)
- The front axle of a vehicle could clearly be seen crossing the stop bar (saturation flow)
- The signal indications were visible
- Part of the vehicle queue was visible
- Conflicting turning traffic was visible (RTOR)

The use of recorded video over longer periods of time, rather than technicians stationed at the individual intersections for manual counting over shorter durations, was thought to provide better odds of capturing a sufficient number of cycles during peak times where vehicle queues of eight or more vehicles would occur in a through lane. In order to maximize the chances of gathering adequate data at each intersection, cameras were typically installed on Monday and removed on a Thursday or Friday to gather multiple days of peak period video.

3.4 Saturation Flow Study Methodology

The following procedure was followed to complete saturation flow studies from the collected video:

- Verify the presence of a queue of eight or more vehicles
- Record the time of signal change from red to green (if signal change was visible)
- Record the time of each vehicle as the front axle crosses the stop bar or reference point
- Record the number of heavy vehicles in queue positions 1 – 4 and positions 5 and above
- Record the number of right-turning vehicles in queue positions 1 – 4 and positions 5 and above

These steps were followed for each cycle with a queue of greater than eight vehicles until a statistically significant number of sample cycles was reached. The method outlined above is in accordance with the HCM headway method. A sample data collection sheet can be found in Appendix B. Since the time that each vehicle crossed the stop bar was recorded, individual headways between vehicles could be computed.

Saturation flow data were typically collected using videos from traditional peak periods (6:00 – 9:00 AM and 3:00 – 6:00 PM) on Tuesdays, Wednesdays, or Thursdays. In approximately one-third of the locations, a portion of the samples were taken from hours outside the peak periods in order to acquire a sufficient total number of samples for the study. In most of these cases, the additional samples were collected between noon and 3:00 PM.

3.5 Right-Turn On Red Data Collection Methodology

RTOR study efforts were initially focused on the NC, NE, and NW regions, but later included collection of data at additional intersections in the SW region. RTOR data were gathered on Tuesdays, Wednesdays, or Thursdays using video from both the existing archive and at new locations. In most cases, two hours of RTOR data were collected from the video at each intersection, typically the peak AM and PM hours. At five locations, only one hour (AM or PM peak) was used due to either a lack of available video or a very low volume of right turns in other hours.

Numerous pieces of information were collected at each intersection. Key traffic data included:

- Total number of right-turning vehicles (V_{RT})
- Total number of right-turn on red vehicles (V_{RTOR})
- Cycles when no vehicles were present to attempt a RTOR movement
- Conflicting roadway traffic (represents the total number of vehicles that would interfere with or cross the RTOR movement)

The use of video allowed for a data collection method that was more granular: each of the pieces of information listed above was collected per individual cycle. RTOR data from the R.A. Smith report (primarily locations in the SE region) were combined with new data collected in this study, resulting in a statewide dataset. The number of hours of data collected at the R.A. Smith locations ranged from one (either AM or PM peak hour) to three (AM, midday, and PM).

3.6 Sample Sizes

A target of 10 sites per WisDOT region was set for saturation flow studies, with a total goal of 50 intersections. A target of five intersections per WisDOT region was set for the RTOR study. In addition, the saturation flow study aimed to distribute intersections between approach configurations and population groups as best as possible. However, it was not feasible to collect data for all approach configuration and population group combinations.

The sample size of cycles to collect a statistically significant saturation flow study was determined by use of the following equation (also utilized in the FDOT report):

$$N = \left(\frac{z*s}{e} \right)^2 \quad (1)$$

N = Sample size, number of cycles

z = standard normal variate = 1.645, for 90% confidence in the results

s = standard deviation of the average saturation headways

e = allowable error in estimate of mean headway = +/- 0.06 seconds/vehicle

Appendix C contains two tables that show allowable error ranges for multiple confidence levels and the corresponding sample size required based on the standard deviation of the sample. An allowable error of +/- 0.06 seconds/vehicle (the same value used in the FDOT report) and a confidence interval of 90% were chosen to keep sample size requirements reasonable and achievable. The allowable error corresponds to +/- 60 vehicles per hour for determining the mean saturation flow rate.

Using equation 1, the actual number of cycles required for a statistically significant result depends on the standard deviation of the average saturation headways (s) for each data collection site. Prior to data collection, equation 1 was used (with an assumed value for $s = 0.25$) to arrive at an initial target of 50 cycles per intersection. It should be noted that this is significantly higher than the minimum of fifteen cycles recommended by the HCM.

After data collection, equation 1 was used with the actual standard deviation of headways for each location to ensure the minimum number of cycles required had been met. Any locations not meeting the minimum number of cycles were not used in analysis. All data included in the final dataset met the 90% confidence level.

4.0 Study Analysis & Results

This section summarizes the results and subsequent data analysis of the saturation flow studies and RTOR studies. Data analysis for the saturation flow study portion focused on developing adjustment factors for approach configurations and area populations. Regional trends and posted speed limits were also considered. Data analysis for the RTOR study was completed as a supplement of the R.A. Smith report.

4.1 Saturation Flow Results Summary

Saturation flow data collection was completed at a total of 55 sites, including 11 in the NW region, 10 in the NC region, 11 in the NE region, 10 in the SW region and 13 in the SE region. Table 3 illustrates the breakdown by approach type and population group, and shows that samples were obtained in 19 of the 24 possible approach configuration / population group combinations.

Table 3: Data Points Collected by Population Group and Approach Configuration







APPROACH CONFIGURATION		Population Group				Total
		< 25K	25K to 100K	100K to 250K	> 250K	
1		1	2	1	0	4
2		1	1	2	0	4
3		1	0	0	6	7
4		2	2	1	1	6
5		3	7	5	9	24
6		2	0	3	5	10
Total		<i>10</i>	<i>12</i>	<i>12</i>	<i>21</i>	55

Table 4 on the following page provides a data summary for each site. In five cases, multiple approach directions at the same intersection or at adjacent intersections were combined into a study in order to obtain a larger number of cycle samples (only if each had the same approach configuration). Information in Table 4 includes the population groups and approach configurations shown in Table 1, the approach studied, and AADT on the approach leg studied (both directions of traffic). AADT values were obtained from WisDOT's Roadrunner site (6) and from City of Madison traffic flow maps (7).

The 'headways measured' column of Table 2 refers to the number of individual vehicle headways collected throughout all cycles studied. The heavy vehicle percentage and right-turn vehicle percentages shown in Table 2 do not refer to a percentage of overall traffic on the approach. These percentages were based on the number of heavy vehicles or right-turning vehicles observed in the actual headways that were measured (vehicle number five through the end of queue). The percentage of heavy vehicles is low because cycles with heavy vehicles were avoided if possible in order to limit their impact on the measured value of saturation flow rate.

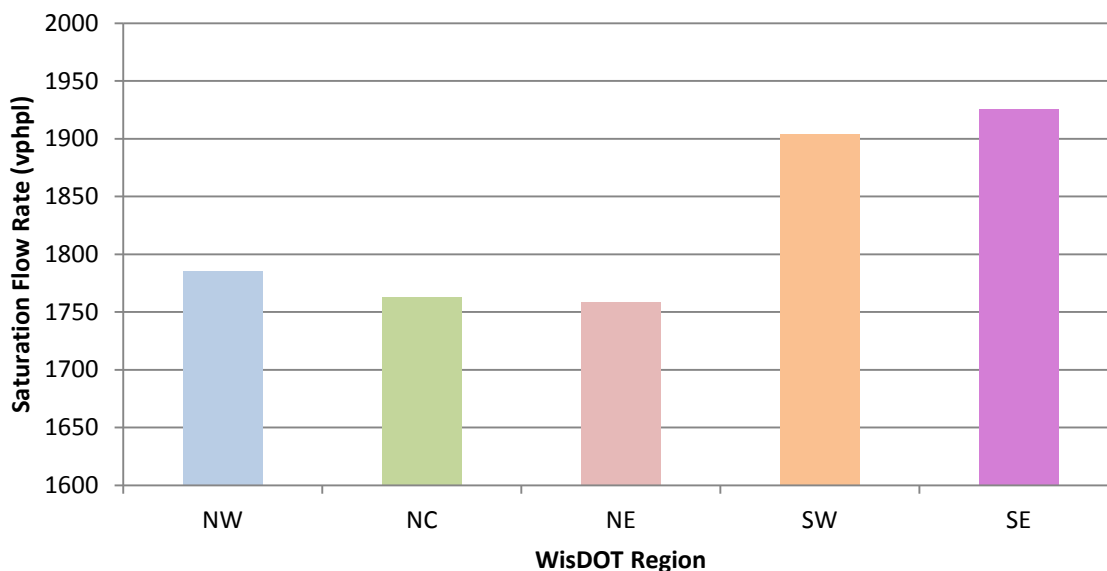
The 'STDEV Cycle Headways' column is a measure of the standard deviation of the average headway measured for each cycle. As discussed in Section 3.6, this value was used to verify that the minimum number of cycles was collected for each site.

Four normality tests (Shapiro-Wilk, Anderson-Darling, Lilliefors and Jarque-Bera) were run on the dataset to look at the data distribution. The Shapiro-Wilk test concluded that the dataset was not normally distributed, while the other three concluded that the dataset was normally distributed. As the results of the four tests did not all agree, median values were used (as opposed to mean values) in analysis to ensure that extremes had minimal impact on results. In addition, two outlier tests, the Dixon Test and Grubbs Test, were run on the dataset to determine if there were any outliers that should be removed. The null hypothesis of each test is that there are no outliers in the dataset. Each test concluded that one cannot reject the null hypothesis. Therefore, no samples were removed as outliers based on the results of these two outlier tests. The results of the normality and outlier tests can be found in Appendix F.

4.2 Saturation Flow Results by WisDOT Region

An initial summary of the saturation flow study results by WisDOT region can be found in Figure 1. An average saturation flow rate was aggregated from all studies completed within each WisDOT region.

Figure 1: Saturation Flow Rate by WisDOT Region



An inspection of Figure 1 shows that the saturation flow rates in the SW and SE regions were typically higher than those of the northern three regions. This trend was expected, as the studies in the southern regions were typically located in more highly populated areas. As shown in other studies, such as the FDOT report, the saturation flow rates are generally found to be higher in larger urban areas.

4.3 Saturation Flow Results by Approach Configuration

The relationship between approach configuration and saturation flow rate is displayed in Figure 2. An average saturation flow rate was aggregated from all studies in the approach configuration.

Figure 2: Saturation Flow Rate by Approach Configuration

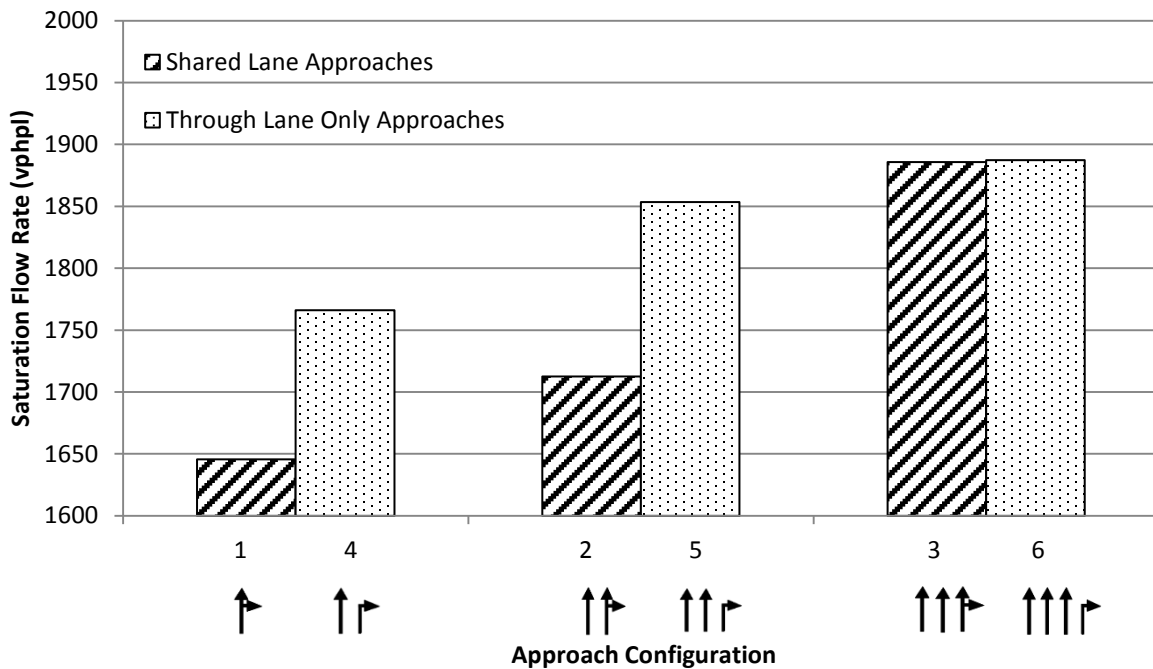


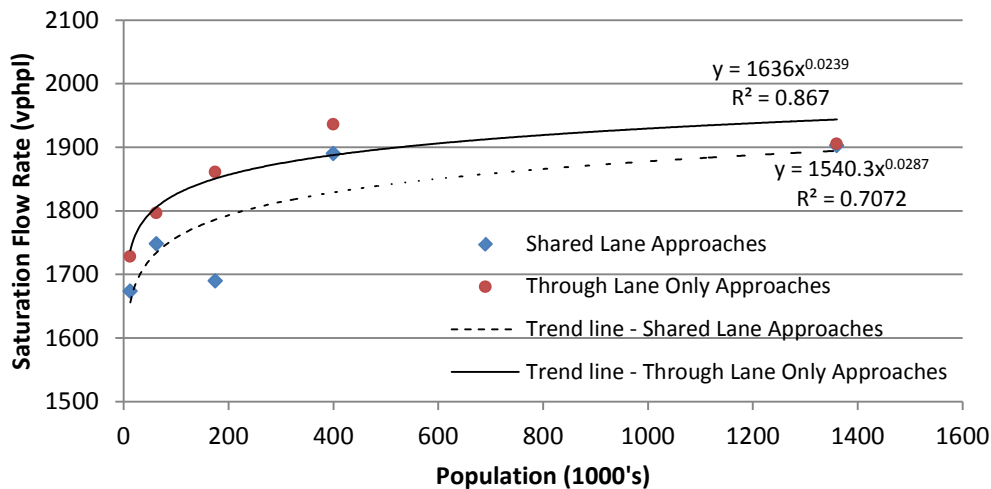
Figure 2 shows a general trend that as the number of approach lanes in a configuration increases, the saturation flow rate increases (approach configurations 1 and 4 have one through lane, 2 and 5 have two through lanes, and 3 and 6 have three through lanes). This relationship was investigated further through nonlinear multivariable regression analysis (see Section 4.6). Figure 2 also highlights which approach configurations have exclusive through lanes only versus approaches that have a shared right-turn and through lane.

4.4 Saturation Flow Results by Area Population

Figure 3 shows the relationship between area population and saturation flow rate. One point was plotted at the midpoint of each population group (e.g. 175,000 for the 100,000 – 250,000 population group). Intersections studied in Madison and Milwaukee urbanized areas were plotted as separate data points using their actual populations. For this visualization, the data were split into two groups: one for approach configurations that included a shared lane, and one for approach configurations with through only lanes. Best fit lines were plotted for each group of data.

As expected, the saturation flow rate increased with area population. The approach configurations with shared lanes had lower saturation flow rate values than the approach configurations with through lanes only for all population groups. These relationships were explored further through nonlinear multivariable regression analysis (see Section 4.6).

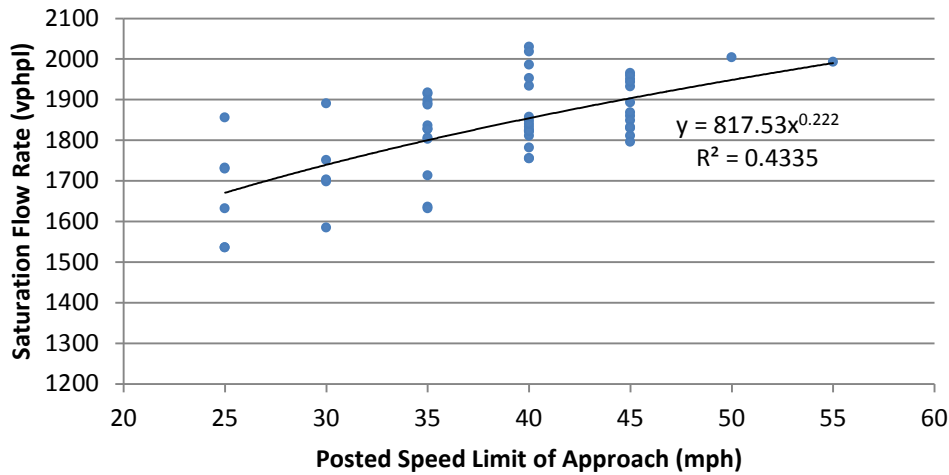
Figure 3: Saturation Flow Rate by Population Group



4.5 Saturation Flow Results by Posted Speed Limit

Figure 4 shows a scatter plot of the posted speed limit and observed saturation flow rate for each approach studied. As it relates to saturation flow rate, the posted speed limit is a general indication of the roadway type and surrounding conditions. Roadways with a functional classification indicative of higher levels of mobility, such as arterials and major collectors, will usually be posted with higher speed limits than minor collectors or local roads that are designed primarily for access to adjoining properties. The best fit trend line indicates that the saturation flow rate increases with the posted speed limit of the approach. It should be noted that the dataset only included one location for posted speed limits of 50mph and 55mph. Further discussion of the investigation of this relationship is contained in Section 4.6.

Figure 4: Saturation Flow Rate by Posted Speed Limit of Approach



4.6 Saturation Flow Analysis

The relationships illustrated in Figures 2, 3 and 4 were the basepoint for a more in-depth analysis of the dataset. The next step in the analysis was to determine which factors outlined in the HCM were already present in the dataset.

The HCM formula for calculating adjusted saturation flow rate is:

$$s = s_0 f_w f_{HV} f_g f_p f_{bb} f_a f_{LU} f_{LT} f_{RT} f_{Lpb} f_{Rpb} \quad (2)$$

The variables in equation 2 above are:

s = adjusted saturation flow rate (vehicles per hour per lane, vphpl)

s_0 = base saturation flow rate (pcphpl) = 1900 pcphpl

f_w = adjustment factor for lane width

f_{HV} = adjustment factor for heavy vehicles in traffic stream

f_g = adjustment factor for approach grade

f_p = adjustment factor for existence of a parking lane and parking activity adjacent to lane group

f_{bb} = adjustment factor for blocking effect of local buses that stop within intersection area

f_a = adjustment factor for area type

f_{LU} = adjustment factor for lane utilization

f_{LT} = adjustment factor for left-turn vehicle presence in a lane group

f_{RT} = adjustment factor for right-turn vehicle presence in a lane group

f_{Lpb} = pedestrian adjustment factor for left-turn groups

f_{Rpb} = pedestrian-bicycle adjustment factor for right-turn groups

Site selection (discussed in Section 3.2) minimized the number of factors affecting the saturation flow rate, including lane width and approach grade. Lane utilization was assumed to be uniform. Data were not collected during cycles where parking activities were taking place, buses were present/making stops, or pedestrian/bicycle interference occurred. The factors that were present during studies included heavy vehicles and right-turning vehicles. The number of heavy vehicles and right-turning vehicles present from position number 5 in the queue through the end of the queue was tallied during data collection; therefore these two factors could be calculated for each study per the HCM adjustment factor equations:

$$f_{HV} = \frac{100}{100 + P_{HV}(E_T - 1)} \quad (3)$$

The variables in equation 3 are:

f_{HV} = adjustment factor for heavy vehicles in traffic stream

P_{HV} = percent heavy vehicles in the corresponding movement group (%)

E_T = equivalent number of through cars for each heavy vehicle = 2.0

$$f_{RT} = \frac{1}{1 + P_{RT}(E_{RT} - 1)} \quad (4)$$

The variables in equation 4 are:

f_{RT} = adjustment factor for right-turn vehicle presence in a lane group

P_{RT} = percent right-turning vehicles in the corresponding movement group (%)

E_{RT} = equivalent number of through cars for a protected right-turning vehicle = 1.18

The percentage of heavy vehicles observed in the studies was low, ranging from 0% to 4% with an average of 0.9%. The percentage of right-turning vehicles was highest for approach configuration 1, with an average value of 22%. Approach configurations 2 and 3 had significantly less percentages of right-turning vehicles studied due to data also being collected in the exclusive through lane(s).

Nonlinear Multivariable Regression Analysis

The dataset was prepared for regression analysis by adjusting the field measured saturation flow rates for right-turning vehicles and heavy vehicles using the HCM procedure (equations 3 and 4). A nonlinear multivariable regression analysis was then conducted to investigate which variables were the most significant, how the variables interact, and to determine proposed adjustment factors to be used in calculating the saturation flow rate.

The initial relationships between the saturation flow rate and area population, approach configuration, and posted speed limit of the approach (see Figures 2, 3 and 4) were consistent with those in the FDOT report. As such, the following equations were obtained from the FDOT report and used in the analysis:

$$f_{Pop} = \frac{1}{Pop^{c1}} \quad (5)$$

$$f_N = \frac{1}{1+1/N(E_{CL}-1)} \quad (6)$$

$$f_{SL} = \frac{1}{1+C_2(S-R)} \quad (7)$$

The variables in equations 5, 6 and 7 are:

F_{Pop} = adjustment factor for population

Pop = area population in millions (population x 10^{-6})

C1 = population regression coefficient

F_N = adjustment factor for approach configuration

N = number of lanes

E_{CL} = curb lane equivalency factor

F_{SL} = adjustment factor for posted speed limit of approach

C2 = speed limit regression coefficient for

S = posted speed limit of approach (mph)

R = reference speed (mph)

Equations 5, 6 and 7 were combined into a nonlinear regression model following the general form of the HCM equation for calculating adjusted saturation flow rate:

$$S = S_0 * \left(\frac{1}{Pop^{c1}} \right) * \left(\frac{1}{1+\frac{1}{N}(E_{CL}-1)} \right) * \left(\frac{1}{1+C_2(S-R)} \right) \quad (8)$$

The variables in equation 8 that were not previously defined in equations 5, 6 and 7 are:

s = field measured saturation flow rate (vphpl) pre-adjusted for right-turning and heavy vehicles

s_0 = base saturation flow rate (pcphpl)

Two approaches were investigated for the nonlinear multivariable regression analysis: cycle-based and intersection-based. The intersection-based approach used equation 8 with one data point for each of the 55 intersections shown in Table 4. The cycle-based approach used a modified version of equation 8 that examined the discharge time in place of saturation flow rate for all of the cycles (3,117) across all 55 intersections shown in Table 4.

Multiple versions of both the cycle-based and intersection-based regressions were run in order to determine the best model. The intersection-based approach emerged as the better alternative since results from the cycle-based approach tended to under-predict the saturation flow rate. Each regression run featured a different combination of inputs. For field measured saturation flow rate, both the average and median values were used as inputs. For posted speed limit, different values were used for the R term, focusing on 40 mph, 45 mph, 50 mph, and 55 mph.

For the population group the different input options included:

- Urbanized Area/Cluster population
- Midpoint of population group
- Midpoint of population group with Madison and Milwaukee as separate population groups
- Population groups as a qualitative variable (1, 2, 3, 4)

For approach configuration, the following input options for the N term included:

- Number of through lanes
- Number of through plus right-turn lanes
- Total number of approach lanes

The run that ended in the best fit model used the median field measured saturation flow rate, the urbanized area/cluster populations, the total number of approach lanes, and a reference speed limit of approach of 40 mph. The resulting r-squared value of the regression run was 0.62. Values for each of the parameters in the equation are shown in Table 5.

Table 5: Nonlinear Multivariable Regression Model Parameters

Parameter	Parameter Description	Value
S_0	Base saturation flow rate	1986
C1	Population coefficient	-0.0143
E_{CL}	Curb Lane Equivalency Factor	1.13
C2	Speed Limit coefficient	-0.0042
R	Reference speed (mph)	40

The parameters from Table 5 were input into equation 5 (for population), equation 6 (for approach configuration) and equation 7 (for posted speed limit of approach). The resulting adjustment factors are displayed in Tables 6, 7 and 8. An example application of the factors is included in Appendix G.

Table 6: Area Population Adjustment Factors

Urbanized Area/Cluster Population	Adjustment Factor
< 2,000	0.91
2,000 - 4,499	0.92
4,500 - 8,999	0.93
9,000 - 18,999	0.94
19,000 - 39,999	0.95
40,000 - 82,999	0.96
83,000 - 170,499	0.97
170,500 - 347,499	0.98
347,500 - 704,499	0.99
> 704,500	1.00

Table 7: Speed Limit Adjustment Factors

Speed Limit of Approach	Adjustment Factor
25	0.94
30	0.96
35	0.98
40	1.00
45	1.02
50	1.04
55	1.07

Table 8: Approach Lane Adjustment Factors

Total Approach Lanes	Adjustment Factor
1	0.88
2	0.94
3	0.96
4	0.97
5	0.97
6	0.98
7	0.98

Following development of the model, predicted saturation flow rates were calculated using the HCM standard procedure, and then also using the HCM standard procedure with the additional adjustment factors from the regression model. A scatter plot of the field measured saturation flow rate versus the saturation flow rates calculated using the standard HCM procedure is shown in Figure 5. Figure 6 shows a scatter plot output from the regression. Each scatter plot also includes an 'y = x' line which represents an ideal match between the predicted and field measured values.

Figure 5: HCM Theoretical Saturation Flow Rate versus Field Measured Data

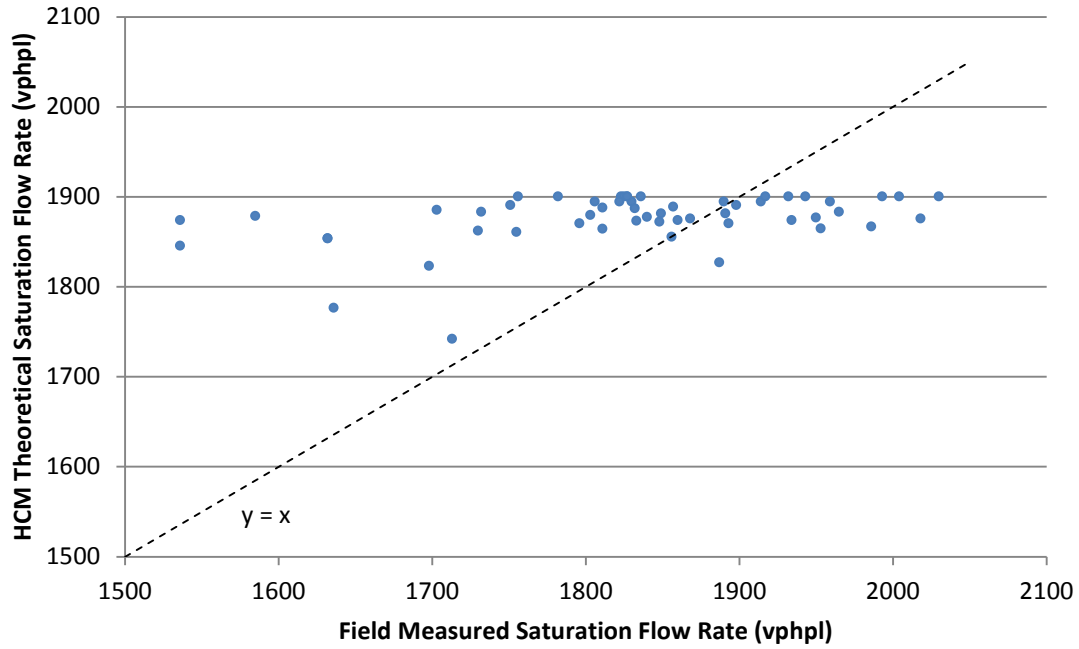
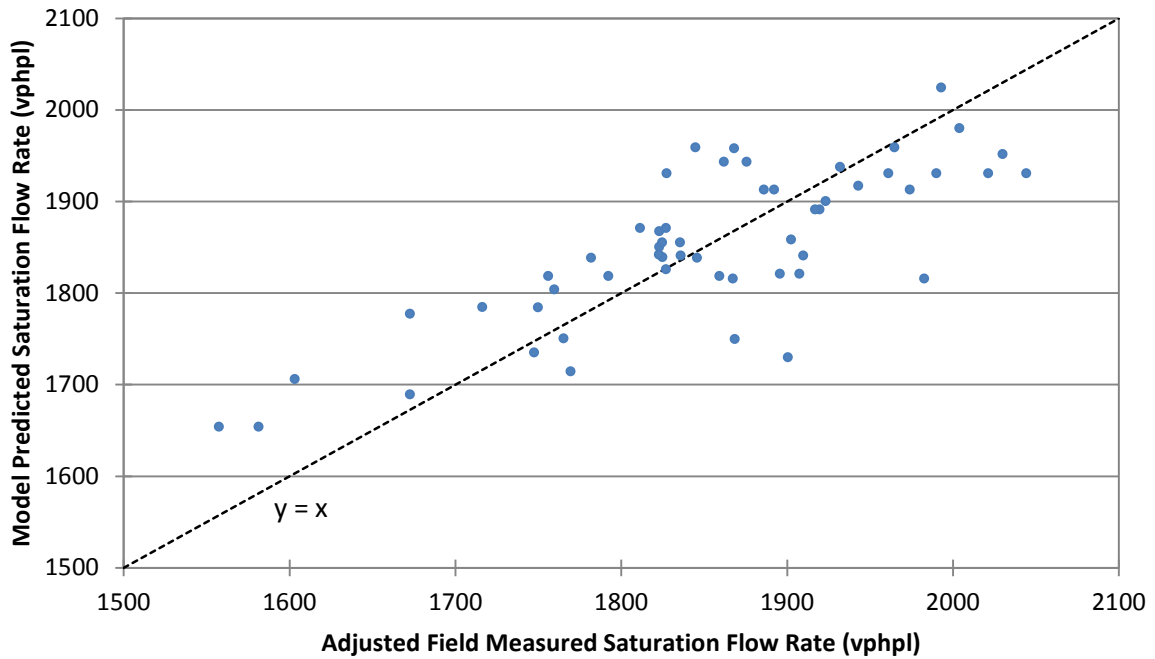


Figure 6: Field Adjusted Saturation Flow Rate versus Regression Model



4.7 Right-Turn On Red Study Results

Right-turn on red studies were collected from twenty-six different sites, including six in the NW region, five in the NC region, seven in the NE region and eight in the SW region. For the purposes of this report a site is defined as a specific right-turn movement from a single approach to an intersection. At twenty-two intersections, studies were conducted at only one approach. At two intersections, one each in the NC and NE regions, two different approaches at the same intersection were analyzed and treated as unique sites. The data collected for this study has been combined with the R.A. Smith data and summarized in Table 9.

Several intersection characteristics were collected in addition to traffic data including: intersection type, right-turn geometry type, right-turn control, roadway cross section, median type, and posted speed limit of approach. Notes on the right side of Table 9 provide information on the qualitative characteristics. The cycle length and green time were aggregated from several cycle samples (typically three) during the hour in which data was collected.

The traffic data section of Table 9 contains the right-turning traffic volumes as well as conflicting traffic volumes. Conflicting left-turn traffic was only counted if it occurred when the signal indication was red for the right-turn movement being studied. Arrival percentages were also collected for most of the intersections if the camera angle allowed an adequate view of the right-turn lane queue. Any percentage of vehicles in the 'Unknown' column indicates a time when the right-turn queue length exceeded camera view.

Similar to the R.A. Smith report, there was a wide distribution of data observed. Total right-turn volumes ranged from 23 to 767. RTOR percentages ranged from 12% to 84% with an average value of 48% across all studies. Conflicting traffic volumes ranged from one vehicle per hour to 1298 vehicles per hour.

Table 9: Right-Turn on Red Data

Table with columns: Study #, Site Location, WISDOT Region, County, Urbanized Area/Cluster, Population Group, Study Date, Right Turn Movement, Intersection Type, RT Geometry (Type, Receiving Lanes, Control, X-Section, Median, Speed), Highway Geometry (Cycle Length, Green Time, Peak, TOD), Cycle Information (Conflicting Thru, Type of Conflicting Left, Conflicting Left, Total Conflicting, RT, RTOG, RTOR, %RTOR, Conflicting Traffic to RT, Arrival On Green, Arrival On Red, Unknown), Traffic Data (Method 1, Method 2, WISDOT, Error %, Hybrid Equation, Error %, Intersection Specific Equation, Error %), and R.A. Smith Methodology (Error %, Error %).

Table Notes

Intersection Type:

- 1) Single lane Intersection,
2) Single lane Interchange
3) Dual lane Intersection
4) Dual lane Interchange

RT Geometry Type:

- 1) Exclusive RT lane
2) RT lane formally parking lane
3) Taper
4) Island

Receiving Lanes:

- 0) Merge
1) Channelized
2) Full Lane

Control:

- 0) Free
1) Yield
2) Stop
3) RT Turn Signal w/red light
4) RT Signal w/red arrow

Median:

- 0) Undivided
1) Divided

Type of Conflicting Left:

- 1) Protected
2) Permitted
3) Protected/Permitted
4) Permitted, Protected, or Protected/Permitted w/right-turn yield

Description of WisDOT & R.A. Smith methodologies in Section 4.8 text

4.8 Right-Turn On Red Analysis

The results of the RTOR data collection were analyzed in a procedure similar to the R.A. Smith report. Data collection sites were first categorized into one of four types: intersections with a single right-turn lane, interchanges with a single right-turn lane, intersections with dual right-turn lanes and interchanges with dual right-turn lanes. Since the saturation flow study portion of data collection focused primarily on intersections, most of the available sites for RTOR studies fell into the single right-turn lane intersection category.

After categorizing each study site, the field measured data were initially compared against three prediction methods: WisDOT methodology (equations 9 and 10), the R.A. Smith manually adjusted hybrid equation for single lane locations (equation 11), and the R.A. Smith equation for single lane intersections (equation 13). The WisDOT procedure for computing RTOR volume takes the minimum of two equations (from the *Traffic Signal Design Manual*, section 3-2-2):

$$\text{Equation 1: } V_{\text{RTOR}} = (3600/C)*2, \text{ where } C \text{ is the cycle length} \quad (9)$$

$$\text{Equation 2: } V_{\text{RTOR}} = 0.50(V_{\text{RT}}) \quad (10)$$

The R.A. Smith report recommended the following manually adjusted hybrid equations to predict right-turn on red volumes:

$$\text{Single lane Locations: } V_{\text{RTOR}} = 0.50(V_{\text{RT}}) \quad (11)$$

$$\text{Dual lane Locations: } V_{\text{RTOR}} = 0.30(V_{\text{RT}}) \quad (12)$$

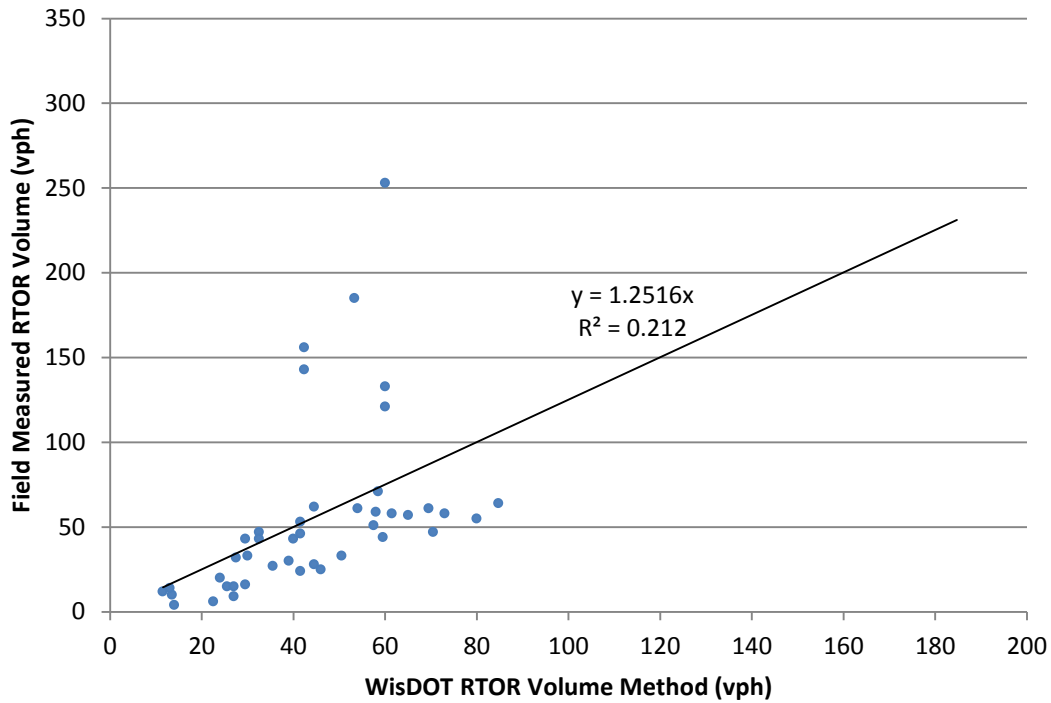
In addition, the R.A. Smith report developed individual equations for each site type. For intersections with single right-turn lanes, the best fit equation was:

$$\text{Single lane Intersections: } V_{\text{RTOR}} = 0.38(V_{\text{RT}}) \quad (13)$$

Table 9 includes columns for both the WisDOT methodology and the recommended R.A. Smith equations. Percent error values were also calculated for each of the methodologies versus the field data. A wide error range was observed. Figures 7, 8 and 9 are scatter plots of field measured right-turn on red data (y-axis) versus the WisDOT and R.A. Smith predicted values (x-axis) shown in Table 9 for all new data points at single lane intersections collected in this study. Best-fit lines were plotted through the data points with the y-intercept set to zero. The r-squared measure of the line is included on each figure to indicate the data correlation.

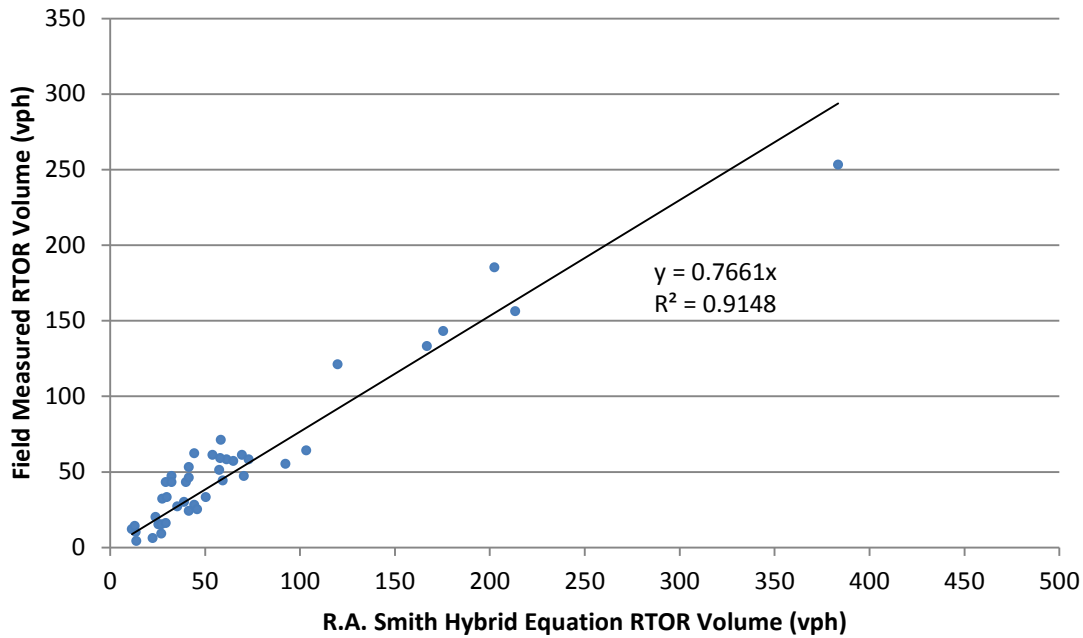
The WisDOT method versus the field measured data yielded several data points where the predicted and field measured values were very close. However, there were more outliers with the WisDOT method than with either R.A. Smith method. Figure 7 shows an R-squared value of 0.212 for the line of best fit with a y-intercept of 0. This indicates a poor correlation of data. The percent error ranged from -76% to 275%, with an average of 21% over all intersections studied.

Figure 7: Field Measured RTOR Volume vs. WisDOT RTOR Predicted Volume for Single lane Intersections



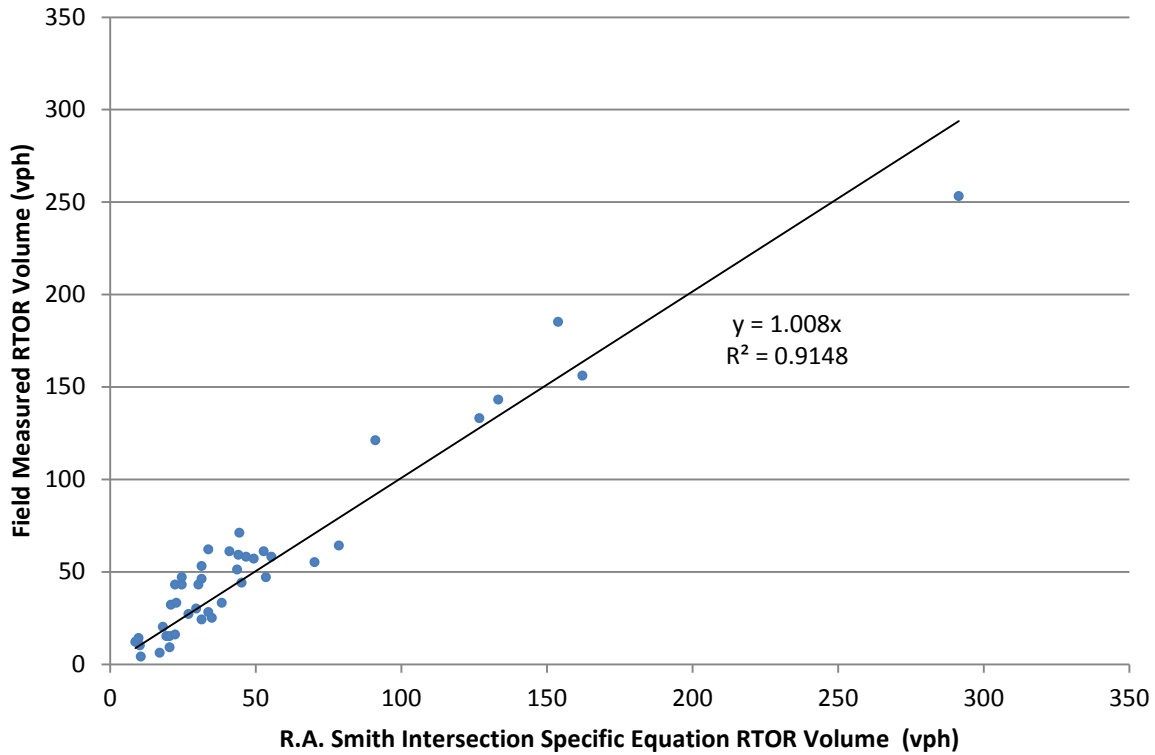
The R.A. Smith Hybrid Equation predictions versus the field measured RTOR data are shown in Figure 8. Percent error ranged from -31% to 275%, with an average of 37%. The r-squared value of 0.9148 indicates a good correlation of data.

Figure 8: Field Measured RTOR Volume vs. R.A. Smith Hybrid Equation for Single lane Intersections



The R.A. Smith single right-turn lane intersection equation predictions versus the field measured RTOR data are shown in Figure 9. Percent error ranged from -48% to 301%, with an average of -38%. The r-squared value of 0.9148 indicates a good correlation of data. Of Figures 7, 8 and 9, Figure 9 has a best fit trend line with an equation very near to the ideal case ($y = x$).

Figure 9: Field Measured RTOR Volume vs. R.A. Smith Equation for Single lane Intersections



After initial comparisons of the new results versus WisDOT and R.A. Smith methodologies were made, regression analysis was conducted to further investigate the dataset. The first regression run incorporated both qualitative (intersection type, median type, etc.) and quantitative (volume of RT vehicles, conflicting traffic volume, etc.) variables. This initial regression analysis found that the total number of right-turning vehicles was the most significant variable in determining the overall RTOR volume, which is consistent with the findings of the R.A. Smith Report. The percentage of vehicles arriving on red also had an apparent relationship that is discussed at the end of this section.

After identifying intersection type as a significant factor, the single lane intersections were further analyzed as a separate dataset. Figure 10 shows a scatter plot of total right-turning vehicles versus RTOR vehicles for all single lane intersections, including the R.A. Smith data. The data were split up into two groups: northern region locations and southern region locations.

Figure 10: Total RT Volume versus RTOR Volume for Single Lane Intersections, North & South Regions

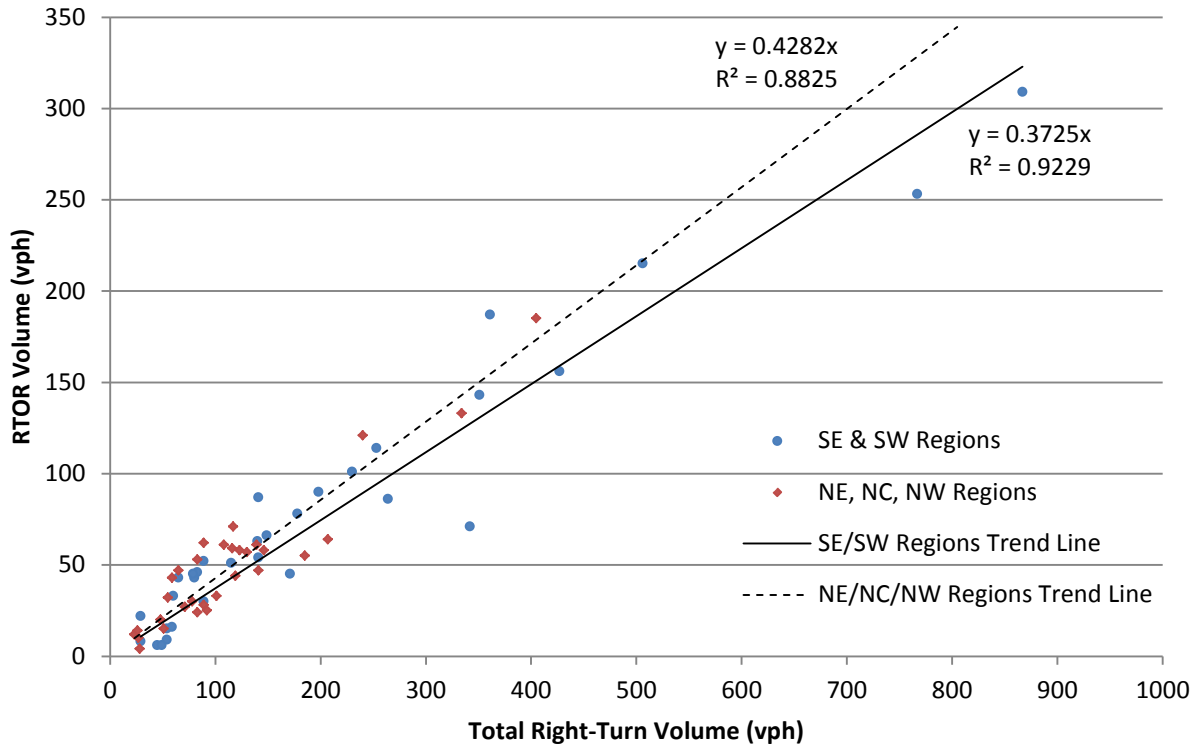
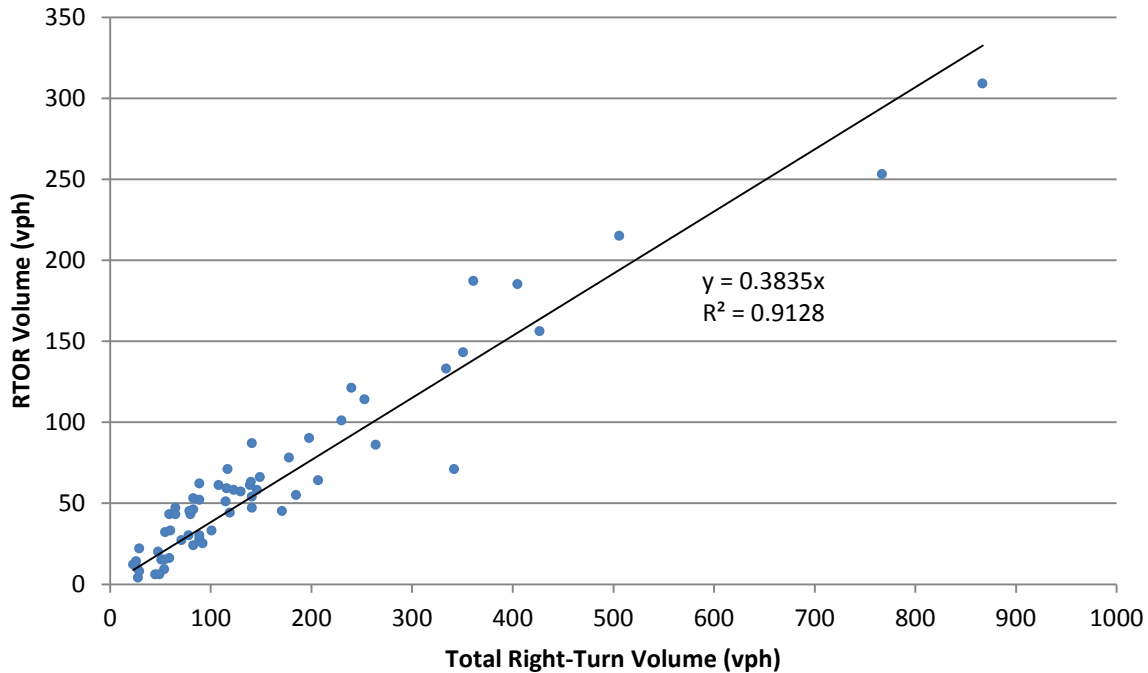


Figure 10 shows slightly different trend lines for the northern regions (31 data points) and southern regions (32 data points). Each trend line has a high correlation, with an r-squared value of 0.8825 for the northern region intersections and an r-squared value of 0.9229 for the southern region intersections. This apparent visual difference was run through multiple regression analyses to determine the significance level of the respective regional groups (northern and southern). The resulting outputs reported a t-statistic value of 2.41 for the northern regions, which is a statistically significant difference (values greater than 1.96 indicate a statistically significant value). The resulting equation, which included an additive term for the northern regions, had an r-squared value of 0.917. This r-squared value is only slightly larger than the value found when using one equation for all regions (see Figure 11).

All single lane intersection data points were plotted together as one group in Figure 11. The resulting best fit trend line indicates a relationship of $V_{RTOR} = 0.38V_{RT}$, which matches the final equation that R.A. Smith recommended for use with single right-turn lane intersections. The r-squared value of 0.9128 indicates a good correlation.

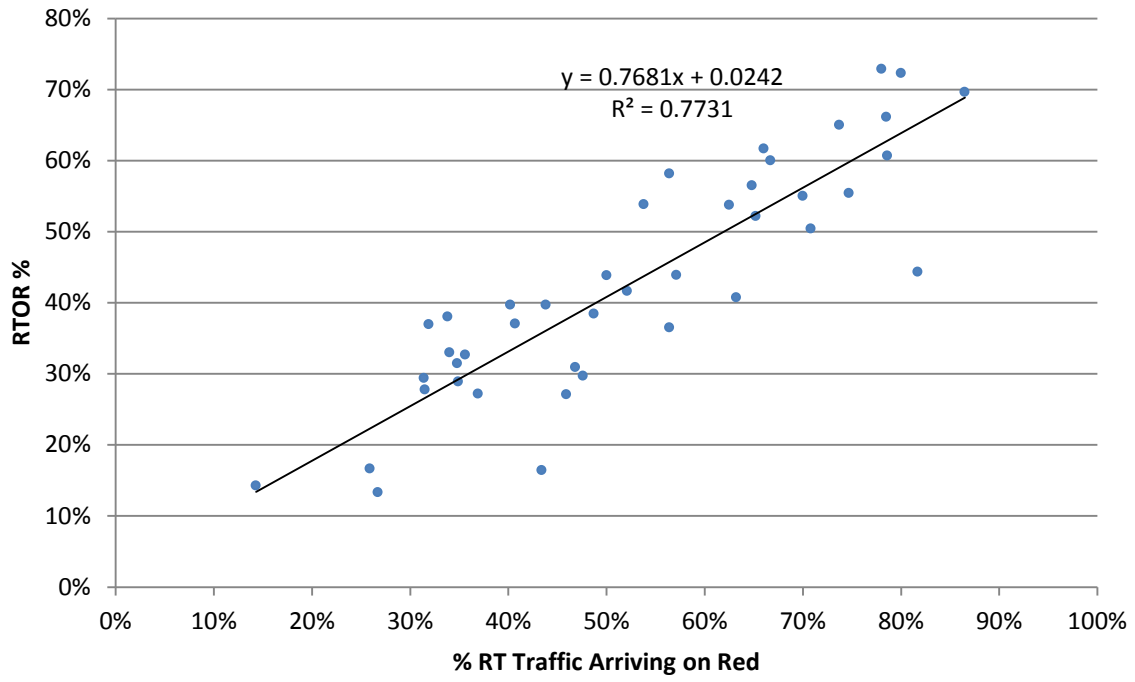
Figure 11: Total RT Volume versus RTOR Volume for Single Lane Intersections



Figures 7 through 11 illustrate data from intersections with single right-turn lanes. R.A. Smith previously also analyzed intersections and interchanges with dual right-turn lanes. This current study did not focus on new data collection at intersections or interchanges with dual right-turn lanes. One of the main reasons is that many of the dual right-turn lane locations in the state are located in the SE and SW regions, where R.A. Smith had already collected data. While further investigation would be needed in the northern regions, the use of the R.A. Smith recommended equation for dual lane locations, $V_{RTOR} = 0.30V_{RT}$, is reasonable given the verification of their recommended equation for single right-turn lane intersections.

One additional relationship was investigated that was not previously available in the R.A. Smith analysis. Queue data for the right-turn lane at the beginning of the green indication and at the end of the green indication was collected for each intersection and is reported in Table 9. Figure 12 shows a scatter plot of the percent of right-turning traffic arriving on red versus the percent RTOR. While there does appear to be a good linear relationship between the two, this relationship was not investigated further since the percentage of vehicles arriving on red is information that is not often readily available to traffic engineers.

Figure 12: Percentage of Right-Turn Traffic Arriving on Red versus RTOR Percentage



5.0 Conclusions

The intent of this study was to evaluate saturation flow rate and RTOR volumes on a statewide level. The objective was to expand upon and improve current methodologies for predicting saturation flow rate and RTOR volumes. Data was collected in each of the five WisDOT regions in order to represent a wide variety of population groups, intersection types, and local conditions. The datasets were examined through multivariable regression analysis and compared to existing methodologies.

Saturation Flow Study

Analysis found that area population, total approach lanes, and posted speed limit of the approach have an influence on the saturation flow rate. It should be noted that the posted speed limit functions as more of a proxy indicator of the roadway type and local conditions surrounding the intersection. The best fit model resulted in adjustment factors ranging from 0.91 to 1.00 for area population, 0.88 to 0.98 for total number of approach lanes, and 0.94 to 1.07 for speed limit of the approach. The best fit model also resulted in a base saturation flow rate of 1986 (pcphpl), which is rounded to a recommended base saturation flow rate of 1980 (pcphpl).

When field measured values were compared against the theoretical HCM methodology it was discovered that the HCM methodology tended to over predict the saturation flow rates. A better fit was obtained when comparing the field measured values to the regression analysis model. The additional adjustment factors for area population, total number of approach lanes, and posted speed limit of the approach can supplement the current HCM methodology in order to more accurately calculate saturation flow rates throughout Wisconsin.

Right-Turn On Red

Right-turn on red studies in the NC, NE, NW, and SW regions were collected to supplement an existing R.A. Smith report. This investigation was conducted because most of the studies conducted in the R.A. Smith report were obtained from the greater Milwaukee and Madison areas, which represent the highest urbanized area populations in Wisconsin. Forty five of 47 new data points collected fell into the single right-turn lane intersection category. The results of analysis were consistent with the R.A. Smith report in that the most significant factor in determining RTOR volumes was the total number of right-turning vehicles. The analysis results also agreed with the R.A. Smith report that evaluating the intersection types individually (intersection versus interchange, single right-turn lane versus dual right-turn lanes) was more accurate than using one method to evaluate all types. (The final recommendation of the R.A. Smith report, however, was to combine single lane locations and dual lane locations by use of a hybrid equation for simplicity.)

A comparison of the data points collected in this study versus current WisDOT methodology did not yield a favorable correlation. However, a comparison of new data points versus the R.A. Smith intersection specific recommended equations yielded a high data correlation. This favorable correlation was further investigated for single right-turn lane intersections in order to determine any differences that stem from collecting data at sites across the state. The number of data points compared for single lane intersections in the southern regions and northern regions was nearly an equal split (31 and 32

respectively). It was determined that a slight difference existed between the studies conducted in WisDOT's northern regions versus the studies from WisDOT's southern regions (primarily in the Milwaukee and Madison areas). The best fit trend line for northern regions was approximately 6 vehicles per 100 right-turning vehicles higher than the southern region intersections, or 6%. The difference was not large enough to recommend the use of two different equations or methodologies.

Since the new RTOR data was collected primarily for single lane intersections, further investigation would be needed to validate R.A. Smith's conclusions on single lane interchanges on a statewide level. Due to the relative consistency with single right-turn lane intersections found in this study, it is recommended that the R.A. Smith equations be used on a statewide level until further investigation can be completed. Dual lane intersections and interchanges are likely to remain consistent with the R.A. Smith recommendations as a majority of those types of approaches are found in the Milwaukee and Madison urbanized areas.

The recommended equations for determining right-turn on red volumes are:

- $V_{RTOR} = 0.38V_{RT}$ (intersections with single right-turn lane)
- $V_{RTOR} = 0.66V_{RT}$ (interchanges with single right-turn lane)
- $V_{RTOR} = 0.30V_{RT}$ (intersections and interchanges with dual right-turn lanes)

References

- (1) *Highway Capacity Manual 2010*. Transportation Research Board, Washington D.C., 2010.
- (2) James A. Bonneson, P.E. *Guidelines for Quantifying the Influence of Area Type and Other Factors on Saturation Flow Rate*. Texas Transportation Institute, FDOT, Kittleson & Associates, June 2005.
- (3) Pat Hawley, P.E., PTOE, John Bruggeman, P.E. *Right Turn on Red Methodology Evaluation*. R.A. Smith National, March 2009.
- (4) *Traffic Signal Design Manual*. State of Wisconsin Department of Transportation, May 2011.
- (5) U.S. Department of Commerce, Economics and Statistics Administration, U.S. Census Bureau, *Population and Housing Unit Counts*, September 2012.
- (6) WisDOT. *Interactive Traffic Count Map*. <https://trust.dot.state.wi.us/roadrunner>
- (7) City of Madison. *Average Weekday Traffic Volume 2013*. http://www.cityofmadison.com/trafficengineering/documents/Flowmaps/12_flowmap_near_southwest.pdf.

Appendix A: Wisconsin Population Data

Table 12.

Population and Housing Units for Urban Areas: 2010

[For information on confidentiality, nonsampling error, and definitions, see Appendixes]

State Urbanized Area Urban Cluster	State total		Total for urban areas crossing state lines	
	Population	Housing units	Population	Housing units
Wisconsin	5,686,986	2,624,358	(X)	(X)
Urban	3,989,638	1,743,597	(X)	(X)
In urbanized area	3,173,382	1,378,190	(X)	(X)
In urban cluster	816,256	365,407	(X)	(X)
Rural	1,697,348	880,761	(X)	(X)
URBANIZED AREA				
Appleton, WI	216,154	92,157	(X)	(X)
Beloit, WI--IL	45,123	18,732	63,835	26,314
Duluth, MN--WI	27,045	12,299	120,378	53,537
Eau Claire, WI	102,852	44,530	(X)	(X)
Fond du Lac, WI	54,901	24,309	(X)	(X)
Green Bay, WI	206,520	88,146	(X)	(X)
Janesville, WI	69,658	30,539	(X)	(X)
Kenosha, WI--IL	124,060	50,482	124,064	50,484
La Crosse, WI--MN	95,510	40,847	100,868	43,137
Madison, WI	401,661	181,348	(X)	(X)
Milwaukee, WI	1,376,476	597,266	(X)	(X)
Minneapolis--St. Paul, MN--WI	276	138	2,650,890	1,110,565
Oshkosh, WI	74,495	31,552	(X)	(X)
Racine, WI	133,700	56,766	(X)	(X)
Round Lake Beach--McHenry--Grayslake, IL--WI	30,562	14,009	290,373	114,191
Sheboygan, WI	71,313	32,081	(X)	(X)
Wausau, WI	74,632	33,318	(X)	(X)
West Bend, WI	68,444	29,671	(X)	(X)
URBAN CLUSTER				
Abbotsford, WI	3,966	1,616	(X)	(X)
Algoma, WI	3,070	1,655	(X)	(X)
Amery, WI	2,832	1,412	(X)	(X)
Antigo, WI	8,158	3,916	(X)	(X)
Arcadia, WI	2,993	1,235	(X)	(X)
Ashland, WI	7,293	3,452	(X)	(X)
Baldwin, WI	5,831	2,474	(X)	(X)
Baraboo, WI	13,759	6,380	(X)	(X)
Barron, WI	3,292	1,469	(X)	(X)
Beaver Dam, WI	17,833	8,063	(X)	(X)
Berlin, WI	4,891	2,230	(X)	(X)
Black River Falls, WI	5,677	2,234	(X)	(X)
Bloomer, WI	3,348	1,566	(X)	(X)
Boscobel, WI	3,261	1,322	(X)	(X)
Brillion, WI	2,968	1,256	(X)	(X)
Brodhead, WI	3,506	1,516	(X)	(X)
Burlington, WI	23,534	10,241	(X)	(X)
Cambridge, WI	2,577	1,412	(X)	(X)
Chetek, WI	2,830	1,618	(X)	(X)
Chilton, WI	3,590	1,669	(X)	(X)
Clintonville, WI	4,481	2,199	(X)	(X)
Columbus, WI	6,623	2,918	(X)	(X)
Delavan, WI	12,158	5,770	(X)	(X)
Dodgeville, WI	4,756	2,123	(X)	(X)
East Troy, WI	4,306	1,814	(X)	(X)
Edgerton, WI	7,208	3,369	(X)	(X)
Elkhorn, WI	12,484	4,987	(X)	(X)
Ellsworth, WI	2,823	1,247	(X)	(X)
Evansville, WI	5,669	2,313	(X)	(X)
Fort Atkinson, WI	21,105	9,095	(X)	(X)
Hayward, WI	2,616	1,373	(X)	(X)
Horicon, WI	3,493	1,561	(X)	(X)
Hudson, WI--MN	19,201	8,094	22,395	9,484
Iron Mountain--Kingsford, MI--WI	1,634	799	19,228	9,456
Ironwood, MI--WI	1,905	1,270	7,134	4,352
Johnson Creek, WI	2,702	1,106	(X)	(X)
Juneau, WI	2,736	892	(X)	(X)
Kewaunee, WI	2,622	1,287	(X)	(X)
Kiel--New Holstein, WI	6,912	3,185	(X)	(X)
Ladysmith, WI	3,449	1,681	(X)	(X)
Lake Delton, WI	5,473	3,491	(X)	(X)
Lake Geneva, WI	14,649	9,116	(X)	(X)
Lake Mills, WI	6,581	3,048	(X)	(X)
Lancaster, WI	3,688	1,745	(X)	(X)
Lodi, WI	3,014	1,262	(X)	(X)

Table 12.

Population and Housing Units for Urban Areas: 2010—Con.

[For information on confidentiality, nonsampling error, and definitions, see Appendixes]

State Urbanized Area Urban Cluster	State total		Total for urban areas crossing state lines	
	Population	Housing units	Population	Housing units
Manitowoc, WI	46,360	22,038	(X)	(X)
Marinette--Menominee, WI--MI	10,861	5,453	19,431	9,946
Marshall, WI	3,834	1,483	(X)	(X)
Marshfield, WI	19,421	9,596	(X)	(X)
Mauston, WI	4,401	1,981	(X)	(X)
Mayville, WI	5,134	2,311	(X)	(X)
Mazomanie, WI	2,956	1,294	(X)	(X)
Medford, WI	4,046	1,984	(X)	(X)
Menomonie, WI	17,844	6,971	(X)	(X)
Merrill, WI	10,282	4,877	(X)	(X)
Monroe, WI	10,883	5,121	(X)	(X)
Mount Horeb, WI	6,997	2,822	(X)	(X)
Mukwonago, WI	20,255	7,922	(X)	(X)
New London, WI	7,643	3,458	(X)	(X)
New Richmond, WI	8,275	3,649	(X)	(X)
Oconto, WI	4,273	1,957	(X)	(X)
Oconto Falls, WI	2,621	1,207	(X)	(X)
Omro, WI	3,358	1,466	(X)	(X)
Oostburg, WI	2,724	1,097	(X)	(X)
Oregon, WI	11,059	4,460	(X)	(X)
Osceola, WI	3,593	1,678	(X)	(X)
Peshigo, WI	3,441	1,608	(X)	(X)
Platteville, WI	11,236	3,844	(X)	(X)
Plymouth, WI	8,799	4,170	(X)	(X)
Portage, WI	10,391	4,563	(X)	(X)
Prairie du Chien, WI--IA	6,255	2,766	6,872	3,117
Prairie du Sac--Sauk City, WI	7,733	3,374	(X)	(X)
Prescott, WI	4,152	1,755	(X)	(X)
Pulaski, WI	3,363	1,447	(X)	(X)
Reedsburg, WI	9,190	4,102	(X)	(X)
Rhineland, WI	9,010	4,659	(X)	(X)
Rice Lake, WI	9,507	4,653	(X)	(X)
Richland Center, WI	5,021	2,535	(X)	(X)
Ripon, WI	7,930	3,381	(X)	(X)
River Falls, WI	15,351	5,581	(X)	(X)
Seymour (Outagamie County), WI	3,500	1,581	(X)	(X)
Shawano, WI	10,527	5,311	(X)	(X)
Somerset, WI	2,604	1,100	(X)	(X)
Sparta, WI	9,907	4,329	(X)	(X)
Spooner, WI	2,673	1,281	(X)	(X)
Stanley, WI	3,447	931	(X)	(X)
Stevens Point, WI	44,223	18,701	(X)	(X)
Sturgeon Bay, WI	8,617	4,693	(X)	(X)
Tomah, WI	9,002	4,144	(X)	(X)
Tomahawk, WI	2,926	1,472	(X)	(X)
Union Grove, WI	6,973	2,669	(X)	(X)
Viroqua, WI	4,097	2,047	(X)	(X)
Walworth, WI	4,383	2,727	(X)	(X)
Waterloo, WI	3,059	1,306	(X)	(X)
Watertown, WI	23,347	9,449	(X)	(X)
Waupaca, WI	7,755	3,779	(X)	(X)
Waupun, WI	11,373	3,719	(X)	(X)
Wautoma, WI	2,573	1,212	(X)	(X)
Whitewater, WI	14,227	5,053	(X)	(X)
Winneconne, WI	3,654	1,798	(X)	(X)
Wisconsin Rapids, WI	29,169	13,396	(X)	(X)
Wrightstown, WI	2,524	965	(X)	(X)

Appendix B: Data Collection Sheets

WisDOT Signalized Intersection Capacity Study

Map ID:
 Intersection Location:
 Approach Direction:
 Approach Configuration:
 Population Group:

Video Date:
 County:
 Region:
 Municipality:
 Approach AADT:

Cycle #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Lane Studied															
Start of Green															
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)															
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1															
Vehicle 2															
Vehicle 3															
Vehicle 4															
Vehicle 5															
Vehicle 6															
Vehicle 7															
Vehicle 8															
Vehicle 9															
Vehicle 10															
Vehicle 11															
Vehicle 12															

	Study Results														
No. vehicles used in cycle															
Time of Vehicle 4 (s)															
Time of Last Vehicle (s)															
Avg Sat Headway (s/veh)															
Unadj. Sat. Flow (veh/h/ln)															
Start up lost time															

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection.
 The headway for vehicle 1 is the amount of time (in seconds) that passed between the light turning green and vehicle 1 crossing the stop bar into the intersection.

Appendix C: Confidence Level Tables

Error Tolerances, 95 % Confidence Interval Levels

Scenario	Z Value	Standard Deviation of Cycle Headways	Error Tolerance (+/-)	Cycle Sample Size	Saturation Flow Rate Error Tolerance (+/- veh/hr/ln)
1	1.960	0.25	0.070	49	70
2	1.960	0.20	0.070	31	70
3	1.960	0.25	0.060	67	60
4	1.960	0.20	0.060	43	60
5	1.960	0.25	0.050	96	50
6	1.960	0.20	0.050	61	50
7	1.960	0.25	0.040	150	40
8	1.960	0.20	0.040	96	40

Error Tolerances, 90% Confidence Interval Levels

Scenario	Z Value	Standard Deviation of Cycle Headways	Error Tolerance (+/-)	Cycle Sample Size	Saturation Flow Rate Error Tolerance (+/- veh/hr/ln)
1	1.645	0.25	0.070	35	70
2	1.645	0.20	0.070	22	70
3	1.645	0.25	0.060	47	60
4	1.645	0.20	0.060	30	60
5	1.645	0.25	0.050	68	50
6	1.645	0.20	0.050	43	50
7	1.645	0.25	0.040	106	40
8	1.645	0.20	0.040	68	40

Appendix D: Saturation Flow Study Data

WisDOT Signalized Intersection Capacity Study

Location ID: 1
Intersection Location: US 51 & County J / Townline Rd
Approach Direction: SB
Approach Configuration: 2
Population Group: < 25

Video Date: 9/7/15-9/9/15
County: Oneida
Region: NC
Municipality: Minocqua
Approach AADT: 18400

Cycle #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Lane Studied	1	1	1	2	1	1	1	2	1	2	1	1	1	1	1
Start of Green	2:01 PM	2:18 PM	2:21 PM	2:29 PM	2:45 PM	2:47 PM	2:49 PM	2:49 PM	2:52 PM	2:54 PM	2:56 PM	3:02 PM	3:04 PM	3:23 PM	3:27 PM
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)															
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	3.44	3.98	2.52	2.99	4.12	5.06	4.80	3.84	3.24	4.61	4.68	3.70	3.26	2.92	3.22
Vehicle 2	2.44	2.86	2.52	2.97	3.74	2.11	2.10	2.91	4.02	2.40	2.69	3.55	2.51	2.25	2.41
Vehicle 3	2.66	2.60	2.07	2.44	1.16	2.01	1.85	2.24	2.44	3.19	2.32	1.64	3.37	2.38	2.66
Vehicle 4	1.70	1.42	2.79	2.35	2.48	2.67	2.23	1.51	2.16	1.98	2.15	1.66	2.52	2.21	2.00
Vehicle 5	1.91	2.09	2.82	1.70	2.73	2.60	2.40	2.15	1.88	1.60	1.25	1.88	3.65	2.09	2.41
Vehicle 6	2.11	2.36	2.72	1.38	2.52	2.94	2.12	1.50	2.72	1.97	1.79	2.14	1.55	2.67	2.37
Vehicle 7	3.34	1.82	1.75	3.43	2.08	2.13	2.07	1.88	3.03	1.81	1.51	2.12	2.63	2.35	2.12
Vehicle 8	1.61	2.23	2.14	2.08	4.12	2.57	3.51	2.03	2.95	2.37	2.93	4.06	1.93	2.13	2.46
Vehicle 9	2.10	1.55	2.04	1.33	1.31	2.99	2.20	2.51	1.01	3.66	3.06			2.07	2.01
Vehicle 10		2.45	1.66	1.59	1.48	1.54	2.19	1.95	2.42	1.92	2.07			2.47	2.23
Vehicle 11		1.86	2.87	1.30	1.74	1.53	3.00	1.99		2.01	2.93				
Vehicle 12		2.62	1.84			2.21	1.57			1.74	2.72				

	Study Results														
No. vehicles used in cycle	9	12	12	11	11	12	12	11	10	12	12	8	8	10	10
Time of Vehicle 4 (s)	10.24	10.86	9.90	10.75	11.50	11.85	10.98	10.50	11.86	12.18	11.84	10.55	11.66	9.76	10.29
Time of Last Vehicle (s)	21.31	27.84	27.74	23.56	27.48	30.36	30.04	24.51	25.87	29.26	30.10	20.75	21.42	23.54	23.89
Avg Sat Headway (s/veh)	2.21	2.12	2.23	1.83	2.28	2.31	2.38	2.00	2.33	2.13	2.28	2.55	2.44	2.30	2.27
Unadj. Sat. Flow (veh/h/ln)	1626	1696	1614	1967	1577	1556	1511	1799	1542	1686	1577	1412	1475	1567	1588
Start up lost time	1.38	2.37	0.98	3.43	2.37	2.59	1.45	2.49	2.52	3.64	2.71	0.35	1.90	0.57	1.22

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. The headway for vehicle 1 is the amount of time (in seconds) that passed between the light turning green and vehicle 1 crossing the stop bar into the intersection.

WisDOT Signalized Intersection Capacity Study

Location ID: 1
Intersection Location: US 51 & County J / Townline Rd
Approach Direction: SB
Approach Configuration: 2
Population Group: < 25

Video Date: 9/7/15-9/9/15
County: Oneida
Region: NC
Municipality: Minocqua
Approach AADT: 18400

Cycle #	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Lane Studied	2	2	1	1	1	2	1	2	1	2	2	1	2	1	1
Start of Green	3:27 PM	3:33 PM	3:55 PM	3:56 PM	4:20 PM	4:33 PM	4:37 PM	4:37 PM	4:38 PM	5:01 PM	5:21 PM	5:23 PM	5:23 PM	5:26 PM	5:41 PM
Heavy Vehicles (1-4)														1	
Heavy Vehicles (5-12)															
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	3.29	3.08	3.13	4.20	2.46	3.56	2.91	3.81	2.68	2.79	3.54	2.81	2.72	4.20	2.38
Vehicle 2	1.71	2.30	2.78	3.45	2.34	2.98	3.00	3.40	3.96	2.67	3.15	2.62	2.81	2.25	2.50
Vehicle 3	2.37	2.34	1.81	2.14	2.82	2.30	3.01	2.12	2.18	2.28	2.01	2.87	3.64	3.92	2.62
Vehicle 4	2.91	3.11	3.70	2.25	2.25	1.56	3.32	2.57	2.46	1.85	2.03	2.46	3.22	2.95	3.26
Vehicle 5	1.56	3.23	1.25	1.56	2.54	2.48	2.54	1.35	3.04	2.20	2.37	2.20	2.39	2.12	1.93
Vehicle 6	2.04	2.23	1.98	2.15	2.44	1.89	2.38	2.28	2.50	2.09	2.09	2.45	1.46	1.51	1.20
Vehicle 7	1.75	1.71	1.97	1.48	2.17	1.68	1.89	2.71	1.44	2.01	2.35	2.31	3.12	2.13	1.10
Vehicle 8	1.45	1.89	2.04	1.88	2.44	2.19	1.89	1.90	2.47	1.62	1.84	1.29	2.71	2.02	3.68
Vehicle 9	1.17	2.38	1.74	1.87	2.98	2.10	0.98	1.75	1.82	2.20	2.15	2.11	2.86	2.36	
Vehicle 10	2.29	1.48	1.86	1.69	2.48		2.13	2.29	2.98		1.50			2.27	
Vehicle 11	1.83	1.60	1.63	1.55			2.72		1.95						
Vehicle 12			1.71				2.09								

	Study Results														
No. vehicles used in cycle	11	11	12	11	10	9	12	10	11	9	10	9	9	10	8
Time of Vehicle 4 (s)	10.28	10.83	11.42	12.04	9.87	10.40	12.24	11.90	11.28	9.59	10.73	10.76	12.39	13.32	10.76
Time of Last Vehicle (s)	22.37	25.35	25.60	24.22	24.92	20.74	28.86	24.18	27.48	19.71	23.03	21.12	24.93	25.73	18.67
Avg Sat Headway (s/veh)	1.73	2.07	1.77	1.74	2.51	2.07	2.08	2.05	2.31	2.02	2.05	2.07	2.51	2.07	1.98
Unadj. Sat. Flow (veh/h/ln)	2084	1736	2031	2069	1435	1741	1733	1759	1556	1779	1756	1737	1435	1741	1820
Start up lost time	3.37	2.53	4.33	5.08	-0.16	2.13	3.93	3.71	2.02	1.49	2.53	2.47	2.36	5.05	2.85

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. The headway for vehicle 1 is the amount of time (in seconds) that passed between the light turning green and vehicle 1 crossing the stop bar into the intersection.

WisDOT Signalized Intersection Capacity Study

Location ID: 1
Intersection Location: US 51 & County J / Townline Rd
Approach Direction: SB
Approach Configuration: 2
Population Group: < 25

Video Date: 9/7/15-9/9/15
County: Oneida
Region: NC
Municipality: Minocqua
Approach AADT: 18400

Cycle #	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Lane Studied	1	2	1	2	1	1	1	1	1	1	1	1	1	1	1
Start of Green	5:43 PM	5:44 PM	5:49 PM	5:49 PM	7:00 AM	2:04 PM	2:09 PM	2:11 PM	2:14 PM	2:18 PM	2:22 PM	2:24 PM	2:38 PM	2:39 PM	2:49 PM
Heavy Vehicles (1-4)	1	1	1						1		1				1
Heavy Vehicles (5-12)					1					1					
Right Turns (1-4)															
Right Turns (5-12)											1				

Vehicle	Headway ¹ (s)														
Vehicle 1	2.78	3.34	2.83	2.99	3.20	2.78	1.71	4.61	3.64	4.58	4.34	3.84	3.74	1.92	3.03
Vehicle 2	2.83	3.71	3.35	2.42	2.48	4.78	2.99	3.18	3.61	2.05	2.77	2.25	2.56	2.23	2.38
Vehicle 3	2.41	1.62	2.09	1.50	2.03	2.35	2.23	1.47	2.02	1.79	3.04	4.27	2.05	2.01	3.09
Vehicle 4	2.66	3.23	2.76	3.04	1.93	2.67	2.28	3.38	3.00	5.73	1.83	2.45	3.02	2.96	1.83
Vehicle 5	1.95	1.89	2.30	1.79	3.00	2.24	2.16	1.58	2.71	2.84	2.06	2.17	2.03	2.24	1.72
Vehicle 6	4.70	1.93	2.62	2.98	1.80	3.49	3.00	2.55	1.94	2.26	2.52	2.72	2.27	1.42	2.13
Vehicle 7	2.23	2.23	3.53	1.77	2.63	2.78	3.44	1.99	2.26	2.97	3.18	2.47	1.90	2.10	3.62
Vehicle 8	3.35	2.40	1.68	2.61	2.80	2.37	2.18	1.60	2.97	3.24	1.36	3.34	3.71	1.80	1.96
Vehicle 9	1.89		2.72	3.37	2.65			1.98	1.31	3.01			2.23		1.42
Vehicle 10			1.75		1.59			2.20		1.76			1.87		1.89
Vehicle 11			2.42		2.40			1.80							1.41
Vehicle 12			2.19		2.98			2.49							2.31

	Study Results														
No. vehicles used in cycle	9	8	12	9	12	8	8	12	9	10	8	8	10	8	12
Time of Vehicle 4 (s)	10.68	11.90	11.03	9.95	9.64	12.58	9.21	12.64	12.27	14.15	11.98	12.81	11.37	9.12	10.33
Time of Last Vehicle (s)	24.80	20.35	30.24	22.47	29.49	23.46	19.99	28.83	23.46	30.23	21.10	23.51	25.38	16.68	26.79
Avg Sat Headway (s/veh)	2.82	2.11	2.40	2.50	2.48	2.72	2.69	2.02	2.24	2.68	2.28	2.67	2.34	1.89	2.06
Unadj. Sat. Flow (veh/h/ln)	1275	1704	1499	1438	1451	1324	1336	1779	1609	1343	1579	1346	1542	1905	1750
Start up lost time	-0.62	3.45	1.42	-0.07	-0.28	1.70	-1.57	4.55	3.32	3.43	2.86	2.11	2.03	1.56	2.10

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. The headway for vehicle 1 is the amount of time (in seconds) that passed between the light turning green and vehicle 1 crossing the stop bar into the intersection.

WisDOT Signalized Intersection Capacity Study

Location ID: 1
Intersection Location: US 51 & County J / Townline Rd
Approach Direction: SB
Approach Configuration: 2
Population Group: < 25

Video Date: 9/7/15-9/9/15
County: Oneida
Region: NC
Municipality: Minocqua
Approach AADT: 18400

Cycle #	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Lane Studied	1	1	1	1	1	1	1	1	2	1	1	1			
Start of Green	2:52 PM	3:06 PM	3:07 PM	3:22 PM	3:36 PM	3:58 PM	4:07 PM	4:14 PM	4:19 PM	5:08 PM	5:33 PM	3:13 PM			
Heavy Vehicles (1-4)	1	1						1							
Heavy Vehicles (5-12)			1					1							
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	2.75	4.87	4.68	2.85	3.25	3.90	2.97	4.20	3.00	3.27	4.39	3.32			
Vehicle 2	3.46	1.90	2.27	2.19	2.48	3.33	3.63	2.38	2.21	2.67	2.38	3.50			
Vehicle 3	1.90	2.48	1.63	4.87	2.94	1.99	2.88	2.39	3.55	2.00	3.14	4.16			
Vehicle 4	2.40	2.27	3.15	2.17	2.65	1.50	1.62	3.46	2.29	3.18	1.62	2.54			
Vehicle 5	2.39	2.29	2.46	2.57	3.54	2.56	1.99	2.86	4.15	2.39	2.22	1.96			
Vehicle 6	2.67	2.48	2.38	2.73	2.11	2.40	1.65	2.53	2.10	2.87	1.89	2.09			
Vehicle 7	2.32	3.00	1.52	2.48	3.62	3.42	2.38	3.55	1.23	3.18	2.29	1.54			
Vehicle 8	2.09	2.09	3.23	1.99	1.91	1.79	2.37	2.30	2.20	1.84	2.39	3.75			
Vehicle 9	2.66		2.68	0.94		1.71	1.62	3.12	1.45	2.37		1.98			
Vehicle 10	2.49		2.39	1.62		3.08		1.62	3.06	2.40		1.69			
Vehicle 11	2.51					1.89		2.39	1.71	2.11					
Vehicle 12						2.20		3.09		1.81					

	Study Results														
No. vehicles used in cycle	11	8	10	10	8	12	9	12	11	12	8	10			
Time of Vehicle 4 (s)	10.51	11.52	11.73	12.08	11.32	10.72	11.10	12.43	11.05	11.12	11.53	13.52			
Time of Last Vehicle (s)	27.64	21.38	26.39	24.41	22.50	29.77	21.11	33.89	26.95	30.09	20.32	26.53			
Avg Sat Headway (s/veh)	2.45	2.47	2.44	2.06	2.80	2.38	2.00	2.68	2.27	2.37	2.20	2.17			
Unadj. Sat. Flow (veh/h/ln)	1471	1460	1473	1752	1288	1512	1798	1342	1585	1518	1638	1660			
Start up lost time	0.72	1.66	1.96	3.86	0.14	1.20	3.09	1.70	1.96	1.64	2.74	4.85			

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. The headway for vehicle 1 is the amount of time (in seconds) that passed between the light turning green and vehicle 1 crossing the stop bar into the intersection.

Saturation Flow Study Summary Sheet

Intersection Information:

Intersection:	US 51 & County J / Townline Rd
Major Street:	US 51
Minor Street:	County J/Townline Rd.
Study Approach:	SB
Approach Configuration:	2
Population Group:	< 25
Cycle by Date:	9/7(1-35), 9/8(36-59), 9/9(60)

Date:	9/7/15-9/9/15
WisDOT Region:	NC
Nearest Municipality:	Minocqua
County:	Oneida
Weather:	Clear
Pavement:	Dry
Observer:	Kevin Brink

Data Collection Summary Data:

Cycles Studied:	57
Average number of vehicles per cycle:	10
Headways Measured (queue vehicles > 4) :	348
% Heavy Vehicles (of headways measured):	1.1%
% RT Vehicles (of headways measured):	0.3%
Average Saturation Flow Headway (s):	2.25
Standard Deviation of All Headways:	0.60
Standard Deviation of Cycle Headways:	0.27
Unadjusted Median Sat Flow Rate (veh/ln.hr):	1585
Unadjusted Avg Sat Flow Rate (veh/ln/hr):	1603
Average Start Up Lost Time (s):	2.20



WisDOT Signalized Intersection Capacity Study

Location ID: 2
Intersection Location: BUS 51 & County JJ / Schofield Road
Approach Direction: WB
Approach Configuration: 4
Population Group: 25 to 100

Video Date: 4/14/15-4/16/15
County: Marathon
Region: NC
Municipality: Schofield
Approach AADT: 14300

Cycle #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Lane Studied	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Start of Green	6:41 AM	7:19 AM	7:30 AM	7:48 AM	8:00 AM	8:51 AM	3:05 PM	3:11 PM	3:18 PM	3:25 PM	3:40 PM	3:42 PM	3:49 PM	3:54 PM	4:06 PM
Heavy Vehicles (1-4)				1											
Heavy Vehicles (5-12)		1			1										
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	3.61	1.61	2.62	3.08	2.12	2.40	2.65	2.62	2.57	3.49	2.79	2.82	2.74	3.42	1.62
Vehicle 3	2.03	3.40	2.15	1.80	2.72	2.43	2.90	2.35	2.11	2.16	2.11	2.24	1.45	1.35	2.51
Vehicle 4	1.63	1.83	3.54	2.88	2.33	1.65	2.12	1.87	2.14	3.34	1.82	2.11	2.44	2.30	2.08
Vehicle 5	2.46	2.36	1.75	1.62	1.69	2.79	2.21	1.49	1.70	1.67	1.56	2.80	1.67	2.05	1.85
Vehicle 6	1.60	2.24	3.06	2.22	1.65	1.90	2.08	1.97	2.90	1.66	1.98	2.13	1.81	1.29	1.38
Vehicle 7	2.29	1.65	1.94	1.66	1.99	1.44	2.00	2.31	1.49	1.90	1.62	1.73	2.13	2.91	2.45
Vehicle 8	1.77	2.50	1.45	1.66	2.02	2.14	1.69	1.88	1.90	1.91	1.93	2.65	1.55	1.34	2.01
Vehicle 9			1.59		2.52		1.38	2.39	1.54		2.03	1.34	1.99	2.29	1.77
Vehicle 10			2.05		2.20		1.61	1.36			2.38	2.70	1.58	1.23	
Vehicle 11											1.68	2.01	2.24	1.29	
Vehicle 12											2.08	1.92		2.42	

	Study Results														
No. vehicles used in cycle	8	8	10	8	10	8	10	10	9	8	12	12	11	12	9
Time of Vehicle 4 (s)	7.27	6.84	8.31	7.76	7.17	6.48	7.67	6.84	6.82	8.99	6.72	7.17	6.63	7.07	6.21
Time of Last Vehicle (s)	15.39	15.59	20.15	14.92	19.24	14.75	18.64	18.24	16.35	16.13	21.98	24.45	19.60	21.89	15.67
Avg Sat Headway (s/veh)	2.03	2.19	1.97	1.79	2.01	2.07	1.83	1.90	1.91	1.78	1.91	2.16	1.85	1.85	1.89
Unadj. Sat. Flow (veh/h/ln)	1773	1646	1824	2011	1790	1741	1969	1895	1889	2017	1887	1667	1943	1943	1903

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

WisDOT Signalized Intersection Capacity Study

Location ID: 2
Intersection Location: BUS 51 & County JJ / Schofield Road
Approach Direction: WB
Approach Configuration: 4
Population Group: 25 to 100

Video Date: 4/14/15-4/16/15
County: Marathon
Region: NC
Municipality: Schofield
Approach AADT: 14300

Cycle #	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Lane Studied	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Start of Green	4:08 PM	4:15 PM	4:16 PM	3:29 PM	4:43 PM	4:50 PM	7:43 AM	7:58 AM	3:02 PM	3:24 PM	3:26 PM	3:30 PM	3:33 PM	3:39 PM	3:51 PM
Heavy Vehicles (1-4)											1				
Heavy Vehicles (5-12)	1					1	1								
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	2.45	2.93	2.75	3.24	2.52	2.31	3.11	3.46	3.67	2.67	1.86	3.18	3.28	2.13	3.23
Vehicle 3	1.77	2.05	1.78	3.14	1.73	2.18	2.56	2.31	2.26	2.56	1.57	2.56	2.13	2.05	1.70
Vehicle 4	2.82	2.02	1.94	1.44	1.83	1.86	2.29	2.02	2.68	2.13	2.29	2.70	2.20	1.85	2.10
Vehicle 5	2.22	2.30	1.66	1.61	1.71	2.42	2.57	2.28	2.73	2.82	2.38	2.57	2.00	1.47	2.64
Vehicle 6	2.36	2.15	1.94	1.56	2.53	2.30	1.55	1.47	2.31	1.23	2.01	0.97	1.23	2.18	1.56
Vehicle 7	1.21	2.20	1.96	1.89	1.55	2.29	1.47	1.26	2.26	1.54	1.67	2.48	1.55	2.03	2.00
Vehicle 8	2.09	2.33	2.24	1.45	1.94	2.11	1.54	2.63	1.69	2.14	1.72	1.69	2.83	1.31	1.66
Vehicle 9	1.67	1.54	2.02	2.83		2.68		1.40	1.81	2.05		1.50	1.71		
Vehicle 10	1.76		2.28	2.21		1.65				2.41		2.70	1.63		
Vehicle 11	2.65		1.95	2.08		1.59									
Vehicle 12	1.02		1.47												

	Study Results														
No. vehicles used in cycle	12	9	12	11	8	11	8	9	9	10	8	10	10	8	8
Time of Vehicle 4 (s)	7.04	7.00	6.47	7.82	6.08	6.35	7.96	7.79	8.61	7.36	5.72	8.44	7.61	6.03	7.03
Time of Last Vehicle (s)	22.02	17.52	21.99	21.45	13.81	21.39	15.09	16.83	19.41	19.55	13.50	20.35	18.56	13.02	14.89
Avg Sat Headway (s/veh)	1.87	2.10	1.94	1.95	1.93	2.15	1.78	1.81	2.16	2.03	1.94	1.99	1.82	1.75	1.96
Unadj. Sat. Flow (veh/h/ln)	1923	1711	1856	1849	1863	1676	2020	1991	1667	1772	1851	1814	1973	2060	1832

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

WisDOT Signalized Intersection Capacity Study

Location ID: 2
Intersection Location: BUS 51 & County JJ / Schofield Road
Approach Direction: WB
Approach Configuration: 4
Population Group: 25 to 100

Video Date: 4/14/15-4/16/15
County: Marathon
Region: NC
Municipality: Schofield
Approach AADT: 14300

Cycle #	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Lane Studied	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Start of Green	3:55 PM	3:56 PM	4:22 PM	4:24 PM	4:44 PM	4:47 PM	4:50 PM	4:55 PM	5:05 PM	5:08 PM	5:09 PM	7:36 AM	7:46 AM	7:50 AM	7:52 AM
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)							1					1			1
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	4.08	2.73	2.98	3.49	2.77	2.58	3.16	1.76	2.80	2.16	1.95	2.53	2.76	2.75	2.27
Vehicle 3	2.80	2.40	3.44	2.25	2.33	1.53	2.70	2.23	2.28	2.55	2.01	2.46	1.96	1.80	2.34
Vehicle 4	2.55	3.03	1.99	2.82	2.12	1.59	1.77	1.51	1.83	2.04	2.26	2.19	2.34	2.71	2.52
Vehicle 5	1.45	1.46	1.75	2.24	1.73	1.61	1.95	2.15	1.97	2.21	1.91	1.99	2.60	1.37	1.94
Vehicle 6	1.77	2.01	1.70	2.05	2.09	1.50	2.49	2.55	2.20	1.40	1.45	2.08	2.64	1.94	2.02
Vehicle 7	2.81	1.69	1.66	2.37	2.05	1.90	2.47	2.01	2.09	1.20	1.73	1.53	2.61	3.25	3.25
Vehicle 8	2.10	1.34	2.46	2.18	1.49	1.66	1.92	1.82	2.43	1.65	1.88	2.21	2.23	1.89	1.43
Vehicle 9	2.23	1.14		2.17	1.16	1.54	1.52		0.95				1.96	1.27	2.45
Vehicle 10		1.68							2.00					1.61	1.90
Vehicle 11		2.36							2.16						1.55
Vehicle 12		1.88							1.92						2.07

	Study Results														
No. vehicles used in cycle	9	12	8	9	9	9	9	8	12	8	8	8	9	10	12
Time of Vehicle 4 (s)	9.43	8.16	8.41	8.56	7.22	5.70	7.63	5.50	6.91	6.75	6.22	7.18	7.06	7.26	7.13
Time of Last Vehicle (s)	19.79	21.72	15.98	19.57	15.74	13.91	17.98	14.03	22.63	13.21	13.19	14.99	19.10	18.59	23.74
Avg Sat Headway (s/veh)	2.07	1.69	1.89	2.20	1.70	1.64	2.07	2.13	1.96	1.62	1.74	1.95	2.41	1.89	2.08
Unadj. Sat. Flow (veh/h/ln)	1737	2124	1902	1635	2113	2192	1739	1688	1832	2229	2066	1844	1495	1906	1734

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

WisDOT Signalized Intersection Capacity Study

Location ID: 2
Intersection Location: BUS 51 & County JJ / Schofield Road
Approach Direction: WB
Approach Configuration: 4
Population Group: 25 to 100

Video Date: 4/14/15-4/16/15
County: Marathon
Region: NC
Municipality: Schofield
Approach AADT: 14300

Cycle #	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Lane Studied	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Start of Green	8:31 AM	8:56 AM	3:00 PM	3:28 PM	3:38 PM	3:41 PM	3:43 PM	3:46 PM	3:54 PM	3:56 PM	4:09 PM	4:29 PM	4:33 PM	4:40 PM	
Heavy Vehicles (1-4)							1								
Heavy Vehicles (5-12)															
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	2.41	2.19	2.72	3.04	2.44	2.52	3.89	3.04	2.37	2.52	2.72	3.37	2.54	3.30	
Vehicle 3	2.19	2.30	2.02	2.51	1.75	2.61	2.14	2.27	3.00	1.96	2.33	3.01	2.07	2.25	
Vehicle 4	1.65	2.84	2.06	2.22	1.64	1.66	2.20	1.95	2.30	2.96	1.89	2.20	2.13	2.66	
Vehicle 5	2.46	1.84	2.11	2.44	2.31	1.68	2.44	2.09	2.61	1.48	1.79	1.40	2.96	1.58	
Vehicle 6	2.64	1.33	1.91	2.26	3.17	1.91	2.14	2.79	2.00	2.29	1.46	2.42	1.85	1.61	
Vehicle 7	2.21	2.08	1.92	1.36	2.09	1.80	1.70	2.87	2.73	1.56	1.78	2.93	1.41	1.84	
Vehicle 8	2.41	2.69	1.89	1.66	2.25	1.37	1.69	1.37	1.97	1.26	2.75	2.26	1.99	1.84	
Vehicle 9	2.14				1.67		2.60	1.83		1.95	1.45	1.52	1.58	1.83	
Vehicle 10					1.66		2.37	1.45		2.27	1.88	2.01	1.99		
Vehicle 11					1.87		2.71	1.13		2.32	1.75	1.63	1.45		
Vehicle 12					1.65			1.64		1.77		1.94			

	Study Results														
No. vehicles used in cycle	9	8	8	8	12	8	11	12	8	12	11	12	11	9	
Time of Vehicle 4 (s)	6.25	7.33	6.80	7.77	5.83	6.79	8.23	7.26	7.67	7.44	6.94	8.58	6.74	8.21	
Time of Last Vehicle (s)	18.11	15.27	14.63	15.49	22.50	13.55	23.88	22.43	16.98	22.34	19.80	24.69	19.97	16.91	
Avg Sat Headway (s/veh)	2.37	1.99	1.96	1.93	2.08	1.69	2.24	1.90	2.33	1.86	1.84	2.01	1.89	1.74	
Unadj. Sat. Flow (veh/h/ln)	1518	1814	1839	1865	1728	2130	1610	1898	1547	1933	1960	1788	1905	2069	

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

Saturation Flow Study Summary Sheet

Intersection Information:

Intersection:	Bus 51 & County JJ / Schofield Road
Major Street:	BUS 51
Minor Street:	County JJ / Schofield Road
Study Approach:	WB
Approach Configuration:	4
Population Group:	25 to 100
Cycles by Date:	4/14 (1-21), 4/15 (22-42), 4/16 (43-59)

Video Date:	4/14/15-4/16/15
WisDOT Region:	NC
Nearest Municipality:	Schofield
County:	Marathon
Weather:	Clear
Pavement:	Dry
Observer:	Kevin Brink

Data Collection Summary Data:

Cycles Studied:	59
Average number of vehicles per cycle:	10
Headways Measured (queue vehicles > 4) :	331
% Heavy Vehicles (of headways measured):	2.4%
% RT Vehicles (of headways measured):	0.0%
Average Saturation Flow Headway (s):	1.95
Standard Deviation of All Headways:	0.44
Standard Deviation of Cycle Headways:	0.17
Unadjusted Median Sat Flow Rate (veh/ln/hr):	1856
Unadjusted Avg Sat Flow Rate (veh/ln/hr):	1842



WisDOT Signalized Intersection Capacity Study

Location ID: 3
Intersection Location: US 10 & County R / Brilowski Rd
Approach Direction: WB
Approach Configuration: 2
Population Group: 25 to 100

Video Date: 4/14/15-4/16/15
County: Portage
Region: NC
Municipality: Stevens Point
Approach AADT: 20100

Cycle #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Lane Studied	2	1	1	2	1	2	2	2	1	1	2	1	2	2	1
Start of Green	7:17 AM	7:24 AM	7:44 AM	7:44 AM	7:47 AM	8:09 AM	3:36 PM	4:23 PM	4:23 PM	4:48 PM	4:50 PM	4:54 PM	4:54 AM	3:14 PM	5:54 PM
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)															
Right Turns (1-4)															
Right Turns (5-12)							1	1	1		1			2	

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	2.42	3.09	2.48	4.03	3.25	3.09	2.38	2.23	2.51	2.00	2.40	3.03	3.87	2.60	2.82
Vehicle 3	2.67	2.92	2.14	2.67	2.66	3.00	2.24	2.99	1.85	1.78	2.02	2.10	2.55	1.96	1.88
Vehicle 4	2.05	2.22	2.40	1.68	2.47	1.44	2.70	2.34	1.77	2.61	2.51	1.27	2.16	2.92	2.01
Vehicle 5	1.93	1.40	2.39	2.36	1.76	1.84	1.71	1.97	2.33	1.42	2.76	2.03	2.58	1.69	3.93
Vehicle 6	2.94	1.69	2.10	1.90	1.75	2.00	1.71	3.05	2.52	1.54	1.24	2.34	2.43	1.89	1.30
Vehicle 7	2.64	3.18	1.75	2.59	1.97	3.23	2.26	3.13	2.35	0.85	1.99	1.93	1.98	2.02	1.97
Vehicle 8	1.58	1.34	1.49	1.49	2.69	1.55	1.30	1.17	2.11	2.23	3.43	1.89	2.27	1.87	1.68
Vehicle 9	2.22		1.28	1.95	2.22		2.85	1.72		1.40	2.43	1.94	2.67	2.39	
Vehicle 10			1.86	2.16	2.18		1.63	1.88		2.16	2.85	1.54		1.81	
Vehicle 11			1.46	1.82	1.37			1.68						2.21	
Vehicle 12			2.81	1.22				1.62						1.91	

	Study Results														
No. vehicles used in cycle	9	8	12	12	11	8	10	12	8	10	10	10	9	12	8
Time of Vehicle 4 (s)	7.14	8.23	7.02	8.38	8.38	7.53	7.32	7.56	6.13	6.39	6.93	6.40	8.58	7.48	6.71
Time of Last Vehicle (s)	18.45	15.84	22.16	23.87	22.32	16.15	18.78	23.78	15.44	15.99	21.63	18.07	20.51	23.27	15.59
Avg Sat Headway (s/veh)	2.26	1.90	1.89	1.94	1.99	2.16	1.91	2.03	2.33	1.60	2.45	1.95	2.39	1.97	2.22
Unadj. Sat. Flow (veh/h/ln)	1592	1892	1902	1859	1808	1671	1885	1776	1547	2250	1469	1851	1509	1824	1622

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

WisDOT Signalized Intersection Capacity Study

Location ID: 3
Intersection Location: US 10 & County R / Brilowski Rd
Approach Direction: WB
Approach Configuration: 2
Population Group: 25 to 100

Video Date: 4/14/15-4/16/15
County: Portage
Region: NC
Municipality: Stevens Point
Approach AADT: 20100

Cycle #	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Lane Studied	1	2	2	1	2	1	1	2	1	2	2	2	1	2	2
Start of Green	6:54 AM	7:01 AM	7:06 AM	7:12 AM	7:21 AM	7:29 AM	7:41 AM	7:45 AM	7:50 AM	7:55 AM	8:20 AM	4:17 PM	4:40 PM	4:40 PM	5:06 PM
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)									1						
Right Turns (1-4)										1		1		1	1
Right Turns (5-12)								2							

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	2.73	2.78	2.89	2.89	2.91	2.94	2.41	3.25	2.23	2.77	3.66	3.69	3.66	2.52	2.22
Vehicle 3	3.80	2.76	2.10	2.11	2.49	2.18	2.23	1.88	3.28	3.11	2.03	2.06	1.98	2.89	3.16
Vehicle 4	2.58	2.00	2.89	1.76	1.95	1.93	1.68	2.72	2.91	2.48	2.53	2.00	1.51	2.27	2.29
Vehicle 5	2.48	2.91	1.56	1.71	2.96	1.95	2.57	1.26	2.35	1.97	3.03	1.87	3.19	1.86	3.26
Vehicle 6	2.58	1.76	1.99	1.55	2.26	2.08	2.86	2.55	2.01	2.23	1.69	1.94	1.34	1.87	2.58
Vehicle 7	1.92	2.56	1.85	1.63	1.88	1.66	1.85	1.30	1.91	1.57	1.42	2.27	1.42	2.20	2.04
Vehicle 8	1.59	1.92	1.72	1.51	1.73	1.28	2.15	2.29	1.54	2.09	1.91	2.08	1.47	2.27	2.10
Vehicle 9				1.35	2.04		1.85	1.69	1.80	1.84	1.40	2.21			1.99
Vehicle 10				1.12			1.28	1.72	1.49		1.64				1.77
Vehicle 11								1.79	1.74		2.82				1.43
Vehicle 12								1.63							

	Study Results														
No. vehicles used in cycle	8	8	8	10	9	8	10	12	11	9	11	9	8	8	11
Time of Vehicle 4 (s)	9.11	7.54	7.88	6.76	7.35	7.05	6.32	7.85	8.42	8.36	8.22	7.75	7.15	7.68	7.67
Time of Last Vehicle (s)	17.68	16.69	15.00	15.63	18.22	14.02	18.88	22.08	21.26	18.06	22.13	18.12	14.57	15.88	22.84
Avg Sat Headway (s/veh)	2.14	2.29	1.78	1.48	2.17	1.74	2.09	1.78	1.83	1.94	1.99	2.07	1.85	2.05	2.17
Unadj. Sat. Flow (veh/h/ln)	1680	1574	2022	2435	1656	2066	1720	2024	1963	1856	1812	1736	1941	1756	1661

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

WisDOT Signalized Intersection Capacity Study

Location ID: 3
Intersection Location: US 10 & County R / Brilowski Rd
Approach Direction: WB
Approach Configuration: 2
Population Group: 25 to 100

Video Date: 4/14/15-4/16/15
County: Portage
Region: NC
Municipality: Stevens Point
Approach AADT: 20100

Cycle #	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Lane Studied	2	1	1	1	1	1	2	1	2	1	1	2	1	2	2
Start of Green	6:56 AM	7:15 AM	7:19 AM	7:43 AM	7:53 AM	8:09 AM	8:09 AM	8:49 AM	3:05 PM	4:03 PM	4:12 PM	4:40 PM	4:56 PM	4:58 PM	5:05 PM
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)	1														
Right Turns (1-4)									1					1	2
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	1.35	2.78	2.36	2.78	2.38	3.50	3.52	2.85	3.71	2.31	2.35	2.93	3.49	2.58	3.09
Vehicle 3	3.63	2.03	2.47	2.05	1.93	2.64	2.63	2.14	2.28	2.39	2.66	2.90	2.07	3.01	2.37
Vehicle 4	1.55	2.59	1.97	2.82	2.23	2.43	2.39	1.75	1.98	1.91	1.80	1.96	2.46	2.46	2.37
Vehicle 5	1.08	2.51	2.38	2.49	2.80	1.28	1.87	1.82	2.72	1.96	1.95	2.89	2.47	2.26	1.67
Vehicle 6	1.71	1.96	1.92	2.37	1.94	1.82	2.16	1.38	2.22	1.61	1.77	3.06	1.98	1.99	1.80
Vehicle 7	2.00	1.47	1.55	1.58	1.52	2.67	2.95	1.97	1.46	1.64	1.64	2.76	1.74	1.55	1.97
Vehicle 8	2.24	2.61	1.48	2.70	1.97	1.61	1.70	2.16	2.73	2.40	1.45	1.67	1.59	1.86	1.64
Vehicle 9	1.84	1.53	1.30	2.21	1.59	1.92	2.19		1.71		1.69			1.99	
Vehicle 10	1.35			1.32		1.72	2.17				1.34			1.87	
Vehicle 11														2.02	
Vehicle 12														1.70	

	Study Results														
No. vehicles used in cycle	10	9	9	10	9	10	10	8	9	8	10	8	8	12	8
Time of Vehicle 4 (s)	6.53	7.40	6.80	7.65	6.54	8.57	8.54	6.74	7.97	6.61	6.81	7.79	8.02	8.05	7.83
Time of Last Vehicle (s)	16.75	17.48	15.43	20.32	16.36	19.59	21.58	14.07	18.81	14.22	16.65	18.17	15.80	23.29	14.91
Avg Sat Headway (s/veh)	1.70	2.02	1.73	2.11	1.96	1.84	2.17	1.83	2.17	1.90	1.64	2.59	1.94	1.90	1.77
Unadj. Sat. Flow (veh/h/ln)	2114	1786	2086	1705	1833	1960	1656	1965	1661	1892	2195	1387	1851	1890	2034

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

WisDOT Signalized Intersection Capacity Study

Location ID: 3
Intersection Location: US 10 & County R / Brilowski Rd
Approach Direction: WB
Approach Configuration: 2
Population Group: 25 to 100

Video Date: 4/14/15-4/16/15
County: Portage
Region: NC
Municipality: Stevens Point
Approach AADT: 20100

Cycle #	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Lane Studied	2	1													
Start of Green	5:19 PM	5:24 PM													
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)															
Right Turns (1-4)															
Right Turns (5-12)	1														

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-													
Vehicle 2	3.08	2.21													
Vehicle 3	2.28	2.48													
Vehicle 4	1.52	2.59													
Vehicle 5	2.24	1.29													
Vehicle 6	1.57	2.24													
Vehicle 7	1.95	1.79													
Vehicle 8	1.45	1.82													
Vehicle 9		2.78													
Vehicle 10															
Vehicle 11															
Vehicle 12															

	Study Results														
No. vehicles used in cycle	8	9													
Time of Vehicle 4 (s)	6.88	7.28													
Time of Last Vehicle (s)	14.09	17.20													
Avg Sat Headway (s/veh)	1.80	1.98													
Unadj. Sat. Flow (veh/h/ln)	1997	1815													

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

Saturation Flow Study Summary Sheet

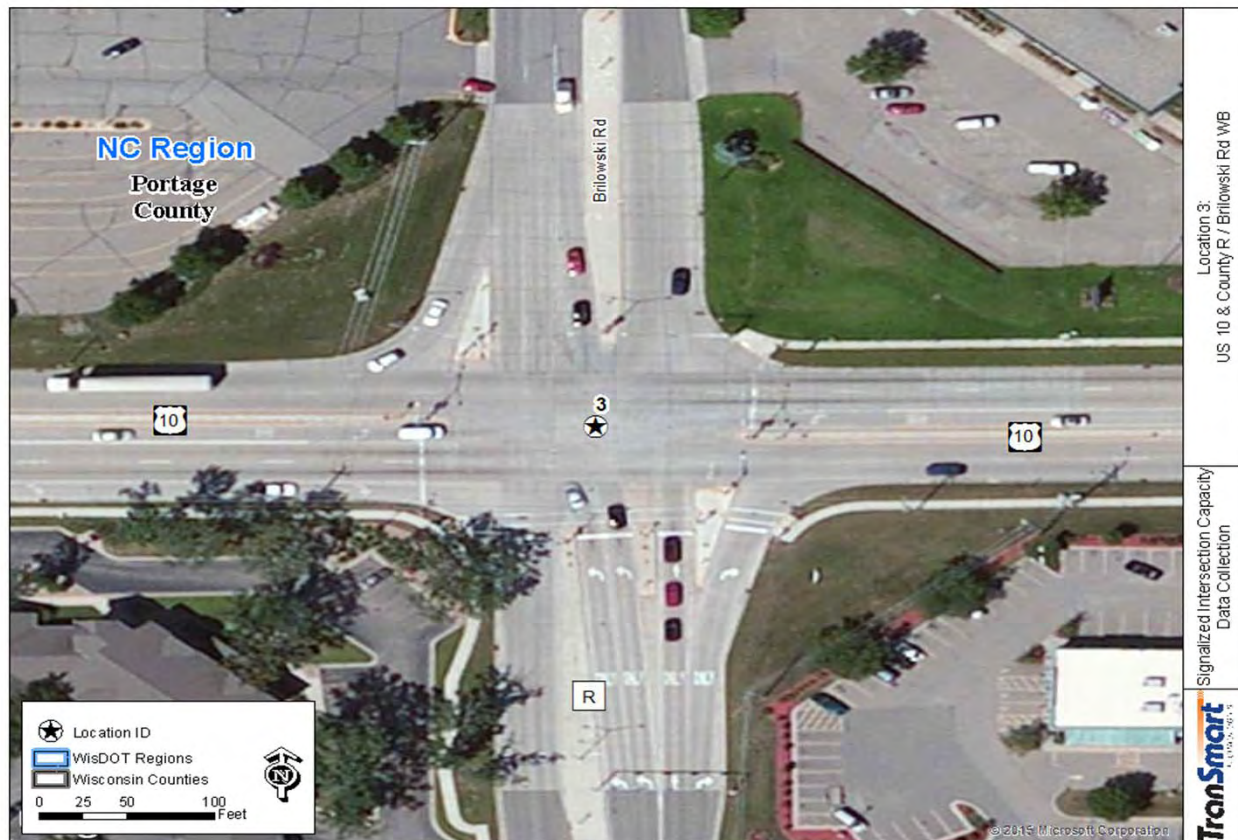
Intersection Information:

Intersection:	US 10 & County R / Brilowski Rd
Major Street:	US 10
Minor Street:	County R / Brilowski Rd
Study Approach:	WB
Approach Configuration:	2
Population Group:	25 to 100
Cycles by Date:	4/14 (1-15), 4/15 (16-30), 4/16 (31-47)

Video Date:	4/14/15-4/16/15
WisDOT Region:	NC
Nearest Municipality:	Stevens Point
County:	Portage
Weather:	Clear
Pavement:	Dry
Observer:	Kevin Brink

Data Collection Summary Data:

Cycles Studied:	47
Average number of vehicles per cycle:	9
Headways Measured (queue vehicles > 4) :	256
% Heavy Vehicles (of headways measured):	0.8%
% RT Vehicles (of headways measured):	3.5%
Average Saturation Flow Headway (s):	1.98
Standard Deviation of All Headways:	0.50
Standard Deviation of Cycle Headways:	0.23
Unadjusted Median Sat Flow Rate (veh/ln.hr):	1833
Unadjusted Avg Sat Flow Rate (veh/ln/hr):	1820



WisDOT Signalized Intersection Capacity Study

Location ID: 4
Intersection Location: WIS 66 & Country Club Dr
Approach Direction: EB
Approach Configuration: 5
Population Group: 25 to 100

Video Date: 9/1/2015-9/3/2015
County: Portage
Region: NC
Municipality: Stevens Point
Approach AADT: 18700

Cycle #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Lane Studied	1	2	1	2	1	1	2	1	2	2	1	2	2	1	2
Start of Green	3:07 PM	3:07 PM	3:17 PM	3:29 PM	3:53 PM	4:02 PM	4:02 PM	4:10 PM	4:10 PM	4:17 PM	4:35 PM	4:37 PM	4:39 PM	5:03 PM	5:21 PM
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)															
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	3.35	2.95	4.11	2.91	3.99	3.34	3.13	3.74	3.16	2.57	3.16	3.04	2.94	3.99	3.09
Vehicle 2	2.59	1.62	3.61	2.21	2.27	2.41	2.82	2.83	1.76	2.21	3.06	2.26	2.40	4.59	2.26
Vehicle 3	2.14	1.77	3.01	2.03	1.98	2.80	1.97	2.40	2.27	3.50	2.66	1.55	2.01	2.42	1.98
Vehicle 4	2.38	2.02	1.84	2.81	1.33	2.75	2.39	2.07	1.91	2.08	1.22	1.98	1.93	3.42	2.02
Vehicle 5	1.50	1.79	1.86	2.33	2.16	1.97	1.97	2.93	1.17	1.60	2.34	0.54	1.95	1.34	2.00
Vehicle 6	2.25	1.64	1.14	1.63	2.19	1.75	1.71	1.93	2.38	1.59	1.94	2.75	2.15	1.99	1.78
Vehicle 7	1.79	1.35	1.73	1.66	3.20	1.72	3.18	1.33	2.12	2.63	2.06	1.75	0.67	1.45	1.57
Vehicle 8	1.25	2.85	1.64	1.76	1.33	1.71	1.98	2.14	1.61	1.96	1.85	1.59	3.09	1.20	2.58
Vehicle 9	2.77	2.41	1.44	1.81	1.93	2.90	3.26	3.25	3.22	1.18	2.63	1.77	2.73	1.20	2.52
Vehicle 10	1.49	2.50	3.15	1.86	1.68	1.38	2.16	2.01	1.51	2.54	1.49	1.30	2.08	1.26	3.09
Vehicle 11	1.75	2.73	2.52	2.34	2.20	2.09	1.46	3.09	1.55	1.99	1.59	1.45	2.18	1.73	2.28
Vehicle 12	2.00	1.66	1.93	1.88	2.37	1.56	1.06	1.54	2.25	1.84		2.05	2.27	0.95	1.95

	Study Results														
No. vehicles used in cycle	12	12	12	12	12	12	12	12	12	12	11	12	12	12	12
Time of Vehicle 4 (s)	10.46	8.36	12.57	9.96	9.57	11.30	10.31	11.04	9.10	10.36	10.10	8.83	9.28	14.42	9.35
Time of Last Vehicle (s)	25.26	25.29	27.98	25.23	26.63	26.38	27.09	29.26	24.91	25.69	24.00	22.03	26.40	25.54	27.12
Avg Sat Headway (s/veh)	1.85	2.12	1.93	1.91	2.13	1.89	2.10	2.28	1.98	1.92	1.99	1.65	2.14	1.39	2.22
Unadj. Sat. Flow (veh/h/ln)	1946	1701	1869	1886	1688	1910	1716	1581	1822	1879	1813	2182	1682	2590	1621
Start up lost time	3.06	-0.10	4.86	2.32	1.04	3.76	1.92	1.93	1.19	2.69	2.16	2.23	0.72	8.86	0.46

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. The headway for vehicle 1 is the amount of time (in seconds) that passed between the light turning green and vehicle 1 crossing the stop bar into the intersection.

WisDOT Signalized Intersection Capacity Study

Location ID: 4
Intersection Location: WIS 66 & Country Club Dr
Approach Direction: EB
Approach Configuration: 5
Population Group: 25 to 100

Video Date: 9/1/2015-9/3/2015
County: Portage
Region: NC
Municipality: Stevens Point
Approach AADT: 18700

Cycle #	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Lane Studied	2	1	2	1	2	1	2	2	2	1	1	2	2	2	1
Start of Green	5:32 PM	3:11 PM	3:13 PM	3:48 PM	3:48 PM	3:49 PM	3:49 PM	4:10 PM	4:15 PM	4:17 PM	4:19 PM	4:21 PM	4:26 PM	4:33 PM	4:35 PM
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)															
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	2.53	3.11	2.96	5.14	6.85	5.02	3.59	4.34	3.54	3.88	3.23	3.26	3.12	2.46	3.22
Vehicle 2	2.80	2.14	1.66	2.40	2.26	1.64	2.98	1.67	2.05	2.25	2.50	2.11	2.64	3.71	1.95
Vehicle 3	1.86	2.23	1.57	2.32	2.19	2.00	2.23	1.61	1.96	2.51	2.53	1.99	2.64	2.86	1.86
Vehicle 4	2.02	2.13	1.46	2.21	2.12	2.18	1.80	3.96	1.17	2.25	1.75	1.80	1.78	2.00	1.70
Vehicle 5	1.55	2.46	1.90	1.95	1.72	2.53	1.64	1.44	1.60	2.24	2.22	1.99	2.09	1.96	1.96
Vehicle 6	2.18	1.84	2.14	1.44	1.84	1.58	2.05	2.07	2.19	1.74	2.10	0.95	0.67	3.29	2.14
Vehicle 7	3.47	2.58	2.65	1.51	2.37	3.23	2.58	2.29	2.08	1.69	2.03	2.57	1.70	3.09	2.41
Vehicle 8	2.39	2.60	2.40	2.34	1.66	1.48	1.47	3.39	1.68	2.16	2.15	2.50	1.40	1.72	0.62
Vehicle 9	2.72	1.77	1.92	2.71	2.32	2.09	1.42	1.87	1.68	1.75	3.51	1.64	1.28	1.96	2.94
Vehicle 10	2.30	1.46	2.30	2.11	2.16	2.09	1.87	1.50	2.10	1.67	2.02	1.61	1.84	1.99	2.36
Vehicle 11	1.61	1.45	2.14	1.89	2.41	1.91	1.65	2.00	1.65	1.42	2.29	1.65	1.38	1.58	1.84
Vehicle 12	1.60		2.73	1.84	2.64	1.72		2.04	2.17	2.28	3.76	0.64	1.39	2.14	1.49

	Study Results														
No. vehicles used in cycle	12	11	12	12	12	12	11	12	12	12	12	12	12	12	12
Time of Vehicle 4 (s)	9.21	9.61	7.65	12.07	13.42	10.84	10.60	11.58	8.72	10.89	10.01	9.16	10.18	11.03	8.73
Time of Last Vehicle (s)	27.03	23.77	25.83	27.86	30.54	27.47	23.28	28.18	23.87	25.84	30.09	22.71	21.93	28.76	24.49
Avg Sat Headway (s/veh)	2.23	2.02	2.27	1.97	2.14	2.08	1.81	2.08	1.89	1.87	2.51	1.69	1.47	2.22	1.97
Unadj. Sat. Flow (veh/h/ln)	1616	1780	1584	1824	1682	1732	1987	1735	1901	1926	1434	2125	2451	1624	1827
Start up lost time	0.30	1.52	-1.44	4.18	4.86	2.52	3.35	3.28	1.15	3.41	-0.03	2.39	4.31	2.16	0.85

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. The headway for vehicle 1 is the amount of time (in seconds) that passed between the light turning green and vehicle 1 crossing the stop bar into the intersection.

WisDOT Signalized Intersection Capacity Study

Location ID: 4
Intersection Location: WIS 66 & Country Club Dr
Approach Direction: EB
Approach Configuration: 5
Population Group: 25 to 100

Video Date: 9/1/2015-9/3/2015
County: Portage
Region: NC
Municipality: Stevens Point
Approach AADT: 18700

Cycle #	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Lane Studied	2	1	2	2	1	1	1	2	1	2	2	2	1	1	1
Start of Green	4:35 PM	4:37 PM	4:37 PM	4:43 PM	4:48 PM	4:52 PM	5:01 PM	5:08 PM	5:10 PM	5:14 PM	5:16 PM	5:19 PM	3:03 PM	3:11 PM	3:21 PM
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)															
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	2.92	3.28	2.55	2.98	2.69	3.64	2.85	2.84	4.20	3.65	3.64	2.75	2.71	4.36	3.96
Vehicle 2	2.88	2.23	2.41	1.88	3.21	2.12	1.88	2.24	1.74	2.06	2.44	2.17	2.40	2.60	2.53
Vehicle 3	2.93	1.72	2.92	1.83	2.38	2.47	2.36	2.44	1.58	2.13	2.27	1.41	2.14	1.98	1.95
Vehicle 4	2.24	2.12	2.00	2.07	1.95	1.49	2.10	2.24	2.32	2.36	1.92	2.15	2.52	2.45	2.77
Vehicle 5	1.79	1.38	1.78	2.42	4.13	1.68	3.35	1.38	1.36	2.11	2.11	2.46	1.80	2.26	2.55
Vehicle 6	2.14	1.78	2.31	3.64	1.87	1.89	1.47	2.11	1.96	1.72	2.43	1.38	2.48	1.75	2.27
Vehicle 7	1.54	2.06	2.15	3.01	1.43	2.61	2.02	2.20	1.36	4.04	1.06	1.67	1.63	1.98	2.33
Vehicle 8	1.66	1.96	1.21	1.76	2.21	2.18	1.96	1.34	1.77	2.12	1.66	1.36	1.78	2.46	1.40
Vehicle 9	1.67	1.73	4.38	2.92	1.74	1.87	2.76	1.65	2.22	1.71	2.04	2.55	2.53	1.72	
Vehicle 10	1.85	1.67	2.64	1.42	1.24	1.79	2.14	2.47	1.67	1.61	1.30	2.07	2.06	2.07	
Vehicle 11	1.11	1.72	1.54	1.13	1.52	1.64	4.30	2.52	1.93	2.30	1.72	2.19	1.46	1.82	
Vehicle 12	1.90	2.56	2.99	4.28	2.55	2.12	2.03	2.21	1.50	1.43	1.65	1.61	2.27	2.22	

	Study Results														
No. vehicles used in cycle	12	12	12	12	12	12	12	12	12	12	12	12	12	12	8
Time of Vehicle 4 (s)	10.97	9.35	9.88	8.76	10.23	9.72	9.19	9.76	9.84	10.20	10.27	8.48	9.77	11.39	11.21
Time of Last Vehicle (s)	24.63	24.21	28.88	29.34	26.92	25.50	29.22	25.64	23.61	27.24	24.24	23.77	25.78	27.67	19.76
Avg Sat Headway (s/veh)	1.71	1.86	2.38	2.57	2.09	1.97	2.50	1.99	1.72	2.13	1.75	1.91	2.00	2.04	2.14
Unadj. Sat. Flow (veh/h/ln)	2108	1938	1516	1399	1726	1825	1438	1814	2092	1690	2062	1884	1799	1769	1684
Start up lost time	4.14	1.92	0.38	-1.53	1.89	1.83	-0.82	1.82	2.95	1.68	3.28	0.84	1.76	3.25	2.66

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. The headway for vehicle 1 is the amount of time (in seconds) that passed between the light turning green and vehicle 1 crossing the stop bar into the intersection.

WisDOT Signalized Intersection Capacity Study

Location ID: 4
Intersection Location: WIS 66 & Country Club Dr
Approach Direction: EB
Approach Configuration: 5
Population Group: 25 to 100

Video Date: 9/1/2015-9/3/2015
County: Portage
Region: NC
Municipality: Stevens Point
Approach AADT: 18700

Cycle #	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Lane Studied	1	1	2	1	2	2	2	2	2	2	1	1	1	2	
Start of Green	3:09 PM	3:13 PM	3:13 PM	3:42 PM	3:42 PM	3:49 PM	3:55 PM	3:59 PM	4:04 PM	4:06 PM	4:12 PM	4:26 PM	4:34 PM	4:41 PM	
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)															
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	2.98	4.11	3.28	3.50	3.88	3.86	2.74	3.47	3.22	4.15	3.44	3.37	3.13	2.19	
Vehicle 2	3.03	2.78	3.16	2.45	2.96	3.42	1.90	3.73	2.51	2.66	2.94	2.94	1.89	3.17	
Vehicle 3	2.40	2.11	2.48	1.75	1.87	2.67	1.90	3.64	2.49	2.00	2.95	2.86	3.36	2.94	
Vehicle 4	2.27	3.00	1.61	1.76	2.07	2.01	1.88	1.82	1.03	1.62	1.76	1.68	1.91	2.79	
Vehicle 5	3.23	2.66	2.88	2.81	1.17	1.59	1.75	1.73	3.41	1.41	2.25	2.21	1.70	1.59	
Vehicle 6	2.13	1.72	2.13	2.11	2.82	1.91	1.71	1.87	1.29	1.31	2.34	1.82	2.13	2.02	
Vehicle 7	2.80	1.46	1.82	2.10	2.32	2.57	2.83	1.60	1.46	1.65	1.61	2.16	1.73	1.62	
Vehicle 8	2.27	2.91	1.91	2.22	2.25	2.32	2.48	1.30	1.72	1.84	1.57	2.90	1.70	2.45	
Vehicle 9	1.67	1.26	1.79	1.54	2.22	2.96	1.52	3.24		1.63	1.43	1.86	1.44	2.19	
Vehicle 10	0.96		2.69	1.55	1.46		2.30	1.68		1.58	2.91	2.82	1.69	1.86	
Vehicle 11	1.78		1.76	2.22	2.25										
Vehicle 12				1.59	2.23										

	Study Results														
No. vehicles used in cycle	11	9	11	12	12	9	10	10	8	10	10	10	10	10	
Time of Vehicle 4 (s)	10.68	12.00	10.53	9.46	10.78	11.96	8.42	12.66	9.25	10.43	11.09	10.85	10.29	11.09	
Time of Last Vehicle (s)	25.52	22.01	25.51	25.60	27.50	23.31	21.01	24.08	17.13	19.85	23.20	24.62	20.68	22.82	
Avg Sat Headway (s/veh)	2.12	2.00	2.14	2.02	2.09	2.27	2.10	1.90	1.97	1.57	2.02	2.30	1.73	1.96	
Unadj. Sat. Flow (veh/h/ln)	1698	1798	1682	1784	1722	1586	1716	1891	1827	2293	1784	1569	2079	1841	
Start up lost time	2.20	3.99	1.97	1.39	2.42	2.88	0.03	5.05	1.37	4.15	3.02	1.67	3.36	3.27	

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. The headway for vehicle 1 is the amount of time (in seconds) that passed between the light turning green and vehicle 1 crossing the stop bar into the intersection.

Saturation Flow Study Summary Sheet

Intersection Information:

Intersection:	WIS 66 & Country Club Dr
Major Street:	WIS 66
Minor Street:	Country Club Dr
Study Approach:	EB
Approach Configuration:	5
Population Group:	25 to 100
Cycle by Date:	9/1(1-17; 45-60),9/2(18-43),9/3(44)

Date:	9/1/2015-9/3/2015
WisDOT Region:	NC
Nearest Municipality:	Stevens Point
County:	Portage
Weather:	Clear
Pavement:	Dry
Observer:	Kevin Brink

Data Collection Summary Data:

Cycles Studied:	59
Average number of vehicles per cycle:	11
Headways Measured (queue vehicles > 4) :	439
% Heavy Vehicles (of headways measured):	0.0%
% RT Vehicles (of headways measured):	0.0%
Average Saturation Flow Headway (s):	2.01
Standard Deviation of All Headways:	0.58
Standard Deviation of Cycle Headways:	0.23
Unadjusted Median Sat Flow Rate (veh/ln.hr):	1822
Unadjusted Avg Sat Flow Rate (veh/ln/hr):	1791
Average Start Up Lost Time (s):	2.25



WisDOT Signalized Intersection Capacity Study

Location ID: 5
Intersection Location: US 10 & Maple Bluff Rd / Old Hwy 18
Approach Direction: EB
Approach Configuration: 5
Population Group: 25 to 100

Video Date: 9/1/15-9/3/15
County: Portage
Region: NC
Municipality: Stevens Point
Approach AADT:

Cycle #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Lane Studied	2	2	1	2	2	1	1	2	2	1	1	2	2	2	2
Start of Green	3:04 PM	3:10 PM	3:15 PM	3:37 PM	3:44 PM	3:50 PM	3:53 PM	4:03 PM	4:12 PM	4:39 PM	4:41 PM	4:43 PM	4:47 PM	4:52 PM	5:03 PM
Heavy Vehicles (1-4)							2								
Heavy Vehicles (5-12)					1					1					
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	1.68	2.60	3.94	2.43	1.10	1.24	2.93	1.53	2.06	2.81	1.44	2.04	2.14	2.70	2.49
Vehicle 3	2.51	1.86	1.73	2.77	2.67	2.42	3.31	1.63	2.31	2.37	3.47	1.68	1.87	2.09	2.05
Vehicle 4	2.43	2.08	1.88	1.68	1.87	2.29	2.59	1.54	1.78	3.37	1.73	2.37	2.17	1.94	1.63
Vehicle 5	2.41	2.29	1.71	1.53	1.64	2.68	2.54	2.00	1.64	1.71	4.30	2.58	2.68	2.61	2.44
Vehicle 6	2.75	2.69	1.94	1.77	2.10	1.03	1.50	2.30	2.64	1.84	2.25	2.49	2.07	1.45	1.55
Vehicle 7	2.53	1.92	1.83	2.25	2.65	1.04	3.30	1.43	2.49	1.66	2.54	1.91	2.11	1.79	1.54
Vehicle 8	2.27	2.97	2.20	1.67	2.32	1.48	1.57	2.80	0.62	2.64	1.67	2.41	1.27	1.55	2.21
Vehicle 9	1.56	1.38	1.91	1.52	2.62	1.24	2.68	2.67	2.77	3.52	3.51	1.39	1.82	1.27	2.02
Vehicle 10	1.73	2.40	1.31	1.87	3.67	1.94	2.26	2.51	2.12	1.27	2.68	1.86	1.24	1.82	3.63
Vehicle 11	1.45	1.11	1.29	1.43	1.64	1.60	1.36		1.71	1.68	1.87	1.70	2.70	2.46	1.31
Vehicle 12	2.70	2.53	1.20	1.57	1.06	1.88	2.53		1.38	1.81	4.02	3.91	1.37	2.18	2.21

	Study Results														
No. vehicles used in cycle	12	12	12	12	12	12	12	10	12	12	12	12	12	12	12
Time of Vehicle 4 (s)	6.62	6.54	7.55	6.88	5.64	5.95	8.83	4.70	6.15	8.55	6.64	6.09	6.18	6.73	6.17
Time of Last Vehicle (s)	24.02	23.83	20.94	20.49	23.34	18.84	26.57	18.41	21.52	24.68	29.48	24.34	21.44	21.86	23.08
Avg Sat Headway (s/veh)	2.18	2.16	1.67	1.70	2.21	1.61	2.22	2.28	1.92	2.02	2.86	2.28	1.91	1.89	2.11
Unadj. Sat. Flow (veh/h/ln)	1655	1666	2151	2116	1627	2234	1623	1575	1874	1785	1261	1578	1887	1904	1703

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

WisDOT Signalized Intersection Capacity Study

Location ID: 5
Intersection Location: US 10 & Maple Bluff Rd / Old Hwy 18
Approach Direction: EB
Approach Configuration: 5
Population Group: 25 to 100

Video Date: 9/1/15-9/3/15
County: Portage
Region: NC
Municipality: Stevens Point
Approach AADT: 0

Cycle #	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Lane Studied	1	2	1	2	2	1	2	2	2	2	2	2	2	2	2
Start of Green	5:03 PM	5:05 PM	5:05 PM	5:18 PM	5:31 PM	5:31 PM	5:40 PM	5:53 PM	3:19 PM	3:22 PM	3:34 PM	3:35 PM	4:03 PM	4:36 PM	4:41 PM
Heavy Vehicles (1-4)			1		1					1					
Heavy Vehicles (5-12)							1		1				1		
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	1.71	1.67	2.42	2.48	3.36	3.39	2.26	1.73	1.66	2.86	1.40	1.67	1.50	3.11	2.69
Vehicle 3	2.29	1.21	1.54	2.89	1.61	2.14	1.87	3.01	1.72	1.36	1.64	3.15	1.77	2.08	2.12
Vehicle 4	2.95	2.16	1.78	3.44	2.17	2.09	1.69	1.53	1.43	1.94	2.30	1.67	1.71	2.61	1.68
Vehicle 5	2.23	2.81	2.49	1.80	1.97	1.96	1.79	2.18	3.96	1.69	2.12	1.48	1.66	2.87	2.74
Vehicle 6	2.11	2.12	1.88	2.06	1.69	1.57	2.05	2.30	2.52	1.56	2.19	2.86	2.11	1.14	1.25
Vehicle 7	3.11	2.04	1.76	1.98	3.14	2.69	2.48	1.98	1.79	1.95	1.67	1.79	1.37	1.34	1.81
Vehicle 8	2.21	1.36	1.62	1.40	1.38	3.03	2.86	1.68	1.61	2.82	1.78	2.03	2.54	2.05	0.95
Vehicle 9	2.70	2.28	1.98	1.60	2.70	2.01	2.70	1.43	1.77	2.00	1.73	2.30	3.08	2.20	2.10
Vehicle 10	2.66	1.81	1.62	1.90	1.68	2.04	1.55	1.05	2.45	1.31	1.88	1.60	1.33	1.37	1.88
Vehicle 11		1.30	1.50	1.94	2.43	1.56	3.62	2.21	1.84	2.26	2.24	1.87	2.68	1.37	1.07
Vehicle 12		2.00	1.81	1.98	2.27	1.97	1.89	1.43	2.71	3.72	1.22	1.75	3.85	3.20	1.84

	Study Results														
No. vehicles used in cycle	10	12	12	12	12	12	12	12	12	12	12	12	12	12	12
Time of Vehicle 4 (s)	6.95	5.04	5.74	8.81	7.14	7.62	5.82	6.27	4.81	6.16	5.34	6.49	4.98	7.80	6.49
Time of Last Vehicle (s)	21.97	20.76	20.40	23.47	24.40	24.45	24.76	20.53	23.46	23.47	20.17	22.17	23.60	23.34	20.13
Avg Sat Headway (s/veh)	2.50	1.97	1.83	1.83	2.16	2.10	2.37	1.78	2.33	2.16	1.85	1.96	2.33	1.94	1.70
Unadj. Sat. Flow (veh/h/ln)	1438	1832	1965	1965	1669	1711	1521	2020	1544	1664	1942	1837	1547	1853	2111

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

WisDOT Signalized Intersection Capacity Study

Location ID: 5
Intersection Location: US 10 & Maple Bluff Rd / Old Hwy 18
Approach Direction: EB
Approach Configuration: 5
Population Group: 25 to 100

Video Date: 9/1/15-9/3/15
County: Portage
Region: NC
Municipality: Stevens Point
Approach AADT: 0

Cycle #	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Lane Studied	2	2	1	1	2	1	1	2	1	2	2	2	2	2	1
Start of Green	4:49 PM	4:52 PM	4:58 PM	4:58 PM	5:05 PM	5:05 PM	5:25 PM	5:40 PM	5:40 PM	5:51 PM	17:58:35	3:06 PM	3:08 PM	3:32 PM	3:32 PM
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)				1										1	
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	1.34	2.80	2.73	2.88	1.37	1.79	2.22	1.97	2.11	3.41	1.53	1.93	2.66	2.05	3.33
Vehicle 3	1.60	2.06	2.58	2.09	1.84	1.54	1.97	1.75	1.97	2.43	1.73	2.28	2.86	4.24	1.72
Vehicle 4	2.33	1.69	1.55	2.07	2.03	2.37	2.05	1.63	1.98	1.59	1.62	1.74	1.85	2.16	1.62
Vehicle 5	1.61	1.74	2.17	2.26	1.86	2.02	1.62	2.15	1.53	1.56	1.64	1.46	2.38	1.94	1.91
Vehicle 6	1.65	1.49	3.37	2.05	1.09	1.51	1.17	2.02	4.23	1.56	1.81	2.02	1.16	2.27	1.54
Vehicle 7	1.60	2.14	1.65	1.65	1.74	2.09	2.82	2.09	1.49	1.51	2.51	1.43	2.12	2.27	2.00
Vehicle 8	1.52	2.99	1.54	1.48	1.36	2.22	2.36	3.30	2.51	1.81	3.18	1.53	1.60	2.23	2.25
Vehicle 9	2.29	2.29	3.01	1.63	1.55	1.45	3.83	1.54	1.53	1.32	1.91	1.88	1.51	2.25	1.24
Vehicle 10	1.55	1.33	1.38	2.09	1.60	2.05	2.75	1.57		1.64	1.35	1.84	1.43	2.00	2.20
Vehicle 11	1.44	3.86	1.98		1.97	1.89	2.52	1.90		1.51	2.05	2.10	2.23	1.69	2.52
Vehicle 12	3.03	1.40	1.92		3.03	1.38	2.87			1.40	1.84	2.44	2.62	2.72	

	Study Results														
No. vehicles used in cycle	12	12	12	10	12	12	12	11	9	12	12	12	12	12	11
Time of Vehicle 4 (s)	5.27	6.55	6.86	7.04	5.24	5.70	6.24	5.35	6.06	7.43	4.88	5.95	7.37	8.45	6.67
Time of Last Vehicle (s)	19.96	23.79	23.88	18.20	19.44	20.31	26.18	19.92	17.35	19.74	21.17	20.65	22.42	25.82	20.33
Avg Sat Headway (s/veh)	1.84	2.15	2.13	1.86	1.78	1.83	2.49	2.08	2.26	1.54	2.04	1.84	1.88	2.17	1.95
Unadj. Sat. Flow (veh/h/ln)	1961	1671	1692	1935	2028	1971	1444	1730	1594	2340	1768	1959	1914	1658	1845

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

WisDOT Signalized Intersection Capacity Study

Location ID: 5
Intersection Location: US 10 & Maple Bluff Rd / Old Hwy 18
Approach Direction: EB
Approach Configuration: 5
Population Group: 25 to 100

Video Date: 9/1/15-9/3/15
County: Portage
Region: NC
Municipality: Stevens Point
Approach AADT: 0

Cycle #	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Lane Studied	1	2	2	2	1	2	2	2	1	2	2	1	2		
Start of Green	3:35 PM	3:41 PM	15:52:20	3:57 PM	3:57 PM	4:03 PM	4:10 PM	16:23:14	4:32 PM	4:43 PM	5:05 PM	5:20 PM	5:48 PM		
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)															
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	2.23	2.31	2.72	1.64	2.83	2.09	1.59	4.01	2.24	2.00	3.23	2.26	2.26		
Vehicle 3	1.57	2.02	1.92	1.71	1.81	1.52	1.29	1.59	1.91	2.50	1.55	2.62	2.62		
Vehicle 4	1.43	1.64	1.74	3.21	2.54	1.66	3.49	2.58	1.75	1.60	1.73	1.50	1.50		
Vehicle 5	2.41	1.82	2.38	2.02	1.89	1.75	2.66	1.98	2.93	1.20	2.33	2.38	2.38		
Vehicle 6	1.60	1.92	2.45	1.82	1.60	2.05	1.98	1.45	1.14	2.27	1.70	2.41	2.41		
Vehicle 7	1.62	1.27	2.26	1.79	2.15	1.82	1.20	2.04	1.94	1.90	2.19	1.43	1.43		
Vehicle 8	1.39	1.50	1.95	1.51	2.42	1.81	1.44	2.36	1.46	1.55	1.63	2.03	2.03		
Vehicle 9	2.81	2.26	2.21	1.66	1.80	1.42	1.65	2.09	1.69	2.04	1.96	1.48	1.48		
Vehicle 10	2.03	1.92	2.28	1.19	1.70	2.06	2.09	2.22	1.49		1.47	1.17	1.17		
Vehicle 11	2.39	1.37	1.71	1.92	1.72	2.06	2.58	0.60	2.10		1.59	1.79	1.79		
Vehicle 12	1.65	3.28	1.59	2.12	1.72	3.64	1.91				2.06	1.46	1.46		

	Study Results														
No. vehicles used in cycle	12	12	12	12	12	12	12	11	11	9	12	12	12		
Time of Vehicle 4 (s)	5.23	5.97	6.38	6.56	7.18	5.27	6.37	8.18	5.90	6.10	6.51	6.38	6.38		
Time of Last Vehicle (s)	21.13	21.31	23.21	20.59	22.18	21.88	21.88	20.92	18.65	15.06	21.44	20.53	20.53		
Avg Sat Headway (s/veh)	1.99	1.92	2.10	1.75	1.88	2.08	1.94	1.82	1.82	1.79	1.87	1.77	1.77		
Unadj. Sat. Flow (veh/h/ln)	1811	1877	1711	2053	1920	1734	1857	1978	1976	2009	1929	2035	2035		

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

Saturation Flow Study Summary Sheet

Intersection Information:

Intersection:	US 10 & Maple Bluff Rd / Old Hwy 18
Major Street:	US 10
Minor Street:	Maple Bluff / Old Hwy 18
Study Approach:	EB
Approach Configuration:	5
Population Group:	25 to 100
Cycles by Date:	9/1(1-24), 9/2(25-43), 9/3(44-60)

Video Date:	9/1/15-9/3/15
WisDOT Region:	NC
Nearest Municipality:	Stevens Point
County:	Portage
Weather:	Clear
Pavement:	Dry
Observer:	Kevin Brink

Data Collection Summary Data:

Cycles Studied:	58
Average number of vehicles per cycle:	12
Headways Measured (queue vehicles > 4) :	448
% Heavy Vehicles (of headways measured):	1.6%
% RT Vehicles (of headways measured):	0.0%
Average Saturation Flow Headway (s):	2.00
Standard Deviation of All Headways:	0.60
Standard Deviation of Cycle Headways:	0.24
Unadjusted Median Sat Flow Rate (veh/ln.hr):	1811
Unadjusted Avg Sat Flow Rate (veh/ln/hr):	1800



WisDOT Signalized Intersection Capacity Study

Location ID: 6
Intersection Location: US 10 & Maple Bluff Rd / Old Hwy 18
Approach Direction: WB
Approach Configuration: 5
Population Group: 25 to 100

Video Date: 9/1/15-9/2/15
County: Portage
Region: NC
Municipality: Stevens Point
Approach AADT: 29200

Cycle #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Lane Studied	2	2	1	2	2	1	2	1	1	1	2	2	1	1	2
Start of Green	3:00 PM	3:02 PM	3:06 PM	3:08 PM	3:10 PM	3:13 PM	3:13 PM	3:30 PM	3:37 PM	3:41 PM	3:42 PM	3:44 PM	3:55 PM	4:01 PM	4:01 PM
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)															
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	2.55	2.70	2.48	2.66	3.38	3.60	3.63	3.10	4.23	3.30	2.87	3.04	3.08	3.49	2.70
Vehicle 2	3.39	2.81	3.54	2.81	2.03	2.06	2.96	2.27	3.32	2.75	2.19	2.69	2.48	2.04	2.63
Vehicle 3	3.05	2.64	1.83	1.88	2.31	2.61	1.90	3.26	2.31	2.65	1.62	2.10	2.95	1.15	1.87
Vehicle 4	2.25	2.23	3.03	2.65	1.96	2.73	1.87	1.88	1.40	2.12	2.34	1.54	1.92	4.18	2.93
Vehicle 5	1.82	1.83	1.49	2.06	1.84	1.83	2.09	2.35	2.45	2.91	2.27	1.49	2.69	1.93	1.67
Vehicle 6	1.59	1.78	1.91	2.50	1.56	1.99	1.50	1.67	3.99	1.97	3.50	1.11	1.57	1.90	1.49
Vehicle 7	3.15	1.93	1.68	3.16	1.64	1.61	1.14	2.39	2.01	3.21	2.16	1.08	2.76	2.39	1.78
Vehicle 8	1.70	2.22	2.55	2.29	3.36	2.41	2.56	2.04	1.96	1.54	1.92	3.37	2.22	1.68	1.55
Vehicle 9	2.63	1.95	1.17	1.34		2.21	2.55	1.89	1.48	1.76		2.45	1.36	1.60	
Vehicle 10	1.76	3.05	1.61			1.91		2.13	2.41	1.88				1.98	
Vehicle 11		2.09				2.39			1.68	1.98				1.38	
Vehicle 12						1.81			1.80	1.34				1.14	

	Study Results														
No. vehicles used in cycle	10	11	10	9	8	12	9	10	12	12	8	9	9	12	8
Time of Vehicle 4 (s)	11.24	10.38	10.88	10.00	9.68	11.00	10.36	10.51	11.26	10.82	9.02	9.37	10.43	10.86	10.13
Time of Last Vehicle (s)	23.89	25.23	21.29	21.35	18.08	27.16	20.20	22.98	29.04	27.41	18.87	18.87	21.03	24.86	16.62
Avg Sat Headway (s/veh)	2.11	2.12	1.74	2.27	2.10	2.02	1.97	2.08	2.22	2.07	2.46	1.90	2.12	1.75	1.62
Unadj. Sat. Flow (veh/h/ln)	1708	1697	2075	1586	1714	1782	1829	1732	1620	1736	1462	1895	1698	2057	2219
Start up lost time	2.81	1.89	3.94	0.92	1.28	2.92	2.49	2.20	2.37	2.53	-0.83	1.77	1.95	3.86	3.64

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection.
 The headway for vehicle 1 is the amount of time (in seconds) that passed between the light turning green and vehicle 1 crossing the stop bar into the intersection.

WisDOT Signalized Intersection Capacity Study

Location ID: 6
Intersection Location: US 10 & Maple Bluff Rd / Old Hwy 18
Approach Direction: WB
Approach Configuration: 5
Population Group: 25 to 100

Video Date: 9/1/15-9/2/15
County: Portage
Region: NC
Municipality: Stevens Point
Approach AADT: 29200

Cycle #	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Lane Studied	1	2	1	2	1	2	1	2	1	2	1	2	2	2	2
Start of Green	4:02 PM	4:02 PM	4:13 PM	4:13 PM	4:23 PM	4:30 PM	4:32 PM	4:35 PM	4:38 PM	4:38 PM	4:39 PM	4:39 PM	4:41 PM	4:50 PM	5:18 PM
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)															
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	3.18	4.03	3.25	3.28	3.51	3.00	2.93	2.92	4.79	3.19	2.71	2.75	3.17	2.93	4.27
Vehicle 2	2.57	2.25	2.31	2.49	2.51	3.38	3.10	2.87	2.36	2.63	3.23	1.49	2.51	2.70	2.47
Vehicle 3	2.50	1.97	2.19	1.84	3.04	3.66	2.75	1.88	1.89	2.01	1.96	1.89	2.18	2.10	2.42
Vehicle 4	2.49	2.40	1.76	2.37	1.56	2.54	2.00	1.83	2.59	1.63	2.75	1.60	3.40	2.99	1.87
Vehicle 5	3.71	2.86	1.83	2.86	1.67	1.79	2.02	1.86	2.34	2.63	2.46	3.07	2.31	2.13	2.75
Vehicle 6	0.21	2.65	1.83	2.27	1.82	1.94	2.08	2.35	1.48	1.55	2.41	1.44	1.98	2.55	1.82
Vehicle 7	2.02	1.52	1.72	1.39	1.51	1.70	1.68	3.14	2.34	2.04	2.15	1.95	2.81	1.93	1.91
Vehicle 8	2.16	1.61	2.29	2.00	1.93	1.46	2.58	2.38		2.27	1.51	1.77	2.27	1.77	1.41
Vehicle 9		1.48	1.95		3.54						1.89	1.60	2.46	0.95	1.29
Vehicle 10		1.87	2.67		2.17						1.99	1.58	1.43	1.41	2.19
Vehicle 11			1.53		1.89						2.16	1.18	0.80	2.07	1.08
Vehicle 12			2.32								1.62	2.06			

	Study Results														
No. vehicles used in cycle	8	10	12	8	11	8	8	8	7	8	12	12	11	11	11
Time of Vehicle 4 (s)	10.74	10.65	9.51	9.98	10.62	12.58	10.78	9.50	11.63	9.46	10.65	7.73	11.26	10.72	11.03
Time of Last Vehicle (s)	18.84	22.64	25.65	18.50	25.15	19.47	19.14	19.23	17.79	17.95	26.84	22.38	25.32	23.53	23.48
Avg Sat Headway (s/veh)	2.03	2.00	2.02	2.13	2.08	1.72	2.09	2.43	2.05	2.12	2.02	1.83	2.01	1.83	1.78
Unadj. Sat. Flow (veh/h/ln)	1778	1802	1784	1690	1734	2090	1722	1480	1753	1696	1779	1966	1792	1967	2024
Start up lost time	2.64	2.66	1.44	1.46	2.32	5.69	2.42	-0.23	3.42	0.97	2.56	0.40	3.23	3.40	3.92

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. The headway for vehicle 1 is the amount of time (in seconds) that passed between the light turning green and vehicle 1 crossing the stop bar into the intersection.

WisDOT Signalized Intersection Capacity Study

Location ID: 6
Intersection Location: US 10 & Maple Bluff Rd / Old Hwy 18
Approach Direction: WB
Approach Configuration: 5
Population Group: 25 to 100

Video Date: 9/1/15-9/2/15
County: Portage
Region: NC
Municipality: Stevens Point
Approach AADT: 29200

Cycle #	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Lane Studied	2	1	1	2	1	1	1	2	1	2	2	1	1	2	2
Start of Green	5:31 PM	5:49 PM	5:51 PM	5:53 PM	3:13 PM	3:20 PM	3:22 PM	3:22 PM	3:26 PM	3:45 PM	4:01 PM	4:06 PM	4:10 PM	4:10 PM	4:12 PM
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)															
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	2.82	3.03	3.53	2.80	3.16	3.03	2.72	3.64	3.17	2.07	3.33	3.29	3.38	3.04	3.79
Vehicle 2	2.45	2.83	2.83	2.73	2.76	2.48	2.17	3.15	2.44	2.30	3.30	2.71	2.42	2.34	2.53
Vehicle 3	2.00	2.26	2.44	2.78	2.19	2.45	2.73	2.86	2.69	2.23	2.36	2.15	2.09	1.77	2.84
Vehicle 4	2.02	2.65	1.47	2.20	2.13	2.88	2.26	2.80	2.05	2.71	1.82	2.38	1.97	1.94	1.96
Vehicle 5	2.79	2.08	1.75	2.90	2.61	1.18	1.66	1.71	2.64	2.46	1.75	1.88	2.21	2.40	1.66
Vehicle 6	3.26	3.04	1.63	1.66	2.27	1.90	2.60	1.93	1.54	2.01	2.00	2.30	1.50	1.76	1.43
Vehicle 7	2.38	2.28	1.90	3.57	2.21	1.39	2.19	2.40	2.39	1.62	1.53	3.32	2.10	1.52	1.49
Vehicle 8	2.00	1.70	2.58	1.36	1.90	1.28	1.32	2.10	2.15	2.14	1.55	2.13	2.08	1.71	1.68
Vehicle 9	1.33	1.47	1.52			3.33	2.51	2.83	1.57		1.49	2.17		1.94	2.07
Vehicle 10	1.91	1.99	2.21				1.35				1.01	1.99		2.44	1.81
Vehicle 11	1.87	1.95					2.25				1.33			2.32	2.06
Vehicle 12	0.42						1.90								1.61

	Study Results														
No. vehicles used in cycle	12	11	10	8	8	9	12	9	9	8	11	10	8	11	12
Time of Vehicle 4 (s)	9.29	10.77	10.27	10.51	10.24	10.84	9.88	12.45	10.35	9.31	10.81	10.53	9.86	9.09	11.12
Time of Last Vehicle (s)	25.25	25.28	21.86	20.00	19.23	19.92	25.66	23.42	20.64	17.54	21.47	24.32	17.75	23.18	24.93
Avg Sat Headway (s/veh)	1.99	2.07	1.93	2.37	2.25	1.82	1.97	2.19	2.06	2.06	1.52	2.30	1.97	2.01	1.73
Unadj. Sat. Flow (veh/h/ln)	1805	1737	1864	1517	1602	1982	1825	1641	1749	1750	2364	1566	1825	1789	2085
Start up lost time	1.31	2.48	2.54	1.02	1.25	3.58	1.99	3.67	2.12	1.08	4.72	1.34	1.97	1.04	4.22

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. The headway for vehicle 1 is the amount of time (in seconds) that passed between the light turning green and vehicle 1 crossing the stop bar into the intersection.

WisDOT Signalized Intersection Capacity Study

Location ID:	6	Video Date:	9/1/15-9/2/15
Intersection Location:	US 10 & Maple Bluff Rd / Old Hwy 18	County:	Portage
Approach Direction:	WB	Region:	NC
Approach Configuration:	5	Municipality:	Stevens Point
Population Group:	25 to 100	Approach AADT:	29200

Cycle #	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Lane Studied	1	1	1	1	1	1	1	2	1	2	1	1			
Start of Green	4:23 PM	4:28 PM	4:34 PM	4:41 PM	4:52 PM	5:01 PM	5:20 PM	5:20 PM	5:29 PM	5:33 PM	5:38 PM	5:40 PM			
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)															
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	2.62	2.55	3.18	2.40	2.61	5.45	3.13	3.14	3.00	3.29	3.23	3.61			
Vehicle 2	2.21	3.80	2.59	3.12	2.69	2.12	2.52	2.28	2.49	3.29	2.65	2.48			
Vehicle 3	2.74	2.51	2.56	1.76	2.60	1.94	1.98	2.11	2.01	1.99	2.12	3.41			
Vehicle 4	2.02	1.59	2.68	1.89	1.84	2.38	2.08	2.65	2.54	3.34	1.59	2.27			
Vehicle 5	1.96	1.71	1.89	2.05	1.95	2.45	1.42	1.94	2.70	2.42	1.66	1.41			
Vehicle 6	2.32	2.34	1.77	1.60	2.10	2.55	2.80	1.78	3.16	2.76	2.20	1.96			
Vehicle 7	3.57	1.73	1.50	1.90	2.36	2.19	1.91	2.70	1.17	1.26	1.91	2.27			
Vehicle 8	2.56	1.45	1.45	1.36	2.04	2.40	1.66	2.15	2.56	1.09	3.44	2.00			
Vehicle 9	1.81		2.85	2.71	1.24	2.46	1.78	1.42	2.65	2.29	2.19	1.54			
Vehicle 10	2.40		2.03	2.29	1.94	2.42	2.01			1.69		2.10			
Vehicle 11				1.96		2.59	1.68			2.41					
Vehicle 12				2.05			1.64								

	Study Results														
No. vehicles used in cycle	10	8	10	12	10	11	12	9	9	11	9	10			
Time of Vehicle 4 (s)	9.59	10.45	11.01	9.17	9.74	11.89	9.71	10.18	10.04	11.91	9.59	11.77			
Time of Last Vehicle (s)	24.21	17.68	22.50	25.09	21.37	28.95	24.61	20.17	22.28	25.83	20.99	23.05			
Avg Sat Headway (s/veh)	2.44	1.81	1.91	1.99	1.94	2.44	1.86	2.00	2.45	1.99	2.28	1.88			
Unadj. Sat. Flow (veh/h/ln)	1477	1992	1880	1809	1857	1477	1933	1802	1471	1810	1579	1915			
Start up lost time	-0.16	3.22	3.35	1.21	1.99	2.14	2.26	2.19	0.25	3.96	0.47	4.25			

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. The headway for vehicle 1 is the amount of time (in seconds) that passed between the light turning green and vehicle 1 crossing the stop bar into the intersection.

Saturation Flow Study Summary Sheet

Intersection Information:

Intersection:	US 10 & Maple Bluff Rd / Old Hwy 18
Major Street:	US 10
Minor Street:	Maple Bluff Rd / Old Hwy 18
Study Approach:	WB
Approach Configuration:	5
Population Group:	25 to 100
Cycle by Date:	9/1/15 (1-37), 9/2/15 (38-60)

Date:	9/1/15-9/2/15
WisDOT Region:	NC
Nearest Municipality:	Stevens Point
County:	Portage
Weather:	Clear
Pavement:	Dry
Observer:	Kevin Brink

Data Collection Summary Data:

Cycles Studied:	57
Average number of vehicles per cycle:	10
Headways Measured (queue vehicles > 4) :	335
% Heavy Vehicles (of headways measured):	0.0%
% RT Vehicles (of headways measured):	0.0%
Average Saturation Flow Headway (s):	2.02
Standard Deviation of All Headways:	0.55
Standard Deviation of Cycle Headways:	0.21
Unadjusted Median Sat Flow Rate (veh/ln.hr):	1782
Unadjusted Avg Sat Flow Rate (veh/ln/hr):	1782
Average Start Up Lost Time (s):	2.27



WisDOT Signalized Intersection Capacity Study

Location ID: 7
Intersection Location: US 10 / WIS 66 & SB US 51 Ramps
Approach Direction: WB
Approach Configuration: 5
Population Group: 25 to 100

Video Date: 9/1/15-9/3/15
County: Portage
Region: NC
Municipality: Stevens Point
Approach AADT: 18700

Cycle #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Lane Studied	1	2	1	2	2	2	2	1	1	1	2	1	2	1	2
Start of Green	3:02 PM	3:04 PM	3:04 PM	3:19 PM	3:41 PM	3:31 PM	4:03 PM	4:03 PM	4:05 PM	4:09 PM	4:10 PM	4:25 PM	4:44 PM	4:44 PM	5:26 PM
Heavy Vehicles (1-4)										1					1
Heavy Vehicles (5-12)			1		1										
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	1.77	2.55	3.15	2.15	3.60	3.58	2.36	2.29	1.86	2.60	2.43	2.82	3.04	3.17	2.62
Vehicle 3	2.07	2.73	2.79	1.94	2.98	4.04	2.54	4.10	2.85	1.65	2.34	2.53	3.38	3.22	2.78
Vehicle 4	2.61	1.87	2.63	1.96	0.99	1.51	1.75	2.03	1.86	2.83	2.46	1.24	1.96	3.44	2.37
Vehicle 5	2.63	1.45	2.32	3.42	1.30	2.21	1.91	2.39	2.62	1.73	1.91	2.05	2.66	2.65	2.00
Vehicle 6	1.84	1.89	1.21	1.11	1.29	1.97	1.69	2.48	1.59	2.33	1.93	2.45	1.32	2.88	1.78
Vehicle 7	2.01	1.99	1.53	2.65	1.45	2.43	2.07	3.03	1.82	2.10	2.42	1.60	2.66	3.95	1.81
Vehicle 8	2.00	2.11	2.38	2.10	1.57	3.39	1.70	2.16	3.31	1.70	1.42	2.95	2.57	3.42	2.24
Vehicle 9	2.22	2.38	2.54	2.93	1.55	1.75	1.26	2.90	0.81	2.62	1.42	1.34	1.72	2.60	2.57
Vehicle 10	2.04		2.33	1.65	1.39	2.65	2.15	2.09	2.64	2.07	2.13	1.70	2.58	2.87	1.87
Vehicle 11	1.68		2.31	2.70	1.63	1.50	2.38	2.68	1.52	2.78	3.16	3.38	1.80	3.32	1.76
Vehicle 12	1.95		2.20	2.68	2.62	1.62	1.63	2.58	1.47	2.02	2.23	1.22		2.04	1.92

	Study Results														
No. vehicles used in cycle	12	9	12	12	12	12	12	12	12	12	12	12	11	12	12
Time of Vehicle 4 (s)	6.45	7.15	8.57	6.05	7.57	9.13	6.65	8.42	6.57	7.08	7.23	6.59	8.38	9.83	7.77
Time of Last Vehicle (s)	22.82	16.97	25.39	25.29	20.37	26.65	21.44	28.73	22.35	24.43	23.85	23.28	23.69	33.56	23.72
Avg Sat Headway (s/veh)	2.05	1.96	2.10	2.40	1.60	2.19	1.85	2.54	1.97	2.17	2.08	2.09	2.19	2.97	1.99
Unadj. Sat. Flow (veh/h/ln)	1759	1833	1712	1497	2250	1644	1947	1418	1825	1660	1733	1726	1646	1214	1806

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection.
 There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

WisDOT Signalized Intersection Capacity Study

Location ID: 7
Intersection Location: US 10 / WIS 66 & SB US 51 Ramps
Approach Direction: WB
Approach Configuration: 5
Population Group: 25 to 100

Video Date: 9/1/15-9/3/15
County: Portage
Region: NC
Municipality: Stevens Point
Approach AADT: 18700

Cycle #	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Lane Studied	1	2	1	1	2	2	2	2	2	1	2	2	1	2	2
Start of Green	5:26 PM	5:40 PM	5:40 PM	3:36 PM	3:41 PM	4:02 PM	4:03 PM	4:14 PM	4:22 PM	4:31 PM	4:42 PM	4:46 PM	4:46 PM	4:53 PM	5:02 PM
Heavy Vehicles (1-4)											1				
Heavy Vehicles (5-12)					2					1			1		1
Right Turns (1-4)															
Right Turns (5-12)									1						

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	3.84	3.11	2.20	2.28	3.42	2.56	2.38	1.71	2.72	1.85	2.22	3.15	1.93	1.86	2.33
Vehicle 3	2.32	1.63	3.83	1.88	2.76	2.27	2.09	2.08	2.02	1.76	1.74	1.77	2.97	1.94	1.56
Vehicle 4	1.55	1.71	2.03	2.10	1.97	2.21	1.90	2.36	1.84	1.60	1.42	1.80	2.67	1.48	2.50
Vehicle 5	1.89	1.62	1.98	1.90	1.93	1.68	2.80	1.85	1.64	1.92	2.28	2.24	1.23	1.73	1.65
Vehicle 6	1.69	2.63	1.63	2.04	1.75	1.63	1.73	1.97	1.65	1.67	1.49	1.63	2.29	1.55	1.60
Vehicle 7	2.64	1.52	1.57	1.87	2.06	2.14	1.63	2.22	2.39	2.57	2.74	1.85	1.90	1.69	3.66
Vehicle 8	1.93	3.00	0.96	1.47	1.56	2.07	1.98	1.44	1.94	2.98	3.16	1.90	1.77	1.60	3.02
Vehicle 9	1.56	1.84	2.80	1.38	3.59	2.17	2.11	2.22	2.08	2.58	2.08	2.31	2.04	1.53	1.84
Vehicle 10		1.23	3.28	2.51	2.87	1.69	1.44	2.43	2.70	2.86	1.69	1.88	3.23	2.25	2.62
Vehicle 11		2.82	2.58	1.26	3.21	1.53	1.34	1.93	2.19	3.04	1.78	2.21	1.87	2.14	1.58
Vehicle 12		2.40		3.22	2.69	3.24	1.73	1.58	3.43	3.01	3.03	2.09	2.70	1.89	1.27

	Study Results														
No. vehicles used in cycle	9	12	11	12	12	12	12	12	12	12	12	12	12	12	12
Time of Vehicle 4 (s)	7.71	6.45	8.06	6.26	8.15	7.04	6.37	6.15	6.58	5.21	5.38	6.72	7.57	5.28	6.39
Time of Last Vehicle (s)	17.42	23.51	22.86	21.91	27.81	23.19	21.13	21.79	24.60	25.84	23.63	22.83	24.60	19.66	23.63
Avg Sat Headway (s/veh)	1.94	2.13	2.11	1.96	2.46	2.02	1.85	1.95	2.25	2.58	2.28	2.01	2.13	1.80	2.15
Unadj. Sat. Flow (veh/h/ln)	1854	1688	1703	1840	1465	1783	1951	1841	1598	1396	1578	1788	1691	2003	1671

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection.
 There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

WisDOT Signalized Intersection Capacity Study

Location ID: 7
Intersection Location: US 10 / WIS 66 & SB US 51 Ramps
Approach Direction: WB
Approach Configuration: 5
Population Group: 25 to 100

Video Date: 9/1/15-9/3/15
County: Portage
Region: NC
Municipality: Stevens Point
Approach AADT: 18700

Cycle #	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Lane Studied	2	1	1	1	2	1	2	1	1	2	2	1	2	2	2
Start of Green	5:06 PM	5:06 PM	5:09 PM	5:15 PM	3:07 PM	3:07 PM	3:10 PM	3:10 PM	3:23 PM	3:38 PM	3:42 PM	3:47 PM	3:53 PM	3:54 PM	4:03 PM
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)															
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	2.34	3.18	3.25	2.43	2.32	2.27	2.68	2.57	2.54	2.39	2.77	2.46	2.21	4.79	2.35
Vehicle 3	1.61	2.13	2.43	3.75	2.30	2.08	1.77	2.63	1.45	2.34	1.30	2.14	2.16	1.79	1.91
Vehicle 4	1.52	1.65	2.93	2.20	1.45	2.34	1.41	2.45	1.96	1.73	2.15	2.26	3.65	2.28	2.00
Vehicle 5	2.06	2.54	2.62	1.90	1.95	1.76	1.97	2.77	1.59	1.27	2.34	2.55	2.01	1.60	1.88
Vehicle 6	1.75	2.01	1.24	2.13	2.30	1.10	1.37	1.50	3.64	2.64	1.87	1.84	3.03	2.85	1.87
Vehicle 7	2.66	1.15	1.74	2.42	1.89	2.62	1.96	1.82	1.97	1.61	2.16	1.90	1.46	1.64	1.74
Vehicle 8	1.29	2.28	1.55	2.62	1.60	3.22	2.58	1.91	1.44	3.96	1.49	1.97	1.83	2.20	1.73
Vehicle 9	1.37	1.21	3.10	1.39	2.47	1.48	1.94	1.50	1.53	2.01	1.75	1.31	2.25	1.53	2.19
Vehicle 10	2.02	2.59	1.46	1.97	1.61	1.97	1.60	2.93	1.45	1.71	1.54	1.58	2.99	2.39	2.84
Vehicle 11	1.52	1.32	2.51	2.24	1.21	2.88	2.49	1.84	2.57	3.16	2.02	3.23	3.36	1.37	2.00
Vehicle 12	1.50		2.20	3.29	2.22	2.02	2.41	2.11	1.42	1.74		2.01	1.99	2.29	2.16

	Study Results														
No. vehicles used in cycle	12	11	12	12	12	12	12	12	12	12	11	12	12	12	12
Time of Vehicle 4 (s)	5.47	6.96	8.61	8.38	6.07	6.69	5.86	7.65	5.95	6.46	6.22	6.86	8.02	8.86	6.26
Time of Last Vehicle (s)	19.64	20.06	25.03	26.34	21.32	23.74	22.18	24.03	21.56	24.56	19.39	23.25	26.94	24.73	22.67
Avg Sat Headway (s/veh)	1.77	1.87	2.05	2.24	1.91	2.13	2.04	2.05	1.95	2.26	1.88	2.05	2.36	1.98	2.05
Unadj. Sat. Flow (veh/h/ln)	2032	1924	1754	1604	1889	1689	1765	1758	1845	1591	1913	1757	1522	1815	1755

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection.
 There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

WisDOT Signalized Intersection Capacity Study

Location ID: 7
Intersection Location: US 10 / WIS 66 & SB US 51 Ramps
Approach Direction: WB
Approach Configuration: 5
Population Group: 25 to 100

Video Date: 9/1/15-9/3/15
County: Portage
Region: NC
Municipality: Stevens Point
Approach AADT: 18700

Cycle #	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Lane Studied	2	1	2	1	2	1	2	1	2	1	1	1			
Start of Green	4:05 PM	4:07 PM	4:11 PM	4:11 PM	4:15 PM	4:15 PM	4:20 PM	4:09 PM	3:19 PM	3:21 PM	3:25 PM	3:27 PM			
Heavy Vehicles (1-4)									2						
Heavy Vehicles (5-12)							2								
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-		
Vehicle 2	3.01	2.98	2.50	3.21	2.19	2.57	2.01	2.31	3.65	2.45	3.00	2.44			
Vehicle 3	1.48	2.23	1.78	2.37	2.45	2.03	1.82	2.68	3.23	2.19	2.31	3.01			
Vehicle 4	1.16	2.23	1.72	3.18	2.59	1.88	1.97	1.91	3.11	3.22	1.70	2.29			
Vehicle 5	1.52	2.46	1.71	1.49	1.12	1.73	1.71	1.92	1.93	1.89	3.61	1.53			
Vehicle 6	3.26	2.14	1.50	1.77	2.11	1.85	3.00	2.02	1.28	1.78	1.47	1.79			
Vehicle 7	1.28	1.80	2.40	1.66	2.54	1.91	2.85	2.03	1.85	2.37	1.40	1.59			
Vehicle 8	1.93	1.92	2.13	2.02	1.75	1.69	2.13	1.87	1.57	3.51	1.94	2.21			
Vehicle 9	1.86	1.68	2.10	1.45	0.96	1.82	2.34	1.76	1.79	1.65		2.27			
Vehicle 10	2.56	1.24	1.40	2.07	3.24	2.49	3.48	3.54	2.44			1.88			
Vehicle 11	2.11	2.28		1.92		3.21									
Vehicle 12						2.28									

	Study Results														
No. vehicles used in cycle	11	11	10	11	10	12	10	10	10	9	8	10			
Time of Vehicle 4 (s)	5.65	7.44	6.00	8.76	7.23	6.48	5.80	6.90	9.99	7.86	7.01	7.74			
Time of Last Vehicle (s)	20.17	20.96	17.24	21.14	18.95	23.46	21.31	20.04	20.85	19.06	15.43	19.01			
Avg Sat Headway (s/veh)	2.07	1.93	1.87	1.77	1.95	2.12	2.59	2.19	1.81	2.24	2.10	1.88			
Unadj. Sat. Flow (veh/h/ln)	1736	1864	1922	2036	1843	1696	1393	1644	1989	1607	1710	1917			

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection.
 There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

Saturation Flow Study Summary Sheet

Intersection Information:

Intersection:	US 10 / WIS 66 & SB US 51 Ramps
Major Street:	US 10 / WIS 66
Minor Street:	SB US 51 Ramps
Study Approach:	WB
Approach Configuration:	5
Population Group:	25 to 100
Cycles by Date:	9/1(1-19), 9/2(20-37), 9/3(38-60)

Video Date:	9/1/15-9/3/15
WisDOT Region:	NC
Nearest Municipality:	Stevens Point
County:	Portage
Weather:	Clear
Pavement:	Dry
Observer:	Jeremy Luttig

Data Collection Summary Data:

Cycles Studied:	57
Average number of vehicles per cycle:	11
Headways Measured (queue vehicles > 4) :	424
% Heavy Vehicles (of headways measured):	2.1%
% RT Vehicles (of headways measured):	0.2%
Average Saturation Flow Headway (s):	2.09
Standard Deviation of All Headways:	0.59
Standard Deviation of Cycle Headways:	0.23
Unadjusted Median Sat Flow Rate (veh/ln.hr):	1755
Unadjusted Avg Sat Flow Rate (veh/ln/hr):	1723



WisDOT Signalized Intersection Capacity Study

Location ID: 8
Intersection Location: US 10 / WIS 66 & SB US 51 Ramps
Approach Direction: EB
Approach Configuration: 5
Population Group: 25 to 100

Video Date: 9/1/15-9/3/15
County: Portage
Region: NC
Municipality: Stevens Point

Cycle #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Lane Studied	2	2	2	2	2	1	2	2	1	2	2	2	1	2	2
Start of Green	3:32 PM	3:32 PM	3:49 PM	3:56 PM	4:09 PM	4:09 PM	4:13 PM	4:18 PM	4:26 PM	4:27 PM	4:29 PM	4:37 PM	4:38 PM	4:38 PM	4:40 PM
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)															
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	3.31	2.78	2.67	4.01	4.20	5.38	3.06	2.59	3.71	2.98	5.58	2.70	3.36	2.65	3.01
Vehicle 2	2.31	2.85	2.58	2.25	2.41	1.73	2.70	1.90	3.29	1.79	1.95	2.35	3.52	2.08	2.15
Vehicle 3	2.54	1.03	2.21	1.92	2.65	2.46	2.38	2.78	2.48	2.44	2.60	2.19	3.09	1.72	2.19
Vehicle 4	2.34	2.80	2.41	1.84	2.08	3.28	2.73	2.13	2.01	2.24	1.78	1.13	1.68	1.95	2.20
Vehicle 5	1.81	2.10	2.59	1.92	2.21	1.56	2.24	1.97	2.80	2.30	2.02	2.89	1.76	2.50	2.13
Vehicle 6	1.44	1.79	2.06	1.69	2.43	1.50	2.20	2.20	1.56	1.15	1.43	1.55	2.00	2.34	2.08
Vehicle 7	2.19	2.18	2.25	2.59	2.83	3.45	2.06	2.01	2.71	2.69	1.55	1.60	1.88	2.11	2.04
Vehicle 8	1.96	2.10	2.06	2.08	1.85	0.85	1.90	1.84	2.97	2.31	1.33	1.67	1.52	1.96	1.32
Vehicle 9	1.46	1.66	2.26	1.94	1.85	1.37	1.32	2.67	2.73	1.79	4.15	2.08	2.82	2.30	2.92
Vehicle 10	0.65	1.19	2.04	2.47	3.03	2.84	1.78	1.32	1.73	2.77	2.66	1.85	2.00	2.11	1.55
Vehicle 11	1.60	2.64	1.43	3.84	2.27	1.72	1.43	0.57	1.78	1.66	1.81	1.55	1.87	2.19	2.01
Vehicle 12	3.13	1.79	2.52	1.54	1.28	1.72	1.91	1.34	2.04	1.78	1.45	1.73	1.71		1.60

	Study Results														
No. vehicles used in cycle	12	12	12	12	12	12	12	12	12	12	12	12	12	11	12
Time of Vehicle 4 (s)	10.50	9.46	9.87	10.02	11.34	12.85	10.87	9.40	11.49	9.45	11.91	8.37	11.65	8.40	9.55
Time of Last Vehicle (s)	24.74	24.91	27.08	28.09	29.09	27.86	25.71	23.32	29.81	25.90	28.31	23.29	27.21	23.91	25.20
Avg Sat Headway (s/veh)	1.78	1.93	2.15	2.26	2.22	1.88	1.85	1.74	2.29	2.06	2.05	1.86	1.94	2.22	1.96
Unadj. Sat. Flow (veh/h/ln)	2022	1864	1673	1594	1623	1919	1941	2069	1572	1751	1756	1930	1851	1625	1840
Start up lost time	3.38	1.74	1.26	0.98	2.46	5.34	3.45	2.44	2.33	1.23	3.71	0.91	3.87	-0.46	1.73

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. The headway for vehicle 1 is the amount of time (in seconds) that passed between the light turning green and vehicle 1 crossing the stop bar into the intersection.

WisDOT Signalized Intersection Capacity Study

Location ID: 8
Intersection Location: US 10 / WIS 66 & SB US 51 Ramps
Approach Direction: EB
Approach Configuration: 5
Population Group: 25 to 100

Video Date: 9/1/15-9/3/15
County: Portage
Region: NC
Municipality: Stevens Point

Cycle #	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Lane Studied	2	2	1	2	2	2	2	2	2	2	2	1	2	2	1
Start of Green	4:42 PM	4:44 PM	4:48 PM	4:48 PM	3:07 PM	3:11 PM	4:07 PM	4:15 PM	4:24 PM	4:27 PM	4:31 PM	4:33 PM	4:33 PM	4:35 PM	4:38 PM
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)															
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	3.47	2.64	2.77	2.92	3.86	3.48	2.95	3.61	4.43	2.70	4.32	4.06	3.50	2.75	3.48
Vehicle 2	3.24	2.93	2.29	1.73	2.42	2.31	1.95	2.90	2.26	2.32	2.08	1.89	2.27	2.13	2.17
Vehicle 3	3.11	2.29	2.12	2.75	2.99	2.49	2.42	2.42	1.54	3.03	2.13	2.57	1.85	1.66	2.47
Vehicle 4	2.07	3.50	1.95	2.34	1.72	2.73	3.50	2.14	2.26	3.19	1.19	2.13	2.26	2.01	1.40
Vehicle 5	2.43	2.12	3.04	2.34	1.83	2.20	2.73	2.03	2.74	1.46	2.89	2.52	2.00	2.61	2.23
Vehicle 6	2.02	2.41	2.29	2.11	1.66	2.26	2.59	1.98	1.14	2.03	2.43	1.97	1.74	1.95	1.76
Vehicle 7	2.13	1.43	2.25	2.41	2.24	2.32	2.39	1.64	1.88	4.72	2.39	2.08	1.83	1.83	1.86
Vehicle 8	1.73	1.60	1.97	2.29	1.96	1.56	1.40	1.34	1.43	1.91	1.80	2.10	1.97	2.32	1.76
Vehicle 9	2.81	1.90	2.40	1.25	2.70	2.31	1.58	1.93	0.93	1.63	1.79	2.30	2.18	2.25	1.31
Vehicle 10	1.48	2.12	1.61	1.32	2.01	2.09	1.90	2.28	2.32	1.76	1.25	1.26	1.96	3.06	3.27
Vehicle 11	1.44	1.72	2.30	2.05	2.29	1.51	1.84	1.85	3.11	1.63	2.90	2.30	2.97	1.90	1.60
Vehicle 12	1.66	1.89	1.32	2.15	1.89	1.61	2.48	1.74	1.68	2.12	2.77	3.20	2.01	2.63	2.19

	Study Results														
No. vehicles used in cycle	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
Time of Vehicle 4 (s)	11.89	11.36	9.13	9.74	10.99	11.01	10.82	11.07	10.49	11.24	9.72	10.65	9.88	8.55	9.52
Time of Last Vehicle (s)	27.59	26.55	26.31	25.66	27.57	26.87	27.73	25.86	25.72	28.50	27.94	28.38	26.54	27.10	25.50
Avg Sat Headway (s/veh)	1.96	1.90	2.15	1.99	2.07	1.98	2.11	1.85	1.90	2.16	2.28	2.22	2.08	2.32	2.00
Unadj. Sat. Flow (veh/h/ln)	1834	1896	1676	1809	1737	1816	1703	1947	1891	1669	1581	1624	1729	1553	1802
Start up lost time	4.04	3.76	0.54	1.78	2.70	3.08	2.36	3.67	2.87	2.61	0.61	1.79	1.55	-0.72	1.53

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. The headway for vehicle 1 is the amount of time (in seconds) that passed between the light turning green and vehicle 1 crossing the stop bar into the intersection.

WisDOT Signalized Intersection Capacity Study

Location ID: 8
Intersection Location: US 10 / WIS 66 & SB US 51 Ramps
Approach Direction: EB
Approach Configuration: 5
Population Group: 25 to 100

Video Date: 9/1/15-9/3/15
County: Portage
Region: NC
Municipality: Stevens Point

Cycle #	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Lane Studied	2	1	2	2	1	2	1	2	1	2	2	2	2	2	1
Start of Green	4:38 PM	4:40 PM	4:40 PM	4:49 PM	4:53 PM	4:53 PM	4:06 PM	4:06 PM	4:07 PM	4:07 PM	4:09 PM	4:12 PM	4:15 PM	4:20 PM	3:03 PM
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)															
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	3.56	3.43	3.21	4.20	2.84	3.49	3.91	2.94	3.09	3.84	3.36	2.45	3.55	2.76	2.81
Vehicle 2	1.92	2.45	1.56	2.60	2.16	2.06	2.41	1.53	4.12	2.79	1.96	2.17	1.77	2.38	3.56
Vehicle 3	2.36	1.64	1.47	2.48	3.82	1.45	3.36	2.11	3.11	1.80	2.95	2.70	2.13	2.62	2.72
Vehicle 4	1.93	4.15	2.79	2.28	2.20	2.30	1.49	1.75	2.47	1.53	2.02	1.97	1.15	2.78	2.63
Vehicle 5	1.74	3.41	2.10	1.79	2.95	2.28	2.62	4.07	1.75	0.97	0.87	1.97	1.36	1.84	2.01
Vehicle 6	1.74	2.04	1.41	2.44	2.17	3.22	0.73	2.01	1.40	2.58	3.95	2.49	1.74	1.72	1.81
Vehicle 7	1.77	1.24	1.78	2.23	1.68	1.58	2.07	2.62	2.79	1.84	3.19	1.83	2.62	2.07	2.08
Vehicle 8	1.51	1.42	2.05	2.22	1.86	2.19	1.08	2.56	1.28	1.82	1.94	1.78	2.27	2.52	2.58
Vehicle 9	2.51	1.03	1.70	1.88	1.56	2.07	1.07	2.34	2.21	2.05	1.28	2.67	1.92	1.88	2.19
Vehicle 10	1.54	1.52	3.15	0.77	3.06	1.64	1.72	2.07	2.30	1.65	1.98	1.92	1.65	1.74	3.04
Vehicle 11	1.94	1.34	1.17	3.39	2.04	1.98	1.60	1.70	2.29	1.61	2.16	1.90	2.14	1.74	2.63
Vehicle 12	3.37	1.74	1.18	1.77	2.06	2.42	2.46	0.60	0.48	1.21	2.01	1.98	1.64	1.57	1.98

	Study Results														
No. vehicles used in cycle	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
Time of Vehicle 4 (s)	9.77	11.67	9.03	11.56	11.02	9.30	11.17	8.33	12.79	9.96	10.29	9.29	8.60	10.54	11.72
Time of Last Vehicle (s)	25.89	25.41	23.57	28.05	28.40	26.68	24.52	26.30	27.29	23.69	27.67	25.83	23.94	25.62	30.04
Avg Sat Headway (s/veh)	2.02	1.72	1.82	2.06	2.17	2.17	1.67	2.25	1.81	1.72	2.17	2.07	1.92	1.89	2.29
Unadj. Sat. Flow (veh/h/ln)	1787	2096	1981	1747	1657	1657	2157	1603	1986	2098	1657	1741	1877	1910	1572
Start up lost time	1.71	4.80	1.76	3.31	2.33	0.61	4.49	-0.65	5.54	3.10	1.60	1.02	0.93	3.00	2.56

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. The headway for vehicle 1 is the amount of time (in seconds) that passed between the light turning green and vehicle 1 crossing the stop bar into the intersection.

WisDOT Signalized Intersection Capacity Study

Location ID: 8
Intersection Location: US 10 / WIS 66 & SB US 51 Ramps
Approach Direction: EB
Approach Configuration: 5
Population Group: 25 to 100

Video Date: 9/1/15-9/3/15
County: Portage
Region: NC
Municipality: Stevens Point

Cycle #	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Lane Studied	2	2	1	2	1	1	1	2	2	2	1	2	2	2	
Start of Green	3:03 PM	3:05 PM	3:07 PM	3:07 PM	3:11 PM	3:25 PM	3:31 PM	3:31 PM	3:44 PM	3:45 PM	3:47 PM	3:47 PM	3:56 PM	3:11 PM	
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)															
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	3.50	2.17	3.63	2.26	1.71	3.85	3.73	2.78	4.05	3.42	5.00	4.95	3.84	4.08	
Vehicle 2	2.43	3.02	4.33	2.25	1.71	2.16	1.84	2.04	2.42	1.90	2.50	2.22	1.31	2.71	
Vehicle 3	1.64	1.74	1.69	2.58	1.68	1.95	2.64	1.84	2.95	3.12	2.20	1.61	2.17	2.10	
Vehicle 4	2.43	1.92	3.28	3.06	1.98	3.05	2.04	1.83	1.90	2.20	2.78	1.88	1.93	2.26	
Vehicle 5	1.79	1.98	1.66	1.45	1.66	0.98	2.00	1.71	1.76	2.31	2.64	1.87	1.76	1.61	
Vehicle 6	3.36	2.23	2.75	1.89	2.64	2.22	2.64	1.64	1.34	2.72	2.36	2.43	1.89	1.37	
Vehicle 7	2.48	2.18	1.68	2.95	1.57	2.35	3.65	1.82	2.12	1.88	1.94	2.13	1.48	2.48	
Vehicle 8	1.91	3.04	4.16	1.58	2.29	1.54	1.56	2.66	1.73	2.05	1.98	2.47	1.37	2.30	
Vehicle 9	1.58	1.73	1.70	1.67	1.75	1.89	2.05	1.91	2.43	2.17	2.36	2.78	1.46	2.17	
Vehicle 10	1.90	1.76	1.67	1.90	1.41	0.97	1.75	1.99	2.13	2.23	1.49	1.88	2.36	1.33	
Vehicle 11	2.38	2.73	2.12	2.29	1.75	2.98	2.07	2.19	2.14		1.94	1.72	2.84	1.36	
Vehicle 12	1.51	2.85	1.60	2.50	1.41	1.38	2.12	2.73	1.98		2.00	1.39	2.34	1.29	

	Study Results														
No. vehicles used in cycle	12	12	12	12	12	12	12	12	12	10	12	12	12	12	
Time of Vehicle 4 (s)	10.00	8.85	12.93	10.15	7.08	11.01	10.25	8.49	11.32	10.64	12.48	10.66	9.25	11.15	
Time of Last Vehicle (s)	26.91	27.35	30.27	26.38	21.56	25.32	28.09	25.14	26.95	24.00	29.19	27.33	24.75	25.06	
Avg Sat Headway (s/veh)	2.11	2.31	2.17	2.03	1.81	1.79	2.23	2.08	1.95	2.23	2.09	2.08	1.94	1.74	
Unadj. Sat. Flow (veh/h/ln)	1703	1557	1661	1774	1989	2013	1614	1730	1843	1617	1724	1728	1858	2070	
Start up lost time	1.55	-0.40	4.26	2.03	-0.16	3.86	1.33	0.16	3.51	1.73	4.12	2.33	1.50	4.19	

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. The headway for vehicle 1 is the amount of time (in seconds) that passed between the light turning green and vehicle 1 crossing the stop bar into the intersection.

Saturation Flow Study Summary Sheet

Intersection Information:

Intersection:	US 10 / WIS 66 & SB US 51 Ramps
Major Street:	US 10 / WIS 66
Minor Street:	SB US 51 Ramps
Study Approach:	EB
Approach Configuration:	5
Population Group:	25 to 100
Cycle by Date:	9/1/2015 (1-20), 9/2/2015 (21-37), 9/3/2015 (38-60)

Date:	9/1/15-9/3/15
WisDOT Region:	NC
Nearest Municipality:	Stevens Point
County:	Portage
Weather:	Clear
Pavement:	Dry
Observer:	Kevin Brink

Data Collection Summary Data:

Cycles Studied:	59
Average number of vehicles per cycle:	12
Headways Measured (queue vehicles > 4) :	469
% Heavy Vehicles (of headways measured):	0.0%
% RT Vehicles (of headways measured):	0.0%
Average Saturation Flow Headway (s):	2.02
Standard Deviation of All Headways:	0.57
Standard Deviation of Cycle Headways:	0.18
Unadjusted Median Sat Flow Rate (veh/ln.hr):	1756
Unadjusted Avg Sat Flow Rate (veh/ln/hr):	1779
Average Start Up Lost Time (s):	2.25



WisDOT Signalized Intersection Capacity Study

Location ID: 9
Intersection Location: WIS 52 & 17th Ave
Approach Direction: EB
Approach Configuration: 5
Population Group: 25 to 100

Video Date: 4/13/15 - 4/15/15
County: Marathon
Region: NC
Municipality: Wausau
Approach AADT: 18600

Cycle #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Lane Studied	1	1	1	2	1	1	1	1	1	2	1	1	2	2	1
Start of Green	3:30 PM	3:37 PM	4:05 PM	4:05 PM	4:12 PM	4:16 PM	4:23 PM	4:29 PM	4:40 PM	4:54 PM	5:09 PM	5:13 PM	5:16 PM	5:18 PM	5:20 PM
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)															
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	3.60	2.78	3.14	3.52	3.50	2.47	2.27	3.99	2.66	3.78	2.47	3.25	3.65	3.31	5.28
Vehicle 2	2.68	1.48	1.38	2.63	1.85	1.24	2.15	1.56	3.22	1.43	3.03	2.33	1.94	1.41	2.75
Vehicle 3	1.67	2.50	2.22	1.82	2.11	2.17	2.74	1.67	2.04	2.22	2.75	1.92	3.52	1.66	1.50
Vehicle 4	1.61	1.80	1.44	3.33	2.64	1.67	1.84	1.72	2.49	2.05	2.25	1.91	2.12	2.53	1.56
Vehicle 5	2.11	1.61	3.01	2.14	3.53	1.99	1.52	1.40	1.67	1.47	2.11	1.90	1.64	2.03	2.58
Vehicle 6	1.51	1.87	2.17	2.19	3.09	1.40	1.51	2.90	1.72	2.61	3.81	1.86	1.97	1.70	2.29
Vehicle 7	1.99	3.63	1.74	1.42	1.13	1.85	1.49	3.90	1.31	1.76	1.73	3.19	2.08	1.80	2.10
Vehicle 8	1.50	1.64	1.92	0.92	1.59	3.04	2.33	1.55	2.27	3.69	3.38	1.55	2.01	2.22	1.62
Vehicle 9		2.44	1.53	2.33	0.80	1.57		2.30	3.14	2.20	1.89	1.53	2.14		2.02
Vehicle 10		1.92	1.91	1.05				1.82	1.01	1.29		1.17			
Vehicle 11				2.92				1.82	0.91	2.01					
Vehicle 12								1.95	1.58	1.88					

	Study Results														
No. vehicles used in cycle	8	10	10	11	9	9	8	12	12	12	9	10	9	8	9
Time of Vehicle 4 (s)	9.56	8.56	8.18	11.30	10.10	7.55	9.00	8.94	10.41	9.48	10.50	9.41	11.23	8.91	11.09
Time of Last Vehicle (s)	16.67	21.67	20.46	24.27	20.24	17.40	15.85	26.58	24.02	26.39	23.42	20.61	21.07	16.66	21.70
Avg Sat Headway (s/veh)	1.78	2.19	2.05	1.85	2.03	1.97	1.71	2.20	1.70	2.11	2.58	1.87	1.97	1.94	2.12
Unadj. Sat. Flow (veh/h/ln)	2025	1648	1759	1943	1775	1827	2102	1633	2116	1703	1393	1929	1829	1858	1697
Start up lost time	2.45	-0.18	-0.01	3.89	1.99	-0.33	2.15	0.12	3.61	1.03	0.16	1.94	3.36	1.16	2.60

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. The headway for vehicle 1 is the amount of time (in seconds) that passed between the light turning green and vehicle 1 crossing the stop bar into the intersection.

WisDOT Signalized Intersection Capacity Study

Location ID: 9
Intersection Location: WIS 52 & 17th Ave
Approach Direction: EB
Approach Configuration: 5
Population Group: 25 to 100

Video Date: 4/13/15 - 4/15/15
County: Marathon
Region: NC
Municipality: Wausau
Approach AADT: 18600

Cycle #	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Lane Studied	2	1	1	1	1	2	2	2	2	2	1	1	2	1	1
Start of Green	5:20 PM	5:27 PM	6:49 AM	7:13 AM	7:26 AM	7:27 AM	7:31 AM	7:33 AM	7:46 AM	7:48 AM	7:48 AM	7:53 AM	7:53 AM	7:57 AM	8:22 AM
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)															
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	5.70	2.01	3.91	1.72	1.72	2.94	1.65	2.85	4.06	3.50	2.54	3.32	2.23	2.36	2.11
Vehicle 2	1.94	1.71	1.78	2.25	1.53	2.42	2.06	1.97	1.73	2.37	2.36	2.47	1.91	3.01	1.64
Vehicle 3	1.83	2.42	1.91	2.89	1.59	1.89	1.69	3.17	1.63	1.97	1.44	2.02	2.48	4.08	2.58
Vehicle 4	1.42	2.22	1.33	2.19	1.95	3.36	1.70	2.45	2.03	1.61	2.70	2.16	1.99	1.24	1.56
Vehicle 5	1.88	2.31	2.06	1.50	1.57	1.75	2.11	1.67	1.64	2.05	1.86	1.45	1.17	1.34	1.62
Vehicle 6	1.54	3.11	1.89	1.81	2.29	1.62	1.95	1.72	1.91	1.42	2.05	1.55	2.59	0.95	1.88
Vehicle 7	1.35	1.64	1.42	1.28	1.74	1.60	1.44	1.38	1.95	2.70	1.75	2.45	1.80	1.27	1.14
Vehicle 8	2.62	1.20	2.88	1.41	1.61	2.20	2.33	1.17	1.78	1.86	1.56	1.65	2.91	2.58	1.86
Vehicle 9			1.64	2.09	1.47	1.56		1.29	1.59	1.22	1.67	1.71	1.83	1.70	1.64
Vehicle 10					2.29	2.19		1.44	1.99	1.97	1.97	2.98	1.92	1.62	
Vehicle 11						1.92				1.41	1.89	1.53	3.34		
Vehicle 12						1.91				2.68	2.38	2.38			

	Study Results														
No. vehicles used in cycle	8	8	9	9	10	12	8	10	10	12	12	12	11	10	9
Time of Vehicle 4 (s)	10.89	8.36	8.93	9.05	6.79	10.61	7.10	10.44	9.45	9.45	9.04	9.97	8.61	10.69	7.89
Time of Last Vehicle (s)	18.28	16.62	18.82	17.14	17.76	25.36	14.93	19.11	20.31	24.76	24.17	25.67	24.17	20.15	16.03
Avg Sat Headway (s/veh)	1.85	2.07	1.98	1.62	1.83	1.84	1.96	1.44	1.81	1.91	1.89	1.96	2.22	1.58	1.63
Unadj. Sat. Flow (veh/h/ln)	1949	1743	1820	2225	1969	1953	1839	2491	1989	1881	1904	1834	1620	2283	2211
Start up lost time	3.50	0.10	1.02	2.58	-0.52	3.24	-0.73	4.66	2.21	1.79	1.47	2.12	-0.28	4.38	1.38

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. The headway for vehicle 1 is the amount of time (in seconds) that passed between the light turning green and vehicle 1 crossing the stop bar into the intersection.

WisDOT Signalized Intersection Capacity Study

Location ID: 9
Intersection Location: WIS 52 & 17th Ave
Approach Direction: EB
Approach Configuration: 5
Population Group: 25 to 100

Video Date: 4/13/15 - 4/15/15
County: Marathon
Region: NC
Municipality: Wausau
Approach AADT: 18600

Cycle #	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Lane Studied	2	2	1	2	2	1	2	1	2	2	1	2	1	1	1
Start of Green	8:24 AM	8:34 AM	8:37 AM	8:37 AM	3:10 PM	3:45 PM	3:45 PM	3:37 PM	4:01 PM	4:12 PM	4:16 PM	4:49 PM	4:52 PM	5:04 PM	5:06 PM
Heavy Vehicles (1-4)										1					
Heavy Vehicles (5-12)															
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	3.94	4.07	3.64	3.03	4.83	5.52	6.58	1.84	3.29	3.68	3.22	2.19	3.43	1.88	2.61
Vehicle 2	3.89	2.25	2.43	1.87	2.80	1.75	2.72	2.65	2.49	1.75	1.76	2.26	2.11	2.31	2.48
Vehicle 3	3.45	1.82	2.39	2.33	3.98	2.44	1.89	1.60	2.11	2.46	1.57	2.77	1.64	2.58	2.38
Vehicle 4	2.92	2.03	1.83	3.39	1.13	1.39	1.73	2.52	2.50	2.14	2.28	2.00	2.18	1.95	1.98
Vehicle 5	1.38	1.37	2.54	2.35	1.95	1.36	1.47	2.39	1.98	3.08	1.73	2.53	2.25	2.89	2.66
Vehicle 6	2.09	2.18	1.24	1.82	2.70	1.98	2.02	3.08	1.50	2.92	1.72	1.76	1.82	3.80	3.78
Vehicle 7	1.61	2.17	2.31	1.03	3.13	1.97	2.03	1.87	2.28	1.31	3.89	3.57	1.64	2.59	2.20
Vehicle 8	0.95	1.92	1.55	3.32	2.03	1.87	1.47	2.10	1.69	1.89	2.19	0.95	2.45	2.99	2.60
Vehicle 9	2.22	2.48	2.54		1.64	1.35	2.68			1.41	1.34	2.16	1.80	0.97	1.18
Vehicle 10	1.64	1.74	1.74			2.08	1.25					1.57	2.17	1.43	1.93
Vehicle 11						2.15	1.30					1.63		2.22	2.75
Vehicle 12						1.49						1.19		2.55	

	Study Results														
No. vehicles used in cycle	10	10	10	8	9	12	11	8	8	9	9	12	10	12	11
Time of Vehicle 4 (s)	14.20	10.17	10.29	10.62	12.74	11.10	12.92	8.61	10.39	10.03	8.83	9.22	9.36	8.72	9.45
Time of Last Vehicle (s)	24.09	22.03	22.21	19.14	24.19	25.35	25.14	18.05	17.84	20.64	19.70	24.58	21.49	28.16	26.55
Avg Sat Headway (s/veh)	1.65	1.98	1.99	2.13	2.29	1.78	1.75	2.36	1.86	2.12	2.17	1.92	2.02	2.43	2.44
Unadj. Sat. Flow (veh/h/ln)	2184	1821	1812	1690	1572	2021	2062	1525	1933	1697	1656	1875	1781	1481	1474
Start up lost time	7.61	2.26	2.34	2.10	3.58	3.98	5.94	-0.83	2.94	1.54	0.13	1.54	1.27	-1.00	-0.32

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. The headway for vehicle 1 is the amount of time (in seconds) that passed between the light turning green and vehicle 1 crossing the stop bar into the intersection.

WisDOT Signalized Intersection Capacity Study

Location ID: 9
Intersection Location: WIS 52 & 17th Ave
Approach Direction: EB
Approach Configuration: 5
Population Group: 25 to 100

Video Date: 4/13/15 - 4/15/15
County: Marathon
Region: NC
Municipality: Wausau
Approach AADT: 18600

Cycle #	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Lane Studied	1	2	2	1	1	1	1	2							
Start of Green	5:13 PM	5:15 PM	5:18 PM	5:24 PM	6:49 AM	6:52 AM	6:58 AM	8:02 AM							
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)															
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	2.34	2.86	3.13	2.63	1.86	3.36	2.31	1.95							
Vehicle 2	1.50	2.24	1.34	3.18	1.95	2.91	2.08	2.35							
Vehicle 3	1.91	4.20	2.77	1.91	3.21	3.04	3.72	1.78							
Vehicle 4	3.00	1.55	2.20	2.27	1.87	1.52	2.68	2.19							
Vehicle 5	2.25	2.23	2.88	1.32	2.86	2.48	1.80	2.14							
Vehicle 6	1.04	2.67	2.90	3.97	2.39	2.08	1.69	2.09							
Vehicle 7	3.11	3.05	2.27	3.33	1.52	2.20	2.73	1.44							
Vehicle 8	2.71	1.19	1.16	2.19	1.96	2.50	0.99	1.50							
Vehicle 9	1.81	1.45	2.03	1.47	1.82		1.86	2.30							
Vehicle 10			2.48	2.09	1.42			1.36							
Vehicle 11			1.45	1.48											
Vehicle 12			1.82												

	Study Results														
No. vehicles used in cycle	9	9	12	11	10	8	9	10							
Time of Vehicle 4 (s)	8.75	10.85	9.44	9.99	8.89	10.83	10.79	8.27							
Time of Last Vehicle (s)	19.67	21.44	26.43	25.84	20.86	20.09	19.86	19.10							
Avg Sat Headway (s/veh)	2.18	2.12	2.12	2.26	2.00	2.31	1.81	1.80							
Unadj. Sat. Flow (veh/h/ln)	1648	1700	1695	1590	1805	1555	1985	1994							
Start up lost time	0.01	2.38	0.94	0.93	0.91	1.57	3.53	1.05							

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. The headway for vehicle 1 is the amount of time (in seconds) that passed between the light turning green and vehicle 1 crossing the stop bar into the intersection.

Saturation Flow Study Summary Sheet

Intersection Information:

Intersection:	WIS 52 & 17th Ave
Major Street:	WIS 52
Minor Street:	17th Ave
Study Approach:	EB
Approach Configuration:	5
Population Group:	25 to 100
Cycle by Date:	1-17 (4/13), 18-49 (4/14), 50-53 (4/15)

Date:	4/13/15 - 4/15/15
WisDOT Region:	NC
Nearest Municipality:	Wausau
County:	Marathon
Weather:	Dry
Pavement:	Clear
Observer:	Lee Kutzke

Data Collection Summary Data:

Cycles Studied:	53
Average number of vehicles per cycle:	10
Headways Measured (queue vehicles > 4) :	311
% Heavy Vehicles (of headways measured):	0.0%
% RT Vehicles (of headways measured):	0.0%
Average Saturation Flow Headway (s):	1.98
Standard Deviation of All Headways:	0.62
Standard Deviation of Cycle Headways:	0.24
Unadjusted Median Sat Flow Rate (veh/ln.hr):	1827
Unadjusted Avg Sat Flow Rate (veh/ln/hr):	1815
Average Start Up Lost Time (s):	1.80



WisDOT Signalized Intersection Capacity Study

Location ID: 10
Intersection Location: WIS 13 & WIS 54
Approach Direction: EB
Approach Configuration: 5
Population Group: 25 to 100

Video Date: 9/1/15-9/3/15
County: Wood
Region: NC
Municipality: Wisconsin Rapids
Approach AADT: 20000

Cycle #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Lane Studied	1	2	2	1	2	2	2	2	2	1	2	2	2	2	2
Start of Green	3:10 PM	3:12 PM	3:28 PM	3:31 PM	3:43 PM	3:45 PM	4:17 PM	4:43 PM	4:47 PM	5:00 PM	5:02 PM	5:07 PM	5:08 PM	5:15 PM	5:16 PM
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)															
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	2.75	4.63	3.25	2.91	3.36	2.27	3.43	3.11	2.60	2.96	4.10	3.79	3.46	2.87	2.97
Vehicle 2	1.83	1.88	1.73	2.01	1.74	2.24	2.30	1.84	2.17	2.92	1.90	2.33	2.16	1.81	2.53
Vehicle 3	2.22	1.63	1.53	2.00	1.95	2.32	2.44	2.43	2.27	1.76	1.68	2.09	1.97	2.43	2.17
Vehicle 4	2.50	2.49	1.52	2.51	2.23	2.03	1.98	2.04	2.85	2.56	3.60	2.03	1.90	1.90	2.17
Vehicle 5	1.67	2.14	1.34	2.32	1.17	2.84	1.47	1.90	1.65	1.87	2.46	3.74	1.59	1.56	2.54
Vehicle 6	1.80	2.36	1.75	2.39	1.81	2.65	0.84	1.99	1.79	2.20	1.90	1.88	1.90	1.46	1.64
Vehicle 7	2.67	1.53	2.53	1.47	1.43	1.89	2.39	2.41	1.60	1.91	1.83	1.14	1.33	1.54	2.26
Vehicle 8	1.93	1.24	1.70	2.09	1.74	1.66	1.24	2.62	1.25	1.54	0.96	1.77	1.44	1.99	1.55
Vehicle 9	2.93	2.00	1.36	1.32	2.77	2.24	1.43	3.16	2.00	1.44					
Vehicle 10		1.52	2.83	1.74	1.67	1.74		1.07	2.19	1.68					
Vehicle 11			2.35	1.65	1.44	1.30		2.43	1.87	2.05					
Vehicle 12				1.32	2.11	1.64		1.68							

	Study Results														
No. vehicles used in cycle	9	10	11	12	12	12	9	12	11	11	8	8	8	8	8
Time of Vehicle 4 (s)	9.30	10.63	8.03	9.43	9.28	8.86	10.15	9.42	9.89	10.20	11.28	10.24	9.49	9.01	9.84
Time of Last Vehicle (s)	20.30	21.42	21.89	23.73	23.42	24.82	17.52	26.68	22.24	22.89	18.43	18.77	15.75	15.56	17.83
Avg Sat Headway (s/veh)	2.20	1.80	1.98	1.79	1.77	1.99	1.47	2.16	1.76	1.81	1.79	2.13	1.57	1.64	2.00
Unadj. Sat. Flow (veh/h/ln)	1636	2002	1818	2014	2037	1805	2442	1669	2040	1986	2014	1688	2300	2198	1802
Start up lost time	0.50	3.44	0.11	2.28	2.21	0.88	4.25	0.79	2.83	2.95	4.13	1.71	3.23	2.46	1.85

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. The headway for vehicle 1 is the amount of time (in seconds) that passed between the light turning green and vehicle 1 crossing the stop bar into the intersection.

WisDOT Signalized Intersection Capacity Study

Location ID: 10
Intersection Location: WIS 13 & WIS 54
Approach Direction: EB
Approach Configuration: 5
Population Group: 25 to 100

Video Date: 9/1/15-9/3/15
County: Wood
Region: NC
Municipality: Wisconsin Rapids
Approach AADT: 20000

Cycle #	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Lane Studied	1	1	2	2	1	1	2	2	2	2	1	2	2	1	1
Start of Green	7:04 AM	7:15 AM	7:24 AM	6:40 AM	6:53 AM	3:12 PM	3:16 PM	3:18 PM	3:22 PM	3:33 PM	3:35 PM	3:35 PM	3:38 PM	3:46 PM	4:17 PM
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)															
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	4.00	2.95	2.95	2.25	2.79	2.09	2.56	3.97	3.18	3.82	4.73	2.55	3.08	3.89	2.60
Vehicle 2	2.09	2.25	2.71	3.14	2.18	1.91	1.71	2.63	2.36	2.36	1.57	1.48	1.74	2.54	2.69
Vehicle 3	2.84	2.34	2.97	2.61	1.91	1.56	3.45	1.74	1.64	3.01	1.92	2.19	2.10	2.01	1.75
Vehicle 4	2.15	2.01	2.06	2.43	2.09	2.27	1.83	1.29	1.11	1.84	1.83	1.91	1.74	2.30	2.12
Vehicle 5	3.92	2.60	1.90	2.26	2.71	2.01	2.36	2.20	2.39	1.62	2.72	1.56	2.01	2.28	1.66
Vehicle 6	3.04	1.64	1.56	2.87	1.99	2.70	1.84	2.02	2.38	2.28	2.11	1.57	2.28	2.29	2.37
Vehicle 7	1.80	2.70	2.60	1.89	1.46	1.64	2.54	1.73	1.39	1.56	2.18	2.01	2.48	1.57	2.38
Vehicle 8	1.63	1.65	1.91	2.18	1.47	1.29	3.55	1.92	2.47	1.57	1.58	2.27	1.66	1.29	1.92
Vehicle 9	1.19	1.29	2.61	2.27	1.84	1.65		2.28		1.93	2.28	0.85	1.83	1.13	1.83
Vehicle 10	1.71	2.26	2.27		2.89	1.47				1.57		1.47	2.11		
Vehicle 11		1.99	0.67									2.38			
Vehicle 12		1.28										2.45			

	Study Results														
No. vehicles used in cycle	10	12	11	9	10	10	8	9	8	10	9	12	10	9	9
Time of Vehicle 4 (s)	11.08	9.55	10.69	10.43	8.97	7.83	9.55	9.63	8.29	11.03	10.05	8.13	8.66	10.74	9.16
Time of Last Vehicle (s)	24.37	24.96	24.21	21.90	21.33	18.59	19.84	19.78	16.92	21.56	20.92	22.69	21.03	19.30	19.32
Avg Sat Headway (s/veh)	2.22	1.93	1.93	2.29	2.06	1.79	2.57	2.03	2.16	1.75	2.17	1.82	2.06	1.71	2.03
Unadj. Sat. Flow (veh/h/ln)	1625	1869	1864	1569	1748	2007	1399	1773	1669	2051	1656	1978	1746	2103	1772
Start up lost time	2.22	1.85	2.96	1.25	0.73	0.66	-0.74	1.51	-0.34	4.01	1.35	0.85	0.41	3.89	1.03

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. The headway for vehicle 1 is the amount of time (in seconds) that passed between the light turning green and vehicle 1 crossing the stop bar into the intersection.

WisDOT Signalized Intersection Capacity Study

Location ID: 10
Intersection Location: WIS 13 & WIS 54
Approach Direction: EB
Approach Configuration: 5
Population Group: 25 to 100

Video Date: 9/1/15-9/3/15
County: Wood
Region: NC
Municipality: Wisconsin Rapids
Approach AADT: 20000

Cycle #	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Lane Studied	2	2	2	1	1	2	1	2	2	2	1	2	2	2	2
Start of Green	4:25 PM	4:27 PM	4:32 PM	4:36 PM	5:00 PM	5:05 PM	5:10 PM	5:10 PM	5:13 PM	5:28 PM	5:33 PM	5:45 PM	5:50 PM	7:11 AM	7:50 AM
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)															
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	3.10	2.38	6.00	4.26	3.62	2.89	2.63	3.52	4.01	2.69	3.07	3.82	3.47	3.48	2.74
Vehicle 2	2.00	2.30	2.31	2.53	1.48	2.02	1.94	2.28	2.20	2.64	2.01	3.82	2.30	2.56	2.21
Vehicle 3	2.22	1.28	1.93	2.55	2.57	1.84	1.92	1.65	2.02	2.22	2.55	0.76	1.57	2.12	2.11
Vehicle 4	1.82	1.84	3.43	1.83	1.92	2.28	2.02	1.56	2.28	1.92	2.89	2.87	1.83	2.38	2.20
Vehicle 5	2.11	2.09	1.21	1.64	1.66	1.84	3.08	1.48	2.02	1.58	1.92	2.01	1.93	1.66	2.40
Vehicle 6	1.48	1.92	2.10	2.73	2.11	1.83	1.48	1.91	2.00	2.41	2.47	2.11	1.78	2.22	2.67
Vehicle 7	3.09	2.11	1.40	1.57	2.10	2.02	1.75	1.94	1.57	2.29	3.15	1.40	2.00	2.22	2.90
Vehicle 8	1.95	2.19	2.63	2.11	2.45	1.48	2.53	1.58	1.74	1.95	2.05	1.83	1.29	1.74	1.77
Vehicle 9	2.10	2.02	2.01		2.02				1.56			1.67	2.83		
Vehicle 10		2.55	1.47		1.66										
Vehicle 11															
Vehicle 12															

	Study Results														
No. vehicles used in cycle	9	10	10	8	10	8	8	8	9	8	8	9	9	8	8
Time of Vehicle 4 (s)	9.14	7.80	13.67	11.17	9.59	9.03	8.51	9.01	10.51	9.47	10.52	11.27	9.17	10.54	9.26
Time of Last Vehicle (s)	19.87	20.68	24.49	19.22	21.59	16.20	17.35	15.92	19.40	17.70	20.11	20.29	19.00	18.38	19.00
Avg Sat Headway (s/veh)	2.15	2.15	1.80	2.01	2.00	1.79	2.21	1.73	1.78	2.06	2.40	1.80	1.97	1.96	2.44
Unadj. Sat. Flow (veh/h/ln)	1678	1677	1996	1789	1800	2008	1629	2084	2025	1750	1502	1996	1831	1837	1478
Start up lost time	0.56	-0.79	6.46	3.12	1.59	1.86	-0.33	2.10	3.40	1.24	0.93	4.05	1.31	2.70	-0.48

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. The headway for vehicle 1 is the amount of time (in seconds) that passed between the light turning green and vehicle 1 crossing the stop bar into the intersection.

WisDOT Signalized Intersection Capacity Study

Location ID: 10
Intersection Location: WIS 13 & WIS 54
Approach Direction: EB
Approach Configuration: 5
Population Group: 25 to 100

Video Date: 9/1/15-9/3/15
County: Wood
Region: NC
Municipality: Wisconsin Rapids
Approach AADT: 20000

Cycle #	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Lane Studied	1	1	2	1	2	2	2	1	1	2	2				
Start of Green	3:10 PM	3:24 PM	3:39 PM	3:53 PM	4:17 PM	4:19 PM	4:30 PM	7:04 AM	7:16 AM	7:38 AM	7:50 AM				
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)															
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	2.83	2.75	2.91	2.81	3.71	3.88	3.00	3.80	3.18	2.44	2.82				
Vehicle 2	2.20	2.02	2.45	2.58	2.11	1.95	1.75	2.10	2.63	2.48	2.02				
Vehicle 3	2.36	3.28	1.92	1.93	2.10	2.18	2.03	1.74	1.65	2.19	1.74				
Vehicle 4	1.74	1.84	1.93	2.39	2.02	1.66	1.57	1.57	1.56	1.92	2.01				
Vehicle 5	2.09	1.48	3.72	2.55	1.67	0.93	2.39	2.20	2.11	2.01	1.91				
Vehicle 6	2.28	2.20	1.57	1.76	1.30	2.02	2.02	2.64	1.83	1.83	1.50				
Vehicle 7	1.57	2.04	1.83	1.39	1.84	2.82	2.66	1.65	3.37	1.84	2.65				
Vehicle 8	1.21	2.03	1.92	2.39	2.65	1.65	1.48	2.02	1.74	2.02	1.84				
Vehicle 9	2.00	2.02	2.20		2.11	1.67	1.77	2.38	2.47	2.09	1.40				
Vehicle 10							1.75			1.38					
Vehicle 11							2.11			1.39					
Vehicle 12															

	Study Results														
No. vehicles used in cycle	9	9	9	8	9	9	11	9	9	11	9				
Time of Vehicle 4 (s)	9.13	9.89	9.21	9.71	9.94	9.67	8.35	9.21	9.02	9.03	8.59				
Time of Last Vehicle (s)	18.28	19.66	20.45	17.80	19.51	18.76	22.53	20.10	20.54	21.59	17.89				
Avg Sat Headway (s/veh)	1.83	1.95	2.25	2.02	1.91	1.82	2.03	2.18	2.30	1.79	1.86				
Unadj. Sat. Flow (veh/h/ln)	1967	1842	1601	1780	1881	1980	1777	1653	1563	2006	1935				
Start up lost time	1.81	2.07	0.22	1.62	2.28	2.40	0.25	0.50	-0.20	1.85	1.15				

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. The headway for vehicle 1 is the amount of time (in seconds) that passed between the light turning green and vehicle 1 crossing the stop bar into the intersection.

Saturation Flow Study Summary Sheet

Intersection Information:

Intersection:	WIS 13 & WIS 54
Major Street:	WIS 13
Minor Street:	WIS 54
Study Approach:	EB
Approach Configuration:	5
Population Group:	25 to 100
Cycle by Date:	9/1(1-20), 9/2(21-47), 9/3(48-60)

Date:	9/1/15-9/3/15
WisDOT Region:	NC
Nearest Municipality:	Wisconsin Rapids
County:	Wood
Weather:	Clear
Pavement:	Dry
Observer:	Kevin Brink

Data Collection Summary Data:

Cycles Studied:	56
Average number of vehicles per cycle:	9
Headways Measured (queue vehicles > 4) :	303
% Heavy Vehicles (of headways measured):	0.0%
% RT Vehicles (of headways measured):	0.0%
Average Saturation Flow Headway (s):	1.96
Standard Deviation of All Headways:	0.51
Standard Deviation of Cycle Headways:	0.22
Unadjusted Median Sat Flow Rate (veh/ln.hr):	1825
Unadjusted Avg Sat Flow Rate (veh/ln/hr):	1833
Average Start Up Lost Time (s):	1.73



WisDOT Signalized Intersection Capacity Study

Location ID: 11
Intersection Location: County VV / E Pioneer Rd & S Main Street
Approach Direction: NB
Approach Configuration: 1
Population Group: 25 to 100

Video Date: 5/12/15 - 5/14/15
County: Fond du Lac
Region: NE
Municipality: Fond du Lac
Approach AADT: 6900

Cycle #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Lane Studied	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Start of Green	3:29 PM	3:33 PM	3:38 PM	3:40 PM	3:46 PM	4:08 PM	4:12 PM	4:15 PM	4:16 PM	5:18 PM	4:21 PM	4:28 PM	4:37 PM	4:38 PM	4:40 PM
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)							1				1				
Right Turns (1-4)	1				1				1			1	1	1	
Right Turns (5-12)			1			1	2		1	2	3	1	1		

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	3.24	2.38	3.01	2.71	3.02	4.54	2.99	2.60	2.05	2.40	2.55	3.58	2.84	2.08	2.75
Vehicle 3	2.96	2.11	3.17	2.70	2.37	2.24	2.39	2.87	2.41	2.32	1.75	2.32	2.22	2.56	2.52
Vehicle 4	1.83	2.02	2.57	2.02	2.21	2.26	2.15	2.19	2.89	3.12	1.93	2.33	2.00	2.78	2.08
Vehicle 5	1.92	2.47	2.64	2.45	1.99	2.49	2.05	1.65	2.32	2.48	2.05	2.53	1.87	2.12	2.20
Vehicle 6	1.74	2.89	4.66	2.89	2.02	2.74	2.51	1.64	3.02	2.14	2.44	1.40	2.82	2.34	2.35
Vehicle 7	3.39	2.10	1.45	2.72	2.16	2.48	2.10	2.34	1.92	1.80	1.82	1.99	1.58	1.72	2.03
Vehicle 8	2.06	1.72	2.17	2.58	1.66	1.93	2.46	1.89	2.57	2.15	2.55	1.70	2.03	1.83	1.76
Vehicle 9		2.72	1.65	1.45	1.25		2.79	2.85			2.89	1.72			2.28
Vehicle 10			3.21				1.41	2.52			1.52	1.82			
Vehicle 11											1.53	1.53			
Vehicle 12											1.54	1.86			

	Study Results														
No. vehicles used in cycle	8	9	10	9	9	8	10	10	8	8	12	12	8	8	9
Time of Vehicle 4 (s)	8.03	6.51	8.75	7.43	7.60	9.04	7.53	7.66	7.35	7.84	6.23	8.23	7.06	7.42	7.35
Time of Last Vehicle (s)	17.14	18.41	24.53	19.52	16.68	18.68	20.85	20.55	17.18	16.41	22.57	22.78	15.36	15.43	17.97
Avg Sat Headway (s/veh)	2.28	2.38	2.63	2.42	1.82	2.41	2.22	2.15	2.46	2.14	2.04	1.82	2.07	2.00	2.12
Unadj. Sat. Flow (veh/h/ln)	1581	1513	1369	1489	1982	1494	1622	1676	1465	1680	1763	1979	1735	1798	1695

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

WisDOT Signalized Intersection Capacity Study

Location ID: 11
Intersection Location: County VV / E Pioneer Rd & S Main Street
Approach Direction: NB
Approach Configuration: 1
Population Group: 25 to 100

Video Date: 5/12/15 - 5/14/15
County: Fond du Lac
Region: NE
Municipality: Fond du Lac
Approach AADT: 6900

Cycle #	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Lane Studied	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Start of Green	4:57 PM	5:09 PM	5:19 PM	5:21 PM	5:42 PM	5:59 PM	7:44 AM	3:05 PM	3:06 PM	3:07 PM	3:23 PM	3:40 PM	3:42 PM	3:53 PM	4:06 PM
Heavy Vehicles (1-4)											1	1	1		
Heavy Vehicles (5-12)				1										1	
Right Turns (1-4)		1			2	1				2	1				1
Right Turns (5-12)		1	1	1	2	1		1		1			2		

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	2.55	2.61	3.09	2.53	2.96	2.94	2.68	2.34	2.97	2.15	3.54	3.62	3.23	3.13	2.11
Vehicle 3	1.91	1.83	1.80	2.45	3.03	2.16	2.17	2.42	1.91	2.47	1.98	3.09	1.98	2.44	2.62
Vehicle 4	2.79	2.07	2.78	2.84	2.80	2.03	2.68	2.12	2.09	2.17	2.27	2.13	3.72	2.23	2.17
Vehicle 5	2.41	1.61	2.06	2.05	1.51	2.53	3.40	2.39	1.86	1.92	3.15	2.77	2.50	2.54	2.08
Vehicle 6	2.08	1.85	1.88	2.51	1.91	3.07	2.50	1.33	2.79	1.44	1.77	2.99	1.62	2.86	2.21
Vehicle 7	1.80	2.45	2.04	2.25	1.66	2.05	1.61	1.91	1.98	2.65	1.28	3.20	1.59	1.98	2.93
Vehicle 8	1.66	2.10	2.22	2.43	3.99	1.51	1.65	1.59	2.44	2.29	1.91	1.81	1.39	2.29	1.36
Vehicle 9	1.38	1.92	1.75	2.43			1.93	2.05			1.54		2.30	1.66	
Vehicle 10		1.69		2.88			2.43	2.77					1.69	3.39	
Vehicle 11		2.09											1.29	1.16	
Vehicle 12															

	Study Results														
No. vehicles used in cycle	9	11	9	10	8	8	10	10	8	8	9	8	11	11	8
Time of Vehicle 4 (s)	7.25	6.51	7.67	7.82	8.79	7.13	7.53	6.88	6.97	6.79	7.79	8.84	8.93	7.80	6.90
Time of Last Vehicle (s)	16.58	20.22	17.62	22.37	17.86	16.29	21.05	18.92	16.04	15.09	17.44	19.61	21.31	23.68	15.48
Avg Sat Headway (s/veh)	1.87	1.96	1.99	2.42	2.27	2.29	2.25	2.01	2.27	2.08	1.93	2.69	1.77	2.27	2.14
Unadj. Sat. Flow (veh/h/ln)	1929	1838	1809	1485	1588	1572	1598	1794	1588	1735	1865	1337	2036	1587	1678

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

WisDOT Signalized Intersection Capacity Study

Location ID: 11
Intersection Location: County VV / E Pioneer Rd & S Main Street
Approach Direction: NB
Approach Configuration: 1
Population Group: 25 to 100

Video Date: 5/12/15 - 5/14/15
County: Fond du Lac
Region: NE
Municipality: Fond du Lac
Approach AADT: 6900

Cycle #	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Lane Studied	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Start of Green	4:12 PM	4:18 PM	4:19 PM	4:29 PM	4:37 PM	4:39 PM	4:42 PM	4:49 PM	5:15 PM	5:19 PM	5:21 PM	5:22 PM	5:31 PM	3:37 PM	3:42 PM
Heavy Vehicles (1-4)			1											2	
Heavy Vehicles (5-12)															
Right Turns (1-4)							1						2		1
Right Turns (5-12)	1			2	1				2	2	1	1	3	3	2

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	2.83	2.62	4.22	2.55	2.46	3.16	3.00	2.18	2.61	2.41	3.02	2.45	1.70	3.42	2.95
Vehicle 3	1.89	2.53	2.05	1.64	2.45	2.28	2.05	1.90	2.21	2.72	2.90	2.56	2.14	2.73	1.90
Vehicle 4	1.56	2.55	2.02	2.25	2.20	2.42	1.91	2.42	1.52	1.30	1.75	1.58	2.86	2.65	2.84
Vehicle 5	2.01	2.13	1.85	1.54	2.12	2.30	2.31	1.75	2.01	2.06	1.77	2.18	2.53	2.63	2.27
Vehicle 6	2.69	2.24	1.93	1.82	2.58	2.06	2.23	2.07	1.55	2.69	2.06	2.43	2.34	2.15	1.83
Vehicle 7	2.25	2.03	2.67	2.29	2.60	1.77	1.60	2.50	3.11	2.04	1.71	2.96	1.57	1.51	2.56
Vehicle 8	2.08	1.86	2.50	3.85	1.07	2.77	2.55	2.11	1.16	2.09	2.89	1.34	2.32	3.31	2.44
Vehicle 9			1.76	1.21	2.44	2.46	1.85					2.78	2.31	1.43	2.28
Vehicle 10					2.64	2.68	2.16					3.77		1.63	2.78
Vehicle 11					1.82		1.72					1.48		1.30	2.31
Vehicle 12					1.37		1.98								2.60

	Study Results														
No. vehicles used in cycle	8	8	9	9	12	10	12	8	8	8	8	11	9	11	12
Time of Vehicle 4 (s)	6.28	7.70	8.29	6.44	7.11	7.86	6.96	6.50	6.34	6.43	7.67	6.59	6.70	8.80	7.69
Time of Last Vehicle (s)	15.31	15.96	19.00	17.15	23.75	21.90	23.36	14.93	14.17	15.31	16.10	23.53	17.77	22.76	26.76
Avg Sat Headway (s/veh)	2.26	2.06	2.14	2.14	2.08	2.34	2.05	2.11	1.96	2.22	2.11	2.42	2.21	1.99	2.38
Unadj. Sat. Flow (veh/h/ln)	1595	1743	1681	1681	1731	1538	1756	1708	1839	1622	1708	1488	1626	1805	1510

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

WisDOT Signalized Intersection Capacity Study

Location ID: 11
Intersection Location: County VV / E Pioneer Rd & S Main Street
Approach Direction: NB
Approach Configuration: 1
Population Group: 25 to 100

Video Date: 5/12/15 - 5/14/15
County: Fond du Lac
Region: NE
Municipality: Fond du Lac
Approach AADT: 6900

Cycle #	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Lane Studied	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Start of Green	3:45 PM	3:47 PM	3:56 PM	3:57 PM	4:04 PM	4:18 PM	4:26 PM	4:38 PM	4:48 PM	5:01 PM	5:11 PM	5:13 PM	7:47 AM	8:07 AM	7:46 AM
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)															
Right Turns (1-4)	1	1			1				1	2					
Right Turns (5-12)	2	1				2			1	2	1	1	1		

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	3.36	3.24	5.30	2.30	3.48	3.12	4.05	2.79	3.14	3.01	3.64	2.50	2.95	3.34	3.09
Vehicle 3	1.69	2.03	2.54	2.97	2.06	2.68	2.63	1.84	2.01	1.91	1.91	2.49	2.38	1.80	1.68
Vehicle 4	2.50	1.68	1.71	2.46	2.36	1.91	2.19	2.22	2.94	2.94	2.29	1.79	2.16	2.89	2.21
Vehicle 5	1.97	0.78	2.11	2.21	1.71	1.78	2.10	2.65	2.45	2.22	2.14	2.44	1.68	2.41	3.08
Vehicle 6	2.12	3.36	1.61	1.16	2.61	2.01	2.33	1.60	1.90	1.61	1.97	1.97	1.83	2.09	2.68
Vehicle 7	1.76	3.12	1.64	2.71	2.54	2.21	1.53	1.82	1.88	2.61	2.44	2.01	2.13	1.45	2.95
Vehicle 8	2.31	2.10	2.46	2.10	1.61	2.50	1.50	2.05	2.17	3.88	2.51	1.90	1.22	1.75	2.80
Vehicle 9		1.84				1.92		1.60	2.12		2.15	2.21			
Vehicle 10						2.15		2.28	2.64		1.29	1.10			
Vehicle 11						2.52		1.43	1.27			2.13			
Vehicle 12									2.04			2.11			

	Study Results														
No. vehicles used in cycle	8	9	8	8	8	11	8	11	12	8	10	12	8	8	8
Time of Vehicle 4 (s)	7.55	6.95	9.55	7.73	7.90	7.71	8.87	6.85	8.09	7.86	7.84	6.78	7.49	8.03	6.98
Time of Last Vehicle (s)	15.71	18.15	17.37	15.91	16.37	22.80	16.33	20.28	24.56	18.18	20.34	22.65	14.35	15.73	18.49
Avg Sat Headway (s/veh)	2.04	2.24	1.95	2.05	2.12	2.16	1.86	1.92	2.06	2.58	2.08	1.98	1.71	1.92	2.88
Unadj. Sat. Flow (veh/h/ln)	1765	1607	1841	1760	1700	1670	1930	1876	1749	1395	1728	1815	2099	1870	1251

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

Saturation Flow Study Summary Sheet

Intersection Information:

Intersection:	County VV / E Pioneer Rd & S Main Street
Major Street:	County VV / E Pioneer Rd
Minor Street:	S Main Street
Study Approach:	NB
Approach Configuration:	1
Population Group:	25 to 100
Cycles by Date:	5/12/15 (1-21) 5/13/15 (22-43,60) 5/14/15(44-59)

Video Date:	5/12/15 - 5/14/15
WisDOT Region:	NE
Nearest Municipality:	Fond du Lac
County:	Fond du Lac
Weather:	Clear
Pavement:	Dry
Observer:	Allen

Data Collection Summary Data:

Cycles Studied:	60
Average number of vehicles per cycle:	9
Headways Measured (queue vehicles > 4) :	316
% Heavy Vehicles (of headways measured):	1.3%
% RT Vehicles (of headways measured):	16.1%
Average Saturation Flow Headway (s):	2.14
Standard Deviation of All Headways:	0.55
Standard Deviation of Cycle Headways:	0.23
Unadjusted Median Sat Flow Rate (veh/ln.hr):	1698
Unadjusted Avg Sat Flow Rate (veh/ln/hr):	1679



WisDOT Signalized Intersection Capacity Study

Location ID: 12
Intersection Location: County VV / E Pioneer Rd & S Main Street
Approach Direction: WB
Approach Configuration: 1
Population Group: 25 to 100

Video Date: 5/12/15 - 5/14/15
County: Fond du Lac
Region: NE
Municipality: Fond du Lac
Approach AADT: 9400

Cycle #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Lane Studied	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Start of Green	3:49 PM	3:53 PM	3:58 PM	4:00 PM	4:02 PM	4:04 PM	4:11 PM	4:12 PM	4:14 PM	4:16 PM	4:18 PM	4:20 PM	4:24 PM	4:26 PM	4:27 PM
Heavy Vehicles (1-4)		1		1			2				1	1	1	1	
Heavy Vehicles (5-12)			1									1			
Right Turns (1-4)	2	1	2	1		2	2		1	1	2	1		1	
Right Turns (5-12)		2	1	2	2	2	3	1	3		1	2	4		2

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	2.33	3.82	2.84	3.32	2.14	1.90	4.95	2.22	2.68	2.34	3.54	3.49	3.88	3.23	2.96
Vehicle 3	1.80	2.25	2.16	1.72	2.18	1.67	2.04	1.55	1.69	1.64	2.25	1.88	2.31	1.42	2.20
Vehicle 4	3.01	2.32	2.19	3.44	1.65	2.52	1.67	2.50	2.08	2.96	2.09	1.96	1.74	2.65	2.18
Vehicle 5	1.74	2.41	2.71	1.96	1.96	2.13	3.62	2.36	2.74	1.71	2.19	2.30	2.40	1.97	2.15
Vehicle 6	2.15	1.67	1.81	2.45	1.91	2.49	2.24	2.05	1.88	1.76	2.14	1.85	2.38	1.98	2.91
Vehicle 7	1.70	2.53	1.96	1.43	2.29	2.84	2.00	2.68	2.83	1.83	1.60	2.72	3.69	1.48	1.67
Vehicle 8	2.29	2.62	1.87	3.45	2.43	2.59	1.44	1.40	1.74	1.87	1.62	2.15	2.15	1.64	2.50
Vehicle 9		2.43		1.75	1.81		1.97	2.05	1.71	2.05	1.67	1.74	2.08	2.17	2.74
Vehicle 10					2.47		1.28		0.90	2.44		2.42	3.49		2.01
Vehicle 11					1.86		1.32		2.38	2.22			2.24		1.51
Vehicle 12							1.86			2.03			1.38		

	Study Results														
No. vehicles used in cycle	8	9	8	9	11	8	12	9	11	12	9	10	12	9	11
Time of Vehicle 4 (s)	7.14	8.39	7.19	8.48	5.97	6.09	8.66	6.27	6.45	6.94	7.88	7.33	7.93	7.30	7.34
Time of Last Vehicle (s)	15.02	20.05	15.54	19.52	20.70	16.14	24.39	16.81	20.63	22.85	17.10	20.51	27.74	16.54	22.83
Avg Sat Headway (s/veh)	1.97	2.33	2.09	2.21	2.10	2.51	1.97	2.11	2.03	1.99	1.84	2.20	2.48	1.85	2.21
Unadj. Sat. Flow (veh/h/ln)	1827	1544	1725	1630	1711	1433	1831	1708	1777	1810	1952	1639	1454	1948	1627

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection.
 There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

WisDOT Signalized Intersection Capacity Study

Location ID: 12
Intersection Location: County VV / E Pioneer Rd & S Main Street
Approach Direction: WB
Approach Configuration: 1
Population Group: 25 to 100

Video Date: 5/12/15 - 5/14/15
County: Fond du Lac
Region: NE
Municipality: Fond du Lac
Approach AADT: 9400

Cycle #	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Lane Studied	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Start of Green	4:36 PM	4:45 PM	5:01 PM	5:05 PM	5:09 PM	5:10 PM	5:12 PM	5:16 PM	5:30 PM	5:36 PM	7:14 AM	7:22 AM	7:33 AM	5:44 PM	7:45 AM
Heavy Vehicles (1-4)														1	
Heavy Vehicles (5-12)								2						1	1
Right Turns (1-4)	1	1	2			2	1	2	1			1		1	1
Right Turns (5-12)	1	2	3	6	1		1		1	1		1	1	2	2

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	2.30	2.78	1.73	2.01	2.22	1.28	2.45	2.60	1.79	2.03	2.32	2.32	1.30	3.06	1.65
Vehicle 3	2.46	1.73	1.68	1.97	1.64	2.07	2.61	2.04	2.12	5.00	2.47	1.60	2.09	2.73	2.52
Vehicle 4	2.53	1.80	1.87	2.32	2.74	2.74	1.75	1.48	2.23	2.53	2.30	2.10	2.34	1.61	1.92
Vehicle 5	2.18	2.72	2.45	2.11	1.77	1.34	2.13	2.37	2.15	2.03	1.95	2.17	1.85	2.25	2.15
Vehicle 6	1.79	2.20	3.37	2.20	1.60	1.73	1.71	1.60	1.56	2.01	2.42	1.74	1.78	1.86	1.65
Vehicle 7	1.66	2.24	2.19	1.25	1.68	3.60	3.19	1.86	2.20	2.01	1.67	1.63	1.77	2.15	2.31
Vehicle 8	1.79	1.40	1.67	2.85	2.21	1.70	2.38	1.64	1.45	3.38	3.75	2.10	2.62	4.05	2.36
Vehicle 9	3.03	1.33	1.94	1.88					2.17	2.18	1.79	1.65	1.49	1.49	2.18
Vehicle 10	1.75	1.47	3.10	1.16						1.88	2.23			2.53	2.31
Vehicle 11			1.90	2.08						2.80				2.50	1.69
Vehicle 12			1.57	1.95										2.92	

	Study Results														
No. vehicles used in cycle	10	10	12	12	8	8	8	8	9	11	10	9	9	12	11
Time of Vehicle 4 (s)	7.29	6.31	5.28	6.30	6.60	6.09	6.81	6.12	6.14	9.56	7.09	6.02	5.73	7.40	6.09
Time of Last Vehicle (s)	19.49	17.67	23.47	21.78	13.86	14.46	16.22	13.59	15.67	25.85	20.90	15.31	15.24	27.15	20.74
Avg Sat Headway (s/veh)	2.03	1.89	2.27	1.94	1.82	2.09	2.35	1.87	1.91	2.33	2.30	1.86	1.90	2.47	2.09
Unadj. Sat. Flow (veh/h/ln)	1770	1901	1583	1860	1983	1720	1530	1928	1889	1547	1564	1938	1893	1458	1720

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection.
 There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

WisDOT Signalized Intersection Capacity Study

Location ID: 12
Intersection Location: County VV / E Pioneer Rd & S Main Street
Approach Direction: WB
Approach Configuration: 1
Population Group: 25 to 100

Video Date: 5/12/15 - 5/14/15
County: Fond du Lac
Region: NE
Municipality: Fond du Lac
Approach AADT: 9400

Cycle #	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Lane Studied	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Start of Green	7:47 AM	7:49 AM	7:53 AM	7:58 AM	8:16 AM	8:30 AM	8:38 AM	8:47 AM	3:00 PM	3:13 PM	3:25 PM	3:37 PM	3:44 PM	3:50 PM	4:16 PM
Heavy Vehicles (1-4)							1	1							1
Heavy Vehicles (5-12)										1					
Right Turns (1-4)					1		1	1	1			1		1	
Right Turns (5-12)	2	1	1		1	2	2	1	1	2	3	3	3	2	

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	2.21	2.85	2.93	2.58	2.94	3.08	2.56	4.04	3.27	2.53	2.44	2.28	2.17	3.58	2.72
Vehicle 3	3.23	3.18	2.55	2.05	2.35	2.96	2.14	2.32	2.78	1.50	1.45	2.97	2.03	2.01	3.37
Vehicle 4	2.02	2.22	1.60	1.91	2.13	1.84	2.51	2.05	1.81	2.25	2.31	2.19	1.71	2.71	3.85
Vehicle 5	3.02	1.55	2.40	2.74	1.83	2.86	2.14	2.61	1.47	3.19	1.53	2.35	1.73	2.41	2.20
Vehicle 6	1.80	2.65	1.59	2.02	2.29	1.76	1.77	2.84	1.88	1.79	2.31	1.84	1.52	1.53	2.07
Vehicle 7	3.00	2.95	1.34	1.94	1.65	2.29	2.03	1.77	2.02	1.56	1.83	1.99	2.44	1.53	2.34
Vehicle 8	1.65	1.77	1.23	2.46	1.82	1.89	1.46	1.68	3.01	1.66	1.61	2.02	1.90	2.16	2.93
Vehicle 9	2.73	2.04	1.95			1.60	3.30		2.29		2.76		2.48		1.30
Vehicle 10	1.52		2.29			2.71					1.74		2.61		
Vehicle 11	1.88					1.96					2.20		2.96		
Vehicle 12	2.28					2.11					2.76		1.81		

	Study Results														
No. vehicles used in cycle	12	9	10	8	8	12	9	8	9	8	12	8	12	8	9
Time of Vehicle 4 (s)	7.46	8.25	7.08	6.54	7.42	7.88	7.21	8.41	7.86	6.28	6.20	7.44	5.91	8.30	9.94
Time of Last Vehicle (s)	25.34	19.21	17.88	15.70	15.01	25.06	17.91	17.31	18.53	14.48	22.94	15.64	23.36	15.93	20.78
Avg Sat Headway (s/veh)	2.23	2.19	1.80	2.29	1.90	2.15	2.14	2.23	2.13	2.05	2.09	2.05	2.18	1.91	2.17
Unadj. Sat. Flow (veh/h/ln)	1611	1642	2000	1572	1897	1676	1682	1618	1687	1756	1720	1756	1650	1887	1661

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection.
 There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

WisDOT Signalized Intersection Capacity Study

Location ID: 12
Intersection Location: County VV / E Pioneer Rd & S Main Street
Approach Direction: WB
Approach Configuration: 1
Population Group: 25 to 100

Video Date: 5/12/15 - 5/14/15
County: Fond du Lac
Region: NE
Municipality: Fond du Lac
Approach AADT: 9400

Cycle #	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Lane Studied	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Start of Green	4:18 PM	4:24 PM	4:31 PM	4:33 PM	4:35 PM	4:41 PM	4:46 PM	4:48 PM	5:08 PM	5:11 PM	5:13 PM	5:14 PM	3:21 PM	5:24 PM	5:35 PM
Heavy Vehicles (1-4)	1		1	1							1		1		
Heavy Vehicles (5-12)	3						1		1				1		
Right Turns (1-4)					1	2					2	1			
Right Turns (5-12)			1	1	2	4	1	1	1	1	1	4	1	1	2

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	3.46	2.58	3.27	1.55	1.70	2.01	3.55	2.47	2.31	1.70	2.76	2.00	2.92	2.73	1.93
Vehicle 3	3.87	2.17	2.17	2.53	2.43	4.30	2.66	1.96	1.94	2.26	1.66	2.28	2.28	1.68	1.94
Vehicle 4	2.81	1.46	3.22	2.46	1.60	1.54	2.32	2.53	1.91	2.84	1.98	2.20	1.56	2.67	2.22
Vehicle 5	2.94	2.17	2.34	3.05	2.52	1.40	2.95	1.52	3.91	2.76	2.33	1.79	2.46	1.58	1.77
Vehicle 6	2.14	2.22	3.07	1.78	2.15	3.11	2.58	3.03	2.63	1.70	2.17	1.53	2.89	2.21	2.41
Vehicle 7	2.65	1.73	1.42	1.64	2.19	1.87	2.61	1.71	2.20	2.88	1.74	1.64	1.93	1.39	1.57
Vehicle 8	2.46	1.91	1.60	3.19	1.36	1.61	1.64	2.12	1.84	1.60	1.32	3.13	2.29	1.71	2.42
Vehicle 9	3.29			1.78	2.71	2.21		2.11				1.32		2.15	1.57
Vehicle 10	3.02				2.03	2.71						1.88			
Vehicle 11						1.80						2.42			
Vehicle 12						1.33									

	Study Results														
No. vehicles used in cycle	10	8	8	9	10	12	8	9	8	8	8	11	8	9	9
Time of Vehicle 4 (s)	10.14	6.21	8.66	6.54	5.73	7.85	8.53	6.96	6.16	6.80	6.40	6.48	6.76	7.08	6.09
Time of Last Vehicle (s)	26.64	14.24	17.09	17.98	18.69	23.89	18.31	17.45	16.74	15.74	13.96	20.19	16.33	16.12	15.83
Avg Sat Headway (s/veh)	2.75	2.01	2.11	2.29	2.16	2.01	2.44	2.10	2.65	2.24	1.89	1.96	2.39	1.81	1.95
Unadj. Sat. Flow (veh/h/ln)	1309	1793	1708	1573	1667	1796	1472	1716	1361	1611	1905	1838	1505	1991	1848

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

Saturation Flow Study Summary Sheet

Intersection Information:

Intersection:	County VV / E Pioneer Rd & S Main Street
Major Street:	County VV / E Pioneer Rd
Minor Street:	S Main Street
Study Approach:	WB
Approach Configuration:	1
Population Group:	25 to 100
Cycles by Date:	5/12/15 (1-25) 5/13/15 (26-29) 5/14/15(30-60)

Video Date:	5/12/15 - 5/14/15
WisDOT Region:	NE
Nearest Municipality:	Fond du Lac
County:	Fond du Lac
Weather:	Clear
Pavement:	Dry
Observer:	Allen Nyberg

Data Collection Summary Data:

Cycles Studied:	60
Average number of vehicles per cycle:	10
Headways Measured (queue vehicles > 4) :	332
% Heavy Vehicles (of headways measured):	3.9%
% RT Vehicles (of headways measured):	27.7%
Average Saturation Flow Headway (s):	2.12
Standard Deviation of All Headways:	0.54
Standard Deviation of Cycle Headways:	0.21
Unadjusted Median Sat Flow Rate (veh/ln.hr):	1713
Unadjusted Avg Sat Flow Rate (veh/ln/hr):	1695



WisDOT Signalized Intersection Capacity Study

Location ID: 13
Intersection Location: US 45/N Main St & WIS 23/W Johnson St
Approach Direction: EB
Approach Configuration: 4
Population Group: 25 to 100

Video Date: 5/12/15 - 5/13/15
County: Fond du Lac
Region: NE
Municipality: Fond du Lac
Approach AADT: 26200

Cycle #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Lane Studied	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Start of Green	3:54 PM	3:56 PM	4:08 PM	4:09 PM	4:14 PM	4:18 PM	4:19 PM	4:23 PM	4:24 PM	4:28 PM	4:33 PM	4:35 PM	4:36 PM	4:38 PM	4:40 PM
Heavy Vehicles (1-4)					1										
Heavy Vehicles (5-12)															
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	2.73	2.70	1.98	2.84	2.28	2.90	1.82	3.50	3.41	3.54	3.50	2.03	3.03	1.86	2.05
Vehicle 3	2.15	1.93	2.42	2.41	2.63	2.04	2.44	2.43	1.46	2.45	2.40	2.90	1.77	3.33	1.84
Vehicle 4	1.98	2.26	2.09	2.41	3.38	2.06	3.06	2.22	2.93	1.58	1.76	2.23	2.14	1.74	1.60
Vehicle 5	2.47	2.29	2.37	2.27	1.84	1.46	1.56	2.57	1.87	1.58	1.85	2.03	2.38	3.31	3.25
Vehicle 6	2.37	1.98	1.91	2.61	2.41	1.20	1.50	2.87	1.30	1.42	2.18	1.60	1.87	3.08	2.20
Vehicle 7	2.08	1.65	2.14	2.02	2.24	2.67	1.53	2.17	1.42	1.44	1.42	1.90	1.64	2.30	2.09
Vehicle 8	1.56	2.04	1.93	2.49	1.94	3.14	3.68	1.63	1.90	1.99	3.22	2.67	2.81	3.56	2.10
Vehicle 9			1.96			1.83	1.88	2.05	3.01	1.96	1.67	2.32	2.81		2.68
Vehicle 10			1.85			1.75	1.42	2.01			2.26		1.34		2.69
Vehicle 11							2.47	1.39					3.91		1.25
Vehicle 12								1.69							2.03

	Study Results														
No. vehicles used in cycle	8	8	10	8	8	10	11	12	9	9	10	9	11	8	12
Time of Vehicle 4 (s)	6.86	6.89	6.49	7.66	8.29	7.00	7.32	8.15	7.80	7.57	7.66	7.16	6.94	6.93	5.49
Time of Last Vehicle (s)	15.34	14.85	18.65	17.05	16.72	19.05	21.36	24.53	17.30	15.96	20.26	17.68	23.70	19.18	23.78
Avg Sat Headway (s/veh)	2.12	1.99	2.03	2.35	2.11	2.01	2.01	2.05	1.90	1.68	2.10	2.10	2.39	3.06	2.29
Unadj. Sat. Flow (veh/h/ln)	1698	1809	1776	1534	1708	1793	1795	1758	1895	2145	1714	1711	1504	1176	1575

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

WisDOT Signalized Intersection Capacity Study

Location ID: 13
Intersection Location: US 45/N Main St & WIS 23/W Johnson St
Approach Direction: EB
Approach Configuration: 4
Population Group: 25 to 100

Video Date: 5/12/15 - 5/13/15
County: Fond du Lac
Region: NE
Municipality: Fond du Lac
Approach AADT: 26200

Cycle #	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Lane Studied	1	2	1	1	2	1	1	1	1	1	2	1	1	1	1
Start of Green	4:41 PM	4:41 PM	4:43 PM	4:45 PM	4:46 PM	4:50 PM	4:52 PM	4:53 PM	4:55 PM	4:57 PM	4:58 PM	5:00 PM	5:02 PM	5:04 PM	5:05 PM
Heavy Vehicles (1-4)											1				
Heavy Vehicles (5-12)								1							
Right Turns (1-4)					1										
Right Turns (5-12)					3						1				

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	2.52	2.28	2.43	2.56	2.59	3.15	2.32	2.29	3.18	2.95	2.54	3.02	2.07	2.44	1.71
Vehicle 3	2.29	2.23	2.70	2.51	1.89	1.73	2.50	3.34	1.96	1.23	4.55	2.01	1.92	2.63	1.91
Vehicle 4	2.44	3.31	1.70	1.38	2.20	2.51	2.43	1.41	2.31	2.17	3.33	1.89	1.65	2.46	1.88
Vehicle 5	1.60	1.73	1.93	2.84	2.87	1.95	2.04	1.45	1.56	2.23	3.24	2.32	2.51	1.53	2.12
Vehicle 6	2.10	1.76	3.41	2.32	2.82	1.90	2.13	1.79	1.66	3.50	3.02	1.97	1.58	1.79	1.93
Vehicle 7	1.98	2.65	1.28	2.27	2.08	2.72	1.78	2.32	2.38	2.00	2.24	1.16	1.55	1.81	2.20
Vehicle 8	2.73	3.27	1.79	1.05	3.04	2.07	1.54	1.87	1.96	1.36	1.48	2.56	1.93	2.02	2.25
Vehicle 9		1.15	1.44	3.15		1.41	1.83	2.63	1.90	1.46		1.55	2.62		
Vehicle 10		1.63	1.97			2.53	2.56	2.08	1.84	2.22			1.77		
Vehicle 11			1.68			1.58		1.85					1.93		
Vehicle 12			1.45			1.41		2.64					1.87		

	Study Results														
No. vehicles used in cycle	8	10	12	9	8	12	10	12	10	10	8	9	12	8	8
Time of Vehicle 4 (s)	7.25	7.82	6.83	6.45	6.68	7.39	7.25	7.04	7.45	6.35	10.42	6.92	5.64	7.53	5.50
Time of Last Vehicle (s)	15.66	20.01	21.78	18.08	17.49	22.96	19.13	23.67	18.75	19.12	20.40	16.48	21.40	14.68	14.00
Avg Sat Headway (s/veh)	2.10	2.03	1.87	2.33	2.70	1.95	1.98	2.08	1.88	2.13	2.49	1.91	1.97	1.79	2.13
Unadj. Sat. Flow (veh/h/ln)	1712	1772	1926	1548	1332	1850	1818	1732	1912	1691	1443	1883	1827	2014	1694

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

WisDOT Signalized Intersection Capacity Study

Location ID: 13
Intersection Location: US 45/N Main St & WIS 23/W Johnson St
Approach Direction: EB
Approach Configuration: 4
Population Group: 25 to 100

Video Date: 5/12/15 - 5/13/15
County: Fond du Lac
Region: NE
Municipality: Fond du Lac
Approach AADT: 26200

Cycle #	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Lane Studied	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1
Start of Green	5:07 PM	5:07 PM	5:09 PM	5:10 PM	5:12 PM	5:14 PM	5:16 PM	5:17 PM	5:19 PM	5:21 PM	5:22 PM	5:24 PM	5:25 PM	5:27 PM	5:29 PM
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)															
Right Turns (1-4)															
Right Turns (5-12)		5													

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	2.65	1.57	2.24	2.02	2.57	2.49	3.16	2.54	3.13	2.19	2.51	1.96	2.10	2.80	2.48
Vehicle 3	2.73	2.43	1.96	2.87	1.71	2.34	1.97	2.04	2.40	2.54	2.51	2.67	1.94	2.27	2.29
Vehicle 4	2.56	1.25	2.60	2.93	1.88	1.59	1.55	1.80	2.04	2.23	2.05	3.38	2.26	2.19	1.78
Vehicle 5	1.75	3.16	1.54	2.82	2.20	1.64	1.54	1.92	2.37	1.68	3.01	2.32	2.30	2.84	2.11
Vehicle 6	2.42	1.64	2.45	1.50	2.23	1.86	1.62	1.90	2.09	1.62	1.85	2.08	1.85	2.01	2.17
Vehicle 7	2.89	1.52	2.89	2.35	3.03	2.18	1.55	2.48	2.25	2.35	1.59	2.21	2.25	1.77	2.44
Vehicle 8	1.47	1.81	1.62	1.58	1.56	1.51	2.27	2.00	1.71	2.50	2.17	1.75	1.51	1.59	1.83
Vehicle 9	2.14	1.58		2.31	1.58	1.28	1.60					1.53	1.80		1.65
Vehicle 10	2.05	2.16			2.15	2.74	1.78					2.61	1.42		1.64
Vehicle 11	2.05					1.52	1.87						2.64		
Vehicle 12	1.99						1.96								

	Study Results														
No. vehicles used in cycle	12	10	8	9	10	11	12	8	8	8	8	10	11	8	10
Time of Vehicle 4 (s)	7.94	5.25	6.80	7.82	6.16	6.42	6.68	6.38	7.57	6.96	7.07	8.01	6.30	7.26	6.55
Time of Last Vehicle (s)	24.70	17.12	15.30	18.38	18.91	19.15	20.87	14.68	15.99	15.11	15.69	20.51	20.07	15.47	18.39
Avg Sat Headway (s/veh)	2.10	1.98	2.13	2.11	2.13	1.82	1.77	2.07	2.11	2.04	2.16	2.08	1.97	2.05	1.97
Unadj. Sat. Flow (veh/h/ln)	1718	1820	1694	1705	1694	1980	2030	1735	1710	1767	1671	1728	1830	1754	1824

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

WisDOT Signalized Intersection Capacity Study

Location ID: 13
Intersection Location: US 45/N Main St & WIS 23/W Johnson St
Approach Direction: EB
Approach Configuration: 4
Population Group: 25 to 100

Video Date: 5/12/15 - 5/13/15
County: Fond du Lac
Region: NE
Municipality: Fond du Lac
Approach AADT: 26200

Cycle #	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Lane Studied	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Start of Green	5:31 PM	5:32 PM	3:01 PM	3:04 PM	3:06 PM	3:08 PM	3:10 PM	3:11 PM	3:13 PM	3:16 PM	3:18 PM	3:20 PM	3:23 PM	3:25 PM	
Heavy Vehicles (1-4)											2	1		1	
Heavy Vehicles (5-12)											2				
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	1.96	2.60	2.09	2.57	2.03	2.43	3.39	2.85	2.52	2.59	4.21	4.38	2.72	2.75	
Vehicle 3	2.39	2.28	2.33	2.43	2.01	1.75	3.19	2.93	1.93	2.16	2.49	2.64	1.93	3.18	
Vehicle 4	1.92	3.24	2.16	1.52	2.29	3.66	2.25	3.13	2.68	1.93	3.02	2.16	3.11	3.00	
Vehicle 5	2.38	1.50	2.27	2.02	1.30	3.00	1.54	1.83	1.62	1.47	3.07	1.63	1.54	2.59	
Vehicle 6	2.86	2.80	1.88	2.35	1.49	2.60	1.71	1.86	2.97	2.10	2.32	1.93	2.03	2.24	
Vehicle 7	1.75	2.33	1.77	2.17	2.76	1.96	2.06	2.00	1.92	1.82	1.47	2.00	1.32	2.20	
Vehicle 8	1.76	1.97	1.29	1.48	2.86	1.67	2.61	1.71	2.92	2.65	2.05	1.77	1.74	1.70	
Vehicle 9	2.30		1.83	2.04			1.61	2.96	2.99	1.68	2.34	2.45	2.21	2.68	
Vehicle 10	1.97			2.28			2.46	1.48			2.13	1.85	1.95	1.63	
Vehicle 11				2.42				2.18					1.92	2.05	
Vehicle 12								1.61						2.30	

	Study Results														
No. vehicles used in cycle	10	8	9	11	8	8	10	12	9	9	10	10	11	12	
Time of Vehicle 4 (s)	6.27	8.12	6.58	6.52	6.33	7.84	8.83	8.91	7.13	6.68	9.72	9.18	7.76	8.93	
Time of Last Vehicle (s)	19.29	16.72	15.62	21.28	14.74	17.07	20.82	24.54	19.55	16.40	23.10	20.81	20.47	26.32	
Avg Sat Headway (s/veh)	2.17	2.15	1.81	2.11	2.10	2.31	2.00	1.95	2.48	1.94	2.23	1.94	1.82	2.17	
Unadj. Sat. Flow (veh/h/ln)	1659	1674	1991	1707	1712	1560	1802	1843	1449	1852	1614	1857	1983	1656	

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

Saturation Flow Study Summary Sheet

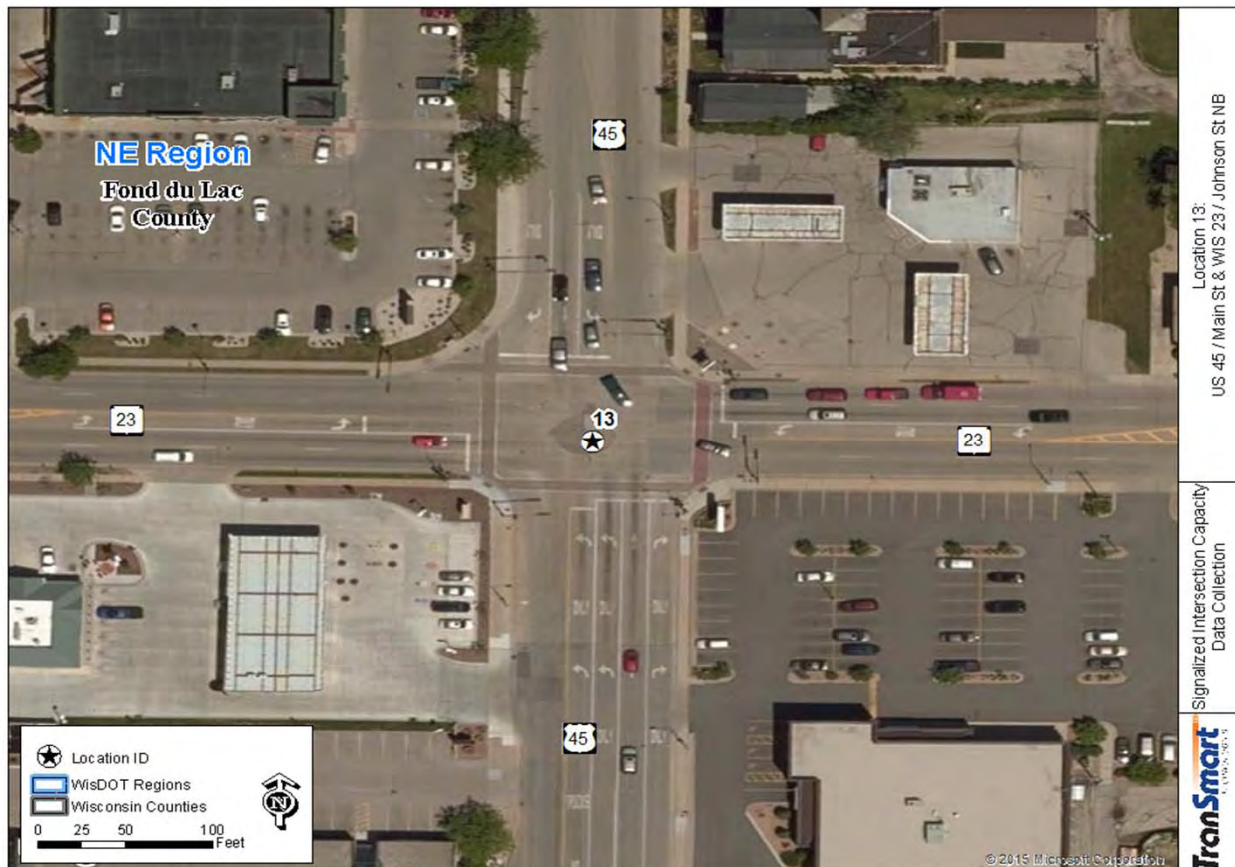
Intersection Information:

Intersection:	US 45/N Main St & WIS 23/W Johnson St
Major Street:	US 45/N Main St.
Minor Street:	WIS 23/W Johnson St.
Study Approach:	EB
Approach Configuration:	4
Population Group:	25 to 100
Cycles by Date:	5/12/15 (1-48) 5/13/15 (49-50)

Video Date:	5/12/15 - 5/13/15
WisDOT Region:	NE
Nearest Municipality:	Fond du Lac
County:	Fond du Lac
Weather:	Clear
Pavement:	Dry
Observer:	Allen N.

Data Collection Summary Data:

Cycles Studied:	59
Average number of vehicles per cycle:	10
Headways Measured (queue vehicles > 4) :	333
% Heavy Vehicles (of headways measured):	0.9%
% RT Vehicles (of headways measured):	2.7%
Average Saturation Flow Headway (s):	2.07
Standard Deviation of All Headways:	0.51
Standard Deviation of Cycle Headways:	0.22
Unadjusted Median Sat Flow Rate (veh/ln.hr):	1732
Unadjusted Avg Sat Flow Rate (veh/ln/hr):	1739



WisDOT Signalized Intersection Capacity Study

Location ID:	14	Video Date:	5/11/15 - 5/13/15
Intersection Location:	WIS 47/N Richmond St & WIS 125/College Ave	County:	Outagamie
Approach Direction:	EB	Region:	NE
Approach Configuration:	2	Municipality:	Appleton
Population Group:	100 to 250	Approach AADT:	15900

Cycle #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Lane Studied	2	2	1	1	1	2	2	2	2	1	1	2	2	2	2
Start of Green	4:58 PM	5:08 PM	5:13 PM	5:15 PM	5:16 PM	5:16 PM	5:31 PM	5:35 PM	3:53 PM	3:57 PM	3:59 PM	4:00 PM	4:06 PM	4:12 PM	4:17 PM
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)															
Right Turns (1-4)		1					1						2		
Right Turns (5-12)						1									

Vehicle	Headway ¹ (s)														
Vehicle 1	1.49	1.74	2.67	2.23	1.49	1.98	1.36	2.34	1.89	1.85	2.07	2.57	1.65	2.22	1.46
Vehicle 2	3.33	3.12	3.60	2.37	3.22	2.81	2.22	2.10	3.24	2.97	2.46	2.57	2.30	3.72	3.21
Vehicle 3	3.35	3.59	2.50	2.48	1.95	1.97	2.90	2.66	2.63	1.68	2.65	2.36	2.35	2.31	2.21
Vehicle 4	2.27	2.64	2.50	2.17	1.69	1.83	1.94	2.30	2.74	2.11	1.88	1.87	2.40	2.35	3.14
Vehicle 5	2.01	2.32	2.67	2.06	2.24	1.99	2.13	1.79	2.33	2.12	2.84	3.05	1.95	1.70	3.08
Vehicle 6	1.68	1.54	1.74	1.91	1.76	1.90	2.15	1.95	1.65	2.47	2.18	2.00	1.80	1.96	1.57
Vehicle 7	1.59	1.56	1.82	1.49	2.66	3.00	2.30	2.82	2.43	1.72	1.79	2.79	1.76	2.30	1.74
Vehicle 8	2.06	1.32	2.30	2.63	2.03	1.96	1.75	1.84	1.91	2.61	2.22	1.98	1.90	1.56	1.76
Vehicle 9	1.45	1.98	2.13	2.15	1.50	2.44				1.98	2.48		2.10	1.59	2.16
Vehicle 10			1.97	2.16	1.69	2.67					1.56				2.16
Vehicle 11				1.63	2.23	2.07									1.99
Vehicle 12					2.68	1.53									2.03

	Study Results														
No. vehicles used in cycle	9	9	10	11	12	12	8	8	8	9	10	8	9	9	12
Time of Vehicle 4 (s)	10.44	11.09	11.27	9.25	8.35	8.59	8.42	9.40	10.50	8.61	9.06	9.37	8.70	10.60	10.02
Time of Last Vehicle (s)	19.23	19.81	23.90	23.28	25.14	26.15	16.75	17.80	18.82	19.51	22.13	19.19	18.21	19.71	26.51
Avg Sat Headway (s/veh)	1.76	1.74	2.11	2.00	2.10	2.19	2.08	2.10	2.08	2.18	2.18	2.45	1.90	1.82	2.06
Unadj. Sat. Flow (veh/h/ln)	2048	2064	1710	1796	1715	1640	1729	1714	1731	1651	1653	1466	1893	1976	1747
Start up lost time	3.41	4.11	2.85	1.23	-0.05	-0.19	0.09	1.00	2.18	-0.11	0.35	-0.45	1.09	3.31	1.77

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. The headway for vehicle 1 is the amount of time (in seconds) that passed between the light turning green and vehicle 1 crossing the stop bar into the intersection.

WisDOT Signalized Intersection Capacity Study

Location ID:	14	Video Date:	5/11/15 - 5/13/15
Intersection Location:	WIS 47/N Richmond St & WIS 125/College Ave	County:	Outagamie
Approach Direction:	EB	Region:	NE
Approach Configuration:	2	Municipality:	Appleton
Population Group:	100 to 250	Approach AADT:	15900

Cycle #	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Lane Studied	2	2	2	2	2	2	1	1	1	1	2	2	1	2	2
Start of Green	4:44 PM	4:45 PM	4:57 PM	5:15 PM	5:17 PM	5:30 PM	5:33 PM	5:51 PM	5:51 PM	5:52 PM	5:57 PM	7:30 AM	7:34 AM	7:43 AM	7:49 AM
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)						1			1	1					
Right Turns (1-4)	1					2					1	1			
Right Turns (5-12)	1	1									1				2

Vehicle	Headway ¹ (s)														
Vehicle 1	1.90	1.95	2.55	1.87	2.58	2.48	1.68	1.64	1.70	2.94	2.12	1.57	2.08	1.87	2.16
Vehicle 2	2.67	2.27	1.77	1.94	3.66	3.06	2.20	2.07	2.54	2.18	2.98	2.45	3.34	2.41	1.65
Vehicle 3	2.81	2.67	3.12	3.46	2.76	2.53	2.00	2.40	2.91	2.42	2.50	2.07	2.02	2.92	2.32
Vehicle 4	2.00	1.95	2.34	2.59	2.03	2.17	2.17	2.29	1.63	2.42	1.81	3.06	2.14	1.82	2.10
Vehicle 5	1.57	2.02	1.51	3.00	2.49	2.13	1.96	1.83	2.95	2.56	2.21	2.60	1.75	2.00	2.07
Vehicle 6	1.88	2.06	1.71	2.47	2.50	2.17	2.11	1.63	1.80	1.45	1.86	1.84	1.93	1.63	1.85
Vehicle 7	1.67	1.54	2.77	1.86	2.09	2.53	1.49	2.10	1.91	2.37	2.44	2.48	1.80	2.22	1.82
Vehicle 8	1.70	2.06	2.19	2.71	1.96	2.96	1.78	3.00	1.93	1.91	1.71	1.54	2.07	1.95	1.99
Vehicle 9	2.07	2.20	1.86	1.88	2.36		1.95			1.74	2.17	1.72			1.68
Vehicle 10	2.56	2.06	2.61	2.62	1.89							2.80			1.98
Vehicle 11				2.36	2.52										1.74
Vehicle 12					2.00										

	Study Results														
No. vehicles used in cycle	10	10	10	11	12	8	9	8	8	9	9	10	8	8	11
Time of Vehicle 4 (s)	9.38	8.84	9.78	9.86	11.03	10.24	8.05	8.40	8.78	9.96	9.41	9.15	9.58	9.02	8.23
Time of Last Vehicle (s)	20.83	20.78	22.43	26.76	28.84	20.03	17.34	16.96	17.37	19.99	19.80	22.13	17.13	16.82	21.36
Avg Sat Headway (s/veh)	1.91	1.99	2.11	2.41	2.23	2.45	1.86	2.14	2.15	2.01	2.08	2.16	1.89	1.95	1.88
Unadj. Sat. Flow (veh/h/ln)	1886	1809	1708	1491	1617	1471	1938	1682	1676	1795	1732	1664	1907	1846	1919
Start up lost time	1.75	0.88	1.35	0.20	2.13	0.45	0.62	-0.16	0.19	1.94	1.10	0.50	2.03	1.22	0.73

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. The headway for vehicle 1 is the amount of time (in seconds) that passed between the light turning green and vehicle 1 crossing the stop bar into the intersection.

WisDOT Signalized Intersection Capacity Study

Location ID:	14	Video Date:	5/11/15 - 5/13/15
Intersection Location:	WIS 47/N Richmond St & WIS 125/College Ave	County:	Outagamie
Approach Direction:	EB	Region:	NE
Approach Configuration:	2	Municipality:	Appleton
Population Group:	100 to 250	Approach AADT:	15900

Cycle #	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Lane Studied	2	2	2	2	2	2	2	2	2	1	2	2	1	1	2
Start of Green	7:54 AM	3:00 PM	3:02 PM	3:32 PM	3:42 PM	3:45 PM	3:48 PM	4:11 PM	4:14 PM	4:18 PM	4:20 PM	4:21 PM	4:32 PM	4:42 PM	4:42 PM
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)															
Right Turns (1-4)	3						1	1	1		1				
Right Turns (5-12)		1	1	1	2			1				2			

Vehicle	Headway ¹ (s)														
Vehicle 1	2.58	2.89	3.10	1.42	1.62	2.09	2.47	2.27	1.67	2.43	1.93	2.18	1.32	2.08	1.87
Vehicle 2	2.25	2.18	2.55	2.84	1.63	2.96	2.69	2.67	1.85	2.26	3.81	2.00	4.06	3.27	2.88
Vehicle 3	2.53	1.65	2.45	2.77	2.29	2.38	2.09	3.32	2.19	2.23	2.43	2.48	2.79	2.13	2.81
Vehicle 4	1.59	1.85	1.71	2.25	2.53	1.73	1.77	1.91	1.97	2.72	2.48	1.99	2.41	2.17	2.69
Vehicle 5	1.45	2.37	1.81	2.43	3.07	1.86	2.26	2.14	1.72	2.27	1.62	2.83	1.67	1.56	1.83
Vehicle 6	2.33	2.38	1.86	2.27	1.94	1.43	2.53	1.94	1.92	2.21	2.16	2.10	1.56	1.51	2.42
Vehicle 7	1.67	2.45	2.24	1.92	1.46	2.25	2.03	1.90	2.72	2.32	1.70	1.74	2.34	2.52	2.06
Vehicle 8	1.47	2.58	3.05	1.97	1.87	1.89	2.26	1.78	3.10	2.18	1.89	1.51	1.98	2.27	1.74
Vehicle 9	2.75		1.60	2.67	2.35	1.98	1.73	2.42	2.55	1.72		2.10			1.69
Vehicle 10	2.59			1.43			2.38		1.52			1.81			2.34
Vehicle 11				2.13					1.40			2.06			2.09
Vehicle 12				1.93					2.03						

	Study Results														
No. vehicles used in cycle	10	8	9	12	9	9	10	9	12	9	8	11	8	8	11
Time of Vehicle 4 (s)	8.95	8.57	9.81	9.28	8.07	9.16	9.02	10.17	7.68	9.64	10.65	8.65	10.58	9.65	10.25
Time of Last Vehicle (s)	21.21	18.35	20.37	26.03	18.76	18.57	22.21	20.35	24.64	20.34	18.02	22.80	18.13	17.51	24.42
Avg Sat Headway (s/veh)	2.04	2.44	2.11	2.09	2.14	1.88	2.20	2.04	2.12	2.14	1.84	2.02	1.89	1.96	2.02
Unadj. Sat. Flow (veh/h/ln)	1762	1472	1705	1719	1684	1913	1638	1768	1698	1682	1954	1781	1907	1832	1778
Start up lost time	0.78	-1.21	1.36	0.90	-0.48	1.63	0.23	2.03	-0.80	1.08	3.28	0.56	3.03	1.79	2.15

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. The headway for vehicle 1 is the amount of time (in seconds) that passed between the light turning green and vehicle 1 crossing the stop bar into the intersection.

WisDOT Signalized Intersection Capacity Study

Location ID:	14	Video Date:	5/11/15 - 5/13/15
Intersection Location:	WIS 47/N Richmond St & WIS 125/College Ave	County:	Outagamie
Approach Direction:	EB	Region:	NE
Approach Configuration:	2	Municipality:	Appleton
Population Group:	100 to 250	Approach AADT:	15900

Cycle #	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Lane Studied	1	2	1	2	2	2	1	1	2	2	2	1	2	2	1
Start of Green	4:44 PM	4:44 PM	4:45 PM	4:45 PM	4:50 PM	3:56 PM	4:59 PM	5:02 PM	5:02 PM	5:15 PM	5:17 PM	5:29 PM	5:29 PM	5:45 PM	5:47 PM
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)															
Right Turns (1-4)		2				1								1	
Right Turns (5-12)		1		1	2	1			2						

Vehicle	Headway ¹ (s)														
Vehicle 1	1.86	2.65	1.92	2.34	3.28	1.98	2.31	1.48	1.74	2.28	2.78	2.19	2.06	1.86	1.85
Vehicle 2	3.40	2.26	3.07	3.10	2.70	2.68	2.16	2.64	3.69	2.14	2.89	2.32	2.61	2.72	2.89
Vehicle 3	2.31	2.43	2.40	2.41	1.80	2.28	3.23	2.96	1.95	2.46	2.03	2.99	2.67	1.65	2.21
Vehicle 4	2.02	2.87	2.45	1.86	2.43	2.17	2.34	2.90	1.99	2.29	2.18	2.57	1.72	1.84	1.87
Vehicle 5	1.98	2.32	2.95	1.90	2.72	1.58	2.18	1.72	2.19	1.76	1.81	1.79	2.26	2.61	1.88
Vehicle 6	2.93	1.95	2.10	2.16	1.51	2.22	1.44	1.73	2.37	1.63	1.84	2.07	2.01	2.01	2.57
Vehicle 7	2.58	2.24	1.85	1.76	1.69	1.84	1.48	2.14	2.04	2.20	1.57	1.74	2.26	1.90	2.56
Vehicle 8	2.21	1.60	1.69	2.65	1.66	1.79	1.58	1.66	2.96	1.95	2.04	2.79	1.95	1.53	1.39
Vehicle 9	1.55	1.63			2.97				2.04	2.05	2.25		2.24	2.18	
Vehicle 10	1.72	2.12			2.01						2.43		2.64		
Vehicle 11	2.55	2.00			2.20						2.12		2.34		
Vehicle 12	1.73	2.40			2.29						1.84		1.99		

	Study Results														
No. vehicles used in cycle	12	12	8	8	12	8	8	8	9	9	12	8	12	9	8
Time of Vehicle 4 (s)	9.59	10.21	9.84	9.71	10.21	9.11	10.04	9.98	9.37	9.17	9.88	10.07	9.06	8.07	8.82
Time of Last Vehicle (s)	26.84	26.47	18.43	18.18	27.26	16.54	16.72	17.23	20.97	18.76	25.78	18.46	26.75	18.30	17.22
Avg Sat Headway (s/veh)	2.16	2.03	2.15	2.12	2.13	1.86	1.67	1.81	2.32	1.92	1.99	2.10	2.21	2.05	2.10
Unadj. Sat. Flow (veh/h/ln)	1670	1771	1676	1700	1689	1938	2156	1986	1552	1877	1811	1716	1628	1760	1714
Start up lost time	0.97	2.08	1.25	1.24	1.69	1.68	3.36	2.73	0.09	1.50	1.93	1.68	0.22	-0.11	0.42

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. The headway for vehicle 1 is the amount of time (in seconds) that passed between the light turning green and vehicle 1 crossing the stop bar into the intersection.

Saturation Flow Study Summary Sheet

Intersection Information:

Intersection:	WIS 47/N Richmond St & WIS 125/College Ave
Major Street:	WIS 125/College
Minor Street:	WIS 47/Richmond
Study Approach:	EB
Approach Configuration:	2
Population Group:	100 to 250
Cycle by Date:	5/11 (1-8), 5/12 (9-26), 5/13 (27-60)

Date:	5/11/15 - 5/13/15
WisDOT Region:	NE
Nearest Municipality:	Appleton
County:	Outagamie
Weather:	Clear
Pavement:	Dry
Observer:	Kevin

Data Collection Summary Data:

Cycles Studied:	60
Average number of vehicles per cycle:	10
Headways Measured (queue vehicles > 4) :	331
% Heavy Vehicles (of headways measured):	0.9%
% RT Vehicles (of headways measured):	6.3%
Average Saturation Flow Headway (s):	2.07
Standard Deviation of All Headways:	0.39
Standard Deviation of Cycle Headways:	0.17
Unadjusted Median Sat Flow Rate (veh/ln.hr):	1730
Unadjusted Avg Sat Flow Rate (veh/ln/hr):	1743
Average Start Up Lost Time (s):	1.21



WisDOT Signalized Intersection Capacity Study

Location ID: 15
Intersection Location: WIS 125/College Ave & Bluemound Dr
Approach Direction: EB
Approach Configuration: 5
Population Group: 100 to 250

Video Date: 5/12/15 - 5/14/15
County: Outagamie
Region: NE
Municipality: Appleton
Approach AADT: 25500

Cycle #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Lane Studied	1	1	1	1	1	1	2	1	2	1	2	2	1	1	1
Start of Green	2:28 PM	2:30 PM	2:35 PM	2:44 PM	2:49 PM	2:57 PM	3:04 PM	3:04 PM	3:18 PM	3:25 PM	3:32 PM	3:44 PM	3:45 PM	15::47:09	3:55 PM
Heavy Vehicles (1-4)										1					
Heavy Vehicles (5-12)															
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	2.68	2.83	2.05	2.63	2.53	2.78	2.98	3.33	2.52	3.74	1.86	4.07	3.44	4.12	1.95
Vehicle 3	1.75	2.58	2.40	1.53	1.65	2.65	2.41	2.44	3.29	2.64	2.62	2.27	1.94	2.09	1.73
Vehicle 4	2.71	2.09	2.06	1.35	1.69	2.60	2.29	2.21	2.43	1.68	2.94	1.92	2.28	2.43	1.72
Vehicle 5	2.70	2.54	3.36	2.55	1.55	2.74	1.82	1.52	2.24	2.20	2.48	2.57	2.90	2.53	2.81
Vehicle 6	2.01	2.78	2.53	2.45	1.62	2.16	1.74	2.18	2.35	0.85	1.95	1.71	2.08	1.94	1.71
Vehicle 7	1.81	2.38	2.04	1.82	1.73	2.07	1.52	2.84	1.50	2.33	2.39	2.03	2.26	2.38	1.58
Vehicle 8	1.57	2.03	1.66	2.12	1.46	1.66	2.40	2.13	1.91	2.28	1.99	1.73	1.64	2.08	1.53
Vehicle 9	2.14	1.53		2.19	3.07	1.56			2.03	2.06	2.26	1.38	2.09	1.64	1.80
Vehicle 10	2.23	1.60		2.62	1.61	1.41			2.03		1.69	1.73	1.86	2.57	
Vehicle 11		1.07			1.94	2.19			2.63		1.20	1.51			
Vehicle 12		2.23				1.91						2.19			

	Study Results														
No. vehicles used in cycle	10	12	8	10	11	12	8	8	11	9	11	12	10	10	9
Time of Vehicle 4 (s)	7.14	7.50	6.51	5.51	5.87	8.03	7.68	7.98	8.24	8.06	7.42	8.26	7.66	8.64	5.40
Time of Last Vehicle (s)	19.60	23.66	16.10	19.26	18.85	23.73	15.16	16.65	22.93	17.78	21.38	23.11	20.49	21.78	14.83
Avg Sat Headway (s/veh)	2.08	2.02	2.40	2.29	1.85	1.96	1.87	2.17	2.10	1.94	1.99	1.86	2.14	2.19	1.89
Unadj. Sat. Flow (veh/h/ln)	1734	1782	1502	1571	1941	1834	1925	1661	1715	1852	1805	1939	1684	1644	1909

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

WisDOT Signalized Intersection Capacity Study

Location ID: 15
Intersection Location: WIS 125/College Ave & Bluemound Dr
Approach Direction: EB
Approach Configuration: 5
Population Group: 100 to 250

Video Date: 5/12/15 - 5/14/15
County: Outagamie
Region: NE
Municipality: Appleton
Approach AADT: 25500

Cycle #	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Lane Studied	2	2	2	1	2	2	1	2	2	2	2	1	2	1	1
Start of Green	3:55 PM	3:57 PM	4:13 PM	4:17 PM	4:17 PM	7:26 AM	7:33 AM	7:37 AM	7:43 AM	7:45 AM	7:50 AM	7:55 AM	8:43 AM	3:12 PM	3:17 PM
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)			1			1		1							
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	2.35	3.11	2.86	3.29	3.58	2.09	4.40	2.77	2.32	2.80	2.61	3.05	2.89	2.28	2.65
Vehicle 3	2.44	2.37	2.03	2.66	2.13	1.91	1.87	2.24	2.19	2.84	1.80	2.83	2.36	2.56	2.63
Vehicle 4	1.98	2.23	1.84	2.46	1.95	2.34	2.04	2.37	1.58	2.89	2.63	2.87	2.00	2.58	1.75
Vehicle 5	2.15	2.75	1.42	2.14	1.65	2.01	2.29	2.05	2.89	1.79	1.51	2.05	2.78	2.11	1.52
Vehicle 6	1.30	1.47	2.27	2.06	2.17	2.50	1.56	2.59	1.57	1.82	2.23	1.90	1.84	2.68	2.02
Vehicle 7	1.81	1.73	1.34	2.17	1.47	2.73	2.08	1.24	2.34	1.77	1.90	1.63	1.85	1.87	1.61
Vehicle 8	1.53	1.54	1.15	1.96	2.35	2.85	1.42	2.53	1.75	2.39	2.81	1.20	1.29	1.77	1.81
Vehicle 9	1.56	1.38	2.22	2.46	2.02		2.11	2.33	1.59			2.27		1.57	1.53
Vehicle 10	1.50	1.63	1.68		1.83			2.23							1.71
Vehicle 11		1.31	1.29		2.08			2.49							
Vehicle 12			1.88					1.19							

	Study Results														
No. vehicles used in cycle	10	11	12	9	11	8	9	12	9	8	8	9	8	9	10
Time of Vehicle 4 (s)	6.77	7.71	6.73	8.41	7.66	6.34	8.31	7.38	6.09	8.53	7.04	8.75	7.25	7.42	7.03
Time of Last Vehicle (s)	16.62	19.52	19.98	19.20	21.23	16.43	17.77	24.03	16.23	16.30	15.49	17.80	15.01	17.42	17.23
Avg Sat Headway (s/veh)	1.64	1.69	1.66	2.16	1.94	2.52	1.89	2.08	2.03	1.94	2.11	1.81	1.94	2.00	1.70
Unadj. Sat. Flow (veh/h/ln)	2193	2134	2174	1668	1857	1427	1903	1730	1775	1853	1704	1989	1856	1800	2118

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

WisDOT Signalized Intersection Capacity Study

Location ID: 15
Intersection Location: WIS 125/College Ave & Bluemound Dr
Approach Direction: EB
Approach Configuration: 5
Population Group: 100 to 250

Video Date: 5/12/15 - 5/14/15
County: Outagamie
Region: NE
Municipality: Appleton
Approach AADT: 25500

Cycle #	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Lane Studied	2	1	2	1	1	2	1	2	2	1	1	2	1	2	1
Start of Green	3:17 PM	3:19 PM	3:19 PM	4:05 PM	4:07 PM	4:07 PM	4:10 PM	4:10 PM	4:19 PM	4:24 PM	4:00 PM	4:00 PM	4:07 PM	4:14 PM	4:20 PM
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)						1									
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	1.96	3.82	3.11	2.01	4.49	2.61	2.10	2.15	3.09	2.21	2.56	2.90	2.47	2.75	2.83
Vehicle 3	1.80	2.17	2.39	2.22	2.98	2.54	2.67	1.98	3.19	1.43	2.25	1.89	2.20	1.53	2.21
Vehicle 4	1.56	2.32	2.05	1.67	2.08	2.82	2.62	2.36	2.70	1.87	2.52	1.71	3.02	2.13	2.20
Vehicle 5	1.83	2.86	2.12	1.32	2.29	1.76	2.19	1.81	1.82	2.02	1.59	2.11	2.17	1.78	2.81
Vehicle 6	2.19	2.19	1.82	2.53	1.77	2.25	2.07	1.67	1.98	1.64	3.57	1.60	1.57	1.74	1.68
Vehicle 7	1.84	2.06	2.06	2.22	1.96	2.64	2.17	1.62	1.48	1.48	2.38	2.60	1.62	1.38	2.14
Vehicle 8	1.57	1.40	2.26	2.52	1.74	2.16	1.88	1.48	1.45	2.17	1.43	1.58	2.33	1.60	1.48
Vehicle 9	1.37	2.76	1.66	2.65	1.27	2.32		1.89	2.01	2.13	2.79	1.50	2.44	1.81	2.72
Vehicle 10	1.74	2.00	1.53		1.87	1.31		1.84	2.64	2.37	2.51	2.19		2.09	1.74
Vehicle 11	1.74		2.14		1.52			1.33	1.65		1.63	2.76		1.47	1.58
Vehicle 12	1.72		1.93					1.72	1.70					2.21	1.28

	Study Results														
No. vehicles used in cycle	12	10	12	9	11	10	8	12	12	10	11	11	9	12	12
Time of Vehicle 4 (s)	5.32	8.31	7.55	5.90	9.55	7.97	7.39	6.49	8.98	5.51	7.33	6.50	7.69	6.41	7.24
Time of Last Vehicle (s)	19.32	21.58	23.07	17.14	21.97	20.41	15.70	19.85	23.71	17.32	23.23	20.84	17.82	20.49	22.67
Avg Sat Headway (s/veh)	1.75	2.21	1.94	2.25	1.77	2.07	2.08	1.67	1.84	1.97	2.27	2.05	2.03	1.76	1.93
Unadj. Sat. Flow (veh/h/ln)	2057	1628	1856	1601	2029	1736	1733	2156	1955	1829	1585	1757	1777	2045	1866

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

WisDOT Signalized Intersection Capacity Study

Location ID: 15
Intersection Location: WIS 125/College Ave & Bluemound Dr
Approach Direction: EB
Approach Configuration: 5
Population Group: 100 to 250

Video Date: 5/12/15 - 5/14/15
County: Outagamie
Region: NE
Municipality: Appleton
Approach AADT: 25500

Cycle #	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Lane Studied	1	1	2	1	1	2	1	2	2	1	2	2	1	2	1
Start of Green	4:24 PM	4:27 PM	4:27 PM	4:44 PM	4:45 PM	5:14 PM	5:15 PM	5:15 PM	5:17 PM	5:25 PM	5:25 PM	5:30 PM	5:37 PM	5:37 PM	5:50 PM
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)															
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	2.89	4.27	2.90	3.11	2.40	2.90	2.34	3.38	3.33	2.88	2.81	3.98	2.99	2.37	2.43
Vehicle 3	2.14	2.31	2.22	3.31	2.10	2.53	2.69	2.92	2.82	2.80	2.04	3.40	2.82	2.88	1.90
Vehicle 4	2.13	2.26	2.36	2.27	2.62	2.21	2.01	2.58	2.05	1.75	2.06	1.91	2.05	1.80	1.46
Vehicle 5	2.01	2.14	1.51	1.62	2.45	1.56	2.56	1.36	2.61	1.56	2.12	2.21	2.87	1.91	2.54
Vehicle 6	2.39	2.83	1.89	2.67	2.14	1.75	1.52	1.82	1.94	2.44	1.75	2.02	1.98	2.61	2.22
Vehicle 7	1.96	2.48	2.12	1.78	1.41	2.50	1.42	1.61	1.79	2.00	2.01	1.83	2.06	1.90	2.09
Vehicle 8	2.52	2.03	2.61	1.55	2.57	1.70	1.82	1.51	2.75	1.77	2.04	1.35	1.72	2.10	2.63
Vehicle 9		1.98	2.08		1.99	2.03	2.39	1.60	1.94	3.01	2.33		1.66	1.32	2.59
Vehicle 10		1.89	1.88		1.70	1.42		2.11		2.03	2.83			2.58	
Vehicle 11		2.19	1.94		1.67	1.33		1.53		1.74	2.37				
Vehicle 12		2.74	2.30			2.03		2.65		2.18	1.99				

	Study Results														
No. vehicles used in cycle	8	12	12	8	11	12	9	12	9	12	12	8	9	10	9
Time of Vehicle 4 (s)	7.16	8.84	7.48	8.69	7.12	7.64	7.04	8.88	8.20	7.43	6.91	9.29	7.86	7.05	5.79
Time of Last Vehicle (s)	16.04	27.12	23.81	16.31	21.05	21.96	16.75	23.07	19.23	24.16	24.35	16.70	18.15	19.47	17.86
Avg Sat Headway (s/veh)	2.22	2.28	2.04	1.90	1.99	1.79	1.94	1.77	2.21	2.09	2.18	1.85	2.06	2.07	2.41
Unadj. Sat. Flow (veh/h/ln)	1622	1575	1764	1890	1809	2011	1854	2030	1632	1721	1651	1943	1749	1739	1491

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

Saturation Flow Study Summary Sheet

Intersection Information:

Intersection:	WIS 125/College Ave & Bluemound Dr
Major Street:	WIS 125 / College Ave
Minor Street:	Bluemound Dr
Study Approach:	EB
Approach Configuration:	5
Population Group:	100 to 250
Cycles by Date:	5/12 (1-20), 5/13 (21-40), 5/14 (41-60)

Video Date:	5/12/15 - 5/14/15
WisDOT Region:	NE
Nearest Municipality:	Appleton
County:	Outagamie
Weather:	Clear
Pavement:	Dry
Observer:	Kevin B/Allen N

Data Collection Summary Data:

Cycles Studied:	60
Average number of vehicles per cycle:	10
Headways Measured (queue vehicles > 4) :	368
% Heavy Vehicles (of headways measured):	1.1%
% RT Vehicles (of headways measured):	0.0%
Average Saturation Flow Headway (s):	1.99
Standard Deviation of All Headways:	0.44
Standard Deviation of Cycle Headways:	0.20
Unadjusted Median Sat Flow Rate (veh/ln/hr):	1803
Unadjusted Avg Sat Flow Rate (veh/ln/hr):	1810



WisDOT Signalized Intersection Capacity Study

Location ID: 16
Intersection Location: US 141/WIS 29/Main St & County V/E Mason St
Approach Direction: SE
Approach Configuration: 2
Population Group: 100 to 250

Video Date: 5/12/15 - 5/14/15
County: Brown
Region: NE
Municipality: Green Bay
Approach AADT: 15100

Cycle #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Lane Studied	1	2	2	1	1	2	1	1	2	1	1	1	2	1	2
Start of Green	3:36 PM	3:38 PM	3:40 PM	3:42 PM	3:46 PM	3:46 PM	3:48 PM	3:54 PM	3:54 PM	3:58 PM	4:00 PM	4:04 PM	4:04 PM	4:10 PM	4:12 PM
Heavy Vehicles (1-4)											1		1		1
Heavy Vehicles (5-12)				1											
Right Turns (1-4)						1			1						1
Right Turns (5-12)									1						

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	2.39	2.59	2.43	2.98	2.59	2.25	2.26	2.41	2.41	2.10	2.30	2.17	2.42	2.46	4.15
Vehicle 3	2.47	2.00	2.18	2.19	2.26	2.60	2.42	2.30	1.86	2.59	1.93	2.51	2.89	2.18	2.53
Vehicle 4	2.26	2.83	2.14	2.15	1.81	2.25	2.48	2.42	1.48	2.04	2.69	2.27	3.02	2.16	1.68
Vehicle 5	1.37	2.10	1.74	1.80	2.09	2.10	2.36	2.30	2.88	2.08	2.44	1.76	3.12	1.41	1.63
Vehicle 6	2.57	2.63	2.59	1.16	2.06	2.26	2.31	1.60	2.03	1.75	2.15	1.17	2.50	3.11	2.34
Vehicle 7	1.37	2.04	1.82	2.37	2.13	1.90	1.56	1.47	1.34	2.29	1.26	3.18	2.18	1.62	1.73
Vehicle 8	2.49	1.69	1.52	1.60	1.72	1.60	3.76	2.24	2.59	1.64	2.00	3.92	1.81	1.91	1.93
Vehicle 9	1.77	2.25	2.30	3.29	1.60	1.78	1.72	1.35	2.55		1.83			1.41	1.59
Vehicle 10		2.31	1.64	2.46	1.40		2.79	1.32			2.66			3.14	
Vehicle 11		1.85	2.63		2.46		1.62								
Vehicle 12		2.43					1.55								

	Study Results														
No. vehicles used in cycle	9	12	11	10	11	9	12	10	9	8	10	8	8	10	9
Time of Vehicle 4 (s)	7.12	7.42	6.75	7.32	6.66	7.10	7.16	7.13	5.75	6.73	6.92	6.95	8.33	6.80	8.36
Time of Last Vehicle (s)	16.69	24.72	20.99	20.00	20.12	16.74	24.83	17.41	17.14	14.49	19.26	16.98	17.94	19.40	17.58
Avg Sat Headway (s/veh)	1.91	2.16	2.03	2.11	1.92	1.93	2.21	1.71	2.28	1.94	2.06	2.51	2.40	2.10	1.84
Unadj. Sat. Flow (veh/h/ln)	1881	1665	1770	1703	1872	1867	1630	2101	1580	1856	1750	1436	1498	1714	1952

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

WisDOT Signalized Intersection Capacity Study

Location ID: 16
Intersection Location: US 141/WIS 29/Main St & County V/E Mason St
Approach Direction: SE
Approach Configuration: 2
Population Group: 100 to 250

Video Date: 5/12/15 - 5/14/15
County: Brown
Region: NE
Municipality: Green Bay
Approach AADT: 15100

Cycle #	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Lane Studied	2	1	2	1	2	1	2	1	1	2	1	2	1	2	1
Start of Green	4:16 PM	4:18 PM	4:18 PM	4:20 PM	4:20 PM	4:28 PM	4:28 PM	4:30 PM	4:34 PM	4:42 PM	4:44 PM	4:44 PM	16:46:45	4:46 PM	4:50 PM
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)															
Right Turns (1-4)															
Right Turns (5-12)	1											2			

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	3.21	2.69	1.95	2.04	3.55	3.44	2.84	2.90	1.93	2.83	3.03	2.69	2.12	2.59	2.91
Vehicle 3	2.20	2.52	1.78	3.06	2.93	2.29	2.12	2.59	3.09	1.14	2.07	1.68	2.68	2.05	1.74
Vehicle 4	2.19	1.86	2.29	2.83	1.26	1.53	2.19	1.89	2.26	2.99	2.20	1.94	1.85	1.75	1.87
Vehicle 5	2.82	1.37	2.16	3.17	1.82	1.54	1.44	2.14	1.69	2.05	1.29	1.41	2.17	2.34	1.41
Vehicle 6	2.86	1.76	2.28	1.56	1.91	1.48	2.31	2.01	2.56	2.50	1.68	2.04	1.56	2.44	1.36
Vehicle 7	2.95	1.45	1.53	1.37	1.23	1.94	2.80	1.14	1.61	1.99	2.06	2.37	1.86	2.76	2.33
Vehicle 8	2.39	1.80	2.71	2.01	2.81	1.97	1.93	1.40	2.95	3.65	1.85	1.88	2.55	2.15	3.47
Vehicle 9	1.68	1.69		1.62	1.30	1.69	2.15		1.98		3.22	1.69		2.14	2.02
Vehicle 10	1.69			1.64			1.82		2.44		2.98	2.62		2.48	4.23
Vehicle 11	1.46								1.77		2.83			3.23	
Vehicle 12	1.63													1.55	

	Study Results														
No. vehicles used in cycle	12	9	8	10	9	9	10	8	11	8	11	10	8	12	10
Time of Vehicle 4 (s)	7.60	7.07	6.02	7.93	7.74	7.26	7.15	7.38	7.28	6.96	7.30	6.31	6.65	6.39	6.52
Time of Last Vehicle (s)	25.08	15.14	14.70	19.30	16.81	15.88	19.60	14.07	22.28	17.15	23.21	18.32	14.79	25.48	21.34
Avg Sat Headway (s/veh)	2.19	1.61	2.17	1.89	1.81	1.72	2.08	1.67	2.14	2.55	2.27	2.00	2.03	2.39	2.47
Unadj. Sat. Flow (veh/h/ln)	1648	2230	1659	1900	1985	2088	1735	2152	1680	1413	1584	1799	1769	1509	1457

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

WisDOT Signalized Intersection Capacity Study

Location ID: 16
Intersection Location: US 141/WIS 29/Main St & County V/E Mason St
Approach Direction: SE
Approach Configuration: 2
Population Group: 100 to 250

Video Date: 5/12/15 - 5/14/15
County: Brown
Region: NE
Municipality: Green Bay
Approach AADT: 15100

Cycle #	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Lane Studied	2	1	1	2	1	2	1	1	2	1	1	1	1	1	2
Start of Green	4:52 PM	4:56 PM	4:58 PM	5:00 PM	5:02 PM	5:02 PM	5:04 PM	5:06 PM	5:06 PM	5:08 PM	5:12 PM	3:10 PM	3:26 PM	3:40 PM	3:40 PM
Heavy Vehicles (1-4)			1												
Heavy Vehicles (5-12)															
Right Turns (1-4)															1
Right Turns (5-12)	1								1						

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	2.88	2.14	2.61	2.88	2.18	3.40	2.27	3.41	2.26	2.97	2.72	1.96	1.55	1.94	2.88
Vehicle 3	1.59	2.43	2.25	1.34	3.47	1.84	2.06	2.26	2.33	1.89	2.43	1.97	3.04	2.31	2.93
Vehicle 4	1.66	2.38	3.33	2.13	1.81	3.31	2.07	2.94	3.68	2.02	1.84	1.73	2.35	2.39	1.70
Vehicle 5	2.03	1.56	3.32	1.43	2.00	2.56	2.22	2.55	1.94	2.05	1.64	1.98	2.03	2.49	1.80
Vehicle 6	1.91	2.03	2.26	2.48	2.18	1.82	2.06	1.81	2.34	1.43	1.66	2.41	2.37	3.21	2.04
Vehicle 7	2.37	2.62	2.11	1.44	3.03	1.86	1.87	1.79	2.84	2.07	2.06	2.62	1.78	1.49	2.58
Vehicle 8	2.63	1.94	1.96	3.45	1.93	2.98	2.05	2.30	2.42	2.60	2.78	1.87	1.45	3.81	1.91
Vehicle 9				2.09	3.22	1.73	1.84	2.09	1.73		2.46	2.19	3.03	1.90	2.00
Vehicle 10						2.29	1.11	2.30	2.01		2.08	2.05	2.87		2.51
Vehicle 11						1.22	1.48						1.81		1.61
Vehicle 12							1.88								1.92

	Study Results														
No. vehicles used in cycle	8	8	8	9	9	11	12	10	10	8	10	10	11	9	12
Time of Vehicle 4 (s)	6.13	6.95	8.19	6.35	7.46	8.55	6.40	8.61	8.27	6.88	6.99	5.66	6.94	6.64	7.51
Time of Last Vehicle (s)	15.07	15.10	17.84	17.24	19.82	23.01	20.91	21.45	21.55	15.03	19.67	18.78	22.28	19.54	23.88
Avg Sat Headway (s/veh)	2.24	2.04	2.41	2.18	2.47	2.07	1.81	2.14	2.21	2.04	2.11	2.19	2.19	2.58	2.05
Unadj. Sat. Flow (veh/h/ln)	1611	1767	1492	1653	1456	1743	1985	1682	1627	1767	1703	1646	1643	1395	1759

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

WisDOT Signalized Intersection Capacity Study

Location ID: 16
Intersection Location: US 141/WIS 29/Main St & County V/E Mason St
Approach Direction: SE
Approach Configuration: 2
Population Group: 100 to 250

Video Date: 5/12/15 - 5/14/15
County: Brown
Region: NE
Municipality: Green Bay
Approach AADT: 15100

Cycle #	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Lane Studied	1	1	2	1	2	1	2	1	1	1	1	2	1	2	
Start of Green	3:42 PM	3:44 PM	3:44 PM	3:46 PM	3:46 PM	3:56 PM	3:56 PM	4:06 PM	4:10 PM	4:12 PM	4:12 PM	4:12 PM	4:14 PM	4:16 PM	
Heavy Vehicles (1-4)												1			
Heavy Vehicles (5-12)															
Right Turns (1-4)															
Right Turns (5-12)							1					1		1	

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	2.81	2.36	3.19	2.85	3.53	2.60	2.42	2.03	2.81	2.44	2.42	2.81	2.20	3.01	
Vehicle 3	2.02	2.14	1.61	2.23	2.36	3.16	2.46	3.42	2.05	2.42	2.58	3.21	2.61	2.04	
Vehicle 4	2.71	2.47	3.23	1.95	2.37	2.18	1.71	1.46	1.88	1.60	1.44	2.99	1.78	2.48	
Vehicle 5	2.30	1.68	2.74	2.15	1.78	2.16	1.62	1.91	2.39	1.54	1.78	2.05	2.20	2.85	
Vehicle 6	2.86	2.70	1.91	2.25	1.48	1.90	3.20	1.96	1.73	3.23	3.02	2.53	1.95	2.35	
Vehicle 7	2.80	1.76	1.89	1.86	2.00	1.40	1.91	1.16	2.63	2.82	2.46	1.54	2.39	1.77	
Vehicle 8	1.59	1.64	1.99	2.05	2.57	1.71	2.18	1.72	3.25	2.07	1.80	1.82	2.39	1.79	
Vehicle 9		1.59		1.72		3.26	2.84			1.52	2.12			1.57	
Vehicle 10		1.98		1.62		2.32				2.40	2.31			1.92	
Vehicle 11				1.86										1.57	
Vehicle 12				3.15											

	Study Results														
No. vehicles used in cycle	8	10	8	12	8	10	9	8	8	10	10	8	8	11	
Time of Vehicle 4 (s)	7.54	6.97	8.03	7.03	8.26	7.94	6.59	6.91	6.74	6.46	6.44	9.01	6.59	7.53	
Time of Last Vehicle (s)	17.09	18.32	16.56	23.69	16.09	20.69	18.34	13.66	16.74	20.04	19.93	16.95	15.52	21.35	
Avg Sat Headway (s/veh)	2.39	1.89	2.13	2.08	1.96	2.13	2.35	1.69	2.50	2.26	2.25	1.99	2.23	1.97	
Unadj. Sat. Flow (veh/h/ln)	1508	1903	1688	1729	1839	1694	1532	2133	1440	1591	1601	1814	1613	1823	

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

Saturation Flow Study Summary Sheet

Intersection Information:

Intersection:	US 141/WIS 29/Main St & County V/E Mason St
Major Street:	US 141/WIS 29/Main
Minor Street:	Coutny V/E Mason St.
Study Approach:	SE
Approach Configuration:	2
Population Group:	100 to 250
Cycles by Date:	5/12/15 (1-41) 5/13/15 (42-59)

Video Date:	5/12/15 - 5/14/15
WisDOT Region:	NE
Nearest Municipality:	Green Bay
County:	Brown
Weather:	Clear
Pavement:	Dry
Observer:	Allen

Data Collection Summary Data:

Cycles Studied:	59
Average number of vehicles per cycle:	10
Headways Measured (queue vehicles > 4) :	328
% Heavy Vehicles (of headways measured):	0.3%
% RT Vehicles (of headways measured):	2.7%
Average Saturation Flow Headway (s):	2.11
Standard Deviation of All Headways:	0.55
Standard Deviation of Cycle Headways:	0.23
Unadjusted Median Sat Flow Rate (veh/ln.hr):	1703
Unadjusted Avg Sat Flow Rate (veh/ln/hr):	1706



WisDOT Signalized Intersection Capacity Study

Location ID:	17	Video Date:	5/12/15 - 5/14/15
Intersection Location:	WIS 32/S Ashland Ave & County VK/Lombardi Ave	County:	Brown
Approach Direction:	EB	Region:	NE
Approach Configuration:	4	Municipality:	Green Bay
Population Group:	100 to 250	Approach AADT:	12300

Cycle #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Lane Studied	2	2	2	2	2	1	2	1	2	1	2	1	2	1	2
Start of Green	3:10 PM	3:13 PM	3:15 PM	3:23 PM	3:33 PM	3:45 PM	3:45 PM	3:51 PM	3:51 PM	3:53 PM	3:53 PM	3:54 PM	4:00 PM	4:07 PM	4:07 PM
Heavy Vehicles (1-4)			1									1			
Heavy Vehicles (5-12)															
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	2.34	2.15	1.98	2.38	3.80	1.92	2.24	2.82	2.64	2.19	2.27	1.71	2.11	2.85	2.45
Vehicle 2	2.60	2.76	2.30	2.02	2.67	1.80	2.67	2.55	2.19	1.83	2.53	1.88	2.36	1.77	2.34
Vehicle 3	2.85	1.86	1.93	2.61	2.13	1.87	3.12	2.00	2.52	2.39	3.31	2.02	2.01	1.58	1.95
Vehicle 4	2.46	2.19	2.24	2.65	2.23	1.53	1.50	1.25	1.52	3.83	2.57	3.64	2.57	1.56	2.39
Vehicle 5	2.45	1.55	2.67	2.15	2.28	2.51	1.45	3.03	1.75	1.95	3.18	2.20	2.69	2.33	2.18
Vehicle 6	1.71	2.96	2.70	2.22	1.97	1.55	2.03	1.82	1.85	1.80	1.93	1.85	2.68	2.01	1.94
Vehicle 7	2.19	1.29	1.57	2.28	1.89	1.77	1.84	2.71	1.66	2.21	2.38	2.18	1.84	1.76	1.81
Vehicle 8	1.51	1.96	1.98	2.32	1.79	1.80	2.38	2.45	2.14	2.90	1.80	2.15	1.35	1.68	1.58
Vehicle 9	1.60	2.57	1.41	1.82	2.59		1.36	2.18	2.18	1.78	1.59	1.52	1.50	2.13	1.65
Vehicle 10		1.73	1.33				2.19	2.49	2.41	1.54	1.02	1.39	1.84	2.31	
Vehicle 11		1.79	1.80					1.63		1.77		1.32	1.39		
Vehicle 12		1.43						1.90							

	Study Results														
No. vehicles used in cycle	9	12	11	9	9	8	10	12	10	11	10	11	11	10	9
Time of Vehicle 4 (s)	10.25	8.96	8.45	9.66	10.83	7.12	9.53	8.62	8.87	10.24	10.68	9.25	9.05	7.76	9.13
Time of Last Vehicle (s)	19.71	24.24	21.91	20.45	21.35	14.75	20.78	26.83	20.86	24.19	22.58	21.86	22.34	19.98	18.29
Avg Sat Headway (s/veh)	1.89	1.91	1.92	2.16	2.10	1.91	1.88	2.28	2.00	1.99	1.98	1.80	1.90	2.04	1.83
Unadj. Sat. Flow (veh/h/ln)	1903	1885	1872	1668	1711	1887	1920	1582	1802	1806	1815	1998	1896	1768	1965
Start up lost time	2.68	1.32	0.76	1.03	2.41	-0.51	2.03	-0.48	0.88	2.27	2.75	2.04	1.46	-0.39	1.80

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. The headway for vehicle 1 is the amount of time (in seconds) that passed between the light turning green and vehicle 1 crossing the stop bar into the intersection.

WisDOT Signalized Intersection Capacity Study

Location ID:	17	Video Date:	5/12/15 - 5/14/15
Intersection Location:	WIS 32/S Ashland Ave & County VK/Lombardi Ave	County:	Brown
Approach Direction:	EB	Region:	NE
Approach Configuration:	4	Municipality:	Green Bay
Population Group:	100 to 250	Approach AADT:	12300

Cycle #	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Lane Studied	2	1	2	1	2	2	2	2	1	2	1	2	1	2	1
Start of Green	4:14 PM	4:16 PM	4:39 PM	4:40 PM	4:40 PM	6:57 AM	7:13 AM	7:21 AM	7:24 AM	7:24 AM	7:26 AM	7:26 AM	7:41 AM	7:41 AM	3:18 PM
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)															
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	2.51	1.89	3.76	2.17	2.40	2.46	2.27	2.78	1.61	1.31	2.73	1.97	2.03	2.12	1.77
Vehicle 2	2.08	1.80	2.44	1.58	2.45	1.61	1.30	1.76	1.46	1.76	1.46	2.76	1.54	2.01	1.85
Vehicle 3	1.85	2.13	2.31	2.62	3.61	1.98	2.25	2.26	2.11	2.29	2.20	3.13	2.04	2.13	2.07
Vehicle 4	3.00	3.64	2.57	2.40	2.15	1.54	1.82	2.09	1.62	1.84	2.12	2.17	1.63	1.88	2.58
Vehicle 5	1.71	1.94	2.03	2.36	1.98	1.43	1.93	2.09	2.37	1.68	2.35	1.74	1.87	1.52	2.71
Vehicle 6	2.04	2.05	2.00	2.10	1.94	1.60	1.63	2.03	1.49	1.51	2.06	2.11	1.91	2.01	1.72
Vehicle 7	2.22	1.60	1.96	1.92	2.56	1.54	1.87	1.63	1.91	1.51	1.47	2.43	1.55	2.21	2.85
Vehicle 8	1.19	1.58	1.56	1.55	1.84	1.73	1.71	2.34	1.94	1.55	1.93	2.22	2.19	2.13	2.12
Vehicle 9	2.68	2.33	1.73	2.13	1.76	2.43	1.88	1.59	2.54	2.14	2.09	1.82	2.69	1.83	2.11
Vehicle 10	1.91	1.53		1.32	1.38		1.63	1.67			2.05		2.44	2.05	
Vehicle 11	1.90	2.18		1.35	1.50		1.97						1.54	1.95	
Vehicle 12	1.44	1.57		1.36	1.65								1.37	2.09	

	Study Results														
No. vehicles used in cycle	12	12	9	12	12	9	11	10	9	9	10	9	12	12	9
Time of Vehicle 4 (s)	9.44	9.46	11.08	8.77	10.61	7.59	7.64	8.89	6.80	7.20	8.51	10.03	7.24	8.14	8.27
Time of Last Vehicle (s)	24.53	24.24	20.36	22.86	25.22	16.32	20.26	20.24	17.05	15.59	20.46	20.35	22.80	23.93	19.78
Avg Sat Headway (s/veh)	1.89	1.85	1.86	1.76	1.83	1.75	1.80	1.89	2.05	1.68	1.99	2.06	1.95	1.97	2.30
Unadj. Sat. Flow (veh/h/ln)	1909	1949	1940	2044	1971	2062	1997	1903	1756	2145	1808	1744	1851	1824	1564
Start up lost time	1.89	2.07	3.66	1.72	3.31	0.61	0.43	1.32	-1.40	0.49	0.54	1.77	-0.54	0.24	-0.94

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. The headway for vehicle 1 is the amount of time (in seconds) that passed between the light turning green and vehicle 1 crossing the stop bar into the intersection.

WisDOT Signalized Intersection Capacity Study

Location ID:	17	Video Date:	5/12/15 - 5/14/15
Intersection Location:	WIS 32/S Ashland Ave & County VK/Lombardi Ave	County:	Brown
Approach Direction:	EB	Region:	NE
Approach Configuration:	4	Municipality:	Green Bay
Population Group:	100 to 250	Approach AADT:	12300

Cycle #	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Lane Studied	2	1	1	2	1	2	1	1	2	2	1	1	1	2	2
Start of Green	3:25 PM	3:42 PM	3:45 PM	3:45 PM	3:57 PM	3:57 PM	4:06 PM	4:37 PM	4:37 PM	4:42 PM	6:40 AM	7:09 AM	7:16 AM	7:16 AM	7:19 AM
Heavy Vehicles (1-4)														1	
Heavy Vehicles (5-12)	1														
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	2.66	2.28	2.11	4.04	2.09	2.30	1.76	2.13	1.46	2.10	2.15	3.28	2.23	2.84	2.06
Vehicle 2	2.14	1.68	2.30	2.56	1.91	1.86	2.35	2.19	3.53	2.57	1.98	2.67	1.88	3.24	2.88
Vehicle 3	3.12	2.46	3.04	3.89	2.20	3.11	2.22	2.33	1.75	2.03	2.84	2.08	1.75	2.08	2.41
Vehicle 4	1.96	1.85	2.39	2.10	2.28	2.47	2.90	2.73	2.01	2.65	2.01	2.04	1.96	1.64	2.21
Vehicle 5	1.58	2.84	2.37	2.34	1.92	1.67	2.41	2.06	1.32	2.29	1.89	2.21	1.56	1.90	2.10
Vehicle 6	1.95	1.87	1.39	3.48	2.01	2.78	2.05	2.23	2.97	2.23	1.86	1.71	1.94	2.17	1.75
Vehicle 7	2.18	1.57	1.99	1.67	1.99	1.75	1.40	1.87	1.75	1.60	1.92	1.34	1.71	1.50	1.81
Vehicle 8	2.01	1.95	1.26	1.37	2.10	1.74	1.35	1.67	2.06	1.55	1.83	1.51	1.63	2.11	1.75
Vehicle 9	2.25	1.69		1.67	1.65	2.08	1.78	2.24	1.16	1.34	1.52	2.19	1.98	2.17	1.64
Vehicle 10	1.55			1.13			1.84		1.74	1.83			1.82	1.64	1.48
Vehicle 11	1.97			2.07			1.88			2.00			1.57	1.82	1.85
Vehicle 12				1.21						2.32				2.62	1.87

	Study Results														
No. vehicles used in cycle	11	9	8	12	9	9	11	9	10	12	9	9	11	12	12
Time of Vehicle 4 (s)	9.88	8.27	9.84	12.59	8.48	9.74	9.23	9.38	8.75	9.35	8.98	10.07	7.82	9.80	9.56
Time of Last Vehicle (s)	23.37	18.19	16.85	27.53	18.15	19.76	21.94	19.45	19.75	24.51	18.00	19.03	20.03	25.73	23.81
Avg Sat Headway (s/veh)	1.93	1.98	1.75	1.87	1.93	2.00	1.82	2.01	1.83	1.89	1.80	1.79	1.74	1.99	1.78
Unadj. Sat. Flow (veh/h/ln)	1868	1815	2054	1928	1861	1796	1983	1787	1964	1900	1996	2009	2064	1808	2021
Start up lost time	2.17	0.33	2.83	5.12	0.74	1.72	1.97	1.32	1.42	1.77	1.76	2.90	0.84	1.84	2.44

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. The headway for vehicle 1 is the amount of time (in seconds) that passed between the light turning green and vehicle 1 crossing the stop bar into the intersection.

WisDOT Signalized Intersection Capacity Study

Location ID:	17	Video Date:	5/12/15 - 5/14/15
Intersection Location:	WIS 32/S Ashland Ave & County VK/Lombardi Ave	County:	Brown
Approach Direction:	EB	Region:	NE
Approach Configuration:	4	Municipality:	Green Bay
Population Group:	100 to 250	Approach AADT:	12300

Cycle #	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Lane Studied	1	2	2	1	2	1	2	1	2	1	1	2	2	2	2
Start of Green	7:25 AM	7:28 AM	7:37 AM	7:42 AM	7:42 AM	4:32 PM	4:32 PM	4:33 PM	4:33 PM	4:39 PM	5:03 PM	5:04 PM	5:10 PM	5:15 PM	5:32 PM
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)													1		
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	1.70	1.59	2.14	2.17	1.84	1.82	2.32	1.52	0.74	1.76	1.84	4.66	2.06	2.37	2.67
Vehicle 2	1.40	2.06	2.89	1.60	2.16	1.70	3.25	1.57	2.77	1.57	1.93	1.71	2.40	2.81	2.33
Vehicle 3	2.05	1.85	2.16	2.20	3.03	1.99	3.25	1.62	2.12	1.95	2.74	1.95	3.16	1.70	2.87
Vehicle 4	2.41	3.26	2.32	1.73	2.45	1.99	2.61	2.33	2.54	2.53	2.06	1.86	2.41	2.31	1.90
Vehicle 5	1.79	2.07	1.95	1.87	1.91	3.28	2.34	2.20	2.29	1.74	1.88	1.51	1.67	2.07	1.77
Vehicle 6	1.91	1.90	1.54	1.99	1.97	1.44	1.48	1.54	2.17	1.76	1.59	1.76	1.59	2.29	2.89
Vehicle 7	1.75	2.14	1.94	2.63	1.55	1.75	1.78	2.04	2.38	1.43	2.18	1.69	1.62	2.64	2.35
Vehicle 8	1.82	1.83	1.97	1.77	2.10	1.64	1.24	2.24	1.98	1.47	1.33	1.45	2.23	2.53	1.57
Vehicle 9	1.34	1.56		2.03	1.79	1.69	1.92	2.39	2.09	1.91	1.80	2.15	1.57	2.28	2.29
Vehicle 10	1.76			1.57	1.39	1.64	1.26	1.75	1.91	2.11	2.22	1.40	2.01	1.43	
Vehicle 11				1.66	2.52	2.36	1.29	1.80	1.86	1.35	2.21		1.82	2.34	
Vehicle 12				1.50		1.53	2.73			2.78	2.03			1.86	

	Study Results														
No. vehicles used in cycle	10	9	8	12	11	12	12	11	11	12	12	10	11	12	9
Time of Vehicle 4 (s)	7.56	8.76	9.51	7.70	9.48	7.50	11.43	7.04	8.17	7.81	8.57	10.18	10.03	9.19	9.77
Time of Last Vehicle (s)	17.93	18.26	16.91	22.72	22.71	22.83	25.47	21.00	22.85	22.36	23.81	20.14	22.54	26.63	20.64
Avg Sat Headway (s/veh)	1.73	1.90	1.85	1.88	1.89	1.92	1.76	1.99	2.10	1.82	1.90	1.66	1.79	2.18	2.17
Unadj. Sat. Flow (veh/h/ln)	2083	1895	1946	1917	1905	1879	2051	1805	1717	1979	1890	2169	2014	1651	1656
Start up lost time	0.65	1.16	2.11	0.19	1.92	-0.17	4.41	-0.94	-0.22	0.53	0.95	3.54	2.88	0.47	1.07

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. The headway for vehicle 1 is the amount of time (in seconds) that passed between the light turning green and vehicle 1 crossing the stop bar into the intersection.

Saturation Flow Study Summary Sheet

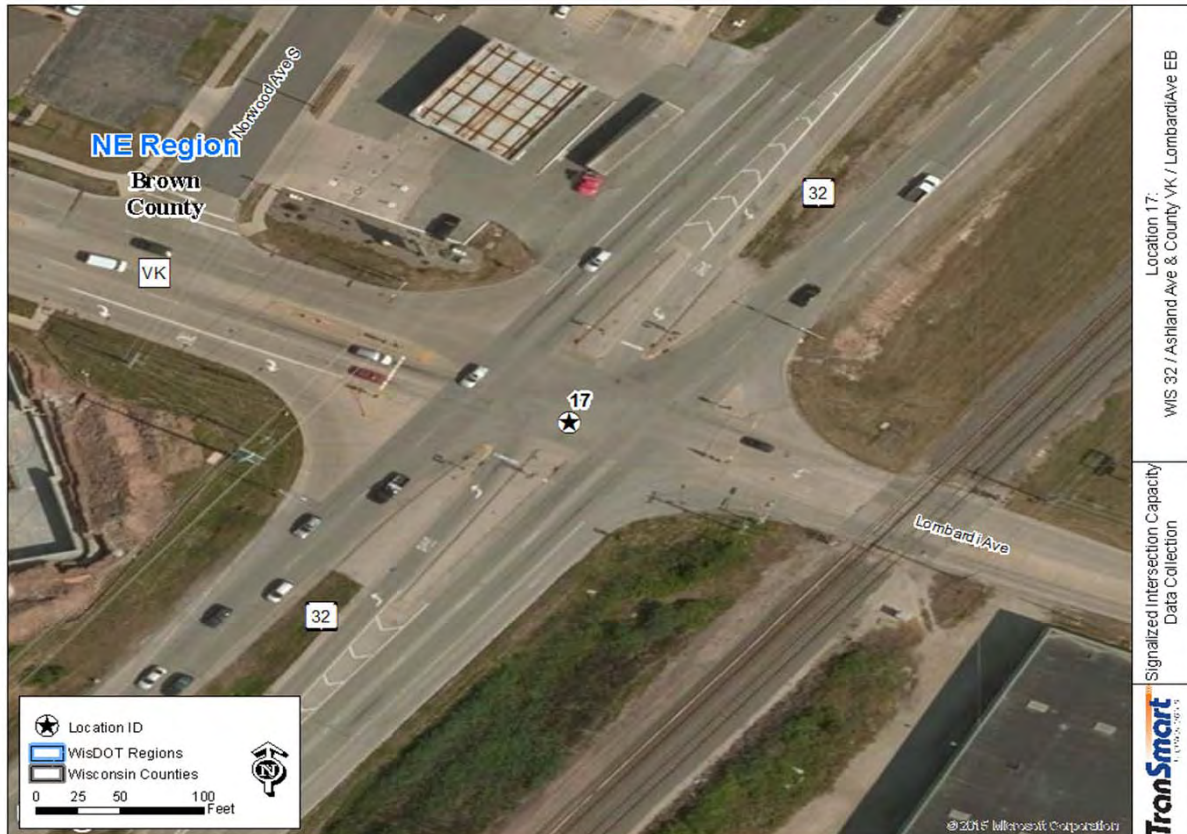
Intersection Information:

Intersection:	WIS 32/S Ashland Ave & County VK
Major Street:	WIS 32/S Ashland Ave.
Minor Street:	County VK/Lombardi Ave.
Study Approach:	EB
Approach Configuration:	4
Population Group:	100 to 250
Cycle by Date:	5/12 (1-20), 5/13 (21-40), 5/14 (41-60)

Date:	5/12/15 - 5/14/15
WisDOT Region:	NE
Nearest Municipality:	Green Bay
County:	Brown
Weather:	Clear
Pavement:	Dry
Observer:	Kevin

Data Collection Summary Data:

Cycles Studied:	60
Average number of vehicles per cycle:	10
Headways Measured (queue vehicles > 4) :	384
% Heavy Vehicles (of headways measured):	0.5%
% RT Vehicles (of headways measured):	0.0%
Average Saturation Flow Headway (s):	1.91
Standard Deviation of All Headways:	0.39
Standard Deviation of Cycle Headways:	0.14
Unadjusted Median Sat Flow Rate (veh/ln.hr):	1898
Unadjusted Avg Sat Flow Rate (veh/ln/hr):	1882
Average Start Up Lost Time (s):	1.38



WisDOT Signalized Intersection Capacity Study

Location ID: 18
Intersection Location: E Mason St & S Webster St
Approach Direction: EB
Approach Configuration: 5
Population Group: 100 to 250

Video Date: 5/12/15 - 5/14/15
County: Brown
Region: NE
Municipality: Green Bay
Approach AADT: 29600

Cycle #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Lane Studied	1	2	1	2	2	1	2	1	2	1	2	1	2	1	2
Start of Green	2:55 PM	2:57 PM	3:03 PM	3:03 PM	3:04 PM	3:06 PM	3:07 PM	3:10 PM	3:10 PM	3:12 PM	3:12 PM	3:13 PM	3:13 PM	3:15 PM	3:16 PM
Heavy Vehicles (1-4)												1			
Heavy Vehicles (5-12)															
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	2.85	2.52	2.46	2.31	3.00	2.45	3.02	2.64	2.60	2.63	2.45	2.11	2.60	1.82	2.49
Vehicle 3	2.55	4.09	2.65	2.14	2.39	2.43	2.32	3.59	3.40	3.40	2.07	2.34	1.94	1.77	2.16
Vehicle 4	2.18	1.65	2.81	2.07	2.04	2.41	2.16	1.97	2.18	2.04	2.40	2.10	2.08	2.63	2.14
Vehicle 5	1.93	1.53	2.47	2.52	1.84	2.49	1.88	2.24	1.67	1.59	2.77	3.41	2.54	2.05	2.31
Vehicle 6	2.07	2.66	2.49	1.61	2.07	2.40	2.18	2.11	1.97	2.28	2.66	1.86	1.76	1.87	1.79
Vehicle 7	1.74	1.73	2.25	1.69	2.55	2.28	2.17	2.49	2.27	2.50	1.97	2.32	1.65	2.89	2.24
Vehicle 8	1.94	1.99	2.24	2.40	1.57	2.01	1.69	2.38	2.25	1.60	2.00	2.18	2.06	2.05	1.23
Vehicle 9			1.88	2.48	1.89	1.77	2.52		1.78	2.53	1.62	2.47		2.18	2.28
Vehicle 10			1.83	2.89	1.92	2.51	2.43		2.32			2.40		2.44	1.63
Vehicle 11			1.97	1.24			0.24		2.38			1.79			
Vehicle 12			1.96	2.20					2.25			2.08			

	Study Results														
No. vehicles used in cycle	8	8	12	12	10	10	11	8	12	9	9	12	8	10	10
Time of Vehicle 4 (s)	7.58	8.26	7.92	6.52	7.43	7.29	7.50	8.20	8.18	8.07	6.92	6.55	6.62	6.22	6.79
Time of Last Vehicle (s)	15.26	16.17	25.01	23.55	19.27	20.75	20.61	17.42	25.07	18.57	17.94	25.06	14.63	19.70	18.27
Avg Sat Headway (s/veh)	1.92	1.98	2.14	2.13	1.97	2.24	1.87	2.31	2.11	2.10	2.20	2.31	2.00	2.25	1.91
Unadj. Sat. Flow (veh/h/ln)	1875	1820	1685	1691	1824	1605	1922	1562	1705	1714	1633	1556	1798	1602	1882

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

WisDOT Signalized Intersection Capacity Study

Location ID: 18
Intersection Location: E Mason St & S Webster St
Approach Direction: EB
Approach Configuration: 5
Population Group: 100 to 250

Video Date: 5/12/15 - 5/14/15
County: Brown
Region: NE
Municipality: Green Bay
Approach AADT: 29600

Cycle #	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Lane Studied	1	1	2	1	2	1	2	1	2	1	2	1	2	1	1
Start of Green	3:18 PM	3:22 PM	3:22 PM	3:25 PM	3:25 PM	7:16 AM	7:16 AM	7:39 AM	7:39 AM	8:00 AM	8:00 AM	4:09 PM	4:09 PM	4:10 PM	4:12 PM
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)									1						
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	2.39	2.73	2.78	2.79	2.18	2.44	2.80	2.41	2.28	2.38	2.45	2.44	2.33	2.20	1.62
Vehicle 3	2.32	2.11	4.00	2.93	3.47	2.24	2.80	2.44	1.75	2.20	2.63	2.04	2.31	2.25	2.88
Vehicle 4	1.64	3.05	1.80	2.50	3.40	3.20	1.45	2.76	1.95	1.74	2.95	2.26	2.46	2.69	2.34
Vehicle 5	1.82	2.96	2.10	1.60	1.70	2.67	1.60	1.88	3.16	1.94	1.64	2.36	1.93	2.04	2.06
Vehicle 6	2.74	1.09	2.82	2.02	2.34	2.21	2.64	2.19	2.41	2.05	1.67	2.33	2.24	2.42	1.98
Vehicle 7	2.21	1.60	1.37	2.40	1.45	1.61	1.62	2.28	1.77	2.23	2.76	1.74	2.17	1.75	2.62
Vehicle 8	2.22	2.29	2.00	2.30	1.95	2.19	2.88	2.32	2.48	2.24	1.85	1.84	1.75	1.32	2.48
Vehicle 9	2.53	2.54	2.31	2.33	1.76			1.82	1.87	2.85	2.21	1.72	1.99	2.10	2.19
Vehicle 10	2.75	2.29	1.75	2.41					3.03	1.74	1.90	1.43	2.11	2.24	1.96
Vehicle 11	2.66	1.68							1.54	1.74		1.32	1.69	1.83	1.68
Vehicle 12		1.43										2.77		2.14	

	Study Results														
No. vehicles used in cycle	11	12	10	10	9	8	8	9	11	11	10	12	11	12	11
Time of Vehicle 4 (s)	6.35	7.89	8.58	8.22	9.05	7.88	7.05	7.61	5.98	6.32	8.03	6.74	7.10	7.14	6.84
Time of Last Vehicle (s)	23.28	23.77	20.93	21.28	18.25	16.56	15.79	18.10	22.24	21.11	20.06	22.25	20.98	22.98	21.81
Avg Sat Headway (s/veh)	2.42	1.99	2.06	2.18	1.84	2.17	2.18	2.10	2.32	2.11	2.00	1.94	1.98	1.98	2.14
Unadj. Sat. Flow (veh/h/ln)	1488	1814	1749	1654	1957	1659	1648	1716	1550	1704	1796	1857	1816	1818	1683

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

WisDOT Signalized Intersection Capacity Study

Location ID: 18
Intersection Location: E Mason St & S Webster St
Approach Direction: EB
Approach Configuration: 5
Population Group: 100 to 250

Video Date: 5/12/15 - 5/14/15
County: Brown
Region: NE
Municipality: Green Bay
Approach AADT: 29600

Cycle #	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Lane Studied	2	1	2	2	2	1	2	1	1	2	1	2	1	1	1
Start of Green	4:12 PM	4:13 PM	4:13 PM	4:16 PM	4:18 PM	4:19 PM	4:19 PM	4:21 PM	4:22 PM	4:22 PM	6:45 AM	6:45 AM	7:49 AM	5:03 PM	5:04 PM
Heavy Vehicles (1-4)						1									
Heavy Vehicles (5-12)															
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	3.61	1.91	2.95	3.27	5.68	2.84	3.37	2.93	2.38	2.64	2.11	2.49	3.00	2.99	1.37
Vehicle 3	2.19	1.93	2.64	2.88	1.89	2.56	2.53	2.84	2.91	2.50	2.19	2.13	2.17	2.77	2.35
Vehicle 4	1.98	2.93	2.11	1.75	1.57	1.61	2.01	2.55	1.85	3.90	1.89	1.80	2.15	2.43	2.07
Vehicle 5	1.78	1.60	1.76	2.04	1.67	1.90	1.63	2.22	3.12	2.52	2.13	1.52	1.43	2.21	2.22
Vehicle 6	1.73	2.06	2.01	1.43	1.61	1.94	2.12	2.14	2.10	1.77	3.09	1.66	2.03	1.34	2.16
Vehicle 7	1.52	2.21	2.76	1.56	1.93	2.34	2.57	2.84	2.22	2.26	1.75	1.42	1.75	2.32	2.18
Vehicle 8	1.46	1.84	2.50	1.85	1.93	2.51	2.84	1.59	1.38	1.27	1.91	2.14	1.62	1.70	2.16
Vehicle 9	2.47	1.76	1.89	1.82	2.41	1.71	1.98	1.70		1.76	1.96	1.49	2.06	1.84	1.55
Vehicle 10	2.26	2.12	2.51	2.18		1.92	2.18	2.56		2.35	1.93	2.15	2.14		1.55
Vehicle 11	1.94	2.71	2.12				2.09	1.58		2.15			1.77		
Vehicle 12	2.15	2.27					2.55	1.37		1.62			1.65		

	Study Results														
No. vehicles used in cycle	12	12	11	10	9	10	12	12	8	12	10	10	12	9	10
Time of Vehicle 4 (s)	7.78	6.77	7.70	7.90	9.14	7.01	7.91	8.32	7.14	9.04	6.19	6.42	7.32	8.19	5.79
Time of Last Vehicle (s)	23.09	23.34	23.25	18.78	18.69	19.33	25.87	24.32	15.96	24.74	18.96	16.80	21.77	17.60	17.61
Avg Sat Headway (s/veh)	1.91	2.07	2.22	1.81	1.91	2.05	2.24	2.00	2.20	1.96	2.13	1.73	1.81	1.88	1.97
Unadj. Sat. Flow (veh/h/ln)	1881	1738	1621	1985	1885	1753	1604	1800	1633	1834	1691	2081	1993	1913	1827

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

WisDOT Signalized Intersection Capacity Study

Location ID: 18
Intersection Location: E Mason St & S Webster St
Approach Direction: EB
Approach Configuration: 5
Population Group: 100 to 250

Video Date: 5/12/15 - 5/14/15
County: Brown
Region: NE
Municipality: Green Bay
Approach AADT: 29600

Cycle #	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Lane Studied	2	1	2	1	2	1	2	1	2	2	1	2	1	2	1
Start of Green	5:04 PM	5:07 PM	5:07 PM	5:08 PM	5:08 PM	5:10 PM	5:10 PM	5:12 PM	5:12 PM	5:13 PM	5:14 PM	5:14 PM	5:17 PM	5:17 PM	5:22 PM
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)												1			
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	2.23	2.59	2.85	2.12	2.40	1.71	3.20	2.06	2.96	2.60	1.67	2.45	2.08	4.07	2.28
Vehicle 3	2.22	2.79	2.34	2.27	2.10	2.05	2.21	2.14	2.00	2.28	2.50	2.29	1.75	1.58	1.70
Vehicle 4	3.57	2.27	1.78	2.26	2.39	2.36	1.82	3.09	1.72	1.73	1.71	1.59	1.56	1.66	2.12
Vehicle 5	1.44	2.45	2.61	1.31	1.68	2.62	1.98	1.63	2.04	1.86	2.42	2.21	1.96	2.29	2.99
Vehicle 6	2.17	2.27	2.01	1.32	1.72	1.80	2.04	2.49	1.74	1.93	1.61	2.18	1.72	1.57	1.84
Vehicle 7	2.35	1.35	2.22	2.04	1.67	2.22	2.74	2.04	2.45	1.55	1.60	2.14	1.60	1.68	2.74
Vehicle 8	2.56	2.03	2.38	2.76	1.67	1.08	2.13	1.60	2.23	2.13	2.06	2.04	1.84	1.98	1.50
Vehicle 9	1.97	1.85	1.76	2.26		2.15	2.41	1.68	2.07	2.65	2.75		1.71	1.80	1.58
Vehicle 10	3.04	2.00				1.88		1.38	1.67	2.12				1.30	2.11
Vehicle 11	2.33	2.57				1.95		1.72	1.77	1.91				1.78	1.66
Vehicle 12	1.96					1.75		2.09	1.82					2.18	

	Study Results														
No. vehicles used in cycle	12	11	9	9	8	12	9	12	12	11	9	8	9	12	11
Time of Vehicle 4 (s)	8.02	7.65	6.97	6.65	6.89	6.12	7.23	7.29	6.68	6.61	5.88	6.33	5.39	7.31	6.10
Time of Last Vehicle (s)	25.84	22.17	17.95	16.34	13.63	21.57	18.53	21.92	22.47	20.76	16.32	14.90	14.22	21.89	20.52
Avg Sat Headway (s/veh)	2.23	2.07	2.20	1.94	1.69	1.93	2.26	1.83	1.97	2.02	2.09	2.14	1.77	1.82	2.06
Unadj. Sat. Flow (veh/h/ln)	1616	1736	1639	1858	2136	1864	1593	1969	1824	1781	1724	1680	2039	1975	1748

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

Saturation Flow Study Summary Sheet

Intersection Information:

Intersection:	E Mason St & S Webster St
Major Street:	E Mason St
Minor Street:	S Webster St
Study Approach:	EB
Approach Configuration:	5
Population Group:	100 to 250
Cycles by Date:	5/12 (1-20), 5/13 (21-40), 5/14 (41-60)

Video Date:	5/12/15 - 5/14/15
WisDOT Region:	NE
Nearest Municipality:	Green Bay
County:	Brown
Weather:	Clear
Pavement:	Dry
Observer:	Kevin B.

Data Collection Summary Data:

Cycles Studied:	60
Average number of vehicles per cycle:	10
Headways Measured (queue vehicles > 4) :	377
% Heavy Vehicles (of headways measured):	0.5%
% RT Vehicles (of headways measured):	0.0%
Average Saturation Flow Headway (s):	2.05
Standard Deviation of All Headways:	0.41
Standard Deviation of Cycle Headways:	0.16
Unadjusted Median Sat Flow Rate (veh/ln.hr):	1751
Unadjusted Avg Sat Flow Rate (veh/ln/hr):	1760



WisDOT Signalized Intersection Capacity Study

Location ID: 19
Intersection Location: WIS 54 / W Mason St & N Military Ave
Approach Direction: EB
Approach Configuration: 5
Population Group: 100 to 250

Video Date: 5/12/15 - 5/14/15
County: Brown
Region: NE
Municipality: Green Bay
Approach AADT: 22600

Cycle #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Lane Studied	2	1	2	2	2	1	2	1	2	1	2	2	2	1	2
Start of Green	2:37 PM	2:39 PM	2:39 PM	3:02 PM	3:20 PM	3:25 PM	3:35 PM	3:40 PM	3:46 PM	3:53 PM	3:53 PM	3:56 PM	3:58 PM	4:03 PM	4:03 PM
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)															
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	2.61	2.00	2.22	2.94	2.28	3.34	1.47	2.38	3.07	2.36	1.75	2.78	2.35	1.78	4.04
Vehicle 3	1.95	1.91	4.07	2.18	3.23	2.60	2.33	2.11	3.28	3.32	2.24	3.37	2.48	2.20	2.24
Vehicle 4	2.92	2.24	2.25	3.00	1.47	2.24	2.51	2.47	1.95	3.14	2.72	2.31	1.49	1.88	2.13
Vehicle 5	3.53	1.41	1.69	2.08	1.55	1.80	2.55	2.64	3.05	1.95	2.45	2.37	1.60	1.91	2.24
Vehicle 6	1.49	1.88	1.63	1.67	1.84	2.31	3.06	1.94	2.39	1.87	2.24	2.18	2.51	2.22	1.70
Vehicle 7	1.63	1.75	2.14	1.50	1.50	1.50	3.13	2.79	2.76	2.09	1.97	2.09	1.77	2.08	1.98
Vehicle 8	2.39	1.55	2.68	2.27	2.24	1.45	2.70	1.36	2.03	1.80	2.35	2.84	1.59	1.81	2.07
Vehicle 9	1.63		1.72	1.50	2.85	1.94	2.01	2.06	1.52				2.07	2.45	1.81
Vehicle 10			1.84	2.44	2.82	1.64	1.65		1.44				1.95	2.44	2.12
Vehicle 11						2.36	1.63		1.61				1.78	1.53	1.59
Vehicle 12							1.61							1.73	2.52

	Study Results														
No. vehicles used in cycle	9	8	10	10	10	11	12	9	11	8	8	8	11	12	12
Time of Vehicle 4 (s)	7.48	6.15	8.54	8.12	6.98	8.18	6.31	6.96	8.30	8.82	6.71	8.46	6.32	5.86	8.41
Time of Last Vehicle (s)	18.15	12.74	20.24	19.58	19.78	21.18	24.65	17.75	23.10	16.53	15.72	17.94	19.59	22.03	24.44
Avg Sat Headway (s/veh)	2.13	1.65	1.95	1.91	2.13	1.86	2.29	2.16	2.11	1.93	2.25	2.37	1.90	2.02	2.00
Unadj. Sat. Flow (veh/h/ln)	1687	2185	1846	1885	1688	1938	1570	1668	1703	1868	1598	1519	1899	1781	1797

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

WisDOT Signalized Intersection Capacity Study

Location ID: 19
Intersection Location: WIS 54 / W Mason St & N Military Ave
Approach Direction: EB
Approach Configuration: 5
Population Group: 100 to 250

Video Date: 5/12/15 - 5/14/15
County: Brown
Region: NE
Municipality: Green Bay
Approach AADT: 22600

Cycle #	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Lane Studied	2	1	2	1	2	1	2	1	1	2	1	1	1	2	1
Start of Green	4:05 PM	4:06 PM	4:06 PM	4:08 PM	4:10 PM	7:00 AM	7:00 AM	7:01 AM	7:06 AM	7:06 AM	7:07 AM	7:16 AM	7:18 AM	7:28 AM	7:30 AM
Heavy Vehicles (1-4)		1													
Heavy Vehicles (5-12)															
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	1.66	1.60	3.10	3.02	2.18	2.07	1.92	2.49	2.00	3.31	2.59	2.30	2.01	2.54	2.39
Vehicle 3	3.16	3.80	1.74	2.24	3.80	3.70	1.62	3.27	1.99	1.52	1.86	3.11	2.23	3.31	2.03
Vehicle 4	2.10	2.06	2.66	2.20	3.16	2.96	1.76	2.56	1.67	2.35	2.74	3.09	2.65	1.91	2.16
Vehicle 5	1.58	1.65	3.06	1.99	2.15	2.04	1.84	2.38	1.62	2.00	2.12	2.16	2.33	2.16	2.18
Vehicle 6	1.52	2.25	1.90	1.99	2.16	1.41	1.99	3.13	2.00	1.79	1.76	1.48	1.60	2.05	3.21
Vehicle 7	1.61	1.89	2.65	1.75	1.53	2.83	2.04	2.67	2.69	1.90	1.64	1.81	2.25	3.14	2.34
Vehicle 8	2.35	1.86	2.40	2.13	2.19	1.47	1.85	1.52	1.96	1.92	2.50	1.40	1.81	2.56	1.46
Vehicle 9		2.81	2.47			1.83	2.24	1.73			2.71	1.42	1.55	2.01	1.70
Vehicle 10			2.44				1.81	1.56			1.62	1.89	1.75		2.29
Vehicle 11			1.91				1.59	1.83				1.81	1.99		2.64
Vehicle 12			2.73									2.09	1.88		

	Study Results														
No. vehicles used in cycle	8	9	12	8	8	9	11	11	8	8	10	12	12	9	11
Time of Vehicle 4 (s)	6.92	7.46	7.50	7.46	9.14	8.73	5.30	8.32	5.66	7.18	7.19	8.50	6.89	7.76	6.58
Time of Last Vehicle (s)	13.98	17.92	27.06	15.32	17.17	18.31	18.66	23.14	13.93	14.79	19.54	22.56	22.05	19.68	22.40
Avg Sat Headway (s/veh)	1.77	2.09	2.44	1.97	2.01	1.92	1.91	2.12	2.07	1.90	2.06	1.76	1.90	2.38	2.26
Unadj. Sat. Flow (veh/h/ln)	2040	1721	1472	1832	1793	1879	1886	1700	1741	1892	1749	2048	1900	1510	1593

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

WisDOT Signalized Intersection Capacity Study

Location ID: 19
Intersection Location: WIS 54 / W Mason St & N Military Ave
Approach Direction: EB
Approach Configuration: 5
Population Group: 100 to 250

Video Date: 5/12/15 - 5/14/15
County: Brown
Region: NE
Municipality: Green Bay
Approach AADT: 22600

Cycle #	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Lane Studied	2	1	1	1	2	1	2	1	2	1	1	1	1	1	1
Start of Green	7:33 AM	7:33 AM	7:34 AM	7:36 AM	7:39 AM	7:40 AM	7:42 AM	7:43 AM	7:43 AM	7:46 AM	7:06 AM	7:07 AM	7:09 AM	7:11 AM	7:18 AM
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)															
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	2.11	2.35	2.71	1.42	2.60	2.48	4.38	2.20	2.64	2.74	1.70	1.91	1.75	2.17	2.03
Vehicle 3	2.03	2.72	2.14	1.94	2.72	2.18	2.73	1.62	2.25	2.29	1.99	1.86	1.77	2.36	1.99
Vehicle 4	1.54	2.19	1.96	1.82	2.48	2.04	2.35	1.79	1.68	1.72	2.32	1.64	2.24	1.63	2.32
Vehicle 5	1.72	1.69	1.96	1.89	1.86	2.24	2.32	1.92	1.60	1.73	3.06	1.49	1.98	2.52	1.80
Vehicle 6	1.62	1.53	1.51	1.93	1.56	1.93	1.85	2.11	1.66	2.55	2.27	0.46	1.83	1.66	1.76
Vehicle 7	1.92	1.55	2.21	1.97	1.78	2.50	1.56	2.27	1.59	2.09	1.44	2.80	1.60	1.36	1.55
Vehicle 8	1.94	1.40	1.68	2.00	2.07	2.32	1.68	2.36	1.97	2.29	1.48	2.07	1.96	1.29	1.48
Vehicle 9	2.08	1.53		1.78	1.68	1.76		2.02	1.62	1.41	1.42		2.06	1.33	1.71
Vehicle 10	1.54				2.30	1.99		1.92	2.22	2.48			1.84		1.95
Vehicle 11	1.91				2.53			1.34	1.88	1.39					
Vehicle 12	1.78							1.41	2.10	2.74					

	Study Results														
No. vehicles used in cycle	12	9	8	9	11	10	8	12	12	12	9	8	10	9	10
Time of Vehicle 4 (s)	5.68	7.26	6.81	5.18	7.80	6.70	9.46	5.61	6.57	6.75	6.01	5.41	5.76	6.16	6.34
Time of Last Vehicle (s)	20.19	14.96	14.17	14.75	21.58	19.44	16.87	20.96	21.21	23.43	15.68	12.23	17.03	14.32	16.59
Avg Sat Headway (s/veh)	1.81	1.54	1.84	1.91	1.97	2.12	1.85	1.92	1.83	2.09	1.93	1.70	1.88	1.63	1.71
Unadj. Sat. Flow (veh/h/ln)	1985	2338	1957	1881	1829	1695	1943	1876	1967	1727	1861	2111	1917	2206	2107

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

WisDOT Signalized Intersection Capacity Study

Location ID: 19
Intersection Location: WIS 54 / W Mason St & N Military Ave
Approach Direction: EB
Approach Configuration: 5
Population Group: 100 to 250

Video Date: 5/12/15 - 5/14/15
County: Brown
Region: NE
Municipality: Green Bay
Approach AADT: 22600

Cycle #	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Lane Studied	1	2	1	2	1	2	1	2	2	2	1	1	1	1	2
Start of Green	7:23 AM	7:23 AM	7:25 AM	7:25 AM	7:30 AM	4:07 PM	4:25 PM	4:25 PM	4:27 PM	4:33 PM	4:39 PM	4:40 PM	4:43 PM	4:43 PM	4:43 PM
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)															
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	2.88	1.07	2.00	3.00	2.58	2.70	2.32	1.90	1.84	2.80	2.20	2.47	1.83	2.23	1.89
Vehicle 3	2.08	2.95	2.76	1.61	2.34	2.58	1.71	2.72	3.62	1.55	1.91	3.47	2.33	2.00	1.86
Vehicle 4	2.20	1.99	2.44	1.89	2.68	2.52	1.89	3.01	1.56	3.53	2.83	1.89	3.04	2.93	2.05
Vehicle 5	2.76	2.00	2.16	2.02	1.57	3.25	1.77	2.46	2.19	3.24	2.13	2.44	1.77	2.02	3.25
Vehicle 6	1.61	2.49	1.99	1.74	2.51	1.86	2.07	2.29	2.61	2.55	2.55	1.73	1.57	1.71	2.09
Vehicle 7	1.84	2.77	2.41	1.79	1.68	2.06	1.61	1.87	2.51	2.75	1.45	1.98	1.71	1.77	2.01
Vehicle 8	1.93	2.04	2.06	2.37	2.32	2.41	1.54	1.83	1.59	1.63	1.43	2.83	2.56	2.06	1.39
Vehicle 9	1.70	1.80		2.78	1.61	2.50	1.72	2.91	2.07	1.77	1.32	1.98			
Vehicle 10	1.75			2.05	1.92	1.60	2.85	2.57	2.07	1.53	1.76	1.70			
Vehicle 11				2.11	2.09		1.79	1.85				1.63			
Vehicle 12							1.58	2.43							

	Study Results														
No. vehicles used in cycle	10	9	8	11	11	10	12	12	10	10	10	11	8	8	8
Time of Vehicle 4 (s)	7.16	6.01	7.20	6.50	7.60	7.80	5.92	7.63	7.02	7.88	6.94	7.83	7.20	7.16	5.80
Time of Last Vehicle (s)	18.75	17.11	15.82	21.36	21.30	21.48	20.85	25.84	20.06	21.35	17.58	22.12	14.81	14.72	14.54
Avg Sat Headway (s/veh)	1.93	2.22	2.15	2.12	1.96	2.28	1.87	2.28	2.17	2.25	1.77	2.04	1.90	1.89	2.18
Unadj. Sat. Flow (veh/h/ln)	1864	1622	1671	1696	1839	1579	1929	1582	1656	1604	2030	1763	1892	1905	1648

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

Saturation Flow Study Summary Sheet

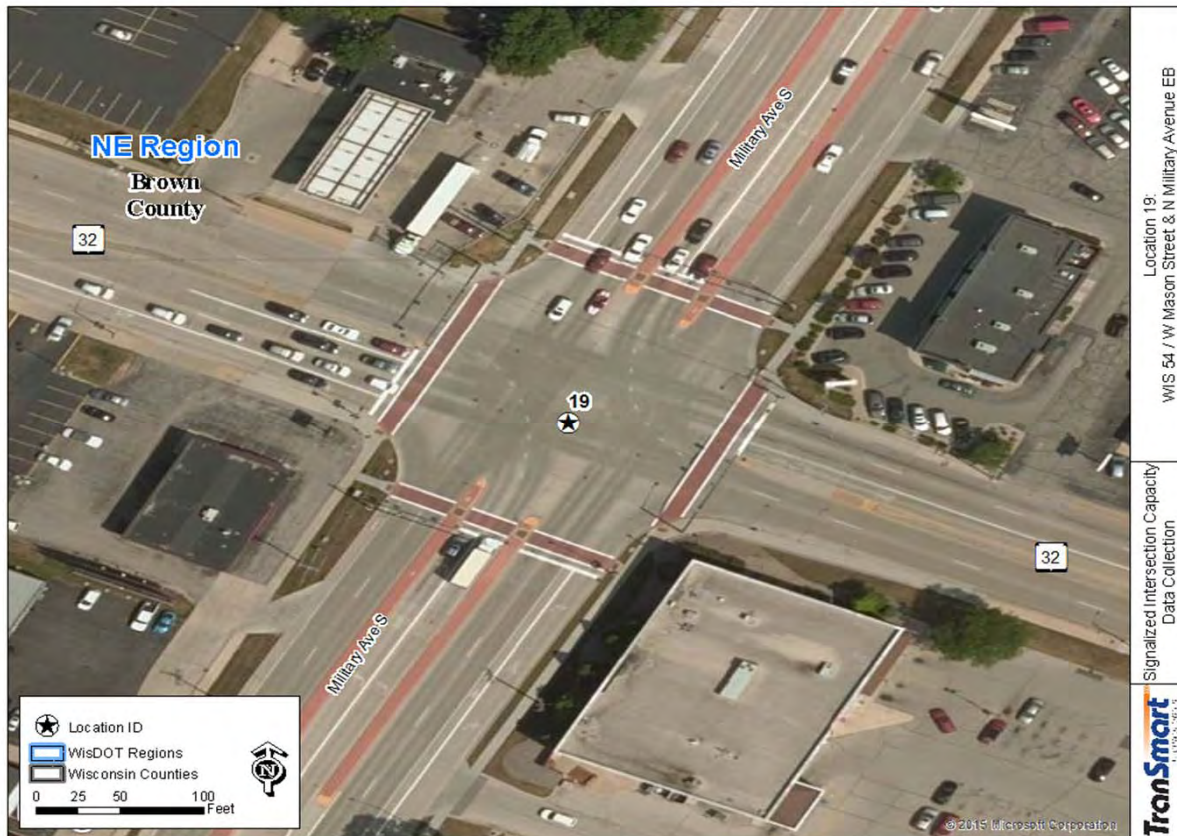
Intersection Information:

Intersection:	WIS 54 / W Mason St & N Military Ave
Major Street:	WIS 54/Mason
Minor Street:	Military Ave.
Study Approach:	EB
Approach Configuration:	5
Population Group:	100 to 250
Cycles by Date:	5/12 (1-20), 5/13 (21-40), 5/14 (41-60)

Video Date:	5/12/15 - 5/14/15
WisDOT Region:	NE
Nearest Municipality:	Green Bay
County:	Brown
Weather:	Clear
Pavement:	Dry
Observer:	Kevin B.

Data Collection Summary Data:

Cycles Studied:	60
Average number of vehicles per cycle:	10
Headways Measured (queue vehicles > 4) :	352
% Heavy Vehicles (of headways measured):	0.0%
% RT Vehicles (of headways measured):	0.0%
Average Saturation Flow Headway (s):	2.00
Standard Deviation of All Headways:	0.44
Standard Deviation of Cycle Headways:	0.20
Unadjusted Median Sat Flow Rate (veh/ln.hr):	1836
Unadjusted Avg Sat Flow Rate (veh/ln/hr):	1796



WisDOT Signalized Intersection Capacity Study

Location ID:	20	Video Date:	5/12/15 - 5/15/15
Intersection Location:	County AAA / Oneida St & County VK / Lombardi Ave	County:	Brown
Approach Direction:	EB	Region:	NE
Approach Configuration:	5	Municipality:	Green Bay
Population Group:	100 to 250	Approach AADT:	18400

Cycle #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Lane Studied	2	2	2	1	1	2	2	2	1	2	2	2	2	2	1
Start of Green	3:45 PM	4:18 PM	5:09 PM	7:19 AM	7:20 AM	7:23 AM	7:35 AM	7:47 AM	7:49 AM	7:49 AM	7:51 AM	7:56 AM	8:00 AM	4:27 PM	4:53 PM
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)									1				1		
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	3.60	3.45	2.50	2.42	2.35	2.33	2.71	2.49	2.10	2.46	2.91	2.13	2.51	2.50	3.47
Vehicle 3	2.56	1.77	1.70	2.12	1.96	2.15	2.10	1.91	2.35	2.56	3.13	2.41	2.04	2.07	2.02
Vehicle 4	2.52	2.57	2.00	2.98	2.20	2.61	2.59	1.86	3.11	3.17	3.02	2.90	1.58	1.78	2.07
Vehicle 5	1.92	1.79	2.39	1.79	1.40	2.18	0.80	1.66	1.27	4.16	1.89	1.21	2.86	2.43	2.40
Vehicle 6	2.73	2.52	1.52	1.66	2.59	1.41	2.45	1.87	2.90	1.53	2.84	2.11	2.90	2.44	1.66
Vehicle 7	2.12	1.46	1.96	1.96	1.85	1.39	1.92	1.97	2.90	1.16	2.66	1.87	1.96	1.69	1.73
Vehicle 8	1.32	2.10	1.89	1.90	1.53	1.43	2.04	1.73	2.45	1.93	2.56	1.92	2.24	2.69	1.59
Vehicle 9	3.16					1.74	1.60	2.65	2.05	1.91			1.68	2.46	
Vehicle 10	1.21					1.51		1.46	1.52				1.88	2.37	
Vehicle 11	1.68					2.73		1.62	1.94				1.73		
Vehicle 12								1.61					1.80		

	Study Results														
No. vehicles used in cycle	11	8	8	8	8	11	9	12	11	9	8	8	12	10	8
Time of Vehicle 4 (s)	8.68	7.79	6.20	7.52	6.51	7.09	7.40	6.26	7.56	8.19	9.06	7.44	6.13	6.35	7.56
Time of Last Vehicle (s)	22.82	15.66	13.96	14.83	13.88	19.48	16.21	20.83	22.59	18.88	19.01	14.55	23.18	20.43	14.94
Avg Sat Headway (s/veh)	2.02	1.97	1.94	1.83	1.84	1.77	1.76	1.82	2.15	2.14	2.49	1.78	2.13	2.35	1.84
Unadj. Sat. Flow (veh/h/ln)	1782	1830	1856	1970	1954	2034	2043	1977	1677	1684	1447	2025	1689	1534	1951

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

WisDOT Signalized Intersection Capacity Study

Location ID:	20	Video Date:	5/12/15 - 5/15/15
Intersection Location:	County AAA / Oneida St & County VK / Lombardi Ave	County:	Brown
Approach Direction:	EB	Region:	NE
Approach Configuration:	5	Municipality:	Green Bay
Population Group:	100 to 250	Approach AADT:	18400

Cycle #	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Lane Studied	2	1	2	2	1	2	2	1	2	1	2	1	2	1	2
Start of Green	4:55 PM	4:55 PM	5:20 PM	5:23 PM	5:23 PM	5:32 PM	5:42 PM	5:42 PM	5:47 PM	5:47 PM	5:49 PM	5:49 PM	5:50 PM	5:50 PM	5:52 PM
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)										1					
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	2.28	2.81	1.96	2.27	2.29	3.87	2.88	2.03	2.45	2.48	2.26	2.30	2.12	2.63	2.11
Vehicle 3	1.22	3.62	2.25	1.44	2.11	1.32	2.44	1.72	2.09	1.61	2.20	2.01	1.84	2.07	3.13
Vehicle 4	3.34	1.78	2.67	3.37	1.62	2.55	2.12	2.25	2.55	1.81	2.78	1.99	2.41	1.38	1.57
Vehicle 5	1.29	2.01	1.99	1.50	2.25	1.19	2.13	2.20	1.51	2.89	2.14	1.90	1.31	1.69	3.02
Vehicle 6	1.87	2.42	2.47	2.46	1.50	1.75	2.14	3.05	1.94	1.57	1.87	1.57	1.87	2.06	1.48
Vehicle 7	1.72	2.06	2.93	1.43	1.86	1.17	1.36	1.49	2.73	2.32	2.89	2.07	1.30	1.87	1.54
Vehicle 8	1.24	1.23	1.38	2.52	1.46	3.37	1.56	1.46	2.00	2.82	1.45	2.06	1.49	2.92	1.85
Vehicle 9	2.01			1.76	1.36		2.43	2.03	2.10	2.05	2.10	1.42	1.60		2.33
Vehicle 10	1.87			1.33	2.28				1.45	2.99	1.62				1.92
Vehicle 11	1.32			2.30											
Vehicle 12	1.88														

	Study Results														
No. vehicles used in cycle	12	8	8	11	10	8	9	9	10	10	10	9	9	8	10
Time of Vehicle 4 (s)	6.84	8.21	6.88	7.08	6.02	7.74	7.44	6.00	7.09	5.90	7.24	6.30	6.37	6.08	6.81
Time of Last Vehicle (s)	20.04	15.93	15.65	20.38	16.73	15.22	17.06	16.23	18.82	20.54	19.31	15.32	13.94	14.62	18.95
Avg Sat Headway (s/veh)	1.65	1.93	2.19	1.90	1.78	1.87	1.92	2.05	1.95	2.44	2.01	1.80	1.51	2.14	2.02
Unadj. Sat. Flow (veh/h/ln)	2182	1865	1642	1895	2017	1925	1871	1760	1841	1475	1790	1996	2378	1686	1779

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

WisDOT Signalized Intersection Capacity Study

Location ID:	20	Video Date:	5/12/15 - 5/15/15
Intersection Location:	County AAA / Oneida St & County VK / Lombardi Ave	County:	Brown
Approach Direction:	EB	Region:	NE
Approach Configuration:	5	Municipality:	Green Bay
Population Group:	100 to 250	Approach AADT:	18400

Cycle #	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Lane Studied	2	2	2	2	2	1	2	1	2	1	2	1	2	1	2
Start of Green	5:56 PM	6:07 PM	7:51 AM	7:53 AM	7:55 AM	7:55 AM	3:51 PM	3:51 PM	3:58 PM	4:12 PM	4:17 PM	4:59 PM	5:08 PM	5:19 PM	5:35 PM
Heavy Vehicles (1-4)								1							
Heavy Vehicles (5-12)															
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	2.81	2.12	2.98	2.72	3.13	2.18	2.17	2.47	2.88	1.65	2.84	2.06	2.49	3.15	2.09
Vehicle 3	1.83	2.49	1.67	2.05	3.03	2.26	2.64	1.75	1.78	1.62	2.55	3.18	2.28	1.97	2.87
Vehicle 4	1.67	1.98	2.15	2.28	1.80	1.57	1.64	2.74	2.64	1.82	1.88	2.48	2.11	2.09	2.87
Vehicle 5	1.96	1.62	1.66	1.87	1.41	1.42	2.78	3.28	2.68	2.01	1.78	1.45	1.24	1.58	1.84
Vehicle 6	1.75	2.73	1.81	1.73	2.42	1.90	1.57	1.56	1.64	2.43	2.19	1.88	2.18	1.52	2.37
Vehicle 7	1.34	2.30	2.58	2.66	1.84	1.87	1.85	1.74	2.14	1.65	1.13	2.13	3.05	2.35	1.89
Vehicle 8	1.38	2.61	1.81	1.99	1.83	1.50	2.76	1.28	2.47	1.56	1.86	1.65	2.21	2.40	2.03
Vehicle 9	1.48		2.48	3.52	1.86		1.53						1.50		1.41
Vehicle 10				1.52	2.03		1.48						1.52		
Vehicle 11					1.81		2.57						2.08		
Vehicle 12															

	Study Results														
No. vehicles used in cycle	9	8	9	10	11	8	11	8	8	8	8	8	11	8	9
Time of Vehicle 4 (s)	6.31	6.59	6.80	7.05	7.96	6.01	6.45	6.96	7.30	5.09	7.27	7.72	6.88	7.21	7.83
Time of Last Vehicle (s)	14.22	15.85	17.14	20.34	21.16	12.70	20.99	14.82	16.23	12.74	14.23	14.83	20.66	15.06	17.37
Avg Sat Headway (s/veh)	1.58	2.32	2.07	2.22	1.89	1.67	2.08	1.97	2.23	1.91	1.74	1.78	1.97	1.96	1.91
Unadj. Sat. Flow (veh/h/ln)	2276	1555	1741	1625	1909	2152	1733	1832	1613	1882	2069	2025	1829	1834	1887

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

WisDOT Signalized Intersection Capacity Study

Location ID:	20	Video Date:	5/12/15 - 5/15/15
Intersection Location:	County AAA / Oneida St & County VK / Lombardi Ave	County:	Brown
Approach Direction:	EB	Region:	NE
Approach Configuration:	5	Municipality:	Green Bay
Population Group:	100 to 250	Approach AADT:	18400

Cycle #	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Lane Studied	2	2	1	2	1	2	2	2	1	2	2				
Start of Green	5:36 PM	5:40 PM	5:48 PM	5:50 PM	5:50 PM	6:03 PM	7:46 AM	7:50 AM	7:50 AM	7:52 AM	7:59 AM				
Heavy Vehicles (1-4)										1					
Heavy Vehicles (5-12)															
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	2.24	2.02	2.65	2.10	2.03	2.67	2.31	2.29	1.86	2.61	2.62				
Vehicle 3	1.83	2.64	2.30	2.49	2.74	2.01	1.87	3.03	2.95	2.99	1.71				
Vehicle 4	1.82	1.91	2.58	1.89	2.01	1.78	1.67	2.44	1.49	2.11	1.96				
Vehicle 5	3.00	1.50	1.45	2.57	1.90	1.99	1.81	1.93	1.51	1.85	1.59				
Vehicle 6	1.45	1.58	1.45	1.72	1.49	1.43	1.98	1.52	2.03	2.70	1.71				
Vehicle 7	1.75	1.97	1.52	1.68	2.17	1.55	1.35	2.06	1.49	1.56	2.09				
Vehicle 8	1.31	1.62	1.64	2.14	1.66	1.42	1.59	1.58	1.47	1.49	1.88				
Vehicle 9				1.86	1.40	1.46	1.80	1.62		1.73	1.50				
Vehicle 10				1.59	1.67			1.85		1.90					
Vehicle 11				1.62	1.92			1.75		2.85					
Vehicle 12				1.93	1.78			1.98							

	Study Results														
No. vehicles used in cycle	8	8	8	12	12	9	9	12	8	11	9				
Time of Vehicle 4 (s)	5.89	6.57	7.53	6.48	6.78	6.46	5.85	7.76	6.30	7.71	6.29				
Time of Last Vehicle (s)	13.40	13.24	13.59	21.59	20.77	14.31	14.38	22.05	12.80	21.79	15.06				
Avg Sat Headway (s/veh)	1.88	1.67	1.51	1.89	1.75	1.57	1.71	1.79	1.63	2.01	1.75				
Unadj. Sat. Flow (veh/h/ln)	1917	2159	2376	1906	2059	2293	2110	2015	2215	1790	2052				

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

Saturation Flow Study Summary Sheet

Intersection Information:

Intersection:	County AAA / Oneida St & County VK / Lombardi Ave
Major Street:	County VK / Lombardi Ave
Minor Street:	County AAA / Oneida St
Study Approach:	EB
Approach Configuration:	5
Population Group:	100 to 250
Cycles by Date:	5/12/15 (1-3) 5/13/15 (4-32) 5/14/15(33-51) 5/15/15 (52-56)

Video Date:	5/12/15 - 5/15/15
WisDOT Region:	NE
Nearest Municipality:	Green Bay
County:	Brown
Weather:	Clear
Pavement:	Dry
Observer:	Allen N.

Data Collection Summary Data:

Cycles Studied:	56
Average number of vehicles per cycle:	9
Headways Measured (queue vehicles > 4) :	298
% Heavy Vehicles (of headways measured):	1.0%
% RT Vehicles (of headways measured):	0.0%
Average Saturation Flow Headway (s):	1.92
Standard Deviation of All Headways:	0.50
Standard Deviation of Cycle Headways:	0.22
Unadjusted Median Sat Flow Rate (veh/ln.hr):	1891
Unadjusted Avg Sat Flow Rate (veh/ln/hr):	1874



WisDOT Signalized Intersection Capacity Study

Location ID: 21
Intersection Location: US 10 / Oneida St & Midway Rd
Approach Direction: EB
Approach Configuration: 1
Population Group: 100 to 250

Video Date: 5/11/15 - 5/12/15
County: Outagamie
Region: NE
Municipality: Menasha
Approach AADT: 9000

Cycle #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Lane Studied	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Start of Green	4:22 PM	4:24 PM	4:28 PM	4:30 PM	4:31 PM	4:34 PM	4:36 PM	4:37 PM	4:39 PM	4:40 PM	4:43 PM	4:45 PM	4:46 PM	4:48 PM	4:49 PM
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)	1				1				1			1			
Right Turns (1-4)	1			1	1		1						2		1
Right Turns (5-12)		1	1		1	2		1	4	1	1	1	1	3	1

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	2.29	2.33	2.40	2.48	2.97	3.34	3.94	2.20	2.58	2.48	2.53	3.03	3.22	3.50	3.06
Vehicle 3	2.62	2.05	2.48	2.46	2.52	2.38	2.18	2.35	2.30	2.23	2.61	2.88	2.49	2.49	1.93
Vehicle 4	2.08	1.90	1.98	1.60	1.93	1.92	2.21	3.28	2.29	2.71	2.03	2.38	2.30	2.16	2.40
Vehicle 5	2.03	1.90	2.54	1.56	2.52	2.15	1.86	1.72	2.04	1.71	2.54	2.28	2.58	1.44	2.53
Vehicle 6	1.91	2.01	3.03	1.14	1.74	1.66	1.93	3.52	2.40	2.72	0.94	2.15	1.79	3.37	1.55
Vehicle 7	3.27	2.10	2.24	2.46	1.45	2.00	3.64	1.88	1.69	2.21	2.84	4.47	1.76	2.20	3.43
Vehicle 8	3.86	2.62	2.09	1.72	3.13	1.79	0.39	1.64	2.35	1.89	1.53	2.02	2.45	1.89	1.90
Vehicle 9	1.61	2.05	3.20	1.63	3.36		2.50	1.57	1.89	1.29	2.51	1.97	1.82	2.82	1.97
Vehicle 10		1.44			2.30		1.75	2.38	2.22	2.22		3.08	1.58	1.64	
Vehicle 11		1.98			1.98		1.97	1.75	3.16			3.35		2.81	
Vehicle 12								1.88	2.01					2.10	

	Study Results														
No. vehicles used in cycle	9	11	9	9	11	8	11	12	12	10	9	11	10	12	9
Time of Vehicle 4 (s)	6.99	6.28	6.86	6.54	7.42	7.64	8.33	7.83	7.17	7.42	7.17	8.29	8.01	8.15	7.39
Time of Last Vehicle (s)	19.67	20.38	19.96	15.05	23.90	15.24	22.37	24.17	24.93	19.46	17.53	27.61	19.99	26.42	18.77
Avg Sat Headway (s/veh)	2.54	2.01	2.62	1.70	2.35	1.90	2.01	2.04	2.22	2.01	2.07	2.76	2.00	2.28	2.28
Unadj. Sat. Flow (veh/h/ln)	1420	1787	1374	2115	1529	1895	1795	1763	1622	1794	1737	1304	1803	1576	1582

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

WisDOT Signalized Intersection Capacity Study

Location ID: 21
Intersection Location: US 10 / Oneida St & Midway Rd
Approach Direction: EB
Approach Configuration: 1
Population Group: 100 to 250

Video Date: 5/11/15 - 5/12/15
County: Outagamie
Region: NE
Municipality: Menasha
Approach AADT: 9000

Cycle #	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Lane Studied	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Start of Green	4:55 PM	4:57 PM	5:00 PM	5:01 PM	5:15 PM	5:18 PM	5:19 AM	5:21 PM	5:24 PM	5:33 PM	5:42 PM	3:00 PM	3:06 PM	3:09 PM	3:12 PM
Heavy Vehicles (1-4)											1				
Heavy Vehicles (5-12)															1
Right Turns (1-4)	1	1	2	1	2	1		2	2	1	1				
Right Turns (5-12)	2			3	2	1		1	2	1	1	2	1	3	1

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	4.70	2.21	3.35	1.78	2.65	2.96	2.98	2.63	3.22	3.52	2.89	2.09	2.49	3.29	2.16
Vehicle 3	3.06	3.44	2.73	3.16	2.75	1.77	2.32	2.77	2.33	2.37	1.70	2.23	2.95	2.35	2.37
Vehicle 4	2.51	3.19	2.27	3.29	2.49	1.83	1.63	2.32	2.17	1.97	2.19	2.28	2.54	2.52	1.81
Vehicle 5	2.93	2.21	1.77	1.83	2.59	3.03	1.99	3.16	2.53	2.20	2.30	1.78	2.87	3.09	4.55
Vehicle 6	2.35	1.48	2.70	1.63	1.50	2.25	1.54	1.60	1.55	3.19	1.59	2.76	1.74	1.81	3.58
Vehicle 7	2.16	2.17	2.07	1.78	1.39	1.95	2.56	2.71	3.28	1.86	1.55	3.08	3.27	2.08	2.23
Vehicle 8	1.49	1.90	2.11	2.33	3.02	2.14	2.25	1.95	1.90	1.59	2.21	2.63	2.94	2.07	1.96
Vehicle 9	1.94		2.01	1.95	2.64			1.66	1.74		1.82	2.66	2.08	2.22	2.17
Vehicle 10			2.43	3.18	1.58						2.20		2.90		1.76
Vehicle 11			1.79	2.50	2.04								3.31		1.65
Vehicle 12			1.59	3.08									2.56		2.03

	Study Results														
No. vehicles used in cycle	9	8	12	12	11	8	8	9	9	8	10	9	12	9	12
Time of Vehicle 4 (s)	10.27	8.84	8.35	8.23	7.89	6.56	6.93	7.72	7.72	7.86	6.78	6.60	7.98	8.16	6.34
Time of Last Vehicle (s)	21.14	16.60	24.82	26.51	22.65	15.93	15.27	18.80	18.72	16.70	18.45	19.51	29.65	19.43	26.27
Avg Sat Headway (s/veh)	2.17	1.94	2.06	2.28	2.11	2.34	2.08	2.22	2.20	2.21	1.94	2.58	2.71	2.25	2.49
Unadj. Sat. Flow (veh/h/ln)	1656	1856	1749	1575	1707	1537	1727	1625	1636	1629	1851	1394	1329	1597	1445

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

WisDOT Signalized Intersection Capacity Study

Location ID: 21
Intersection Location: US 10 / Oneida St & Midway Rd
Approach Direction: EB
Approach Configuration: 1
Population Group: 100 to 250

Video Date: 5/11/15 - 5/12/15
County: Outagamie
Region: NE
Municipality: Menasha
Approach AADT: 9000

Cycle #	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Lane Studied	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Start of Green	3:28 PM	3:30 PM	3:31 PM	3:33 PM	3:46 PM	3:48 PM	3:52 PM	3:54 PM	3:58 PM	4:00 PM	4:06 PM	4:07 PM	4:10 PM	4:15 PM	4:18 PM
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)				1				1					1	1	
Right Turns (1-4)	1	1			2		2		1		1			1	1
Right Turns (5-12)		1		4	1	2	2	1	2	2		2			1

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	2.57	3.71	2.69	3.95	4.68	2.52	2.91	3.91	2.10	2.59	3.66	2.83	2.56	2.98	3.83
Vehicle 3	2.10	1.63	2.34	2.24	3.24	2.06	2.37	2.60	3.14	1.98	2.05	3.02	1.97	2.30	2.64
Vehicle 4	2.47	1.89	2.17	2.51	2.11	1.83	3.08	2.22	2.20	1.11	3.04	1.60	2.46	1.69	1.88
Vehicle 5	1.71	2.21	2.81	2.03	1.84	2.86	1.99	1.71	2.59	3.37	1.64	2.66	2.39	1.76	1.54
Vehicle 6	1.69	1.91	1.80	2.01	1.59	1.94	2.01	1.59	2.15	1.80	3.32	2.54	1.91	4.58	2.05
Vehicle 7	3.44	1.26	2.65	2.44	1.54	2.11	1.76	1.60	1.02	2.11	1.86	1.99	1.77	1.45	1.61
Vehicle 8	1.69	2.27	1.31	1.78	2.59	2.16	1.89	2.03	3.05	1.81	2.28	2.42	1.95	2.55	2.82
Vehicle 9	1.84	2.23	2.52	2.44	2.31		2.48			1.08	2.13	2.38	2.33	1.78	2.13
Vehicle 10		1.75		2.53	2.42		3.38			1.90	2.42		2.14		
Vehicle 11				2.76	1.88		1.82			1.97			1.75		
Vehicle 12				1.68	2.19		1.85						2.71		

	Study Results														
No. vehicles used in cycle	9	10	9	12	12	8	12	8	8	11	10	9	12	9	9
Time of Vehicle 4 (s)	7.14	7.23	7.20	8.70	10.03	6.41	8.36	8.73	7.44	5.68	8.75	7.45	6.99	6.97	8.35
Time of Last Vehicle (s)	17.51	18.86	18.29	26.37	26.39	15.48	25.54	15.66	16.25	19.72	22.40	19.44	23.94	19.09	18.50
Avg Sat Headway (s/veh)	2.07	1.94	2.22	2.21	2.04	2.27	2.15	1.73	2.20	2.01	2.28	2.40	2.12	2.42	2.03
Unadj. Sat. Flow (veh/h/ln)	1736	1857	1623	1630	1760	1588	1676	2078	1635	1795	1582	1501	1699	1485	1773

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

WisDOT Signalized Intersection Capacity Study

Location ID: 21
Intersection Location: US 10 / Oneida St & Midway Rd
Approach Direction: EB
Approach Configuration: 1
Population Group: 100 to 250

Video Date: 5/11/15 - 5/12/15
County: Outagamie
Region: NE
Municipality: Menasha
Approach AADT: 9000

Cycle #	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Lane Studied	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Start of Green	4:21 PM	4:22 PM	4:31 PM	4:36 PM	4:40 PM	4:42 PM	4:46 PM	4:49 PM	5:04 PM	5:07 PM	5:09 PM	5:15 PM	5:16 PM	5:19 PM	
Heavy Vehicles (1-4)										1					
Heavy Vehicles (5-12)										1					
Right Turns (1-4)	1		3		1					3		2			
Right Turns (5-12)	1	1	3	1	2	3	3	1	1	4	2	2		1	

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	2.00	2.86	2.65	6.52	2.80	1.94	2.11	2.96	2.34	3.37	2.74	2.43	1.93	2.57	
Vehicle 3	2.53	1.73	3.03	2.72	3.26	2.21	2.86	1.72	2.09	3.05	2.45	2.74	1.98	2.29	
Vehicle 4	3.24	3.10	2.51	2.71	1.92	1.73	3.52	1.75	1.80	2.92	1.57	2.00	2.02	2.29	
Vehicle 5	2.29	2.64	2.72	2.16	2.37	3.21	1.28	2.02	2.11	3.10	2.41	2.65	2.16	2.17	
Vehicle 6	2.55	3.08	3.05	1.67	1.22	3.36	4.08	1.75	2.93	1.95	2.08	1.72	2.72	2.68	
Vehicle 7	2.31	1.95	3.11	2.09	2.22	1.87	1.98	1.63	1.88	2.42	2.42	3.60	2.47	2.13	
Vehicle 8	1.52	2.86	2.13	1.56	2.02	1.62	2.37	3.30	1.98	1.55	2.24	2.34	2.02	2.61	
Vehicle 9	2.06	1.53	1.94	2.05		2.90	2.22	2.17	1.66	2.06	2.22	1.27	1.50	1.84	
Vehicle 10	2.03	1.99	2.48	1.61		1.77	2.16	2.79	1.46	3.51	1.52	1.62		1.56	
Vehicle 11				2.46		2.32	2.63		3.22	2.52	1.95	2.67			
Vehicle 12							2.14		1.50	2.88	1.86	2.00			

	Study Results														
No. vehicles used in cycle	10	10	10	11	8	11	12	10	12	12	12	12	9	10	
Time of Vehicle 4 (s)	7.77	7.69	8.19	11.95	7.98	5.88	8.49	6.43	6.23	9.34	6.76	7.17	5.93	7.15	
Time of Last Vehicle (s)	20.53	21.74	23.62	25.55	15.81	22.93	27.35	20.09	22.97	29.33	23.46	25.04	16.80	20.14	
Avg Sat Headway (s/veh)	2.13	2.34	2.57	1.94	1.96	2.44	2.36	2.28	2.09	2.50	2.09	2.23	2.17	2.16	
Unadj. Sat. Flow (veh/h/ln)	1693	1537	1400	1853	1839	1478	1527	1581	1720	1441	1725	1612	1656	1663	

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

Saturation Flow Study Summary Sheet

Intersection Information:

Intersection:	US 10 / Oneida St & Midway Rd
Major Street:	US 10 / Oneida
Minor Street:	Midway Road
Study Approach:	EB
Approach Configuration:	1
Population Group:	100 to 250
Cycles by Date:	5/11/15 (1-26) 5/12/15 (27-60)

Video Date:	5/11/15 - 5/12/15
WisDOT Region:	NE
Nearest Municipality:	Menasha
County:	Outagamie
Weather:	Clear
Pavement:	Dry
Observer:	Allen N.

Data Collection Summary Data:

Cycles Studied:	59
Average number of vehicles per cycle:	10
Headways Measured (queue vehicles > 4) :	360
% Heavy Vehicles (of headways measured):	2.8%
% RT Vehicles (of headways measured):	22.5%
Average Saturation Flow Headway (s):	2.21
Standard Deviation of All Headways:	0.60
Standard Deviation of Cycle Headways:	0.22
Unadjusted Median Sat Flow Rate (veh/ln.hr):	1636
Unadjusted Avg Sat Flow Rate (veh/ln/hr):	1631



WisDOT Signalized Intersection Capacity Study

Location ID: 22
Intersection Location: Carmichael Rd & Crest View Dr
Approach Direction: NB
Approach Configuration: 3
Population Group: < 25

Video Date: 4/27/15-4/29/15
County: St Croix
Region: NW
Municipality: Hudson
Approach AADT: 15500

Cycle #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Lane Studied	1	1	1	2	1	1	3	1	2	3	1	3	3	3	2
Start of Green	2:43 PM	2:47 PM	3:07 PM	3:20 PM	3:36 PM	3:38 PM	3:44 PM	3:51 PM	4:07 PM	4:16 PM	4:18 PM	4:21 PM	4:23 PM	4:24 PM	4:31 PM
Heavy Vehicles (1-4)							1								
Heavy Vehicles (5-12)															
Right Turns (1-4)														2	
Right Turns (5-12)							1			1					

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	2.62	2.90	1.90	2.72	3.21	3.82	3.60	3.26	3.14	2.18	2.16	2.39	1.91	2.18	2.61
Vehicle 3	2.87	2.22	1.91	3.27	1.90	2.43	3.31	1.88	2.84	2.35	1.91	1.83	2.01	2.57	3.66
Vehicle 4	2.10	1.81	1.88	1.89	2.48	1.55	2.86	1.80	1.94	2.75	2.50	1.93	1.11	2.20	2.85
Vehicle 5	2.64	2.31	2.89	1.69	2.22	1.99	2.56	1.29	2.46	0.62	2.00	2.04	1.54	1.63	1.89
Vehicle 6	3.35	1.89	1.86	1.65	1.89	1.96	1.60	3.23	1.58	3.62	2.66	1.73	1.51	2.19	2.37
Vehicle 7	3.10	1.94	2.73	2.22	1.74	2.22	1.43	2.35	2.12	1.72	3.11	1.01	1.76	2.48	1.83
Vehicle 8	3.66	2.37	2.45	1.68	2.27	1.92	1.94	1.88	2.67	2.29	1.96	2.26	2.02	1.50	1.41
Vehicle 9		1.82				1.94		2.47		1.73			1.62	1.19	
Vehicle 10								1.39					1.58	1.10	
Vehicle 11													2.04		
Vehicle 12															

	Study Results														
No. vehicles used in cycle	8	9	8	8	8	9	8	10	8	9	8	8	11	10	8
Time of Vehicle 4 (s)	7.59	6.93	5.69	7.88	7.59	7.80	9.77	6.94	7.92	7.28	6.57	6.15	5.03	6.95	9.12
Time of Last Vehicle (s)	20.34	17.26	15.62	15.12	15.71	17.83	17.30	19.55	16.75	17.26	16.30	13.19	17.10	17.04	16.62
Avg Sat Headway (s/veh)	3.19	2.07	2.48	1.81	2.03	2.01	1.88	2.10	2.21	2.00	2.43	1.76	1.72	1.68	1.88
Unadj. Sat. Flow (veh/h/ln)	1129	1742	1450	1989	1773	1795	1912	1713	1631	1804	1480	2045	2088	2141	1920

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

WisDOT Signalized Intersection Capacity Study

Location ID: 22
Intersection Location: Carmichael Rd & Crest View Dr
Approach Direction: NB
Approach Configuration: 3
Population Group: < 25

Video Date: 4/27/15-4/29/15
County: St Croix
Region: NW
Municipality: Hudson
Approach AADT: 15500

Cycle #	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Lane Studied	2	3	1	2	3	1	1	1	1	1	1	1	1	1	1
Start of Green	4:34 PM	4:38 PM	4:51 PM	4:56 PM	4:58 PM	5:01 PM	5:03 PM	5:04 PM	6:53 AM	7:05 AM	7:15 AM	7:17 AM	7:19 AM	7:29 AM	7:35 AM
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)															
Right Turns (1-4)															
Right Turns (5-12)		2			1										

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	2.42	2.75	2.71	2.66	2.36	2.57	1.69	1.93	2.53	2.17	3.18	2.69	2.50	2.52	3.14
Vehicle 3	2.73	2.55	2.84	1.91	1.05	2.10	2.68	2.04	1.53	3.24	2.56	1.82	2.49	1.79	1.78
Vehicle 4	0.87	2.05	2.41	1.68	2.66	1.97	2.06	1.88	2.15	2.64	1.73	2.52	1.58	1.58	2.53
Vehicle 5	2.35	1.42	2.55	2.52	2.24	1.51	3.03	2.43	1.71	1.91	1.48	1.93	2.09	1.92	2.44
Vehicle 6	1.47	1.11	1.93	1.71	2.10	1.85	2.21	2.26	1.38	1.95	1.97	1.59	3.27	1.77	1.50
Vehicle 7	3.22	2.46	1.83	2.04	2.02	2.45	2.00	2.29	2.27	1.77	2.29	1.39	2.11	1.86	1.92
Vehicle 8	2.98	1.25	2.75	2.27	2.32	1.79	1.88	3.09	1.57	1.79	2.53	1.54	1.73	1.38	2.81
Vehicle 9		1.45				1.48	1.66				1.65	2.39	1.40	1.95	1.21
Vehicle 10		1.81									1.82	2.02	1.31	1.95	
Vehicle 11		1.58										1.21			
Vehicle 12		1.63													

	Study Results														
No. vehicles used in cycle	8	12	8	8	8	9	9	8	8	8	10	11	10	10	9
Time of Vehicle 4 (s)	6.02	7.35	7.96	6.25	6.07	6.64	6.43	5.85	6.21	8.05	7.47	7.03	6.57	5.89	7.45
Time of Last Vehicle (s)	16.04	20.06	17.02	14.79	14.75	15.72	17.21	15.92	13.14	15.47	19.21	19.10	18.48	16.72	17.33
Avg Sat Headway (s/veh)	2.50	1.59	2.26	2.14	2.17	1.82	2.16	2.52	1.73	1.85	1.96	1.72	1.98	1.81	1.98
Unadj. Sat. Flow (veh/h/ln)	1437	2266	1589	1686	1659	1982	1670	1430	2078	1941	1840	2088	1814	1994	1822

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

WisDOT Signalized Intersection Capacity Study

Location ID: 22
Intersection Location: Carmichael Rd & Crest View Dr
Approach Direction: NB
Approach Configuration: 3
Population Group: < 25

Video Date: 4/27/15-4/29/15
County: St Croix
Region: NW
Municipality: Hudson
Approach AADT: 15500

Cycle #	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Lane Studied	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Start of Green	7:39 AM	7:48 AM	7:50 AM	8:00 AM	8:02 AM	8:10 AM	8:18 AM	8:24 AM	8:25 AM	6:47 AM	6:50 AM	6:51 AM	7:09 AM	7:12 AM	7:15 AM
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)															
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	2.49	2.77	2.44	2.84	2.04	2.15	2.08	1.85	2.04	2.04	2.07	2.08	1.90	2.98	2.28
Vehicle 3	2.00	1.40	2.03	2.27	1.77	2.02	1.98	2.05	1.95	2.51	2.46	1.97	1.80	2.77	2.10
Vehicle 4	1.91	2.89	2.00	2.27	2.26	1.99	2.13	2.39	1.72	2.01	1.18	2.28	1.91	2.04	2.29
Vehicle 5	1.50	1.93	2.05	2.84	2.28	3.29	1.92	2.07	2.11	2.94	1.77	1.65	2.29	3.12	2.32
Vehicle 6	2.07	1.61	1.63	2.12	2.17	1.83	1.77	2.28	2.09	1.26	1.68	1.72	1.97	2.06	2.65
Vehicle 7	2.29	2.29	2.09	2.34	1.40	1.76	2.10	1.58	2.86	1.92	1.42	1.57	1.98	1.29	3.02
Vehicle 8	1.87	1.64	2.38	1.95	1.28	2.46	1.41	1.70	1.94	2.73	1.39	1.87	1.94	1.53	1.44
Vehicle 9	1.67			1.87	2.55		1.73	2.28	1.99	1.45			1.46		
Vehicle 10								1.51	1.57				1.48		
Vehicle 11															
Vehicle 12															

	Study Results														
No. vehicles used in cycle	9	8	8	9	9	8	9	10	10	9	8	8	10	8	8
Time of Vehicle 4 (s)	6.40	7.06	6.47	7.38	6.07	6.16	6.19	6.29	5.71	6.56	5.71	6.33	5.61	7.79	6.67
Time of Last Vehicle (s)	15.80	14.53	14.62	18.50	15.75	15.50	15.12	17.71	18.27	16.86	11.97	13.14	16.73	15.79	16.10
Avg Sat Headway (s/veh)	1.88	1.87	2.04	2.22	1.94	2.33	1.79	1.90	2.09	2.06	1.57	1.70	1.85	2.00	2.36
Unadj. Sat. Flow (veh/h/ln)	1915	1928	1767	1619	1860	1542	2016	1891	1720	1748	2300	2115	1942	1800	1527

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

WisDOT Signalized Intersection Capacity Study

Location ID: 22
Intersection Location: Carmichael Rd & Crest View Dr
Approach Direction: NB
Approach Configuration: 3
Population Group: < 25

Video Date: 4/27/15-4/29/15
County: St Croix
Region: NW
Municipality: Hudson
Approach AADT: 15500

Cycle #	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Lane Studied	1	1	1	1	1	1	3	1	1	1	2	3	1	2	2
Start of Green	7:30 AM	7:34 AM	7:37 AM	7:45 AM	3:15 PM	3:33 PM	3:40 PM	3:57 PM	5:03 PM	5:04 PM	5:06 PM	5:08 PM	5:14 PM	5:14 PM	5:18 PM
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)				1											
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	2.41	1.66	2.80	2.95	3.85	2.63	3.29	2.90	3.41	3.14	2.01	2.46	2.61	2.59	2.02
Vehicle 3	2.32	2.62	2.48	2.09	2.55	2.37	2.06	1.99	2.02	2.52	2.38	1.86	2.54	2.69	3.00
Vehicle 4	2.31	2.62	1.94	1.67	2.10	2.42	2.64	2.02	1.55	1.46	2.29	2.08	1.95	1.57	2.41
Vehicle 5	2.20	1.72	2.19	1.90	1.68	1.97	2.73	2.38	1.20	1.88	1.91	1.42	1.76	1.48	1.71
Vehicle 6	1.65	2.03	1.45	1.71	1.97	2.25	1.97	1.87	1.64	1.46	2.19	2.34	2.92	1.85	2.20
Vehicle 7	1.93	2.47	1.37	2.29	1.96	2.77	2.09	1.93	2.85	1.56	2.79	1.63	1.88	1.63	2.07
Vehicle 8	1.89	1.57	1.61	2.44	2.80	1.73	1.69	2.80	2.14	2.48	2.05	1.19	2.66	1.93	2.12
Vehicle 9	2.92	2.07		1.53		1.51			1.76	2.35	2.29	1.82			
Vehicle 10	1.35	1.34		1.73		1.31			2.60						
Vehicle 11															
Vehicle 12															

	Study Results														
No. vehicles used in cycle	10	10	8	10	8	10	8	8	10	9	9	9	8	8	8
Time of Vehicle 4 (s)	7.04	6.90	7.22	6.71	8.50	7.42	7.99	6.91	6.98	7.12	6.68	6.40	7.10	6.85	7.43
Time of Last Vehicle (s)	18.98	18.10	13.84	18.31	16.91	18.96	16.47	15.89	19.17	16.85	17.91	14.80	16.32	13.74	15.53
Avg Sat Headway (s/veh)	1.99	1.87	1.66	1.93	2.10	1.92	2.12	2.24	2.03	1.95	2.25	1.68	2.31	1.72	2.03
Unadj. Sat. Flow (veh/h/ln)	1809	1929	2175	1862	1712	1872	1698	1604	1772	1850	1603	2143	1562	2090	1778

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

Saturation Flow Study Summary Sheet

Intersection Information:

Intersection:	Carmichael Rd & Crest View Dr
Major Street:	Carmichael Rd
Minor Street:	Crest View Dr
Study Approach:	NB
Approach Configuration:	3
Population Group:	< 25
Cycles by Date:	4/27(1-23), 4/28(24-39), 4/29(40-60)

Date:	4/27/15-4/29/15
WisDOT Region:	NW
Nearest Municipality:	Hudson
County:	St Croix
Weather:	Sunny
Pavement:	Dry
Observer:	Kevin Brink

Data Collection Summary Data:

Cycles Studied:	60
Average number of vehicles per cycle:	9
Headways Measured (queue vehicles > 4) :	290
% Heavy Vehicles (of headways measured):	0.3%
% RT Vehicles (of headways measured):	2.0%
Average Saturation Flow Headway (s):	1.99
Standard Deviation of All Headways:	0.50
Standard Deviation of Cycle Headways:	0.28
Unadjusted Median Sat Flow Rate (veh/ln/hr):	1811
Unadjusted Saturation Flow Rate (veh/ln/hr):	1806



Location 22:
Carmichael Rd & Crest View Dr NB

Signalized Intersection Capacity
Data Collection



© 2015 Microsoft Corporation

WisDOT Signalized Intersection Capacity Study

Location ID: 23
Intersection Location: I-94 WB Ramps & Carmichael Rd
Approach Direction: NB
Approach Configuration: 5
Population Group: < 25

Video Date: 4/27/15 - 4/28/15
County: St. Croix
Region: NW
Municipality: Hudson
Approach AADT: 32600

Cycle #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Lane Studied	1	1	1	1	1	1	1	1	1	1	2	1	1	1	1
Start of Green	3:47 PM	3:48 PM	4:00 PM	4:02 PM	4:03 PM	4:05 PM	4:08 PM	4:13 PM	4:25 PM	4:35 PM	4:35 PM	4:37 PM	4:38 PM	4:42 PM	4:52 PM
Heavy Vehicles (1-4)					1										
Heavy Vehicles (5-12)													1		
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	2.30	3.00	3.49	1.76	3.79	2.98	3.00	2.68	2.78	2.40	1.95	2.99	1.65	2.23	2.57
Vehicle 3	2.16	3.38	1.72	1.98	3.37	2.79	3.38	1.51	1.53	2.08	2.24	1.72	1.91	2.40	2.67
Vehicle 4	2.21	3.02	2.06	2.43	3.05	1.81	1.56	1.82	1.72	1.67	2.08	3.11	1.90	2.05	2.21
Vehicle 5	1.59	1.51	2.31	2.15	1.87	1.76	2.48	1.72	3.26	4.01	2.34	1.15	2.68	2.62	2.76
Vehicle 6	2.23	2.00	2.03	3.83	1.62	2.87	1.95	1.56	0.49	1.65	2.19	1.27	4.22	2.71	2.97
Vehicle 7	2.50	1.88	1.15	2.37	2.86	1.99	1.89	1.76	3.01	1.30	2.72	2.11	3.35	1.38	1.91
Vehicle 8	2.12	1.44	3.31	1.11	2.57	1.46	1.65	2.42	1.52	2.11	1.81	3.00	1.84	1.41	2.48
Vehicle 9	2.08	1.80	1.62	1.82		2.33	1.80	1.47	2.52	1.87		1.81	1.96	1.21	1.52
Vehicle 10	1.51	1.90	2.38	1.96		1.35	1.95	1.62		1.42		1.95	2.00	1.83	2.05
Vehicle 11	1.81	2.06	2.29	2.03		2.17		1.74		1.50		1.42	1.95	1.38	2.67
Vehicle 12	1.87	1.98		2.71				2.47		2.16			1.84		1.36

	Study Results														
No. vehicles used in cycle	12	12	11	12	8	11	10	12	9	12	8	11	12	11	12
Time of Vehicle 4 (s)	6.67	9.40	7.27	6.17	10.21	7.58	7.94	6.01	6.03	6.15	6.27	7.82	5.46	6.68	7.45
Time of Last Vehicle (s)	22.38	23.97	22.36	24.15	19.13	21.51	19.66	20.77	16.83	22.17	15.33	20.53	25.30	19.22	25.17
Avg Sat Headway (s/veh)	1.96	1.82	2.16	2.25	2.23	1.99	1.95	1.85	2.16	2.00	2.26	1.82	2.48	1.79	2.22
Unadj. Sat. Flow (veh/h/ln)	1833	1977	1670	1602	1614	1809	1843	1951	1667	1798	1589	1983	1452	2010	1625

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

WisDOT Signalized Intersection Capacity Study

Location ID: 23
Intersection Location: I-94 WB Ramps & Carmichael Rd
Approach Direction: NB
Approach Configuration: 5
Population Group: < 25

Video Date: 4/27/15 - 4/28/15
County: St. Croix
Region: NW
Municipality: Hudson
Approach AADT: 32600

Cycle #	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Lane Studied	1	1	1	1	1	1	2	1	1	2	1	1	1	2	1
Start of Green	5:10 PM	5:13 PM	5:20 PM	5:22 PM	5:35 PM	5:37 PM	5:37 PM	5:38 PM	5:40 PM	5:40 PM	5:48 PM	5:53 PM	5:58 PM	5:58 PM	6:10 PM
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)		1	1												1
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	3.95	3.43	1.93	1.94	1.87	2.55	1.94	3.25	2.78	2.93	2.26	2.14	2.80	2.23	2.41
Vehicle 3	2.22	1.57	4.02	2.63	1.77	1.85	1.96	2.25	2.37	2.06	2.96	2.07	2.42	1.90	2.39
Vehicle 4	2.20	1.47	1.62	2.04	1.58	1.59	1.29	1.54	2.31	2.20	2.12	1.95	2.20	2.25	2.61
Vehicle 5	2.00	2.51	2.29	2.41	2.24	2.28	2.64	1.80	1.74	2.53	2.50	2.99	1.90	2.68	2.41
Vehicle 6	2.76	1.16	1.71	1.95	3.15	1.89	2.44	1.63	3.00	2.07	2.00	1.48	3.00	2.22	1.64
Vehicle 7	2.24	1.95	1.79	1.75	1.46	1.78	2.47	1.66	2.41	1.73	2.00	1.18	1.16	2.48	2.07
Vehicle 8	2.45	4.53	2.34	2.55	1.87	2.46	1.69	2.57	1.18	2.18	2.43	1.85	1.67	2.48	1.85
Vehicle 9		2.95	3.84	2.27	1.96	1.77	1.40	2.23	2.40		1.47	2.01	1.74	2.00	3.40
Vehicle 10		1.40	0.90		1.36		1.61	1.90	2.34		1.83	1.36	1.69	1.52	1.87
Vehicle 11		1.96	1.36					1.78	1.65			1.44	2.00	1.72	1.23
Vehicle 12		1.56	1.18												2.08

	Study Results														
No. vehicles used in cycle	8	12	12	9	10	9	10	11	11	8	10	11	11	11	12
Time of Vehicle 4 (s)	8.37	6.47	7.57	6.61	5.22	5.99	5.19	7.04	7.46	7.19	7.34	6.16	7.42	6.38	7.41
Time of Last Vehicle (s)	17.82	24.49	22.98	17.54	17.26	16.17	17.44	20.61	22.18	15.70	19.57	18.47	20.58	21.48	23.96
Avg Sat Headway (s/veh)	2.36	2.25	1.93	2.19	2.01	2.04	2.04	1.94	2.10	2.13	2.04	1.76	1.88	2.16	2.07
Unadj. Sat. Flow (veh/h/ln)	1524	1598	1869	1647	1794	1768	1763	1857	1712	1692	1766	2047	1915	1669	1740

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

WisDOT Signalized Intersection Capacity Study

Location ID: 23
Intersection Location: I-94 WB Ramps & Carmichael Rd
Approach Direction: NB
Approach Configuration: 5
Population Group: < 25

Video Date: 4/27/15 - 4/28/15
County: St. Croix
Region: NW
Municipality: Hudson
Approach AADT: 32600

Cycle #	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Lane Studied	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1
Start of Green	6:17 PM	6:20 PM	6:20 PM	3:40 PM	3:43 PM	3:45 PM	3:53 PM	4:02 PM	4:07 PM	4:08 PM	4:14 PM	4:16 PM	4:18 PM	4:20 PM	4:21 PM
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)								1							
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	2.04	2.92	2.30	3.38	3.16	2.96	2.33	1.66	2.87	2.13	1.90	1.99	2.47	2.61	1.69
Vehicle 3	2.20	2.21	2.41	1.81	2.16	1.90	1.92	3.48	2.98	1.97	2.21	1.70	2.84	1.79	1.97
Vehicle 4	2.07	2.27	5.14	2.20	1.49	1.63	2.29	1.87	1.72	2.70	2.12	2.62	1.94	1.91	1.62
Vehicle 5	2.03	1.98	2.08	2.17	2.54	1.75	1.99	1.63	2.47	2.02	2.67	2.22	2.08	2.15	2.29
Vehicle 6	2.02	2.30	2.94	1.64	1.83	1.78	1.55	1.42	1.65	2.18	1.71	1.79	1.65	2.01	2.60
Vehicle 7	2.20	1.99	1.94	2.43	1.83	1.46	2.09	1.80	1.93	1.53	3.10	1.51	2.24	2.13	1.56
Vehicle 8	3.41	1.84	2.75	2.23	1.81	1.98	1.22	1.46	4.41	1.55	3.09	1.66	1.70	1.90	1.34
Vehicle 9	2.49	2.29		2.00	1.19	1.60	2.12	1.72	3.38			2.46	1.73		2.46
Vehicle 10	1.49	0.74		1.42	1.61		1.91	2.07	1.71			2.09	1.47		
Vehicle 11	1.94	1.93		1.80	1.67		2.14	2.76	2.50			1.55	1.64		
Vehicle 12	2.16	2.45		1.56	1.73			2.17	2.56				1.55		

	Study Results														
No. vehicles used in cycle	12	12	8	12	12	9	11	12	12	8	8	11	12	8	9
Time of Vehicle 4 (s)	6.31	7.40	9.85	7.39	6.81	6.49	6.54	7.01	7.57	6.80	6.23	6.31	7.25	6.31	5.28
Time of Last Vehicle (s)	24.05	22.92	19.56	22.64	21.02	15.06	19.56	22.04	28.18	14.08	16.80	19.59	21.31	14.50	15.53
Avg Sat Headway (s/veh)	2.22	1.94	2.43	1.91	1.78	1.71	1.86	1.88	2.58	1.82	2.64	1.90	1.76	2.05	2.05
Unadj. Sat. Flow (veh/h/ln)	1623	1856	1483	1889	2027	2100	1935	1916	1397	1978	1362	1898	2048	1758	1756

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

WisDOT Signalized Intersection Capacity Study

Location ID: 23
Intersection Location: I-94 WB Ramps & Carmichael Rd
Approach Direction: NB
Approach Configuration: 5
Population Group: < 25

Video Date: 4/27/15 - 4/28/15
County: St. Croix
Region: NW
Municipality: Hudson
Approach AADT: 32600

Cycle #	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Lane Studied	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2
Start of Green	4:25 PM	4:28 PM	4:30 PM	4:33 PM	4:45 PM	4:47 PM	4:58 PM	5:00 PM	5:02 PM	5:08 PM	5:10 PM	5:13 PM	5:14 PM	5:14 PM	5:27 PM
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)				1											
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	1.89	1.82	2.20	3.10	2.70	2.77	2.21	1.90	1.40	1.89	2.52	1.94	3.20	2.02	3.11
Vehicle 3	2.67	1.95	2.22	1.97	2.47	2.65	2.58	2.67	2.96	2.53	2.21	2.46	2.10	2.74	3.65
Vehicle 4	1.94	1.82	2.05	1.82	5.07	1.76	1.54	2.33	1.45	1.74	1.94	3.04	2.40	2.45	3.73
Vehicle 5	1.90	1.75	3.26	1.86	2.13	1.84	1.69	1.67	2.52	2.50	1.38	2.32	1.74	1.94	1.94
Vehicle 6	2.79	2.18	2.40	2.53	1.97	1.69	2.07	2.00	1.49	2.23	1.96	2.82	1.56	1.80	2.01
Vehicle 7	1.51	1.57	1.58	1.81	1.71	1.99	2.30	2.01	2.62	2.68	1.29	1.70	2.10	1.97	2.28
Vehicle 8	1.42	1.48	1.33	3.91	3.00	1.98	1.26	1.95	1.35	2.32	1.08	2.07	3.22	1.08	1.53
Vehicle 9	1.98		1.62	2.30	2.08	1.25	2.12	1.67	1.65	2.76	1.55	1.74	2.03		2.20
Vehicle 10	1.60		1.52		1.41	3.49	2.11	1.69	1.57	1.90	2.15		1.79		
Vehicle 11			1.48		1.97	2.36	1.93		1.90				2.31		
Vehicle 12						1.76	1.62		2.01				2.45		

	Study Results														
No. vehicles used in cycle	10	8	11	9	11	12	12	10	12	10	10	9	12	8	9
Time of Vehicle 4 (s)	6.50	5.59	6.47	6.89	10.24	7.18	6.33	6.90	5.81	6.16	6.67	7.44	7.70	7.21	10.49
Time of Last Vehicle (s)	17.70	12.57	19.66	19.30	24.51	23.54	21.43	17.89	20.92	20.55	16.08	18.09	24.90	14.00	20.45
Avg Sat Headway (s/veh)	1.87	1.74	1.88	2.48	2.04	2.05	1.89	1.83	1.89	2.40	1.57	2.13	2.15	1.70	1.99
Unadj. Sat. Flow (veh/h/ln)	1929	2063	1911	1450	1766	1760	1907	1965	1906	1501	2295	1690	1674	2121	1807

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

Saturation Flow Study Summary Sheet

Intersection Information:

Intersection:	I-94 WB Ramps & Carmichael Rd
Major Street:	Carmichael Road
Minor Street:	I-94 WB Ramps
Study Approach:	NB
Approach Configuration:	5
Population Group:	< 25
Cycles by Date:	4/27/2015 (1-33) 4/28/15 (34-60)

Video Date:	4/27/15 - 4/28/15
WisDOT Region:	NW
Nearest Municipality:	Hudson
County:	St. Croix
Weather:	Clear
Pavement:	Dry
Observer:	Kevin

Data Collection Summary Data:

Cycles Studied:	60
Average number of vehicles per cycle:	10
Headways Measured (queue vehicles > 4) :	387
% Heavy Vehicles (of headways measured):	1.6%
% RT Vehicles (of headways measured):	0.0%
Average Saturation Flow Headway (s):	2.02
Standard Deviation of All Headways:	0.57
Standard Deviation of Cycle Headways:	0.23
Unadjusted Median Sat Flow Rate (veh/ln.hr):	1796
Unadjusted Avg Sat Flow Rate (veh/ln/hr):	1779



WisDOT Signalized Intersection Capacity Study

Location ID: 24
Intersection Location: I-94 EB Ramps & Carmichael Rd
Approach Direction: SB
Approach Configuration: 6
Population Group: < 25

Video Date: 4/27/15 - 4/29/15
County: St Croix
Region: NW
Municipality: Hudson
Approach AADT: 13000

Cycle #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Lane Studied	3	3	1	3	3	2	3	3	3	3	3	3	3	1	3
Start of Green	2:58 PM	3:13 PM	3:23 PM	3:23 PM	3:25 PM	3:27 PM	3:27 PM	3:30 PM	3:38 PM	3:40 PM	3:58 PM	4:22 PM	4:35 PM	4:37 PM	4:38 PM
Heavy Vehicles (1-4)				1											
Heavy Vehicles (5-12)															1
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	2.49	2.66	2.63	2.65	3.09	2.07	1.93	2.61	2.44	2.00	4.03	1.75	2.23	2.96	2.44
Vehicle 3	2.24	2.40	2.24	1.71	3.06	1.90	2.89	1.63	2.58	2.52	2.37	2.25	2.32	2.38	3.76
Vehicle 4	1.93	1.76	2.27	3.08	1.92	2.16	2.44	3.40	2.30	1.92	2.34	3.03	1.95	1.89	1.35
Vehicle 5	2.00	1.83	1.96	2.17	1.80	2.96	1.47	2.80	2.39	1.56	1.92	1.77	3.18	2.07	2.30
Vehicle 6	2.02	3.28	2.08	2.70	2.43	2.27	2.07	3.23	1.44	1.18	1.39	1.36	1.30	2.11	2.53
Vehicle 7	1.85	1.84	1.81	2.28	2.82	2.25	1.91	1.99	2.54	1.97	1.37	1.80	2.25	1.84	2.78
Vehicle 8	2.38	3.12	1.57	1.70	2.32	1.50	1.74	2.68	1.47	1.87	1.97	2.17	2.48	1.54	1.81
Vehicle 9		1.46	1.65	2.25				1.80	1.88	1.88	1.24	1.83			1.69
Vehicle 10		1.43						1.71	1.53	1.78		2.59			
Vehicle 11								1.65	2.03			1.90			
Vehicle 12								2.39	2.60			1.71			

	Study Results														
No. vehicles used in cycle	8	10	9	9	8	8	8	12	12	10	9	12	8	8	9
Time of Vehicle 4 (s)	6.66	6.82	7.14	7.44	8.07	6.13	7.26	7.64	7.32	6.44	8.74	7.03	6.50	7.23	7.55
Time of Last Vehicle (s)	14.91	19.78	16.21	18.54	17.44	15.11	14.45	25.89	23.20	16.68	16.63	22.16	15.71	14.79	18.66
Avg Sat Headway (s/veh)	2.06	2.16	1.81	2.22	2.34	2.25	1.80	2.28	1.98	1.71	1.58	1.89	2.30	1.89	2.22
Unadj. Sat. Flow (veh/h/ln)	1745	1667	1985	1622	1537	1604	2003	1578	1814	2109	2281	1904	1564	1905	1620

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

WisDOT Signalized Intersection Capacity Study

Location ID: 24
Intersection Location: I-94 EB Ramps & Carmichael Rd
Approach Direction: SB
Approach Configuration: 6
Population Group: < 25

Video Date: 4/27/15 - 4/29/15
County: St Croix
Region: NW
Municipality: Hudson
Approach AADT: 13000

Cycle #	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Lane Studied	3	3	3	3	1	3	3	3	3	3	1	3	3	3	1
Start of Green	4:46 PM	4:55 PM	5:01 PM	5:12 PM	5:13 PM	6:51 AM	6:57 AM	7:50 AM	7:54 AM	8:57 AM	3:20 PM	3:20 PM	3:35 PM	3:43 PM	3:45 PM
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)															
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	2.23	4.14	2.18	2.58	2.35	1.86	2.55	2.17	2.81	3.19	3.43	2.47	3.17	2.47	2.22
Vehicle 3	2.79	2.43	2.25	3.20	2.73	2.42	2.10	1.96	1.54	1.82	2.98	2.15	1.98	1.84	3.29
Vehicle 4	1.76	3.00	1.80	1.41	2.40	2.62	1.74	1.87	1.56	1.49	2.03	1.74	2.77	1.88	2.00
Vehicle 5	1.94	1.41	2.64	1.92	1.36	2.31	2.48	1.93	1.55	1.39	2.29	2.26	1.59	2.16	2.05
Vehicle 6	1.52	1.70	2.41	1.92	1.60	1.78	2.09	1.62	1.94	2.81	1.84	1.69	1.76	2.25	2.25
Vehicle 7	1.88	1.78	1.98	2.09	1.68	1.99	1.58	1.79	1.31	2.64	3.16	2.00	1.90	1.29	2.07
Vehicle 8	2.75	2.19	2.06	1.65	1.62	1.42	1.71	1.74	2.14	1.80	1.86	1.68	1.81	1.94	1.83
Vehicle 9		2.99	2.10		2.37		1.62	1.67	1.62	1.77			1.24	2.09	1.95
Vehicle 10		2.09						2.56	1.67	1.45					
Vehicle 11		1.81							1.56	1.74					
Vehicle 12		1.74							2.23						

	Study Results														
No. vehicles used in cycle	8	12	9	8	9	8	9	10	12	11	8	8	9	9	9
Time of Vehicle 4 (s)	6.78	9.57	6.23	7.19	7.48	6.90	6.39	6.00	5.91	6.50	8.44	6.36	7.92	6.19	7.51
Time of Last Vehicle (s)	14.87	25.28	17.42	14.77	16.11	14.40	15.87	17.31	19.93	20.10	17.59	13.99	16.22	15.92	17.66
Avg Sat Headway (s/veh)	2.02	1.96	2.24	1.90	1.73	1.88	1.90	1.88	1.75	1.94	2.29	1.91	1.66	1.95	2.03
Unadj. Sat. Flow (veh/h/ln)	1780	1833	1609	1900	2086	1920	1899	1910	2054	1853	1574	1887	2169	1850	1773

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

WisDOT Signalized Intersection Capacity Study

Location ID: 24
Intersection Location: I-94 EB Ramps & Carmichael Rd
Approach Direction: SB
Approach Configuration: 6
Population Group: < 25

Video Date: 4/27/15 - 4/29/15
County: St Croix
Region: NW
Municipality: Hudson
Approach AADT: 13000

Cycle #	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Lane Studied	3	3	3	3	3	3	3	3	3	3	3	3	1	3	3
Start of Green	3:45 PM	3:47 PM	3:48 PM	3:53 PM	3:55 PM	3:58 PM	4:05 PM	4:08 PM	4:22 PM	4:23 PM	8:10 AM	8:18 AM	8:43 AM	4:44 PM	4:54 PM
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)															
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	2.56	2.10	2.28	2.06	2.37	2.95	2.17	2.78	2.64	2.79	3.29	3.53	1.97	2.36	2.56
Vehicle 3	2.80	2.03	2.01	2.24	2.78	2.19	2.33	2.23	2.47	1.70	3.07	2.06	1.78	1.99	3.05
Vehicle 4	2.65	1.88	2.05	1.58	1.98	2.00	2.52	2.23	2.28	1.76	2.61	1.78	2.00	2.39	2.07
Vehicle 5	1.66	1.99	1.76	2.06	1.53	1.76	1.66	2.50	3.00	2.02	2.96	2.09	1.75	2.00	2.23
Vehicle 6	2.10	1.95	2.08	1.89	1.59	1.71	1.57	1.90	1.91	1.68	2.06	2.14	1.99	2.16	1.95
Vehicle 7	1.65	2.07	3.14	1.39	1.82	1.63	2.36	2.37	1.41	2.24	2.46	2.14	2.09	2.51	1.87
Vehicle 8	1.69	1.98	2.02	2.01	2.45	1.83	2.29	2.17	1.70	1.58	1.81	1.83	2.93	2.58	2.20
Vehicle 9	2.18	1.86	1.52		1.22		2.21	1.83		2.67	1.85		1.25		2.63
Vehicle 10	1.73		1.32				2.57	2.49			2.06		1.73		1.34
Vehicle 11											1.68		2.96		2.49
Vehicle 12											1.42				

	Study Results														
No. vehicles used in cycle	10	9	10	8	9	8	10	10	8	9	12	8	11	8	11
Time of Vehicle 4 (s)	8.01	6.01	6.34	5.88	7.13	7.14	7.02	7.24	7.39	6.25	8.97	7.37	5.75	6.74	7.68
Time of Last Vehicle (s)	19.02	15.86	18.18	13.23	15.74	14.07	19.68	20.50	15.41	16.44	25.27	15.57	20.45	15.99	22.39
Avg Sat Headway (s/veh)	1.84	1.97	1.97	1.84	1.72	1.73	2.11	2.21	2.01	2.04	2.04	2.05	2.10	2.31	2.10
Unadj. Sat. Flow (veh/h/ln)	1962	1827	1824	1959	2091	2078	1706	1629	1796	1766	1767	1756	1714	1557	1713

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

WisDOT Signalized Intersection Capacity Study

Location ID: 24
Intersection Location: I-94 EB Ramps & Carmichael Rd
Approach Direction: SB
Approach Configuration: 6
Population Group: < 25

Video Date: 4/27/15 - 4/29/15
County: St Croix
Region: NW
Municipality: Hudson
Approach AADT: 13000

Cycle #	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Lane Studied	3	3	3	3	1	3	1	1	1	3	3	3	3	2	3
Start of Green	4:59 PM	5:05 PM	5:12 PM	5:14 PM	5:30 PM	5:32 PM	5:34 PM	5:35 PM	5:37 PM	5:55 PM	4:32 PM	4:39 PM	4:40 PM	4:42 PM	4:42 PM
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)															
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	2.64	3.12	2.77	2.76	3.09	4.84	2.33	3.38	2.22	2.88	3.54	2.50	3.55	2.67	2.24
Vehicle 3	2.99	2.39	1.58	1.55	2.94	1.92	2.01	2.47	2.54	1.87	1.63	3.11	2.11	2.13	2.05
Vehicle 4	3.02	2.66	2.15	1.59	2.29	1.46	2.31	2.55	2.85	1.46	2.00	1.89	1.78	1.80	1.87
Vehicle 5	1.63	3.14	2.07	2.10	1.88	1.65	2.17	2.31	2.01	2.71	1.83	2.01	2.04	1.98	1.47
Vehicle 6	1.21	2.65	1.58	1.59	1.73	2.26	1.47	1.93	2.34	1.68	1.94	2.24	2.96	1.75	1.52
Vehicle 7	1.28	1.63	1.83	2.10	1.71	2.76	1.86	2.09	2.31	1.83	1.58	2.14	1.38	1.77	1.76
Vehicle 8	1.38	1.62	2.72	1.80	2.05	1.50	1.78	2.95	2.54	1.76	2.17	2.39	1.68	1.38	1.74
Vehicle 9	1.92	1.58	1.74	1.56	1.67		1.79	2.31		1.23	2.03	2.17	1.80		1.53
Vehicle 10	2.19	1.90	1.51	2.24			1.84			1.73	2.31	1.77	1.58		1.46
Vehicle 11	1.71		1.91				1.58			1.33		1.71	1.92		
Vehicle 12	1.96		1.96				2.01			2.03			2.00		

	Study Results														
No. vehicles used in cycle	12	10	12	10	9	8	12	9	8	12	10	11	12	8	10
Time of Vehicle 4 (s)	8.65	8.17	6.50	5.90	8.32	8.22	6.65	8.40	7.61	6.21	7.17	7.50	7.44	6.60	6.16
Time of Last Vehicle (s)	21.93	20.69	21.82	17.29	17.36	16.39	21.15	19.99	16.81	20.51	19.03	21.93	22.80	13.48	15.64
Avg Sat Headway (s/veh)	1.66	2.09	1.91	1.90	1.81	2.04	1.81	2.32	2.30	1.79	1.98	2.06	1.92	1.72	1.58
Unadj. Sat. Flow (veh/h/ln)	2169	1725	1880	1896	1991	1763	1986	1553	1565	2014	1821	1746	1875	2093	2278

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

Saturation Flow Study Summary Sheet

Intersection Information:

Intersection:	I-94 EB Ramps & Carmichael Rd
Major Street:	Carmichael Road
Minor Street:	I-94 EB Ramps
Study Approach:	SB
Approach Configuration:	6
Population Group:	< 25
Cycles by Date:	4/27 (1-20), 4/28 (21-40), 4/29 (41-60)

Video Date:	4/27/15 - 4/29/15
WisDOT Region:	NW
Nearest Municipality:	Hudson
County:	St Croix
Weather:	Clear
Pavement:	Dry
Observer:	Allen

Data Collection Summary Data:

Cycles Studied:	60
Average number of vehicles per cycle:	10
Headways Measured (queue vehicles > 4) :	333
% Heavy Vehicles (of headways measured):	0.3%
% RT Vehicles (of headways measured):	0.0%
Average Saturation Flow Headway (s):	1.97
Standard Deviation of All Headways:	0.43
Standard Deviation of Cycle Headways:	0.20
Unadjusted Median Sat Flow Rate (veh/ln.hr):	1830
Unadjusted Avg Sat Flow Rate (veh/ln/hr):	1832



WisDOT Signalized Intersection Capacity Study

Location ID: 25
Intersection Location: WIS 25 & 13th Street
Approach Direction: SB
Approach Configuration: 1
Population Group: < 25

Video Date: 4/27/15-4/29/15
County: Dunn
Region: NW
Municipality: Menomonie
Approach AADT: 11700

Cycle #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Lane Studied	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Start of Green	2:58 PM	3:15 PM	3:58 PM	4:27 PM	4:41 PM	5:05 PM	5:08 PM	5:36 PM	5:44 PM	3:11 PM	3:44 PM	3:48 PM	3:56 PM	4:02 PM	4:59 PM
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)											1				
Right Turns (1-4)		1													
Right Turns (5-12)			1					1						2	

Vehicle	Headway ¹ (s)														
Vehicle 1	1.70	3.02	1.65	1.67	2.60	3.25	3.87	1.73	3.06	2.51	1.99	2.26	2.63	2.85	2.44
Vehicle 2	2.50	2.27	1.83	3.30	2.23	3.68	2.40	2.32	3.06	2.36	1.96	2.68	2.45	3.40	2.84
Vehicle 3	2.04	3.22	3.47	2.72	1.36	2.66	2.69	2.27	3.10	2.75	2.31	2.50	2.55	2.29	2.14
Vehicle 4	2.66	1.70	2.70	2.50	3.65	2.80	4.17	2.55	2.87	2.13	2.87	2.06	2.74	2.51	2.18
Vehicle 5	2.48	2.47	1.74	2.15	2.57	2.55	1.81	1.81	1.97	1.92	2.42	1.79	2.38	2.96	2.01
Vehicle 6	2.38	2.11	2.89	2.83	3.12	2.37	2.14	2.18	2.47	1.75	2.28	2.43	2.68	3.31	1.45
Vehicle 7	2.67	2.16	2.34	2.06	2.82	1.76	2.68	2.73	2.43	2.18	2.15	3.19	2.91	2.06	1.89
Vehicle 8	2.86	2.38	2.43	2.04	2.19	2.18	2.06	2.04	1.92	2.56	2.13	2.31	2.21	2.45	2.12
Vehicle 9	2.66	1.61	2.15		1.73				2.37		2.21	2.52		2.11	2.04
Vehicle 10	2.26	2.22	2.29		2.16									2.36	2.49
Vehicle 11		1.83	2.57											2.19	
Vehicle 12															

	Study Results														
No. vehicles used in cycle	10	11	11	8	10	8	8	8	9	8	9	9	8	11	10
Time of Vehicle 4 (s)	8.90	10.21	9.65	10.19	9.84	12.39	13.13	8.87	12.09	9.75	9.13	9.50	10.37	11.05	9.60
Time of Last Vehicle (s)	24.21	24.99	26.06	19.27	24.43	21.25	21.82	17.63	23.25	18.16	20.32	21.74	20.55	28.49	21.60
Avg Sat Headway (s/veh)	2.55	2.11	2.34	2.27	2.43	2.22	2.17	2.19	2.23	2.10	2.24	2.45	2.55	2.49	2.00
Unadj. Sat. Flow (veh/h/ln)	1411	1705	1536	1586	1480	1625	1657	1644	1613	1712	1609	1471	1415	1445	1800
Start up lost time	-1.31	1.76	0.27	1.11	0.11	3.53	4.44	0.11	3.16	1.34	0.18	-0.29	0.19	1.08	1.60

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. The headway for vehicle 1 is the amount of time (in seconds) that passed between the light turning green and vehicle 1 crossing the stop bar into the intersection.

WisDOT Signalized Intersection Capacity Study

Location ID: 25
Intersection Location: WIS 25 & 13th Street
Approach Direction: SB
Approach Configuration: 1
Population Group: < 25

Video Date: 4/27/15-4/29/15
County: Dunn
Region: NW
Municipality: Menomonie
Approach AADT: 11700

Cycle #	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Lane Studied	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Start of Green	5:34 PM	3:15 PM	3:55 PM	3:57 PM	4:14 PM	4:15 PM	4:40 PM	4:43 PM	5:44 PM	5:46 PM	3:04 PM	3:36 PM	3:46 PM	3:53 PM	3:08 PM
Heavy Vehicles (1-4)													1		
Heavy Vehicles (5-12)											1	1			1
Right Turns (1-4)							1	1				1		1	
Right Turns (5-12)															1

Vehicle	Headway ¹ (s)														
Vehicle 1	1.56	2.85	2.14	2.61	3.34	3.17	2.66	2.84	2.24	1.68	2.02	1.80	3.28	1.66	2.78
Vehicle 2	3.02	3.26	2.17	2.15	2.21	2.77	3.55	2.48	2.01	2.12	2.39	3.28	3.02	2.54	2.27
Vehicle 3	3.08	3.24	2.35	2.81	3.26	2.60	2.44	2.36	2.22	3.16	2.15	2.66	2.74	3.02	1.90
Vehicle 4	2.60	1.93	2.55	2.39	1.75	2.53	3.48	2.85	2.25	3.59	3.56	2.28	2.40	2.79	2.08
Vehicle 5	2.66	2.28	3.66	1.88	2.42	1.46	2.44	2.22	2.67	2.88	2.03	2.21	2.98	3.88	2.25
Vehicle 6	3.01	1.95	2.59	1.76	2.40	2.75	2.10	2.33	1.93	1.51	2.54	2.82	1.83	2.01	1.83
Vehicle 7	1.97	1.95	2.52	1.93	2.31	2.23	1.51	2.23	3.53	1.90	2.78	3.14	2.78	2.73	2.52
Vehicle 8	1.60	2.52	2.17	3.20	2.27	1.69	1.94	2.62	2.45	2.35	2.66	1.81	2.74	3.33	3.40
Vehicle 9	1.76	1.89	1.98	1.94		2.28	2.46	2.44		1.44					
Vehicle 10			2.09	1.78		2.32	1.72			2.55					
Vehicle 11															
Vehicle 12															

	Study Results														
No. vehicles used in cycle	9	9	10	10	8	10	10	9	8	10	8	8	8	8	8
Time of Vehicle 4 (s)	10.26	11.28	9.21	9.96	10.56	11.07	12.13	10.53	8.72	10.55	10.12	10.02	11.44	10.01	9.03
Time of Last Vehicle (s)	21.26	21.87	24.22	22.45	19.96	23.80	24.30	22.37	19.30	23.18	20.13	20.00	21.77	21.96	19.03
Avg Sat Headway (s/veh)	2.20	2.12	2.50	2.08	2.35	2.12	2.03	2.37	2.65	2.11	2.50	2.50	2.58	2.99	2.50
Unadj. Sat. Flow (veh/h/ln)	1636	1700	1439	1729	1532	1697	1775	1520	1361	1710	1439	1443	1394	1205	1440
Start up lost time	1.46	2.81	-0.80	1.63	1.16	2.58	4.02	1.06	-1.86	2.13	0.11	0.04	1.11	-1.94	-0.97

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. The headway for vehicle 1 is the amount of time (in seconds) that passed between the light turning green and vehicle 1 crossing the stop bar into the intersection.

WisDOT Signalized Intersection Capacity Study

Location ID: 25
Intersection Location: WIS 25 & 13th Street
Approach Direction: SB
Approach Configuration: 1
Population Group: < 25

Video Date: 4/27/15-4/29/15
County: Dunn
Region: NW
Municipality: Menomonie
Approach AADT: 11700

Cycle #	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Lane Studied	1	1	1	1	1	1	1	1	1						
Start of Green	3:42 PM	3:53 PM	4:21 PM	5:15 PM	5:34 PM	1:00 PM	1:10 PM	1:28 PM	2:12 PM						
Heavy Vehicles (1-4)			1	1			1								
Heavy Vehicles (5-12)	1														
Right Turns (1-4)						3	4	3							
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	1.32	2.02	1.77	2.89	2.29	1.86	2.03	2.03	2.18						
Vehicle 2	4.22	2.60	2.64	3.10	2.52	1.98	4.16	3.23	2.51						
Vehicle 3	2.73	2.54	3.33	2.66	2.08	2.76	4.47	2.99	2.27						
Vehicle 4	2.23	2.31	2.22	3.85	2.47	2.98	2.66	2.57	3.72						
Vehicle 5	2.94	1.55	2.04	1.77	2.39	2.75	2.75	2.19	2.25						
Vehicle 6	2.23	3.28	2.04	2.71	2.27	2.82	2.28	2.49	3.03						
Vehicle 7	3.55	2.77	2.03	3.16	2.38	1.81	1.91	3.04	2.42						
Vehicle 8	2.04	3.38	2.91	2.20	1.84	1.73	2.36	2.27	3.03						
Vehicle 9		2.99		2.38	1.76		2.38		1.91						
Vehicle 10				2.53	2.66		2.10		1.94						
Vehicle 11					2.54				3.05						
Vehicle 12															

	Study Results														
No. vehicles used in cycle	8	9	8	10	11	8	10	8	11						
Time of Vehicle 4 (s)	10.50	9.47	9.96	12.50	9.36	9.58	13.32	10.82	10.68						
Time of Last Vehicle (s)	21.26	23.44	18.98	27.25	25.20	18.69	27.10	20.81	28.31						
Avg Sat Headway (s/veh)	2.69	2.79	2.25	2.46	2.26	2.28	2.30	2.50	2.52						
Unadj. Sat. Flow (veh/h/ln)	1338	1288	1596	1464	1591	1581	1567	1441	1429						
Start up lost time	-0.26	-1.71	0.94	2.67	0.31	0.47	4.13	0.83	0.61						

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. The headway for vehicle 1 is the amount of time (in seconds) that passed between the light turning green and vehicle 1 crossing the stop bar into the intersection.

Saturation Flow Study Summary Sheet

Intersection Information:

Intersection:	WIS 25 & 13th Street
Major Street:	WIS 25
Minor Street:	13th Street
Study Approach:	SB
Approach Configuration:	1
Population Group:	< 25
Cycle by Date:	4/27 (1-9), 4/28 (10-16, 26-29, 36-39), 4/29 (17-25, 30-35)

Date:	3/31/15 - 4/2/15
WisDOT Region:	NW
Nearest Municipality:	Menomonie
County:	Dunn
Weather:	Dry
Pavement:	Clear
Observer:	Kevin

Data Collection Summary Data:

Cycles Studied:	39
Average number of vehicles per cycle:	9
Headways Measured (queue vehicles > 4) :	198
% Heavy Vehicles (of headways measured):	2.5%
% RT Vehicles (of headways measured):	2.5%
Average Saturation Flow Headway (s):	2.35
Standard Deviation of All Headways:	0.46
Standard Deviation of Cycle Headways:	0.22
Unadjusted Median Sat Flow Rate (veh/ln.hr):	1536
Unadjusted Avg Sat Flow Rate (veh/ln/hr):	1534
Average Start Up Lost Time (s):	0.97



WisDOT Signalized Intersection Capacity Study

Location ID: 26
Intersection Location: WIS 25 (S Broadway St) & WIS 29 (Main St)
Approach Direction: NB
Approach Configuration: 4
Population Group: < 25

Video Date: 4/27/15- 4/29/15
County: Dunn
Region: NW
Municipality: Menomonie
Approach AADT: 11700

Cycle #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Lane Studied	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Start of Green	2:25 PM	2:35 PM	2:38 PM	2:55 PM	3:13 PM	3:20 PM	3:28 PM	3:29 PM	3:31 PM	3:32 PM	3:38 PM	3:43 PM	3:47 PM	3:52 PM	3:58 PM
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)		1					1								
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	2.57	2.58	2.48	2.59	3.42	2.69	1.96	1.87	2.91	1.73	2.05	2.15	2.15	2.24	1.95
Vehicle 2	2.64	2.47	2.75	2.27	2.53	2.43	2.14	2.78	2.22	2.89	2.50	2.09	1.88	2.40	1.80
Vehicle 3	2.34	2.32	2.79	2.11	2.89	2.63	2.23	2.68	2.75	2.16	2.56	3.07	1.75	2.77	3.23
Vehicle 4	2.74	2.43	2.99	2.54	2.62	2.08	3.07	2.66	2.02	2.74	2.14	2.45	2.07	2.64	3.14
Vehicle 5	2.92	2.13	2.16	2.28	1.87	1.97	2.51	2.36	2.25	2.47	1.65	2.16	2.27	3.18	2.62
Vehicle 6	2.28	3.21	2.32	2.26	3.14	2.72	2.51	2.29	2.75	2.10	1.95	1.95	3.01	2.87	3.20
Vehicle 7	1.99	2.54	2.62	1.00	2.73	2.68	1.83	2.70	1.93	1.94	2.41	2.61	2.69	2.41	3.09
Vehicle 8	1.64	2.96	2.91	2.81	2.01	1.85	2.00	2.49	2.23	2.88	2.17	2.29	1.77	1.77	2.83
Vehicle 9	2.44	3.10		2.96		2.38	2.93	2.93	2.90		2.02	2.54	1.64		2.23
Vehicle 10	2.19	2.07		3.12			2.07	2.02	2.61		2.37	2.25	2.87		
Vehicle 11		2.20					2.25	2.84	2.22				2.92		
Vehicle 12															

	Study Results														
No. vehicles used in cycle	10	11	8	10	8	9	11	11	11	8	10	10	11	8	9
Time of Vehicle 4 (s)	10.29	9.80	11.01	9.51	11.46	9.83	9.40	9.99	9.90	9.52	9.25	9.76	7.85	10.05	10.12
Time of Last Vehicle (s)	23.75	28.01	21.02	23.94	21.21	21.43	25.50	27.62	26.79	18.91	21.82	23.56	25.02	20.28	24.09
Avg Sat Headway (s/veh)	2.24	2.60	2.50	2.41	2.44	2.32	2.30	2.52	2.41	2.35	2.09	2.30	2.45	2.56	2.79
Unadj. Sat. Flow (veh/h/ln)	1605	1384	1439	1497	1477	1552	1565	1429	1492	1534	1718	1565	1468	1408	1288
Start up lost time	1.32	-0.61	1.00	-0.11	1.71	0.55	0.20	-0.08	0.25	0.13	0.87	0.56	-1.96	-0.18	-1.06

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. The headway for vehicle 1 is the amount of time (in seconds) that passed between the light turning green and vehicle 1 crossing the stop bar into the intersection.

WisDOT Signalized Intersection Capacity Study

Location ID: 26
Intersection Location: WIS 25 (S Broadway St) & WIS 29 (Main St)
Approach Direction: NB
Approach Configuration: 4
Population Group: < 25

Video Date: 4/27/15- 4/29/15
County: Dunn
Region: NW
Municipality: Menomonie
Approach AADT: 11700

Cycle #	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Lane Studied	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Start of Green	3:59 PM	4:07 PM	4:17 PM	4:19 PM	4:20 PM	8:10 AM	8:26 AM	3:11 PM	3:13 PM	3:17 PM	3:19 PM	3:22 PM	3:26 PM	3:32 PM	3:38 PM
Heavy Vehicles (1-4)						1	1								
Heavy Vehicles (5-12)												1			
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	3.51	2.20	2.31	1.90	1.72	1.88	1.98	2.45	2.85	2.31	2.37	2.46	3.14	2.43	2.25
Vehicle 2	2.93	1.95	2.57	3.98	3.61	4.16	2.52	2.94	2.98	2.45	2.58	2.37	3.72	2.13	1.70
Vehicle 3	2.43	2.58	3.25	2.10	2.63	2.68	3.83	2.78	3.07	2.15	3.98	2.44	3.14	2.96	2.63
Vehicle 4	2.52	2.78	2.18	2.47	2.01	2.75	2.91	2.38	3.44	2.52	2.56	2.58	2.41	2.07	2.10
Vehicle 5	2.05	2.22	1.95	2.14	3.30	3.25	3.24	2.81	2.76	2.67	2.81	3.24	1.85	2.18	2.04
Vehicle 6	3.18	3.26	2.16	2.57	3.00	2.38	2.29	2.44	2.13	2.09	2.09	2.80	2.71	2.72	3.00
Vehicle 7	2.50	2.29	2.22	2.16	2.12	2.22	2.65	2.87	2.78	2.05	2.28	2.29	2.15	2.45	2.85
Vehicle 8	2.73	1.70	2.65	2.56	1.33	2.37	2.06	2.27	2.63	2.41	2.97	1.86	2.33	1.74	2.45
Vehicle 9	2.47				1.29	2.48	2.62	2.24	2.34	2.11	2.89	2.00	2.09		2.59
Vehicle 10	1.96				2.14		2.65	2.09	2.12	1.92		2.48	1.96		
Vehicle 11	1.79				2.17			2.09	2.23	2.50		2.24			
Vehicle 12	2.03							2.32		2.01					

	Study Results														
No. vehicles used in cycle	12	8	8	8	11	9	10	12	11	12	9	11	10	8	9
Time of Vehicle 4 (s)	11.39	9.51	10.31	10.45	9.97	11.47	11.24	10.55	12.34	9.43	11.49	9.85	12.41	9.59	8.68
Time of Last Vehicle (s)	30.10	18.98	19.29	19.88	25.32	24.17	26.75	29.68	29.33	27.19	24.53	26.76	25.50	18.68	21.61
Avg Sat Headway (s/veh)	2.34	2.37	2.25	2.36	2.19	2.54	2.59	2.39	2.43	2.22	2.61	2.42	2.18	2.27	2.59
Unadj. Sat. Flow (veh/h/ln)	1539	1521	1604	1527	1642	1417	1393	1505	1483	1622	1380	1490	1650	1584	1392
Start up lost time	2.03	0.04	1.33	1.02	1.20	1.31	0.90	0.99	2.63	0.55	1.06	0.19	3.68	0.50	-1.66

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. The headway for vehicle 1 is the amount of time (in seconds) that passed between the light turning green and vehicle 1 crossing the stop bar into the intersection.

WisDOT Signalized Intersection Capacity Study

Location ID: 26
Intersection Location: WIS 25 (S Broadway St) & WIS 29 (Main St)
Approach Direction: NB
Approach Configuration: 4
Population Group: < 25

Video Date: 4/27/15- 4/29/15
County: Dunn
Region: NW
Municipality: Menomonie
Approach AADT: 11700

Cycle #	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Lane Studied	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Start of Green	4:14 PM	4:28 PM	4:31 PM	4:34 PM	4:40 PM	4:41 PM	4:43 PM	4:44 PM	4:47 PM	4:49 PM	8:16 AM	4:02 PM	4:08 PM	4:10 PM	4:17 PM
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)												1			
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	2.45	2.21	2.98	2.78	2.14	1.98	2.00	2.44	2.46	3.92	2.32	1.90	2.46	2.34	2.06
Vehicle 2	2.22	2.53	2.48	2.69	4.32	2.75	2.54	2.29	2.13	2.10	2.57	2.05	2.60	1.95	2.54
Vehicle 3	2.78	2.28	2.74	2.42	2.60	2.22	3.14	1.92	2.84	2.09	2.41	2.57	2.38	2.28	2.54
Vehicle 4	2.34	2.03	2.24	2.78	2.92	2.53	3.79	1.96	2.41	2.33	1.90	2.82	2.29	2.88	2.72
Vehicle 5	1.94	2.25	2.58	2.32	2.58	2.22	2.71	1.70	2.17	2.96	2.32	2.81	2.54	2.44	2.42
Vehicle 6	2.52	2.43	2.30	2.99	1.99	2.36	2.38	2.44	2.89	3.14	2.53	2.56	1.82	2.02	2.35
Vehicle 7	2.57	2.15	2.07	2.75	1.96	2.87	2.65	2.79	2.00	2.73	2.91	2.44	2.18	2.09	2.22
Vehicle 8	1.89	1.64	2.70	2.72	2.24	2.09	2.85	2.47	2.03	1.66	2.56	2.17	2.47	2.80	2.48
Vehicle 9	2.78	2.31	2.64	2.86		2.84	2.58	2.55	2.13	1.64					
Vehicle 10	2.31	1.99	2.09	2.26		1.85	2.15	2.82		1.72					
Vehicle 11		2.27	2.01	2.31		2.22	2.12	2.29		2.09					
Vehicle 12		1.98				2.03	1.99								

	Study Results														
No. vehicles used in cycle	10	12	11	11	8	12	12	11	9	11	8	8	8	8	8
Time of Vehicle 4 (s)	9.79	9.05	10.44	10.67	11.98	9.48	11.47	8.61	9.84	10.44	9.20	9.34	9.73	9.45	9.86
Time of Last Vehicle (s)	23.80	26.07	26.83	28.88	20.75	27.96	30.90	25.67	21.06	26.38	19.52	19.32	18.74	18.80	19.33
Avg Sat Headway (s/veh)	2.34	2.13	2.34	2.60	2.19	2.31	2.43	2.44	2.24	2.28	2.58	2.50	2.25	2.34	2.37
Unadj. Sat. Flow (veh/h/ln)	1542	1692	1538	1384	1642	1558	1482	1477	1604	1581	1395	1443	1598	1540	1521
Start up lost time	0.45	0.54	1.07	0.26	3.21	0.24	1.76	-1.14	0.86	1.33	-1.12	-0.64	0.72	0.10	0.39

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. The headway for vehicle 1 is the amount of time (in seconds) that passed between the light turning green and vehicle 1 crossing the stop bar into the intersection.

WisDOT Signalized Intersection Capacity Study

Location ID:	26	Video Date:	4/27/15- 4/29/15
Intersection Location:	WIS 25 (S Broadway St) & WIS 29 (Main St)	County:	Dunn
Approach Direction:	NB	Region:	NW
Approach Configuration:	4	Municipality:	Menomonie
Population Group:	< 25	Approach AADT:	11700

Cycle #	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Lane Studied	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Start of Green	4:32 PM	4:40 PM	4:53 PM	5:05 PM	5:08 PM	5:14 PM	5:19 PM	5:22 PM	5:26 PM	5:29 PM	5:34 PM	5:35 PM	5:43 PM	5:46 PM	5:49 PM
Heavy Vehicles (1-4)	1												1		
Heavy Vehicles (5-12)		1													
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	3.00	2.06	3.06	2.91	2.04	2.45	2.86	2.31	1.89	2.15	2.52	2.47	1.90	2.60	2.45
Vehicle 2	2.75	2.69	3.99	2.34	1.78	2.42	2.28	1.69	2.69	3.16	2.39	2.58	3.51	3.31	2.51
Vehicle 3	3.62	3.89	3.11	2.44	1.83	3.06	3.26	2.20	4.08	2.82	3.64	2.64	3.09	2.65	2.71
Vehicle 4	3.36	2.87	2.31	2.63	2.61	2.80	3.19	3.15	3.49	2.44	2.09	2.70	2.73	2.41	2.61
Vehicle 5	2.99	2.45	2.86	2.97	2.29	2.58	3.20	2.49	2.39	3.00	3.12	2.91	2.26	2.36	2.48
Vehicle 6	2.40	2.82	2.31	2.80	2.80	2.06	2.31	2.39	2.32	2.42	2.28	2.17	2.14	2.11	2.09
Vehicle 7	2.59	2.65	1.72	1.91	2.00	1.52	1.78	2.65	1.88	1.98	2.39	2.35	3.03	1.94	2.70
Vehicle 8	2.41	2.49	2.28	2.36	2.66	1.91	2.04	2.56	1.75	2.39	2.57	2.13	1.54	2.89	1.55
Vehicle 9	2.06	2.82	2.43	2.26	1.81	1.60	1.97	2.24	1.61	2.52	2.01	2.28	2.05	2.23	2.67
Vehicle 10	2.34	3.00	1.71	2.66	1.55	2.64	1.93	2.76	1.89	2.32	2.07	2.35	2.18	1.23	2.08
Vehicle 11	1.88			2.77	2.38	2.84	2.43		1.90	1.75	2.77	2.83	2.25		
Vehicle 12	1.89			2.58	2.27		2.76				1.89	2.07			

	Study Results														
No. vehicles used in cycle	12	10	10	12	12	11	12	10	11	11	12	12	11	10	10
Time of Vehicle 4 (s)	12.73	11.51	12.47	10.32	8.26	10.73	11.59	9.35	12.15	10.57	10.64	10.39	11.23	10.97	10.28
Time of Last Vehicle (s)	31.29	27.74	25.78	30.63	26.02	25.88	30.01	24.44	25.89	26.95	29.74	29.48	26.68	23.73	23.85
Avg Sat Headway (s/veh)	2.32	2.71	2.22	2.54	2.22	2.16	2.30	2.51	1.96	2.34	2.39	2.39	2.21	2.13	2.26
Unadj. Sat. Flow (veh/h/ln)	1552	1331	1623	1418	1622	1663	1564	1431	1834	1538	1508	1509	1631	1693	1592
Start up lost time	3.45	0.69	3.60	0.17	-0.62	2.07	2.38	-0.71	4.30	1.21	1.09	0.84	2.40	2.46	1.23

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. The headway for vehicle 1 is the amount of time (in seconds) that passed between the light turning green and vehicle 1 crossing the stop bar into the intersection.

Saturation Flow Study Summary Sheet

Intersection Information:

Intersection:	WIS 25 (S Broadway St) & WIS 29 (Main St)
Major Street:	WIS 29
Minor Street:	WIS 25
Study Approach:	NB
Approach Configuration:	4
Population Group:	< 25
Cycle by Date:	4/27 (1-20), 4/28 (21-40), 4/29 (41-60)

Date:	4/27/15- 4/29/15
WisDOT Region:	NW
Nearest Municipality:	Menomonie
County:	Dunn
Weather:	Clear
Pavement:	Dry
Observer:	Kevin B.

Data Collection Summary Data:

Cycles Studied:	60
Average number of vehicles per cycle:	10
Headways Measured (queue vehicles > 4) :	366
% Heavy Vehicles (of headways measured):	1.4%
% RT Vehicles (of headways measured):	0.0%
Average Saturation Flow Headway (s):	2.36
Standard Deviation of All Headways:	0.41
Standard Deviation of Cycle Headways:	0.16
Unadjusted Median Sat Flow Rate (veh/ln.hr):	1536
Unadjusted Avg Sat Flow Rate (veh/ln/hr):	1525
Average Start Up Lost Time (s):	0.85



WisDOT Signalized Intersection Capacity Study

Location ID:	27	Video Date:	4/27/15 - 4/28/15
Intersection Location:	US 12/Crescent St & WIS 25/Broadway St & 4th Ave	County:	Dunn
Approach Direction:	SB	Region:	NW
Approach Configuration:	4	Municipality:	Menomonie
Population Group:	< 25	Approach AADT:	20600

Cycle #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Lane Studied	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Start of Green	3:10 PM	3:25 PM	3:34 PM	3:35 PM	3:44 PM	3:49 PM	3:52 PM	4:02 PM	4:04 PM	4:08 PM	4:10 PM	4:13 PM	4:16 PM	4:17 PM	4:19 PM
Heavy Vehicles (1-4)					1										
Heavy Vehicles (5-12)					1		1							1	
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	2.34	2.38	2.21	2.55	2.22	2.31	1.83	1.82	2.15	2.18	2.05	2.18	2.48	2.90	2.05
Vehicle 2	3.59	2.83	1.98	2.18	3.84	2.78	2.08	2.37	3.63	3.23	4.17	3.01	2.74	2.37	3.04
Vehicle 3	2.71	2.42	3.16	1.65	3.00	2.48	2.66	2.69	2.77	3.26	1.97	3.15	2.85	1.92	2.50
Vehicle 4	1.19	2.76	4.07	2.76	2.55	2.25	2.21	2.38	2.56	2.14	2.29	2.81	1.70	2.27	3.52
Vehicle 5	2.50	2.21	2.63	2.04	2.59	1.77	2.83	1.84	1.47	2.06	2.46	1.57	2.25	2.14	1.96
Vehicle 6	2.58	2.21	3.05	2.62	3.44	1.30	2.57	3.46	2.18	2.07	1.96	1.99	2.29	1.93	2.47
Vehicle 7	1.95	2.28	2.18	1.20	2.34	1.70	1.88	1.63	1.94	1.78	1.28	2.10	3.27	3.04	3.33
Vehicle 8	2.00	2.17	1.81	1.81	1.40	2.61	2.83	2.09	2.00	2.57	2.82	2.06	1.70	2.93	1.86
Vehicle 9	2.07	2.43		2.16	3.85	1.80	1.76	3.15		2.65	2.13	2.76	2.76		2.22
Vehicle 10	2.18	2.19		1.79	3.74		3.03			3.13		1.62	2.12		2.08
Vehicle 11		1.57											1.93		1.86
Vehicle 12		2.18											2.41		

	Study Results														
No. vehicles used in cycle	10	12	8	10	10	9	10	9	8	10	9	10	12	8	11
Time of Vehicle 4 (s)	9.83	10.39	11.42	9.14	11.61	9.82	8.78	9.26	11.11	10.81	10.48	11.15	9.77	9.46	11.11
Time of Last Vehicle (s)	23.11	27.63	21.09	20.76	28.97	19.00	23.68	21.43	18.70	25.07	21.13	23.25	28.50	19.50	26.89
Avg Sat Headway (s/veh)	2.21	2.16	2.42	1.94	2.89	1.84	2.48	2.43	1.90	2.38	2.13	2.02	2.34	2.51	2.25
Unadj. Sat. Flow (veh/h/ln)	1627	1671	1489	1859	1244	1961	1450	1479	1897	1515	1690	1785	1538	1434	1597
Start up lost time	0.98	1.77	1.75	1.39	0.04	2.48	-1.15	-0.48	3.52	1.30	1.96	3.08	0.41	-0.58	2.09

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. The headway for vehicle 1 is the amount of time (in seconds) that passed between the light turning green and vehicle 1 crossing the stop bar into the intersection.

WisDOT Signalized Intersection Capacity Study

Location ID:	27	Video Date:	4/27/15 - 4/28/15
Intersection Location:	US 12/Crescent St & WIS 25/Broadway St & 4th Ave	County:	Dunn
Approach Direction:	SB	Region:	NW
Approach Configuration:	4	Municipality:	Menomonie
Population Group:	< 25	Approach AADT:	20600

Cycle #	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Lane Studied	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Start of Green	4:25 PM	4:26 PM	4:28 PM	4:37 PM	4:38 PM	4:44 PM	4:46 PM	4:47 PM	4:53 PM	4:58 PM	5:02 PM	5:05 PM	5:07 PM	5:08 PM	5:10 PM
Heavy Vehicles (1-4)				1									1		
Heavy Vehicles (5-12)										1				1	1
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	2.23	2.96	1.88	2.15	2.26	2.41	3.90	1.74	1.70	2.14	3.08	2.25	2.45	2.33	2.19
Vehicle 2	2.68	3.28	2.56	2.80	3.33	2.34	2.08	3.00	4.12	3.26	2.80	2.27	3.31	3.60	3.41
Vehicle 3	3.30	1.95	2.98	2.49	3.29	3.88	2.67	3.04	2.50	1.72	2.87	3.10	1.97	2.11	2.06
Vehicle 4	1.94	2.47	2.62	1.95	2.26	2.31	2.15	2.84	1.93	2.64	2.08	2.34	2.22	2.00	1.78
Vehicle 5	0.92	2.65	2.29	1.71	2.15	2.08	2.45	1.85	2.61	2.64	2.94	2.86	2.02	2.11	2.15
Vehicle 6	2.15	2.29	1.83	2.36	2.38	1.98	2.12	1.88	2.17	3.28	2.37	1.70	1.92	2.16	2.27
Vehicle 7	1.97	1.83	2.20	2.04	2.12	2.42	2.36	2.37	2.11	1.99	2.54	2.19	1.88	2.56	3.02
Vehicle 8	2.24	2.39	2.78	1.88	1.86	2.46	2.53	2.55	2.05	1.80	2.09	2.17	2.07	2.19	2.50
Vehicle 9		2.28	2.17		2.23	2.14	1.49	1.54	1.70	2.07	1.79	2.32	2.91	2.28	
Vehicle 10			2.76		2.34	1.69	2.30	2.08	2.43	2.59	1.17	1.12		2.23	
Vehicle 11			2.97		2.25			2.02		1.97	3.13	2.49		1.94	
Vehicle 12			2.25					1.94			1.85	1.75		1.84	

	Study Results														
No. vehicles used in cycle	8	9	12	8	11	10	10	12	10	11	12	12	9	12	8
Time of Vehicle 4 (s)	10.15	10.66	10.04	9.39	11.14	10.94	10.80	10.62	10.25	9.76	10.83	9.96	9.95	10.04	9.44
Time of Last Vehicle (s)	17.43	22.10	29.29	17.38	26.47	23.71	24.05	26.85	23.32	26.10	28.71	26.56	20.75	27.35	19.38
Avg Sat Headway (s/veh)	1.82	2.29	2.41	2.00	2.19	2.13	2.21	2.03	2.18	2.33	2.24	2.07	2.16	2.16	2.48
Unadj. Sat. Flow (veh/h/ln)	1978	1573	1496	1802	1644	1691	1630	1774	1653	1542	1611	1735	1667	1664	1449
Start up lost time	2.87	1.51	0.41	1.40	2.38	2.43	1.97	2.51	1.54	0.42	1.89	1.66	1.31	1.39	-0.50

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. The headway for vehicle 1 is the amount of time (in seconds) that passed between the light turning green and vehicle 1 crossing the stop bar into the intersection.

WisDOT Signalized Intersection Capacity Study

Location ID:	27	Video Date:	4/27/15 - 4/28/15
Intersection Location:	US 12/Crescent St & WIS 25/Broadway St & 4th Ave	County:	Dunn
Approach Direction:	SB	Region:	NW
Approach Configuration:	4	Municipality:	Menomonie
Population Group:	< 25	Approach AADT:	20600

Cycle #	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Lane Studied	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Start of Green	5:11 PM	5:14 PM	5:19 PM	5:23 PM	5:25 PM	5:26 PM	5:31 PM	5:35 PM	7:47 AM	7:49 AM	7:58 AM	3:33 PM	3:39 PM	3:42 PM	3:46 PM
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)				1					1				1		
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	2.01	2.26	2.61	2.33	2.91	2.00	2.72	3.02	2.28	3.38	2.18	1.95	1.59	3.95	1.66
Vehicle 2	3.11	3.05	3.11	3.40	3.38	2.90	3.91	3.02	2.13	3.34	2.96	3.02	3.90	3.49	2.53
Vehicle 3	2.21	2.66	2.30	2.29	1.91	2.71	2.29	2.41	2.57	1.41	3.08	2.40	2.46	2.77	2.37
Vehicle 4	1.77	2.51	2.41	2.99	3.45	2.07	1.30	1.88	3.50	2.24	4.28	2.19	2.52	2.61	1.91
Vehicle 5	1.73	2.37	2.39	1.86	1.80	1.90	1.65	1.89	2.53	2.48	2.10	3.21	1.73	2.93	1.72
Vehicle 6	1.58	2.13	1.80	1.95	1.77	3.30	2.51	2.37	2.38	3.20	3.94	3.18	2.46	1.77	2.22
Vehicle 7	2.77	3.06	2.78	1.89	1.84	2.50	2.25	2.80	1.53	2.21	1.40	2.02	1.60	1.07	2.22
Vehicle 8	1.95	3.13	1.96	2.62	1.54	1.82	2.58	2.04	2.36	3.27	2.18	2.26	1.85	2.45	2.77
Vehicle 9	1.47	2.24		2.56		1.58	1.85	2.77	2.91	1.43		1.69	3.01	2.53	2.17
Vehicle 10	1.93	2.98				1.74		2.44	2.49						2.10
Vehicle 11	1.20	2.99				2.36		3.53	2.23						1.85
Vehicle 12	2.42	1.48						1.26	1.64						2.04

	Study Results														
No. vehicles used in cycle	12	12	8	9	8	11	9	12	12	9	8	9	9	9	12
Time of Vehicle 4 (s)	9.10	10.48	10.43	11.01	11.65	9.68	10.22	10.33	10.48	10.37	12.50	9.56	10.47	12.82	8.47
Time of Last Vehicle (s)	24.15	30.86	19.36	21.89	18.60	24.88	21.06	29.43	28.55	22.96	22.12	21.92	21.12	23.57	25.56
Avg Sat Headway (s/veh)	1.88	2.55	2.23	2.18	1.74	2.17	2.17	2.39	2.26	2.52	2.41	2.47	2.13	2.15	2.14
Unadj. Sat. Flow (veh/h/ln)	1914	1413	1613	1654	2072	1658	1661	1508	1594	1430	1497	1456	1690	1674	1685
Start up lost time	1.58	0.29	1.50	2.31	4.70	0.99	1.55	0.78	1.44	0.30	2.88	-0.33	1.95	4.22	-0.08

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. The headway for vehicle 1 is the amount of time (in seconds) that passed between the light turning green and vehicle 1 crossing the stop bar into the intersection.

WisDOT Signalized Intersection Capacity Study

Location ID:	27	Video Date:	4/27/15 - 4/28/15
Intersection Location:	US 12/Crescent St & WIS 25/Broadway St & 4th Ave	County:	Dunn
Approach Direction:	SB	Region:	NW
Approach Configuration:	4	Municipality:	Menomonie
Population Group:	< 25	Approach AADT:	20600

Cycle #	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Lane Studied	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Start of Green	3:52 PM	3:54 PM	3:57 PM	4:00 PM	4:01 PM	4:03 PM	4:04 PM	4:07 PM	4:10 PM	4:12 PM	4:18 PM	4:19 PM	4:25 PM	4:27 PM	4:30 PM
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)															
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	3.02	2.15	1.68	1.68	5.03	2.46	2.32	1.64	2.70	2.23	2.06	2.25	4.90	2.60	2.16
Vehicle 2	3.70	4.40	2.98	3.55	2.47	2.98	2.75	2.85	5.22	2.56	2.53	2.84	2.90	3.66	3.27
Vehicle 3	2.80	2.22	1.87	2.47	2.39	2.29	3.00	2.46	2.49	3.21	3.05	2.52	2.27	2.25	2.71
Vehicle 4	2.41	2.46	1.98	2.70	2.53	2.40	2.58	2.31	2.31	1.75	2.62	2.57	2.33	2.81	1.69
Vehicle 5	1.91	2.87	3.15	2.66	2.59	2.71	2.39	1.71	2.71	3.47	2.25	1.40	2.06	2.40	2.38
Vehicle 6	1.73	1.98	2.12	2.51	3.60	1.93	2.29	3.88	1.61	3.10	2.54	2.75	1.90	2.12	2.36
Vehicle 7	1.63	3.41	2.41	1.94	1.83	3.01	2.76	2.74	1.82	2.53	1.86	2.18	2.37	2.36	1.82
Vehicle 8	3.33	1.96	2.38	1.23	2.31	2.00	2.46	2.00	2.89	2.97	1.45	3.27	2.29	1.33	2.25
Vehicle 9	1.83	1.54	1.98	1.57	2.15	2.16	1.98	3.70	1.71	1.57		2.14	2.02	1.86	
Vehicle 10		1.95		2.59	2.36	1.54		1.75		2.27		1.83	2.17		
Vehicle 11				1.64	1.97	2.39							2.76		
Vehicle 12				1.89	1.88	2.13							1.84		

	Study Results														
No. vehicles used in cycle	9	10	9	12	12	12	9	10	9	10	8	10	12	9	8
Time of Vehicle 4 (s)	11.93	11.23	8.51	10.40	12.42	10.13	10.65	9.26	12.72	9.75	10.26	10.18	12.40	11.32	9.83
Time of Last Vehicle (s)	22.36	24.94	20.55	26.43	31.11	28.00	22.53	25.04	23.46	25.66	18.36	23.75	29.81	21.39	18.64
Avg Sat Headway (s/veh)	2.09	2.28	2.41	2.00	2.34	2.23	2.38	2.63	2.15	2.65	2.02	2.26	2.18	2.01	2.20
Unadj. Sat. Flow (veh/h/ln)	1726	1575	1495	1797	1541	1612	1515	1369	1676	1358	1778	1592	1654	1787	1635
Start up lost time	3.59	2.09	-1.12	2.39	3.07	1.20	1.15	-1.26	4.13	-0.86	2.16	1.13	3.69	3.26	1.02

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. The headway for vehicle 1 is the amount of time (in seconds) that passed between the light turning green and vehicle 1 crossing the stop bar into the intersection.

Saturation Flow Study Summary Sheet

Intersection Information:

Intersection:	US 12/Crescent St & WIS 25/Broadway St & 4th Ave
Major Street:	US 12/Crescent St.
Minor Street:	WIS 25/Broadway & 4th Ave.
Study Approach:	SB
Approach Configuration:	4
Population Group:	< 25
Cycle by Date:	4/27/15 (1-38) 4/28/15 (39-60)

Date:	4/27/15 - 4/28/15
WisDOT Region:	NW
Nearest Municipality:	Menomonie
County:	Dunn
Weather:	Clear
Pavement:	Dry
Observer:	Allen

Data Collection Summary Data:

Cycles Studied:	60
Average number of vehicles per cycle:	10
Headways Measured (queue vehicles > 4) :	358
% Heavy Vehicles (of headways measured):	2.5%
% RT Vehicles (of headways measured):	0.0%
Average Saturation Flow Headway (s):	2.23
Standard Deviation of All Headways:	0.53
Standard Deviation of Cycle Headways:	0.22
Unadjusted Median Sat Flow Rate (veh/ln.hr):	1632
Unadjusted Avg Sat Flow Rate (veh/ln/hr):	1612
Average Start Up Lost Time (s):	1.52



WisDOT Signalized Intersection Capacity Study

Location ID: 28
Intersection Location: US 12/Pine St. & WIS 25/County J
Approach Direction: SB
Approach Configuration: 5
Population Group: < 25

Video Date: 4/27/15 - 4/29/15
County: Dunn
Region: NW
Municipality: Menomonie
Approach AADT: 18000

Cycle #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Lane Studied	1	2	1	1	2	2	1	1	2	1	2	2	1	2	2
Start of Green	3:36 PM	3:36 PM	3:41 PM	3:53 PM	4:11 PM	4:14 PM	4:35 PM	4:51 PM	4:51 PM	5:05 PM	5:05 PM	5:19 PM	5:21 PM	5:23 PM	5:33 PM
Heavy Vehicles (1-4)													1		
Heavy Vehicles (5-12)			1		1										
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	2.87	2.37	2.42	1.44	2.68	2.36	3.28	2.92	2.83	2.87	2.58	2.29	2.78	2.77	2.61
Vehicle 3	2.32	1.62	2.13	2.16	1.47	2.98	1.38	2.13	2.67	1.84	2.46	2.84	2.74	2.90	2.64
Vehicle 4	2.45	2.80	2.26	2.95	2.71	2.14	2.01	3.93	2.36	1.74	2.39	2.17	3.04	1.28	3.25
Vehicle 5	3.29	2.91	2.04	2.33	2.39	2.12	1.18	1.63	2.47	2.57	1.50	2.18	2.53	2.78	1.94
Vehicle 6	2.21	2.11	2.02	3.24	2.24	1.65	2.41	1.51	2.14	1.68	3.24	1.76	1.57	2.50	1.52
Vehicle 7	2.68	1.37	2.73	2.51	1.82	2.27	1.75	1.49	2.45	1.62	2.74	1.89	1.06	2.06	2.33
Vehicle 8	2.45	2.07	2.24	1.81	2.09	2.18	1.68	1.78	2.04	2.26	1.99	2.14	2.04	1.61	1.98
Vehicle 9	1.71	1.53	3.01				2.02	1.68	1.61	1.49	1.61	2.09	2.61		
Vehicle 10								2.27	1.55			3.39	2.55		
Vehicle 11								1.56							
Vehicle 12								1.53							

	Study Results														
No. vehicles used in cycle	9	9	9	8	8	8	9	12	10	9	9	10	10	8	8
Time of Vehicle 4 (s)	7.64	6.79	6.81	6.55	6.86	7.48	6.67	8.98	7.86	6.45	7.43	7.30	8.56	6.95	8.50
Time of Last Vehicle (s)	19.98	16.78	18.85	16.44	15.40	15.70	15.71	22.43	20.12	16.07	18.51	20.75	20.92	15.90	16.27
Avg Sat Headway (s/veh)	2.47	2.00	2.41	2.47	2.13	2.05	1.81	1.68	2.04	1.92	2.22	2.24	2.06	2.24	1.94
Unadj. Sat. Flow (veh/h/ln)	1459	1802	1495	1456	1686	1752	1991	2141	1762	1871	1625	1606	1748	1609	1853

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

WisDOT Signalized Intersection Capacity Study

Location ID: 28
Intersection Location: US 12/Pine St. & WIS 25/County J
Approach Direction: SB
Approach Configuration: 5
Population Group: < 25

Video Date: 4/27/15 - 4/29/15
County: Dunn
Region: NW
Municipality: Menomonie
Approach AADT: 18000

Cycle #	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Lane Studied	1	2	1	2	1	1	1	1	2	1	2	1	2	1	1
Start of Green	7:50 AM	3:57 PM	4:08 PM	4:21 PM	4:29 PM	4:33 PM	4:44 PM	4:45 PM	4:48 PM	4:50 PM	4:50 PM	4:59 PM	5:02 PM	5:05 PM	5:06 PM
Heavy Vehicles (1-4)								1							
Heavy Vehicles (5-12)						1									
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	2.74	4.58	2.82	2.16	2.85	3.42	1.88	3.19	2.56	2.68	2.18	2.21	3.09	1.76	2.41
Vehicle 3	2.63	1.87	2.42	2.25	2.42	2.62	2.78	2.38	3.72	2.24	2.59	2.94	1.61	4.14	3.00
Vehicle 4	2.17	0.98	2.13	2.31	1.99	1.89	3.35	3.20	1.92	1.92	1.98	2.86	2.20	2.24	1.54
Vehicle 5	2.82	3.27	1.98	1.99	1.77	3.02	2.68	2.62	2.67	1.86	1.96	1.88	3.56	1.85	2.08
Vehicle 6	2.11	1.13	2.14	1.90	2.38	3.32	1.05	1.97	3.76	1.92	1.80	1.50	2.12	2.34	3.25
Vehicle 7	2.15	1.55	1.90	2.34	2.54	1.95	1.98	2.43	1.18	2.94	2.85	2.36	1.40	2.00	2.07
Vehicle 8	1.67	1.54	1.44	1.28	1.62	1.35	2.27	1.68	0.80	1.62	2.46	1.98	1.35	2.56	2.20
Vehicle 9		1.46	2.03		1.46	1.78		1.45				2.30	1.62	2.05	2.16
Vehicle 10			2.36		1.36								1.66	1.34	2.09
Vehicle 11			2.25											1.64	3.07
Vehicle 12															

	Study Results														
No. vehicles used in cycle	8	9	11	8	10	9	8	9	8	8	8	9	10	11	11
Time of Vehicle 4 (s)	7.54	7.43	7.37	6.72	7.26	7.93	8.01	8.77	8.20	6.84	6.75	8.01	6.90	8.14	6.95
Time of Last Vehicle (s)	16.29	16.38	21.47	14.23	18.39	19.35	15.99	18.92	16.61	15.18	15.82	18.03	18.61	21.92	23.87
Avg Sat Headway (s/veh)	2.19	1.79	2.01	1.88	1.85	2.28	1.99	2.03	2.10	2.08	2.27	2.00	1.95	1.97	2.42
Unadj. Sat. Flow (veh/h/ln)	1646	2011	1787	1917	1941	1576	1805	1773	1712	1727	1588	1796	1845	1829	1489

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

WisDOT Signalized Intersection Capacity Study

Location ID: 28
Intersection Location: US 12/Pine St. & WIS 25/County J
Approach Direction: SB
Approach Configuration: 5
Population Group: < 25

Video Date: 4/27/15 - 4/29/15
County: Dunn
Region: NW
Municipality: Menomonie
Approach AADT: 18000

Cycle #	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Lane Studied	2	1	1	1	2	2	1	1	1	1	2	1	1	2	1
Start of Green	5:08 PM	5:15 PM	5:21 PM	5:30 PM	5:30 PM	5:33 PM	5:36 PM	5:42 PM	5:44 PM	5:46 PM	5:50 PM	5:53 PM	5:54 PM	4:02 PM	4:05 PM
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)						1									
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	2.39	2.79	3.20	3.58	3.11	2.75	2.61	5.45	2.38	3.21	2.65	2.34	2.67	2.73	2.97
Vehicle 3	2.80	2.17	1.87	1.73	1.86	3.13	1.90	2.41	3.08	2.43	1.95	2.78	2.21	1.94	2.26
Vehicle 4	2.22	2.45	2.00	2.19	2.11	2.48	2.20	2.71	2.35	1.76	2.56	1.68	2.03	2.85	1.86
Vehicle 5	1.79	1.72	2.40	2.06	1.94	2.04	1.91	2.24	1.66	1.75	2.56	1.62	2.03	2.99	2.79
Vehicle 6	2.59	1.95	2.71	2.16	2.30	1.84	1.59	1.82	1.93	2.10	1.71	2.30	1.83	2.67	2.69
Vehicle 7	1.48	1.28	3.61	2.06	1.71	1.92	2.28	2.03	2.83	2.52	1.71	1.24	2.01	1.36	2.15
Vehicle 8	0.86	2.36	1.94	1.57	1.50	2.56	1.43	2.85	1.55	1.47	1.71	1.75	1.31	1.75	2.55
Vehicle 9	2.76		1.43	1.60		2.07		2.58		1.58					
Vehicle 10	2.02		1.27			2.06		1.51		2.07					
Vehicle 11	1.67		1.91			2.48		1.84		1.61					
Vehicle 12															

	Study Results														
No. vehicles used in cycle	11	8	11	9	8	11	8	11	8	8	11	8	8	8	8
Time of Vehicle 4 (s)	7.41	7.41	7.07	7.50	7.08	8.36	6.71	10.57	7.81	7.40	7.16	6.80	6.91	7.52	7.09
Time of Last Vehicle (s)	20.58	14.72	22.34	16.95	14.53	23.33	13.92	25.44	15.78	15.24	20.11	13.71	14.09	16.29	17.27
Avg Sat Headway (s/veh)	1.88	1.83	2.18	1.89	1.86	2.14	1.80	2.12	1.99	1.96	1.85	1.73	1.80	2.19	2.55
Unadj. Sat. Flow (veh/h/ln)	1913	1970	1650	1905	1933	1683	1997	1695	1807	1837	1946	2084	2006	1642	1415

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

WisDOT Signalized Intersection Capacity Study

Location ID: 28
Intersection Location: US 12/Pine St. & WIS 25/County J
Approach Direction: SB
Approach Configuration: 5
Population Group: < 25

Video Date: 4/27/15 - 4/29/15
County: Dunn
Region: NW
Municipality: Menomonie
Approach AADT: 18000

Cycle #	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Lane Studied	1	1	2	1	2	1	2	2	1	1	2	2	1	1	
Start of Green	4:06 PM	4:21 PM	4:30 PM	4:38 PM	4:38 PM	4:42 PM	4:59 PM	5:05 PM	5:09 PM	5:18 PM	5:29 PM	5:35 PM	5:36 PM	5:51 PM	
Heavy Vehicles (1-4)			1												
Heavy Vehicles (5-12)					1										
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	2.52	3.26	4.08	3.67	2.69	2.45	2.21	3.21	2.88	3.15	2.25	2.86	2.89	2.56	
Vehicle 3	1.97	2.56	2.32	2.01	2.46	1.93	2.81	2.37	2.01	2.07	2.51	2.68	2.06	2.39	
Vehicle 4	1.48	1.79	1.79	2.23	2.30	2.02	2.76	2.65	2.57	1.87	2.51	1.92	2.04	2.31	
Vehicle 5	3.01	3.01	2.03	1.47	1.77	1.98	1.97	2.31	1.61	2.71	2.09	2.70	3.96	1.80	
Vehicle 6	1.69	1.46	2.00	1.85	2.39	2.23	1.82	2.08	1.82	1.89	2.94	2.10	1.71	1.69	
Vehicle 7	1.34	2.32	1.67	1.49	2.49	1.57	2.57	1.83	2.18	1.09	1.70	1.94	2.15	1.89	
Vehicle 8	2.17	1.37	2.99	1.97	2.11	1.42	2.05	1.73	1.77	2.55	2.26	1.77	2.12	2.12	
Vehicle 9		1.31		1.48		2.18	2.30			1.56	1.49	2.19			
Vehicle 10											1.47				
Vehicle 11											2.02				
Vehicle 12															

	Study Results														
No. vehicles used in cycle	8	9	8	9	8	9	9	8	8	9	11	9	8	8	
Time of Vehicle 4 (s)	5.97	7.61	8.19	7.91	7.45	6.40	7.78	8.23	7.46	7.09	7.27	7.46	6.99	7.26	
Time of Last Vehicle (s)	14.18	17.08	16.88	16.17	16.21	15.78	18.49	16.18	14.84	16.89	21.24	18.16	16.93	14.76	
Avg Sat Headway (s/veh)	2.05	1.89	2.17	1.65	2.19	1.88	2.14	1.99	1.84	1.96	2.00	2.14	2.49	1.88	
Unadj. Sat. Flow (veh/h/ln)	1754	1901	1657	2179	1644	1919	1681	1811	1951	1837	1804	1682	1449	1920	

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

Saturation Flow Study Summary Sheet

Intersection Information:

Intersection:	US 12/Pine St. & WIS 25/County J
Major Street:	US 12/Pine St.
Minor Street:	WIS 25/County J
Study Approach:	SB
Approach Configuration:	5
Population Group:	< 25
Cycles by Date:	4/27/15 (1-15) 4/28 (16-44) 4/29 (45-59)

Video Date:	4/27/15 - 4/29/15
WisDOT Region:	NW
Nearest Municipality:	Menomonie
County:	Dunn
Weather:	Clear
Pavement:	Dry
Observer:	Allen N.

Data Collection Summary Data:

Cycles Studied:	59
Average number of vehicles per cycle:	9
Headways Measured (queue vehicles > 4) :	294
% Heavy Vehicles (of headways measured):	1.7%
% RT Vehicles (of headways measured):	0.0%
Average Saturation Flow Headway (s):	2.04
Standard Deviation of All Headways:	0.53
Standard Deviation of Cycle Headways:	0.21
Unadjusted Median Sat Flow Rate (veh/ln.hr):	1796
Unadjusted Avg Sat Flow Rate (veh/ln/hr):	1766



WisDOT Signalized Intersection Capacity Study

Location ID: 29
Intersection Location: US 12 & WIS 53
Approach Direction: EB (1-34) & WB (35-65)
Approach Configuration: 5
Population Group: 100 to 250

Video Date: 4/29/2015
County: Eau Claire
Region: NW
Municipality: Eau Claire
Approach AADT: 25400

Cycle #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Lane Studied	1	1	2	1	1	1	2	1	1	2	2	1	2	1	1
Start of Green	3:31 PM	3:40 PM	3:40 PM	3:47 PM	4:04 PM	4:08 PM	4:08 PM	4:16 PM	4:20 PM	4:20 PM	4:25 PM	4:27 PM	4:27 PM	4:37 PM	4:45 PM
Heavy Vehicles (1-4)						1	1								
Heavy Vehicles (5-12)									1	2					
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	2.68	3.37	2.09	2.78	2.80	2.73	3.41	2.30	2.61	3.58	3.11	1.86	2.18	2.28	3.40
Vehicle 3	2.11	2.09	2.43	2.74	2.00	2.94	2.64	2.35	1.69	3.54	1.87	1.81	1.46	2.13	2.08
Vehicle 4	1.66	1.88	1.43	1.81	1.84	3.26	2.50	2.70	1.81	1.74	3.25	1.57	1.97	1.99	2.04
Vehicle 5	2.27	1.62	2.15	2.81	1.61	1.78	3.21	2.78	2.43	1.49	2.14	2.76	1.15	1.72	1.66
Vehicle 6	1.67	2.58	1.74	1.64	2.36	2.48	2.13	1.22	2.20	2.11	1.68	1.75	2.29	3.05	1.61
Vehicle 7	2.25	1.90	1.39	2.35	2.09	1.44	2.23	1.69	3.02	2.09	2.10	1.91	1.90	1.55	1.92
Vehicle 8	1.80	2.65	1.83	1.89	1.64	2.69	1.64	1.29	1.12	1.82	2.46	1.66	2.07	1.69	1.90
Vehicle 9		2.21	2.35		1.38	1.68	2.33	2.01	1.44	3.20	1.57			2.64	2.11
Vehicle 10		1.95	2.78			1.50	1.62		2.12		1.44				0.60
Vehicle 11		1.75				1.72	1.95		1.51		1.87				2.58
Vehicle 12						1.15	1.52		1.41		1.82				2.36

	Study Results														
No. vehicles used in cycle	8	11	10	8	9	12	12	9	12	9	12	8	8	9	12
Time of Vehicle 4 (s)	6.45	7.34	5.95	7.33	6.64	8.93	8.55	7.35	6.11	8.86	8.23	5.24	5.61	6.40	7.52
Time of Last Vehicle (s)	14.44	22.00	18.19	16.02	15.72	23.37	25.18	16.34	21.36	19.57	23.31	13.32	13.02	17.05	22.26
Avg Sat Headway (s/veh)	2.00	2.09	2.04	2.17	1.82	1.80	2.08	1.80	1.91	2.14	1.89	2.02	1.85	2.13	1.84
Unadj. Sat. Flow (veh/h/ln)	1802	1719	1765	1657	1982	1994	1732	2002	1889	1681	1910	1782	1943	1690	1954

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

WisDOT Signalized Intersection Capacity Study

Location ID: 29
Intersection Location: US 12 & WIS 53
Approach Direction: EB (1-34) & WB (35-65)
Approach Configuration: 5
Population Group: 100 to 250

Video Date: 4/29/2015
County: Eau Claire
Region: NW
Municipality: Eau Claire
Approach AADT: 25400

Cycle #	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Lane Studied	1	2	1	2	1	1	1	2	2	1	1	2	1	2	1
Start of Green	4:48 PM	4:48 PM	4:50 PM	4:50 PM	4:56 PM	5:06 PM	5:08 PM	5:08 PM	5:12 PM	5:15 PM	5:17 PM	5:19 PM	5:21 PM	5:21 PM	5:23 PM
Heavy Vehicles (1-4)						1									
Heavy Vehicles (5-12)															
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	2.57	2.62	2.16	2.34	2.39	2.12	2.16	2.66	4.24	2.39	2.01	2.85	2.71	2.76	2.04
Vehicle 3	1.57	3.05	1.78	2.31	1.95	2.93	2.34	1.64	2.31	1.96	2.57	2.94	2.34	2.23	1.70
Vehicle 4	3.05	1.71	1.61	2.39	1.53	3.15	2.47	2.66	2.52	1.76	2.51	2.28	2.06	1.72	2.16
Vehicle 5	1.38	2.51	1.33	1.78	2.25	2.21	1.94	1.87	1.68	2.03	3.02	1.79	1.66	1.70	1.58
Vehicle 6	2.27	2.02	1.90	1.66	2.05	2.26	2.27	1.84	2.54	3.40	2.13	1.29	1.29	1.92	1.66
Vehicle 7	1.98	2.07	1.95	1.33	1.58	2.99	1.82	1.46	1.67	1.67	1.70	2.61	2.23	1.37	1.80
Vehicle 8	1.54	1.55	1.63	1.73	1.74	2.04	1.77	1.89	1.45	1.95	1.68	1.42	1.89	1.81	1.54
Vehicle 9	1.81	2.02		1.50	1.92	1.75	1.53		1.59	1.50		2.21	1.69	1.01	2.27
Vehicle 10	1.99	2.48			2.08	1.70			1.89	2.76		1.88	1.50		1.34
Vehicle 11	1.47								2.01	2.34		2.10			1.27
Vehicle 12	1.59								1.93						2.58

	Study Results														
No. vehicles used in cycle	12	10	8	9	10	10	9	8	12	11	8	11	10	9	12
Time of Vehicle 4 (s)	7.19	7.38	5.55	7.04	5.87	8.20	6.97	6.96	9.07	6.11	7.09	8.07	7.11	6.71	5.90
Time of Last Vehicle (s)	21.22	20.03	12.36	15.04	17.49	21.15	16.30	14.02	23.83	21.76	15.62	21.37	17.37	14.52	19.94
Avg Sat Headway (s/veh)	1.75	2.11	1.70	1.60	1.94	2.16	1.87	1.76	1.85	2.24	2.13	1.90	1.71	1.56	1.76
Unadj. Sat. Flow (veh/h/ln)	2053	1708	2115	2250	1859	1668	1929	2040	1951	1610	1688	1895	2105	2305	2051

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

WisDOT Signalized Intersection Capacity Study

Location ID: 29
Intersection Location: US 12 & WIS 53
Approach Direction: EB (1-34) & WB (35-65)
Approach Configuration: 5
Population Group: 100 to 250

Video Date: 4/29/2015
County: Eau Claire
Region: NW
Municipality: Eau Claire
Approach AADT: 25400

Cycle #	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Lane Studied	1	1	2	1	2	2	1	2	2	1	2	2	2	1	2
Start of Green	5:27 PM	5:36 PM	5:36 PM	6:05 PM	3:34 PM	3:36 PM	3:38 PM	3:38 PM	3:40 PM	3:43 PM	3:47 PM	4:08 PM	4:29 PM	4:37 PM	4:38 PM
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)											1		1		
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	3.24	3.09	3.28	2.61	2.12	3.11	2.73	2.92	2.69	3.97	3.45	2.64	3.29	2.37	2.40
Vehicle 3	1.67	1.70	2.43	2.10	2.37	2.25	2.32	2.05	3.08	2.00	2.00	1.88	3.60	2.60	2.30
Vehicle 4	1.70	2.08	2.38	2.99	2.02	2.20	1.82	2.19	1.86	1.97	2.27	2.45	1.66	1.94	2.42
Vehicle 5	1.46	1.86	2.39	2.44	1.77	1.79	2.18	2.81	1.33	1.66	2.84	2.40	1.80	2.05	1.89
Vehicle 6	2.05	2.11	1.64	2.79	1.46	1.27	2.11	1.43	1.37	1.84	2.09	1.67	2.04	1.58	1.67
Vehicle 7	1.58	2.15	1.85	1.23	1.99	2.74	1.96	1.64	1.95	2.63	1.83	1.61	1.94	1.73	2.18
Vehicle 8	2.12	1.47	1.34	1.78	1.46	1.75	1.40	2.42	1.95	2.18	2.13	2.84	1.70	1.43	1.98
Vehicle 9	1.31	2.03	1.93	1.51	2.21	1.67	1.86	1.35	2.62		2.01	1.47		2.19	1.72
Vehicle 10		1.49	2.29				1.76	1.52	1.47		2.54	2.08		1.77	1.79
Vehicle 11			1.43				1.98	1.35			1.56			1.74	2.78
Vehicle 12			1.17				1.96	1.60							

	Study Results														
No. vehicles used in cycle	9	10	12	9	9	9	12	12	10	8	11	10	8	11	11
Time of Vehicle 4 (s)	6.61	6.87	8.09	7.70	6.51	7.56	6.87	7.16	7.63	7.94	7.72	6.97	8.55	6.91	7.12
Time of Last Vehicle (s)	15.13	17.98	22.13	17.45	15.40	16.78	22.08	21.28	18.32	16.25	22.72	19.04	16.03	19.40	21.13
Avg Sat Headway (s/veh)	1.70	1.85	1.76	1.95	1.78	1.84	1.90	1.77	1.78	2.08	2.14	2.01	1.87	1.78	2.00
Unadj. Sat. Flow (veh/h/ln)	2113	1944	2051	1846	2025	1952	1893	2040	2021	1733	1680	1790	1925	2018	1799

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

WisDOT Signalized Intersection Capacity Study

Location ID: 29
Intersection Location: US 12 & WIS 53
Approach Direction: EB (1-34) & WB (35-65)
Approach Configuration: 5
Population Group: 100 to 250

Video Date: 4/29/2015
County: Eau Claire
Region: NW
Municipality: Eau Claire
Approach AADT: 25400

Cycle #	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Lane Studied	1	2	2	1	2	1	2	1	2	1	2	1	2	2	2
Start of Green	4:42 PM	4:50 PM	4:59 PM	5:05 PM	5:05 PM	5:09 PM	5:09 PM	5:11 PM	5:11 PM	5:13 PM	5:13 PM	5:15 PM	5:15 PM	5:21 PM	5:49 PM
Heavy Vehicles (1-4)	1														1
Heavy Vehicles (5-12)		1													
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	2.54	2.38	2.27	2.79	3.04	2.52	2.88	2.38	2.88	2.31	3.21	2.72	1.70	2.83	3.17
Vehicle 3	2.07	3.17	2.80	2.30	3.64	2.02	2.89	3.48	2.84	1.96	1.95	2.10	2.08	3.15	3.08
Vehicle 4	2.63	2.10	2.23	1.44	1.80	1.42	1.70	1.71	1.89	1.72	1.81	2.34	1.94	2.15	2.10
Vehicle 5	1.90	2.67	2.73	1.48	2.07	2.50	2.08	2.80	1.87	2.66	2.90	1.58	2.26	2.48	2.08
Vehicle 6	2.25	2.15	2.57	2.43	1.46	1.97	2.57	2.21	1.68	2.15	1.54	1.86	1.59	1.45	2.21
Vehicle 7	1.62	1.83	1.32	2.36	1.58	2.81	1.35	1.31	2.00	1.60	1.93	1.76	1.88	2.68	1.42
Vehicle 8	1.76	2.18	1.66	1.64	1.25	2.07	2.43	1.85	2.19	2.27	2.38	2.32	1.58	1.91	1.81
Vehicle 9	3.05	3.10	2.34	1.59	1.51	1.74	2.12	1.76	2.12	2.35	1.82	2.02	1.08	1.95	
Vehicle 10					2.30	1.95		1.69	2.90	1.86			1.78	1.48	
Vehicle 11					1.47			1.82	2.36	1.72					
Vehicle 12					1.76			1.70	2.38	2.22					

	Study Results														
No. vehicles used in cycle	9	9	9	9	12	10	9	12	12	12	9	9	10	10	8
Time of Vehicle 4 (s)	7.24	7.65	7.30	6.53	8.48	5.96	7.47	7.57	7.61	5.99	6.97	7.16	5.72	8.13	8.35
Time of Last Vehicle (s)	17.82	19.58	17.92	16.03	21.88	19.00	18.02	22.71	25.11	22.82	17.54	16.70	15.89	20.08	15.87
Avg Sat Headway (s/veh)	2.12	2.39	2.12	1.90	1.68	2.17	2.11	1.89	2.19	2.10	2.11	1.91	1.69	1.99	1.88
Unadj. Sat. Flow (veh/h/ln)	1701	1509	1695	1895	2149	1656	1706	1902	1646	1711	1703	1887	2124	1808	1915

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

WisDOT Signalized Intersection Capacity Study

Location ID: 29
Intersection Location: US 12 & WIS 53
Approach Direction: EB (1-34) & WB (35-65)
Approach Configuration: 5
Population Group: 100 to 250

Video Date: 4/29/2015
County: Eau Claire
Region: NW
Municipality: Eau Claire
Approach AADT: 25400

Cycle #	61	62	63	64	65
Lane Studied	2	2	2	1	2
Start of Green	5:51 PM	5:54 PM	6:03 PM	6:05 PM	6:08 PM
Heavy Vehicles (1-4)					
Heavy Vehicles (5-12)					
Right Turns (1-4)					
Right Turns (5-12)					

Vehicle	Headway1 (s)				
Vehicle 1	-	-	-	-	-
Vehicle 2	3.20	2.50	2.37	3.13	2.89
Vehicle 3	2.74	2.50	2.34	3.61	1.91
Vehicle 4	1.72	2.21	2.64	1.68	2.06
Vehicle 5	1.77	1.42	1.94	2.32	1.40
Vehicle 6	1.77	2.00	1.68	1.70	2.02
Vehicle 7	1.89	1.72	2.39	1.88	2.31
Vehicle 8	1.70	2.13	1.39	2.16	2.21
Vehicle 9	1.80	1.96	2.27	2.78	2.33
Vehicle 10				2.65	2.07
Vehicle 11					
Vehicle 12					

	Study Results				
No. vehicles used in cycle	9	9	9	10	10
Time of Vehicle 4 (s)	7.66	7.21	7.35	8.42	6.86
Time of Last Vehicle (s)	16.59	16.44	17.02	21.91	19.20
Avg Sat Headway (s/veh)	1.79	1.85	1.93	2.25	2.06
Unadj. Sat. Flow (veh/h/ln)	2016	1950	1861	1601	1750

Saturation Flow Study Summary Sheet

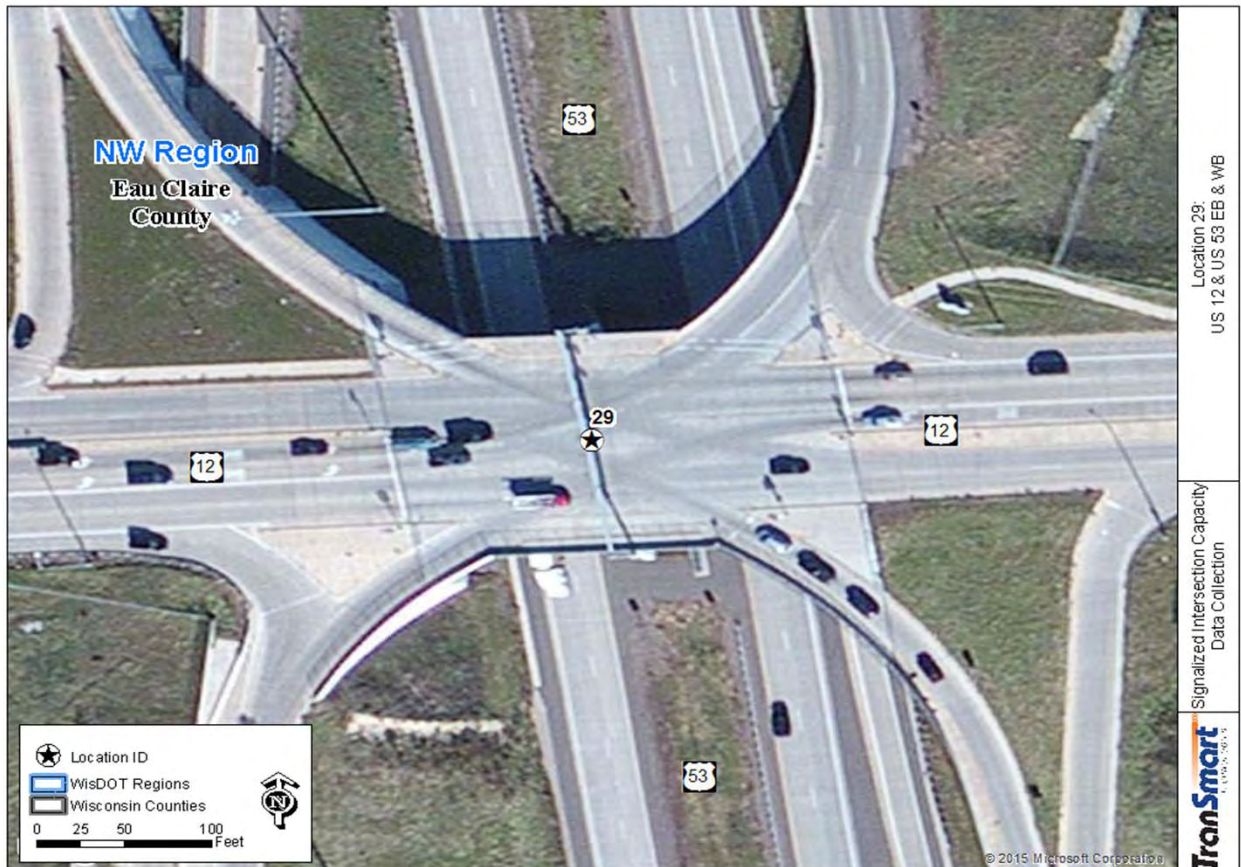
Intersection Information:

Intersection:	US 12 & WIS 53
Major Street:	US 12
Minor Street:	WIS 53
Study Approach:	EB (1-34) & WB (35-65)
Approach Configuration:	5
Population Group:	100 to 250
Cycles by Date:	4/29/15 (1 - 65)

Video Date:	4/29/2015
WisDOT Region:	NW
Nearest Municipality:	Eau Claire
County:	Eau Claire
Weather:	Clear
Pavement:	Dry
Observer:	Kevin B.

Data Collection Summary Data:

Cycles Studied:	65
Average number of vehicles per cycle:	10
Headways Measured (queue vehicles > 4) :	385
% Heavy Vehicles (of headways measured):	1.6%
% RT Vehicles (of headways measured):	0.0%
Average Saturation Flow Headway (s):	1.93
Standard Deviation of All Headways:	0.44
Standard Deviation of Cycle Headways:	0.18
Unadjusted Median Sat Flow Rate (veh/ln.hr):	1893
Unadjusted Avg Sat Flow Rate (veh/ln/hr):	1861



WisDOT Signalized Intersection Capacity Study

Location ID: 30
Intersection Location: US 12 & Craig EB (1 -31), WB (32 - 65)
Approach Direction: EB & WB
Approach Configuration: 6
Population Group: 100 to 250

Video Date: 4/29/2015
County: Eau Claire
Region: NW
Municipality: Eau Claire
Approach AADT: 22300

Cycle #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Lane Studied	3	1	3	1	2	3	3	2	1	3	1	3	1	3	3
Start of Green	3:32 PM	3:48 PM	3:53 PM	3:55 PM	3:55 PM	3:55 PM	4:07 PM	4:12 PM	4:17 PM	4:17 PM	4:26 PM	4:31 PM	4:40 PM	4:42 PM	4:47 PM
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)															
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	2.25	2.50	2.02	2.03	1.96	2.17	1.88	2.88	2.73	2.93	2.07	2.80	3.12	2.18	2.41
Vehicle 3	1.75	2.21	2.32	2.40	2.49	2.26	2.20	1.77	2.18	2.27	2.04	1.96	2.15	2.47	2.09
Vehicle 4	3.14	1.83	1.51	2.42	1.62	1.94	1.70	1.78	1.81	1.49	2.06	2.16	2.04	1.57	2.94
Vehicle 5	1.85	2.44	1.90	1.81	2.67	2.06	2.03	2.16	1.95	1.67	2.16	1.83	2.04	1.91	1.78
Vehicle 6	2.60	2.01	2.26	1.30	1.31	1.67	2.17	2.04	1.79	0.55	1.48	1.73	2.26	1.89	2.22
Vehicle 7	1.66	1.86	2.88	1.36	2.75	2.46	1.43	1.94	1.83	2.39	1.45	1.60	1.48	2.37	1.75
Vehicle 8	1.34	1.90	1.77	1.86	2.22	2.35	1.28	1.66	2.03	2.08	1.99	2.01	1.39	2.13	1.30
Vehicle 9	1.43	2.21		2.87	1.49	1.50	2.66		1.47	1.84			1.68		2.20
Vehicle 10				2.18		2.09	2.21		1.64	1.81			1.73		1.73
Vehicle 11				2.31		1.79			1.58	2.04			2.18		1.70
Vehicle 12				1.67		2.36				1.38					1.91

	Study Results														
No. vehicles used in cycle	9	9	8	12	9	12	10	8	11	12	8	8	11	8	12
Time of Vehicle 4 (s)	7.14	6.54	5.85	6.85	6.07	6.37	5.78	6.43	6.72	6.69	6.17	6.92	7.31	6.22	7.44
Time of Last Vehicle (s)	16.02	16.96	14.66	22.21	16.51	22.65	17.56	14.23	19.01	20.45	13.25	14.09	20.07	14.52	22.03
Avg Sat Headway (s/veh)	1.78	2.08	2.20	1.92	2.09	2.03	1.96	1.95	1.76	1.72	1.77	1.79	1.82	2.07	1.82
Unadj. Sat. Flow (veh/h/ln)	2027	1727	1635	1875	1724	1769	1834	1846	2050	2093	2034	2008	1975	1735	1974

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

WisDOT Signalized Intersection Capacity Study

Location ID: 30
Intersection Location: US 12 & Craig EB (1 -31), WB (32 - 65)
Approach Direction: EB & WB
Approach Configuration: 6
Population Group: 100 to 250

Video Date: 4/29/2015
County: Eau Claire
Region: NW
Municipality: Eau Claire
Approach AADT: 22300

Cycle #	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Lane Studied	1	3	3	3	3	2	3	1	3	3	1	2	1	1	2
Start of Green	4:47 PM	4:56 PM	5:10 PM	5:13 PM	5:15 PM	5:20 PM	5:22 PM	5:24 PM	5:24 PM	5:34 PM	5:41 PM	5:41 PM	5:52 PM	6:22 PM	6:22 PM
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)	1														
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	2.76	1.69	1.94	2.13	2.81	2.63	2.23	1.66	2.38	1.88	2.35	1.77	3.43	2.93	2.71
Vehicle 3	2.01	1.81	2.70	3.28	1.77	2.80	2.93	1.89	2.29	2.33	1.86	2.39	2.66	2.91	1.85
Vehicle 4	2.21	2.43	1.99	1.98	1.64	1.69	2.06	2.98	1.26	2.70	1.88	2.89	2.64	1.54	2.25
Vehicle 5	2.68	2.07	1.86	1.52	1.98	1.86	1.82	1.23	1.35	2.67	1.81	2.59	2.44	2.48	1.54
Vehicle 6	1.72	1.78	2.21	2.21	2.25	1.77	2.28	1.81	2.13	1.52	1.83	2.39	1.80	2.63	1.67
Vehicle 7	1.00	1.50	1.92	1.50	1.29	1.72	2.21	2.25	2.12	2.01	2.18	2.06	1.67	2.86	2.17
Vehicle 8	1.43	1.75	2.28	2.44	1.80	1.64	2.52	2.07	3.00	1.82	2.22	2.16	1.42	1.32	1.67
Vehicle 9	0.92	1.91	1.32		1.81	1.84	2.11		2.25	1.80	1.76		1.49	1.06	1.91
Vehicle 10	2.29		1.59		1.74				2.11				2.18		1.91
Vehicle 11			1.93						1.65				2.09		
Vehicle 12									1.33						

	Study Results														
No. vehicles used in cycle	10	9	11	8	10	9	9	8	12	9	9	8	11	9	10
Time of Vehicle 4 (s)	6.98	5.93	6.63	7.39	6.22	7.12	7.22	6.53	5.93	6.91	6.09	7.05	8.73	7.38	6.81
Time of Last Vehicle (s)	17.02	14.94	19.74	15.06	17.09	15.95	18.16	13.89	21.87	16.73	15.89	16.25	21.82	17.73	17.68
Avg Sat Headway (s/veh)	1.67	1.80	1.87	1.92	1.81	1.77	2.19	1.84	1.99	1.96	1.96	2.30	1.87	2.07	1.81
Unadj. Sat. Flow (veh/h/ln)	2151	1998	1922	1877	1987	2039	1645	1957	1807	1833	1837	1565	1925	1739	1987

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

WisDOT Signalized Intersection Capacity Study

Location ID: 30
Intersection Location: US 12 & Craig EB (1 -31), WB (32 - 65)
Approach Direction: EB & WB
Approach Configuration: 6
Population Group: 100 to 250

Video Date: 4/29/2015
County: Eau Claire
Region: NW
Municipality: Eau Claire
Approach AADT: 22300

Cycle #	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Lane Studied	3	3	2	1	2	1	2	3	2	1	3	3	2	3	1
Start of Green	6:22 PM	3:30 PM	3:30 PM	3:41 PM	4:03 PM	4:12 PM	4:12 PM	4:19 PM	4:19 PM	4:21 PM	4:21 PM	4:26 PM	4:40 PM	4:40 PM	4:44 PM
Heavy Vehicles (1-4)												1			
Heavy Vehicles (5-12)					1						1		1		
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	2.83	3.45	2.19	1.94	3.03	3.29	2.60	2.41	2.49	2.42	3.55	3.13	2.36	2.44	2.16
Vehicle 3	1.91	2.56	2.50	2.06	3.33	2.31	2.55	1.90	1.91	2.02	3.11	1.78	1.41	1.29	3.37
Vehicle 4	2.12	2.28	2.07	1.68	2.32	1.33	2.19	2.15	3.85	2.51	1.65	2.20	1.73	2.17	1.18
Vehicle 5	1.81	1.67	2.92	1.68	2.21	1.76	1.59	1.62	1.32	1.56	1.50	1.80	2.34	3.13	3.11
Vehicle 6	2.66	1.79	2.04	2.39	2.74	1.52	1.93	2.31	1.36	1.79	1.83	2.47	1.56	2.40	1.30
Vehicle 7	2.16	1.83	2.36	2.10	2.47	2.10	2.34	2.24	2.94	1.78	1.93	2.11	1.66	1.78	3.22
Vehicle 8	2.59	1.36	1.78	2.55	1.60	2.29	1.15	1.60	1.71	1.96	1.20	2.49	2.53	1.54	1.48
Vehicle 9	2.42	1.75				2.19	1.60	1.90	2.04		1.82	2.20	2.91	1.13	1.48
Vehicle 10	1.01	1.73				2.40		1.36			2.54	2.04	1.53	1.16	
Vehicle 11						2.83		1.52				1.91	1.56		
Vehicle 12						1.71							2.60		

	Study Results														
No. vehicles used in cycle	10	10	8	8	8	12	9	11	9	8	9	10	11	12	10
Time of Vehicle 4 (s)	6.86	8.29	6.76	5.68	8.68	6.93	7.34	6.46	8.25	6.95	8.31	7.11	5.50	5.90	6.71
Time of Last Vehicle (s)	19.51	18.42	15.86	14.40	17.70	23.73	15.95	19.01	17.62	14.04	16.59	20.72	20.45	21.57	18.46
Avg Sat Headway (s/veh)	2.11	1.69	2.27	2.18	2.26	2.10	1.72	1.79	1.87	1.77	1.66	2.27	2.14	1.96	1.96
Unadj. Sat. Flow (veh/h/ln)	1708	2132	1582	1651	1596	1714	2091	2008	1921	2031	2174	1587	1686	1838	1838

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

WisDOT Signalized Intersection Capacity Study

Location ID: 30
Intersection Location: US 12 & Craig EB (1 -31), WB (32 - 65)
Approach Direction: EB & WB
Approach Configuration: 6
Population Group: 100 to 250

Video Date: 4/29/2015
County: Eau Claire
Region: NW
Municipality: Eau Claire
Approach AADT: 22300

Cycle #	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Lane Studied	2	1	2	2	3	1	2	3	1	1	2	3	3	3	2
Start of Green	4:44 PM	4:56 PM	5:03 PM	5:12 PM	5:12 PM	5:15 PM	5:15 PM	5:15 PM	5:17 PM	5:19 PM	5:27 PM	5:27 PM	5:36 PM	5:38 PM	5:40 PM
Heavy Vehicles (1-4)						1									
Heavy Vehicles (5-12)					1										
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	2.27	2.62	2.01	2.41	2.79	2.15	2.41	2.41	2.80	2.59	1.76	2.70	2.02	2.60	2.38
Vehicle 3	2.86	1.59	2.29	2.21	1.85	2.29	2.78	2.23	1.88	2.69	2.64	1.73	2.23	2.97	3.12
Vehicle 4	2.75	2.77	1.90	1.87	2.59	2.62	3.06	4.44	2.19	1.52	2.46	1.84	2.19	2.22	1.41
Vehicle 5	2.05	2.55	2.14	1.36	1.73	1.97	2.58	1.83	2.03	3.02	1.51	2.67	1.78	1.49	1.98
Vehicle 6	2.28	1.66	1.60	1.72	1.94	2.05	2.37	2.34	2.13	1.29	1.63	1.97	1.71	2.05	2.27
Vehicle 7	1.54	1.38	1.25	2.02	1.61	1.80	1.89	2.09	1.97	1.90	1.32	2.28	1.28	1.82	2.11
Vehicle 8	2.50	2.02	1.53	1.76	2.02	1.94	1.71	1.82	2.82	2.54	1.58	1.56	1.85	1.69	2.57
Vehicle 9	2.00		1.68	2.19	2.46	1.71	1.53	1.45	1.51	2.14		1.50			2.83
Vehicle 10			2.12	2.28		1.89		1.23	1.47			1.91			1.60
Vehicle 11				1.94		1.59						1.39			2.58
Vehicle 12				1.35		2.53									

	Study Results														
No. vehicles used in cycle	9	8	10	12	9	12	9	10	10	9	8	11	8	8	11
Time of Vehicle 4 (s)	7.88	6.98	6.20	6.49	7.23	7.06	8.25	9.08	6.87	6.80	6.86	6.27	6.44	7.79	6.91
Time of Last Vehicle (s)	18.25	14.59	16.52	21.11	16.99	22.54	18.33	19.84	18.80	17.69	12.90	19.55	13.06	14.84	22.85
Avg Sat Headway (s/veh)	2.07	1.90	1.72	1.83	1.95	1.93	2.02	1.79	1.99	2.18	1.51	1.90	1.66	1.76	2.28
Unadj. Sat. Flow (veh/h/ln)	1736	1892	2093	1970	1844	1860	1786	2007	1811	1653	2384	1898	2175	2043	1581

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

WisDOT Signalized Intersection Capacity Study

Location ID: 30
Intersection Location: US 12 & Craig EB (1 -31), WB (32 - 65)
Approach Direction: EB & WB
Approach Configuration: 6
Population Group: 100 to 250

Video Date: 4/29/2015
County: Eau Claire
Region: NW
Municipality: Eau Claire
Approach AADT: 22300

Cycle #	61	62	63	64	65
Lane Studied	1	3	3	2	3
Start of Green	5:50 PM	5:50 PM	6:12 PM	6:16 PM	6:17 PM
Heavy Vehicles (1-4)					
Heavy Vehicles (5-12)					
Right Turns (1-4)					
Right Turns (5-12)					

Vehicle	Headway1 (s)				
Vehicle 1	-	-	-	-	-
Vehicle 2	2.45	2.61	2.33	2.43	2.91
Vehicle 3	2.47	1.71	2.58	1.92	1.70
Vehicle 4	2.17	2.89	2.08	3.16	1.98
Vehicle 5	2.63	1.85	2.01	2.61	1.61
Vehicle 6	1.62	1.87	1.95	1.57	1.53
Vehicle 7	1.79	2.22	2.29	1.49	1.48
Vehicle 8	2.39	2.93	1.69	2.50	2.49
Vehicle 9	1.32	1.29	1.95		2.35
Vehicle 10			2.18		
Vehicle 11					
Vehicle 12					

	Study Results				
No. vehicles used in cycle	9	9	10	8	9
Time of Vehicle 4 (s)	7.09	7.21	6.99	7.51	6.59
Time of Last Vehicle (s)	16.84	17.37	19.06	15.68	16.05
Avg Sat Headway (s/veh)	1.95	2.03	2.01	2.04	1.89
Unadj. Sat. Flow (veh/h/ln)	1846	1772	1790	1763	1903

Saturation Flow Study Summary Sheet

Intersection Information:

Intersection:	US 12 & Craig
Major Street:	US 12
Minor Street:	Craig
Study Approach:	EB (1-31) & WB (32-65)
Approach Configuration:	6
Population Group:	100 to 250
Cycles by Date:	4/29/15 (1 - 65)

Video Date:	4/29/2015
WisDOT Region:	NW
Nearest Municipality:	Eau Claire
County:	Eau Claire
Weather:	Clear
Pavement:	Dry
Observer:	Kevin B.

Data Collection Summary Data:

Cycles Studied:	65
Average number of vehicles per cycle:	10
Headways Measured (queue vehicles > 4) :	363
% Heavy Vehicles (of headways measured):	1.4%
% RT Vehicles (of headways measured):	0.0%
Average Saturation Flow Headway (s):	1.93
Standard Deviation of All Headways:	0.44
Standard Deviation of Cycle Headways:	0.18
Unadjusted Median Sat Flow Rate (veh/ln.hr):	1860
Unadjusted Avg Sat Flow Rate (veh/ln/hr):	1863



WisDOT Signalized Intersection Capacity Study

Location ID:	31	Video Date:	4/29/2015
Intersection Location:	US 12 & WIS 37 (1 - 26) , Stein Blvd (27 - 52)	County:	Eau Claire
Approach Direction:	WB (1-16, 27-33 & EB (17 - 26, 34 - 52)	Region:	NW
Approach Configuration:	6	Municipality:	Eau Claire
Population Group:	100 to 250	Approach AADT:	22300, 21800

Cycle #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Lane Studied	1	1	1	2	1	2	1	1	1	1	1	1	1	1	1
Start of Green	3:32 PM	3:34 PM	3:46 PM	4:00 PM	4:16 PM	4:18 PM	4:25 PM	4:33 PM	4:37 PM	4:39 PM	4:44 PM	4:47 PM	4:51 PM	4:58 PM	5:05 PM
Heavy Vehicles (1-4)		1					1				1				
Heavy Vehicles (5-12)															
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	2.21	2.89	2.67	2.30	2.73	3.36	1.63	3.13	2.32	1.98	2.40	2.17	2.37	2.91	4.07
Vehicle 3	2.18	2.24	2.41	1.79	2.75	1.92	2.60	2.06	3.00	2.60	3.20	2.53	2.21	1.98	1.82
Vehicle 4	2.14	1.96	2.02	2.48	1.79	2.64	2.88	1.98	2.22	2.67	1.96	2.02	1.42	1.50	1.28
Vehicle 5	2.04	3.03	1.54	1.82	1.97	1.93	2.15	1.48	2.30	2.09	3.45	1.72	1.92	1.71	2.05
Vehicle 6	1.37	1.68	2.60	1.71	2.41	1.61	1.90	1.31	2.24	2.26	2.33	1.68	2.84	1.79	2.31
Vehicle 7	2.00	1.66	1.87	2.05	2.33	1.80	1.79	1.98	1.94	2.22	1.65	1.77	2.43	2.39	1.88
Vehicle 8	1.79	1.25	1.81	2.16	1.55	1.75	2.50	2.23	2.79	1.63	1.77	2.74	1.73	1.96	1.80
Vehicle 9	1.89	1.30	2.45		1.12	2.23	1.82	1.15			2.33	2.47	2.35	1.83	
Vehicle 10	1.64	2.13	2.16		2.00						2.75			2.14	
Vehicle 11	2.02		2.25								1.89			1.54	
Vehicle 12	2.25													2.04	

	Study Results														
No. vehicles used in cycle	12	10	11	8	10	9	9	9	8	8	11	9	9	12	8
Time of Vehicle 4 (s)	6.53	7.09	7.10	6.57	7.27	7.92	7.11	7.17	7.54	7.25	7.56	6.72	6.00	6.39	7.17
Time of Last Vehicle (s)	21.53	18.14	21.78	14.31	18.65	17.24	17.27	15.32	16.81	15.45	23.73	17.10	17.27	21.79	15.21
Avg Sat Headway (s/veh)	1.88	1.84	2.10	1.93	1.90	1.86	2.03	1.63	2.32	2.05	2.31	2.08	2.25	1.92	2.01
Unadj. Sat. Flow (veh/h/ln)	1920	1955	1717	1860	1898	1931	1772	2209	1553	1756	1558	1734	1597	1870	1791

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection.

There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

WisDOT Signalized Intersection Capacity Study

Location ID:	31	Video Date:	4/29/2015
Intersection Location:	US 12 & WIS 37 (1 - 26) , Stein Blvd (27 - 52)	County:	Eau Claire
Approach Direction:	WB (1-16, 27-33 & EB (17 - 26, 34 - 52)	Region:	NW
Approach Configuration:	6	Municipality:	Eau Claire
Population Group:	100 to 250	Approach AADT:	22300, 21800

Cycle #	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Lane Studied	1	1	3	2	3	1	1	1	3	1	1	3	3	3	3
Start of Green	5:48 PM	3:33 PM	3:39 PM	4:12 PM	4:24 PM	4:33 PM	4:43 PM	4:47 PM	5:46 PM	5:52 PM	6:10 PM	3:50 PM	3:59 PM	4:04 PM	4:10 PM
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)		1													
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	2.61	2.36	2.18	2.58	2.80	3.23	1.99	1.76	2.22	2.34	3.41	2.42	2.33	1.92	1.74
Vehicle 3	2.82	2.14	2.86	2.40	1.70	1.87	2.03	2.22	3.22	2.31	1.43	2.92	2.02	1.84	1.91
Vehicle 4	2.04	2.46	2.37	1.46	2.57	1.82	2.00	1.91	2.73	2.32	1.85	1.90	1.87	1.74	2.51
Vehicle 5	1.57	1.68	1.68	1.63	2.39	2.21	2.11	1.51	1.73	1.87	2.01	1.41	1.98	1.73	1.77
Vehicle 6	1.88	1.49	2.57	1.77	1.91	2.19	2.13	1.95	2.38	1.59	1.71	1.77	1.68	2.84	1.87
Vehicle 7	1.47	2.02	1.61	2.17	2.00	1.55	2.95	2.74	1.80	1.60	2.21	1.97	1.80	2.72	1.73
Vehicle 8	1.65	2.55	1.80	1.23	1.88	2.36	1.38	1.96	1.91	1.44	2.63	1.78	2.45	1.66	1.73
Vehicle 9	1.47	1.32	2.23	1.78	1.71	1.77	1.16	1.69	2.49	1.23		1.87	2.18	2.07	1.51
Vehicle 10	2.68	1.75		1.54	1.15		1.28	2.11	2.13	2.63		1.83	2.28		1.16
Vehicle 11		1.52			2.26		1.30	1.96		1.89			2.46		1.25
Vehicle 12							2.76	1.86					2.23		

	Study Results														
No. vehicles used in cycle	10	11	9	10	11	9	12	12	10	11	8	10	12	9	11
Time of Vehicle 4 (s)	7.47	6.96	7.41	6.44	7.07	6.92	6.02	5.89	8.17	6.97	6.69	7.24	6.22	5.50	6.16
Time of Last Vehicle (s)	18.19	19.29	17.30	16.56	20.37	17.00	21.09	21.67	20.61	19.22	15.25	17.87	23.28	16.52	17.18
Avg Sat Headway (s/veh)	1.79	1.76	1.98	1.69	1.90	2.02	1.88	1.97	2.07	1.75	2.14	1.77	2.13	2.20	1.57
Unadj. Sat. Flow (veh/h/ln)	2015	2044	1820	2134	1895	1786	1911	1825	1736	2057	1682	2032	1688	1633	2287

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection.

There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

WisDOT Signalized Intersection Capacity Study

Location ID:	31	Video Date:	4/29/2015
Intersection Location:	US 12 & WIS 37 (1 - 26) , Stein Blvd (27 - 52)	County:	Eau Claire
Approach Direction:	WB (1-16, 27-33 & EB (17 - 26, 34 - 52)	Region:	NW
Approach Configuration:	6	Municipality:	Eau Claire
Population Group:	100 to 250	Approach AADT:	22300, 21800

Cycle #	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Lane Studied	2	1	1	1	3	1	2	3	3	1	2	1	3	3	1
Start of Green	4:10 PM	4:50 PM	6:06 PM	3:31 PM	3:31 PM	3:40 PM	3:40 PM	3:40 PM	3:45 PM	3:47 PM	3:47 PM	3:49 PM	3:51 PM	3:56 PM	4:01 PM
Heavy Vehicles (1-4)					1			1	1						
Heavy Vehicles (5-12)							2								
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	1.81	2.03	2.02	3.02	3.42	2.27	2.57	2.63	2.76	3.07	2.25	3.14	2.58	2.58	1.92
Vehicle 3	2.20	1.91	2.01	1.80	2.09	1.96	2.44	1.93	2.30	1.90	2.18	2.38	2.70	0.77	1.90
Vehicle 4	2.39	2.08	2.68	1.69	3.54	1.44	2.14	1.51	2.64	2.76	1.74	1.94	2.15	3.34	1.59
Vehicle 5	2.08	2.41	2.35	2.48	1.44	1.71	1.95	1.85	2.73	2.04	3.06	2.15	1.68	1.57	2.11
Vehicle 6	1.80	2.01	2.18	2.97	1.26	1.62	2.30	1.53	2.15	1.61	2.50	1.42	2.20	1.49	2.76
Vehicle 7	1.62	2.04	2.56	2.23	2.23	1.63	1.82	2.20	1.41	1.72	1.90	1.78	2.29	1.81	1.45
Vehicle 8	1.36	2.02	1.71	1.84	1.89	2.26	1.73	2.13	1.60	0.91	2.08	1.58	1.99	1.25	2.05
Vehicle 9	1.53	1.51		1.29	1.83	1.47	2.74	2.05	2.52	3.66		2.42		2.58	
Vehicle 10	1.37	2.16		1.51	1.59	1.99	1.66	1.62	1.84	2.26		1.97		1.77	
Vehicle 11				1.19		2.00	2.66	1.94	1.99	1.45				1.71	
Vehicle 12						1.34	2.59			1.97				1.88	

	Study Results														
No. vehicles used in cycle	10	10	8	11	10	12	12	11	11	12	8	10	8	12	8
Time of Vehicle 4 (s)	6.40	6.02	6.71	6.51	9.05	5.67	7.15	6.07	7.70	7.73	6.17	7.46	7.43	6.69	5.41
Time of Last Vehicle (s)	16.16	18.17	15.51	20.02	19.29	19.69	24.60	19.39	21.94	23.35	15.71	18.78	15.59	20.75	13.78
Avg Sat Headway (s/veh)	1.63	2.02	2.20	1.93	1.71	1.75	2.18	1.90	2.03	1.95	2.39	1.89	2.04	1.76	2.09
Unadj. Sat. Flow (veh/h/ln)	2213	1778	1636	1865	2109	2054	1650	1892	1770	1844	1509	1908	1765	2048	1720

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

WisDOT Signalized Intersection Capacity Study

Location ID:	31	Video Date:	4/29/2015
Intersection Location:	US 12 & WIS 37 (1 - 26) , Stein Blvd (27 - 52)	County:	Eau Claire
Approach Direction:	WB (1-16, 27-33 & EB (17 - 26, 34 - 52)	Region:	NW
Approach Configuration:	6	Municipality:	Eau Claire
Population Group:	100 to 250	Approach AADT:	22300, 21800

Cycle #	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Lane Studied	2	3	1	1	2	3	2								
Start of Green	4:04 PM	4:04 PM	4:07 PM	4:09 PM	4:09 PM	4:09 PM	4:12 PM								
Heavy Vehicles (1-4)				1											
Heavy Vehicles (5-12)					1										
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-								
Vehicle 2	3.64	2.74	2.25	2.41	2.83	2.84	2.96								
Vehicle 3	3.07	1.99	2.60	2.19	2.75	2.39	1.99								
Vehicle 4	2.26	2.04	2.16	2.34	1.87	2.29	2.20								
Vehicle 5	1.62	2.94	1.84	2.77	1.67	1.64	1.49								
Vehicle 6	2.26	1.56	1.79	1.61	2.50	1.87	1.61								
Vehicle 7	2.59	1.47	1.69	2.20	1.28	1.78	2.16								
Vehicle 8	1.10	1.33	2.00	1.52	1.92	1.98	1.62								
Vehicle 9	1.63	1.93	1.53		2.03	1.43									
Vehicle 10	1.80	1.39	2.06		1.49	2.11									
Vehicle 11	1.57		1.29		2.39	1.21									
Vehicle 12					2.06	2.06									

	Study Results														
No. vehicles used in cycle	11	10	11	8	12	12	8								
Time of Vehicle 4 (s)	8.97	6.77	7.01	6.94	7.45	7.52	7.15								
Time of Last Vehicle (s)	21.54	17.39	19.21	15.04	22.79	21.60	14.03								
Avg Sat Headway (s/veh)	1.80	1.77	1.74	2.02	1.92	1.76	1.72								
Unadj. Sat. Flow (veh/h/ln)	2005	2034	2066	1778	1877	2045	2093								

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

Saturation Flow Study Summary Sheet

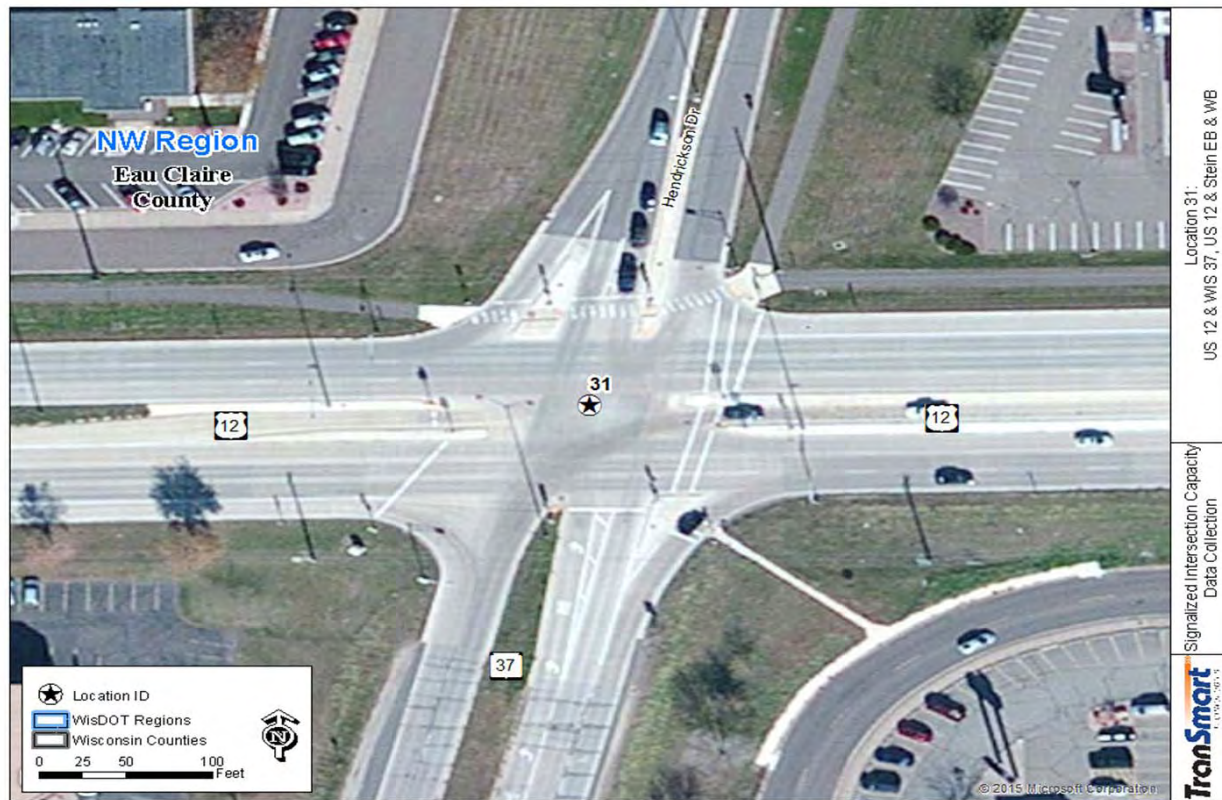
Intersection Information:

Intersection:	US 12 & WIS 37 (1 - 26) , Stein Blvd (27 - 52)
Major Street:	US 12
Minor Street:	WIS 37
Study Approach:	WB (1-16, 27-33 & EB (17 - 26, 34 - 52)
Approach Configuration:	6
Population Group:	100 to 250
Cycles by Date:	4/29/15 (1 - 52)

Video Date:	4/29/2015
WisDOT Region:	NW
Nearest Municipality:	Eau Claire
County:	Eau Claire
Weather:	Clear
Pavement:	Dry
Observer:	Kevin B.

Data Collection Summary Data:

Cycles Studied:	52
Average number of vehicles per cycle:	10
Headways Measured (queue vehicles > 4) :	315
% Heavy Vehicles (of headways measured):	1.3%
% RT Vehicles (of headways measured):	0.0%
Average Saturation Flow Headway (s):	1.93
Standard Deviation of All Headways:	0.43
Standard Deviation of Cycle Headways:	0.19
Unadjusted Median Sat Flow Rate (veh/ln.hr):	1868
Unadjusted Avg Sat Flow Rate (veh/ln/hr):	1869



WisDOT Signalized Intersection Capacity Study

Location ID: 32
 Intersection Location: US 12 & Rudolph Rd
 Approach Direction: EB
 Approach Configuration: 6
 Population Group: 100 to 250

Video Date: 4/29/2015
 County: Eau Claire
 Region: NW
 Municipality: Eau Claire
 Approach AADT: 35200

Cycle #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Lane Studied	3	1	3	1	3	1	1	3	2	1	3	1	3	1	2
Start of Green	3:31 PM	3:31 PM	3:33 PM	3:33 PM	3:34 PM	3:34 PM	3:38 PM	3:40 PM	3:40 PM	3:40 PM	3:42 PM	3:42 PM	3:43 PM	3:43 PM	3:47 PM
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)		1		1									1		
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	2.05	3.37	2.18	3.70	3.12	2.45	1.81	2.70	2.73	2.25	2.63	3.05	2.53	2.23	2.63
Vehicle 3	2.09	1.72	2.96	2.32	2.50	2.28	2.86	2.52	2.10	2.61	2.40	2.57	2.58	2.21	2.78
Vehicle 4	2.01	2.60	2.16	2.16	2.23	2.13	2.60	1.64	3.19	1.95	2.04	2.63	2.37	2.59	2.30
Vehicle 5	1.87	2.70	1.78	2.62	1.60	2.06	3.57	2.29	1.69	1.91	1.49	2.30	1.63	1.59	1.60
Vehicle 6	1.82	2.35	2.35	2.65	1.48	1.61	2.74	1.39	3.62	2.18	2.53	1.23	2.62	1.93	1.18
Vehicle 7	1.45	1.50	2.94	1.79	1.35	1.54	1.70	2.88	1.56	2.37	2.30	1.39	2.55	1.73	1.35
Vehicle 8	1.65	2.22	2.07	2.33	1.96	1.69	1.61	1.63	1.36	2.33	2.54	1.22	1.82	1.43	1.35
Vehicle 9		1.97	1.59	2.28	2.42	1.89	1.54	1.27	1.47	1.88	2.61		1.44	1.97	1.56
Vehicle 10			2.41		1.36	2.29		2.14	2.53	1.79	1.86		1.68		1.77
Vehicle 11					1.79			1.44		1.56			1.86		2.08
Vehicle 12								2.16		1.31					1.43

	Study Results														
No. vehicles used in cycle	8	9	10	9	11	10	9	12	10	12	10	8	11	9	12
Time of Vehicle 4 (s)	6.15	7.69	7.30	8.18	7.85	6.86	7.27	6.86	8.02	6.81	7.07	8.25	7.48	7.03	7.71
Time of Last Vehicle (s)	12.94	18.43	20.44	19.85	19.81	17.94	18.43	22.06	20.25	22.14	20.40	14.39	21.08	15.68	20.03
Avg Sat Headway (s/veh)	1.70	2.15	2.19	2.33	1.71	1.85	2.23	1.90	2.04	1.92	2.22	1.53	1.94	1.73	1.54
Unadj. Sat. Flow (veh/h/ln)	2121	1676	1644	1542	2107	1949	1613	1895	1766	1879	1620	2345	1853	2081	2338

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

WisDOT Signalized Intersection Capacity Study

Location ID: 32
Intersection Location: US 12 & Rudolph Rd
Approach Direction: EB
Approach Configuration: 6
Population Group: 100 to 250

Video Date: 4/29/2015
County: Eau Claire
Region: NW
Municipality: Eau Claire
Approach AADT: 35200

Cycle #	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Lane Studied	1	3	2	1	3	2	1	3	1	3	1	3	1	3	2
Start of Green	3:47 PM	3:52 PM	3:52 PM	3:52 PM	3:54 PM	3:54 PM	3:54 PM	3:56 PM	3:56 PM	3:58 PM	3:58 PM	3:59 PM	3:59 PM	4:01 PM	4:01 PM
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)															
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	2.54	2.40	2.28	2.81	2.49	2.29	2.69	3.16	2.55	1.89	2.12	2.64	3.40	3.23	2.38
Vehicle 3	1.78	1.52	2.08	1.87	1.62	1.93	2.02	3.12	2.14	2.21	2.57	3.01	2.20	1.37	1.94
Vehicle 4	2.30	2.55	1.42	2.39	2.64	2.57	1.84	1.49	1.80	2.07	2.13	2.08	2.38	2.39	1.79
Vehicle 5	2.81	0.77	1.86	1.71	2.88	2.44	1.52	2.07	2.90	1.89	1.93	2.28	1.88	1.89	2.68
Vehicle 6	1.30	2.91	1.46	1.68	3.37	1.68	2.26	1.82	1.69	1.66	1.69	2.03	2.03	1.89	1.94
Vehicle 7	2.23	1.65	1.91	1.73	2.98	2.12	1.22	1.47	1.49	2.51	1.39	1.70	2.17	1.75	1.78
Vehicle 8	1.82	1.00	2.51	1.51	2.10	2.75	1.81	1.57	2.26	2.09	1.79	1.46	1.73	2.21	2.09
Vehicle 9		2.02		1.18	2.16	1.41	1.83	1.67	2.08	1.37	1.16	1.66	1.68	1.18	
Vehicle 10		1.60		1.86	1.70	1.60	1.59	1.05	1.50	1.55	1.40	1.65	1.60	1.78	
Vehicle 11				1.66	2.07			1.54	1.66	1.46			1.67	1.47	
Vehicle 12					1.92			1.62	1.53	1.28				2.10	

	Study Results														
No. vehicles used in cycle	8	10	8	11	12	10	10	12	12	12	10	10	11	12	8
Time of Vehicle 4 (s)	6.62	6.47	5.78	7.07	6.75	6.79	6.55	7.77	6.49	6.17	6.82	7.73	7.98	6.99	6.11
Time of Last Vehicle (s)	14.78	16.42	13.52	18.40	25.93	18.79	16.78	20.58	21.60	19.98	16.18	18.51	20.74	21.26	14.60
Avg Sat Headway (s/veh)	2.04	1.66	1.93	1.62	2.40	2.00	1.70	1.60	1.89	1.73	1.56	1.80	1.82	1.78	2.12
Unadj. Sat. Flow (veh/h/ln)	1765	2171	1860	2224	1502	1800	2111	2248	1906	2085	2308	2004	1975	2018	1696

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

WisDOT Signalized Intersection Capacity Study

Location ID: 32
Intersection Location: US 12 & Rudolph Rd
Approach Direction: EB
Approach Configuration: 6
Population Group: 100 to 250

Video Date: 4/29/2015
County: Eau Claire
Region: NW
Municipality: Eau Claire
Approach AADT: 35200

Cycle #	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Lane Studied	1	3	3	2	1	3	2	1	3	2	1	1	3	2	1
Start of Green	4:01 PM	4:02 PM	4:05 PM	4:05 PM	4:05 PM	4:13 PM	4:13 PM	4:13 PM	4:15 PM	4:15 PM	4:15 PM	4:17 PM	4:20 PM	4:20 PM	4:20 PM
Heavy Vehicles (1-4)											1				
Heavy Vehicles (5-12)							1	1							
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	2.34	2.11	2.55	2.96	1.75	2.46	2.95	2.62	2.97	2.74	2.43	3.67	2.08	2.34	2.47
Vehicle 3	1.69	2.14	1.86	1.57	2.16	1.52	2.76	1.43	2.39	2.21	2.07	2.17	2.46	2.84	1.78
Vehicle 4	3.22	1.79	1.90	1.79	1.74	1.60	1.52	1.97	1.48	1.84	2.16	1.63	1.80	1.67	2.40
Vehicle 5	1.77	2.01	2.55	1.70	1.81	1.44	3.53	1.65	1.10	1.62	2.81	2.05	2.49	1.45	2.38
Vehicle 6	1.47	2.64	1.89	1.73	2.07	2.26	1.63	1.82	1.95	1.70	1.49	1.66	1.51	1.93	1.92
Vehicle 7	1.50	1.89	1.85	1.62	1.68	2.76	1.55	1.63	2.24	1.30	1.48	1.87	1.30	2.23	1.87
Vehicle 8	1.54	1.68	1.42	2.39	1.27	1.95	1.78	2.46	1.22	1.38	1.32	1.66	1.63	2.40	2.43
Vehicle 9	1.85	2.93	2.86	1.63	1.98	2.12	1.84	2.43	3.03	1.47	2.43	1.56	1.36	1.83	2.29
Vehicle 10	1.34	1.81	1.37	1.20	1.82	1.46	1.94	0.96	1.10	1.66	1.81	2.24	2.19	1.49	1.47
Vehicle 11	1.55	1.55	1.70	2.46	2.06	1.32	2.64		2.07	0.76	1.04	2.51	1.68	3.07	1.95
Vehicle 12	1.89				1.69	1.43			2.05		1.32	2.18	1.47	1.53	2.08

	Study Results														
No. vehicles used in cycle	12	11	11	11	12	12	11	10	12	11	12	12	12	12	12
Time of Vehicle 4 (s)	7.25	6.04	6.31	6.32	5.65	5.58	7.23	6.02	6.84	6.79	6.66	7.47	6.34	6.85	6.65
Time of Last Vehicle (s)	20.16	20.55	19.95	19.05	20.03	20.32	22.14	16.97	21.60	16.68	20.36	23.20	19.97	22.78	23.04
Avg Sat Headway (s/veh)	1.61	2.07	1.95	1.82	1.80	1.84	2.13	1.83	1.85	1.41	1.71	1.97	1.70	1.99	2.05
Unadj. Sat. Flow (veh/h/ln)	2231	1737	1848	1980	2003	1954	1690	1973	1951	2548	2102	1831	2113	1808	1757

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

WisDOT Signalized Intersection Capacity Study

Location ID: 32
Intersection Location: US 12 & Rudolph Rd
Approach Direction: EB
Approach Configuration: 6
Population Group: 100 to 250

Video Date: 4/29/2015
County: Eau Claire
Region: NW
Municipality: Eau Claire
Approach AADT: 35200

Cycle #	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Lane Studied	3	2	1	3	1	3	1	3	1	3	3	1	3	2	1
Start of Green	4:22 PM	4:22 PM	4:22 PM	4:24 PM	4:24 PM	4:26 PM	4:26 PM	4:30 PM	4:30 PM	4:32 PM	4:33 PM	4:33 PM	4:36 PM	4:36 PM	4:36 PM
Heavy Vehicles (1-4)				1					1						
Heavy Vehicles (5-12)															
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	2.30	2.49	1.75	3.00	2.64	3.59	2.91	3.04	2.95	1.97	2.19	2.28	2.62	2.24	2.16
Vehicle 3	2.29	2.23	2.70	3.30	3.78	2.16	1.77	2.40	2.35	2.76	1.86	2.40	2.30	1.31	2.03
Vehicle 4	1.79	1.49	1.90	2.37	1.77	1.87	1.81	2.50	2.88	2.04	1.62	1.76	2.11	1.70	2.92
Vehicle 5	1.58	1.72	1.51	2.84	1.33	2.06	2.36	1.94	2.65	2.46	1.86	2.67	1.55	2.49	1.68
Vehicle 6	1.35	1.78	2.13	1.54	1.97	1.76	3.25	2.55	1.42	1.75	1.72	1.76	2.33	1.17	2.54
Vehicle 7	1.68	2.15	1.57	1.18	2.29	2.08	1.61	2.31	1.16	2.64	1.67	2.50	1.54	1.44	2.06
Vehicle 8	1.01	2.95	1.33	2.60	1.95	2.02	1.84	1.44	1.33	2.25	1.92	1.38	1.46	1.89	1.74
Vehicle 9	1.75	1.38		2.95	1.45	2.67	2.08		2.49	1.83	1.47	1.97	1.60	1.42	2.02
Vehicle 10	1.43	2.62		1.13	2.95	1.36	1.83			2.99	1.57	1.25	2.12	1.50	2.01
Vehicle 11	2.10	1.94		1.64	2.56	2.53	1.28				2.20	1.82	1.59	1.61	1.11
Vehicle 12	2.40	0.91		1.41	2.16	2.50	0.99				1.83		1.63	2.52	1.35

	Study Results														
No. vehicles used in cycle	12	12	8	12	12	12	12	8	9	10	12	11	12	12	12
Time of Vehicle 4 (s)	6.38	6.21	6.35	8.67	8.19	7.62	6.49	7.94	8.18	6.77	5.67	6.44	7.03	5.25	7.11
Time of Last Vehicle (s)	19.68	21.66	12.89	23.96	24.85	24.60	21.73	16.18	17.23	20.69	19.91	19.79	20.85	19.29	21.62
Avg Sat Headway (s/veh)	1.66	1.93	1.64	1.91	2.08	2.12	1.91	2.06	1.81	2.32	1.78	1.91	1.73	1.76	1.81
Unadj. Sat. Flow (veh/h/ln)	2165	1864	2202	1884	1729	1696	1890	1748	1989	1552	2022	1888	2084	2051	1985

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

Saturation Flow Study Summary Sheet

Intersection Information:

Intersection:	US 12 & Rudolph Rd
Major Street:	US 12
Minor Street:	Rudolph Rd
Study Approach:	EB
Approach Configuration:	6
Population Group:	100 to 250
Cycles by Date:	4/29 (1-60)

Video Date:	4/29/2015
WisDOT Region:	NW
Nearest Municipality:	Eau Claire
County:	Eau Claire
Weather:	Clear
Pavement:	Dry
Observer:	Kevin Brink

Data Collection Summary Data:

Cycles Studied:	60
Average number of vehicles per cycle:	11
Headways Measured (queue vehicles > 4) :	405
% Heavy Vehicles (of headways measured):	1.2%
% RT Vehicles (of headways measured):	0.0%
Average Saturation Flow Headway (s):	1.87
Standard Deviation of All Headways:	0.50
Standard Deviation of Cycle Headways:	0.21
Unadjusted Median Sat Flow Rate (veh/ln.hr):	1950
Unadjusted Avg Sat Flow Rate (veh/ln/hr):	1922



WisDOT Signalized Intersection Capacity Study

Location ID: 33
Intersection Location: County O & Shopping Center Ring Road
Approach Direction: SB
Approach Configuration: 3
Population Group: > 250

Video Date: 10/1/2014
County: Waukesha
Region: SE
Municipality: Brookfield
Approach AADT: 32000

Cycle #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Lane Studied	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Start of Green	7:31 AM	7:48 AM	8:15 AM	8:18 AM	12:13 PM	12:41 PM	1:01 PM	1:39 PM	1:43 PM	2:15 PM	2:25 PM	3:16 PM	3:18 PM	15:20:43	3:32 PM
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)															
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	1.72	1.67	2.11	2.72	3.08	2.05	1.97	2.55	1.76	2.14	2.85	2.34	1.67	2.05	1.87
Vehicle 3	1.53	2.55	2.42	2.47	2.30	2.50	2.05	3.09	3.28	2.44	1.56	3.19	1.97	2.10	2.52
Vehicle 4	1.52	2.03	1.71	2.30	3.33	3.80	1.76	3.13	1.89	1.28	1.38	2.14	4.39	1.39	1.81
Vehicle 5	2.12	1.67	1.70	2.34	2.12	1.61	2.74	1.09	2.41	2.33	2.09	1.41	2.27	1.73	2.23
Vehicle 6	1.91	1.25	1.77	1.80	1.56	2.29	2.83	1.42	1.11	1.92	1.64	1.67	1.50	2.25	2.16
Vehicle 7	1.52	1.24	3.36	1.45	1.71	2.60	1.03	2.15	3.23	1.44	2.18	2.14	1.84	1.85	1.91
Vehicle 8	1.20	3.64	1.98	2.72	1.42	2.28	2.42	1.59	1.99	3.08	2.59	1.78	2.27	2.08	1.59
Vehicle 9	1.59	0.98				1.79		1.76			1.72	1.87	1.43	2.01	
Vehicle 10	1.17					2.10		1.93			3.87	2.63	1.68	1.72	
Vehicle 11													2.39		
Vehicle 12													1.64		

	Study Results														
No. vehicles used in cycle	10	9	8	8	8	10	8	10	8	8	10	10	12	10	8
Time of Vehicle 4 (s)	4.77	6.25	6.24	7.49	8.71	8.35	5.78	8.77	6.93	5.86	5.79	7.67	8.03	5.54	6.20
Time of Last Vehicle (s)	14.28	15.03	15.05	15.80	15.52	21.02	14.80	18.71	15.67	14.63	19.88	19.17	23.05	17.18	14.09
Avg Sat Headway (s/veh)	1.59	1.76	2.20	2.08	1.70	2.11	2.25	1.66	2.18	2.19	2.35	1.92	1.88	1.94	1.97
Unadj. Sat. Flow (veh/h/ln)	2271	2050	1635	1733	2115	1705	1596	2173	1648	1642	1533	1878	1917	1856	1825

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

WisDOT Signalized Intersection Capacity Study

Location ID: 33
Intersection Location: County O & Shopping Center Ring Road
Approach Direction: SB
Approach Configuration: 3
Population Group: > 250

Video Date: 10/1/2014
County: Waukesha
Region: SE
Municipality: Brookfield
Approach AADT: 32000

Cycle #	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Lane Studied	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Start of Green	3:37 PM	3:40 PM	3:46 PM	3:49 PM	3:56 PM	3:58 PM	4:03 PM	4:08 PM	4:10 PM	4:12 PM	4:21 PM	4:24 PM	4:31 PM	4:33 PM	4:40 PM
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)															
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	2.17	2.55	2.24	2.18	1.71	1.18	2.58	1.73	1.62	2.16	1.78	2.97	2.31	1.80	2.53
Vehicle 3	2.99	1.55	1.83	1.82	1.47	3.25	4.19	1.91	1.88	2.20	2.39	1.69	2.58	2.11	2.02
Vehicle 4	2.03	2.00	1.92	2.44	1.90	3.14	2.39	2.72	2.59	2.80	1.79	1.94	2.74	2.27	1.67
Vehicle 5	1.86	2.71	2.11	1.92	2.35	1.54	1.78	3.23	1.24	1.92	2.20	2.36	1.93	2.15	1.89
Vehicle 6	1.84	1.72	1.59	1.82	3.35	2.72	2.11	1.85	1.76	1.94	2.47	2.79	1.55	2.58	2.75
Vehicle 7	1.80	2.53	1.72	2.18	1.29	1.53	3.31	1.15	1.99	2.53	0.79	1.89	2.05	2.41	1.88
Vehicle 8	2.14	1.54	1.92	2.42	1.48	1.69	1.77	1.30	1.44	4.02	2.49	2.72	2.03	1.64	3.25
Vehicle 9	1.59	1.32	1.67	2.83	1.91	2.06	1.87	2.06	1.70	1.53	0.97	1.68	1.80	1.97	1.82
Vehicle 10	2.22	2.61	2.61	2.52		1.89	2.08	1.39	1.51	2.42	1.64	2.62	1.89	3.17	1.50
Vehicle 11	1.92	2.38	1.74	2.92		2.35	2.20	2.66	1.00		2.00	1.22	1.83		1.88
Vehicle 12	1.75	2.37	1.37	2.14			1.36	1.84	2.04		2.95		1.51		1.44

	Study Results														
No. vehicles used in cycle	12	12	12	12	9	11	12	12	12	10	12	11	12	10	12
Time of Vehicle 4 (s)	7.19	6.10	5.99	6.44	5.08	7.57	9.16	6.36	6.09	7.16	5.96	6.60	7.63	6.18	6.22
Time of Last Vehicle (s)	22.31	23.28	20.72	25.19	15.46	21.35	25.64	21.84	18.77	21.52	21.47	21.88	22.22	20.10	22.63
Avg Sat Headway (s/veh)	1.89	2.15	1.84	2.34	2.08	1.97	2.06	1.93	1.59	2.39	1.94	2.18	1.82	2.32	2.05
Unadj. Sat. Flow (veh/h/ln)	1905	1676	1955	1536	1734	1829	1748	1860	2271	1504	1857	1649	1974	1552	1755

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

WisDOT Signalized Intersection Capacity Study

Location ID: 33
Intersection Location: County O & Shopping Center Ring Road
Approach Direction: SB
Approach Configuration: 3
Population Group: > 250

Video Date: 10/1/2014
County: Waukesha
Region: SE
Municipality: Brookfield
Approach AADT: 32000

Cycle #	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Lane Studied	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Start of Green	4:42 PM	4:49 PM	4:52 PM	4:54 PM	5:01 PM	5:04 PM	5:09 PM	5:11 PM	5:13 PM	5:16 PM	5:20 PM	5:24 PM	5:27 PM	5:31 PM	5:37 PM
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)															
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	2.73	1.92	1.63	3.42	2.39	1.83	2.45	3.25	3.28	1.88	2.75	2.64	2.11	1.38	1.72
Vehicle 3	2.63	1.88	2.51	2.50	2.29	2.04	1.88	1.64	2.68	2.92	2.53	2.53	2.15	1.42	1.83
Vehicle 4	2.34	2.29	1.64	1.64	3.02	2.36	2.66	3.12	1.50	1.75	1.69	1.41	2.85	2.75	2.62
Vehicle 5	1.49	2.08	1.97	1.55	3.02	1.74	2.92	1.74	2.29	2.25	3.22	1.62	4.45	1.67	1.77
Vehicle 6	1.53	1.78	1.33	1.50	2.17	2.03	3.56	1.81	1.73	2.66	1.52	2.38	1.48	1.92	2.86
Vehicle 7	1.39	1.36	2.11	1.31	2.20	1.54	1.86	1.39	1.48	1.82	1.67	1.80	1.52	1.44	1.23
Vehicle 8	2.15	1.58	1.06	2.54	1.59	1.99	2.22	1.49	1.94	0.99	2.03	2.46	1.34	2.75	2.19
Vehicle 9	2.91	2.03	1.63	1.36	1.36	2.30		1.59	2.30	1.78	1.51	1.55	2.72	2.08	2.45
Vehicle 10	2.05	2.13		1.83	1.49	1.64		1.58	1.53	3.55		2.30	1.80	2.36	3.27
Vehicle 11		2.12		1.30	1.97	1.82		2.03	1.77	2.07		1.86	2.22	2.84	
Vehicle 12					2.31	2.02		1.42	1.78	1.41		1.47	1.48	1.21	

	Study Results														
No. vehicles used in cycle	10	11	9	11	12	12	8	12	12	12	9	12	12	12	10
Time of Vehicle 4 (s)	7.70	6.09	5.78	7.56	7.70	6.23	6.99	8.01	7.46	6.55	6.97	6.58	7.11	5.55	6.17
Time of Last Vehicle (s)	19.22	19.17	13.88	18.95	23.81	21.31	17.55	21.06	22.28	23.08	16.92	22.02	24.12	21.82	19.94
Avg Sat Headway (s/veh)	1.92	1.87	1.62	1.63	2.01	1.89	2.64	1.63	1.85	2.07	1.99	1.93	2.13	2.03	2.30
Unadj. Sat. Flow (veh/h/ln)	1875	1927	2222	2212	1788	1910	1364	2207	1943	1742	1809	1865	1693	1770	1569

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

WisDOT Signalized Intersection Capacity Study

Location ID: 33
Intersection Location: County O & Shopping Center Ring Road
Approach Direction: SB
Approach Configuration: 3
Population Group: > 250

Video Date: 10/1/2014
County: Waukesha
Region: SE
Municipality: Brookfield
Approach AADT: 32000

Cycle #	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Lane Studied	1	1	1	1	1	1	1								
Start of Green	5:41 PM	5:43 PM	5:51 PM	6:02 PM	6:06 PM	6:09 PM	6:13 PM								
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)															
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-								
Vehicle 2	1.83	2.41	8.17	2.42	1.76	3.06	2.23								
Vehicle 3	2.14	2.03	1.59	2.47	1.93	2.30	5.47								
Vehicle 4	1.69	2.14	2.72	1.84	2.03	2.31	1.89								
Vehicle 5	1.59	1.89	1.75	2.61	2.57	1.46	1.92								
Vehicle 6	2.57	2.02	2.28	1.23	1.46	2.28	2.31								
Vehicle 7	2.00	1.48	2.07	1.52	1.36	2.70	2.32								
Vehicle 8	1.43	1.53	1.56	1.25	2.70	3.03	1.54								
Vehicle 9	2.86	1.66	1.95	1.19	2.73		1.38								
Vehicle 10		2.33	2.64	2.50	1.57		2.01								
Vehicle 11		2.26	1.39	2.28	1.90		2.83								
Vehicle 12		1.30	0.85		1.14		1.49								

	Study Results														
No. vehicles used in cycle	9	12	12	11	12	8	12								
Time of Vehicle 4 (s)	5.66	6.58	12.48	6.73	5.72	7.67	9.59								
Time of Last Vehicle (s)	16.11	21.05	26.97	19.31	21.15	17.14	25.39								
Avg Sat Headway (s/veh)	2.09	1.81	1.81	1.80	1.93	2.37	1.98								
Unadj. Sat. Flow (veh/h/ln)	1722	1990	1988	2003	1866	1521	1823								

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

Saturation Flow Study Summary Sheet

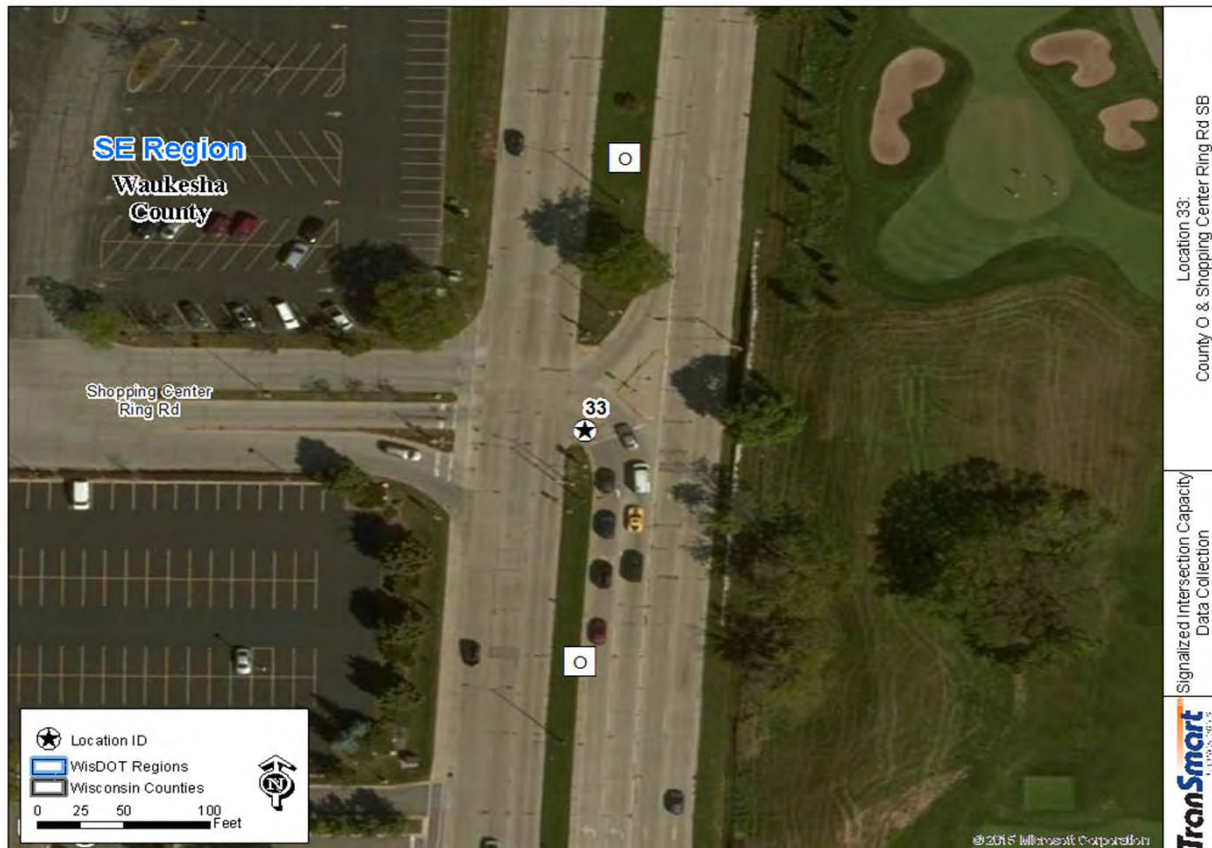
Intersection Information:

Intersection:	County O & Shopping Center Ring Road
Major Street:	County O
Minor Street:	Shopping Center Ring Road
Study Approach:	SB
Approach Configuration:	3
Population Group:	> 250
Cycles by Date:	10/1/2014

Video Date:	10/1/2014
WisDOT Region:	SE
Nearest Municipality:	Brookfield
County:	Waukesha
Weather:	Clear
Pavement:	Dry
Observer:	Matt Sudac

Data Collection Summary Data:

Cycles Studied:	52
Average number of vehicles per cycle:	11
Headways Measured (queue vehicles > 4) :	340
% Heavy Vehicles (of headways measured):	0.0%
% RT Vehicles (of headways measured):	0.0%
Average Saturation Flow Headway (s):	1.98
Standard Deviation of All Headways:	0.57
Standard Deviation of Cycle Headways:	0.23
Unadjusted Median Sat Flow Rate (veh/ln.hr):	1827
Unadjusted Avg Sat Flow Rate (veh/ln/hr):	1823



Location 33:
County O & Shopping Center Ring Rd SB

Signalized Intersection Capacity
Data Collection

TransSmart
by TRC

© 2015 HillmanSi Corporation

WisDOT Signalized Intersection Capacity Study

Location ID: 34
Intersection Location: WIS 59 & County O
Approach Direction: NB
Approach Configuration: 6
Population Group: > 250

Video Date: 10/1/2014
County: Waukesha
Region: SE
Municipality: Brookfield
Approach AADT: 34100

Cycle #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Lane Studied	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Start of Green	6:38 AM	6:38 AM	6:43 AM	6:46 AM	6:48 AM	6:50 AM	6:53 AM	6:55 AM	6:57 AM	6:59 AM	7:02 AM	7:04 AM	7:07 AM	7:09 AM	7:11 AM
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)															
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	3.67	2.53	2.84	4.65	3.23	3.62	2.81	3.94	2.39	4.16	4.84	3.22	3.14	2.39	2.25
Vehicle 2	0.87	1.22	2.25	1.93	1.56	5.39	2.95	1.90	2.43	1.69	3.74	1.99	1.83	2.69	2.91
Vehicle 3	3.02	3.80	2.73	2.65	2.38	2.27	2.77	1.83	1.93	2.25	2.81	2.47	2.70	3.08	1.79
Vehicle 4	2.48	2.17	1.29	1.47	2.12	1.98	2.92	1.94	2.24	2.29	2.30	2.45	0.98	1.91	2.14
Vehicle 5	2.32	2.39	2.04	1.34	1.72	1.55	3.39	1.50	2.86	2.00	1.45	2.39	1.74	2.01	1.71
Vehicle 6	2.22	2.19	0.86	2.21	2.72	1.95	2.83	1.56	1.26	1.69	1.67	1.73	1.69	3.09	2.33
Vehicle 7	1.26	1.39	1.80	1.42	2.00	2.30	1.76	2.58	1.30	1.42	1.06	1.91	2.34	1.96	1.70
Vehicle 8	1.55	1.48	2.55	1.72	2.59	1.31	1.83	1.98	1.39	3.20	1.52	1.99	2.02	1.95	2.20
Vehicle 9	3.40	3.47	1.96	2.03	1.69	1.57	2.19	2.16	1.77	0.93	1.30	1.42	1.57	1.86	1.44
Vehicle 10	2.13			0.91	1.11	0.97	1.92	3.91	2.11	1.78	2.25	1.28	0.82	1.27	1.06
Vehicle 11	1.67				1.98		1.47	1.95	2.18	1.94	0.90	1.03	1.36	1.31	1.72
Vehicle 12							1.55	1.12	1.88	1.17	1.74	1.72	1.67	1.39	1.50

	Study Results														
No. vehicles used in cycle	11	9	9	10	11	10	12	12	12	12	12	12	12	12	12
Time of Vehicle 4 (s)	10.04	9.72	9.11	10.70	9.29	13.26	11.45	9.61	8.99	10.39	13.69	10.13	8.65	10.07	9.09
Time of Last Vehicle (s)	24.59	20.64	18.32	20.33	23.10	22.91	28.39	26.37	23.74	24.52	25.58	23.60	21.86	24.91	22.75
Avg Sat Headway (s/veh)	2.08	2.18	1.84	1.60	1.97	1.61	2.12	2.10	1.84	1.77	1.49	1.68	1.65	1.86	1.71
Unadj. Sat. Flow (veh/h/ln)	1732	1648	1954	2243	1825	2238	1700	1718	1953	2038	2422	2138	2180	1941	2108
Start up lost time	1.73	0.98	1.74	4.28	1.40	6.83	2.98	1.23	1.62	3.32	7.74	3.39	2.05	2.65	2.26

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. The headway for vehicle 1 is the amount of time (in seconds) that passed between the light turning green and vehicle 1 crossing the stop bar into the intersection.

WisDOT Signalized Intersection Capacity Study

Location ID: 34
Intersection Location: WIS 59 & County O
Approach Direction: NB
Approach Configuration: 6
Population Group: > 250

Video Date: 10/1/2014
County: Waukesha
Region: SE
Municipality: Brookfield
Approach AADT: 34100

Cycle #	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Lane Studied	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Start of Green	7:14 AM	7:16 AM	7:18 AM	7:20 AM	7:23 AM	7:25 AM	7:27 AM	7:30 AM	7:32 AM	7:37 AM	7:39 AM	7:41 AM	7:44 AM	7:46 AM	7:48 AM
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)															
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	3.38	2.60	2.70	2.98	3.30	3.70	5.69	4.49	2.76	3.05	2.86	2.91	3.92	3.02	3.59
Vehicle 2	3.09	1.70	1.70	2.75	1.78	2.24	6.12	1.76	2.32	2.22	1.86	2.22	6.56	1.75	3.03
Vehicle 3	2.25	2.61	1.93	3.36	2.16	1.65	1.82	2.06	3.26	2.55	2.08	2.84	1.74	2.66	2.78
Vehicle 4	1.28	2.14	1.60	2.44	1.61	1.60	1.81	2.05	1.88	2.51	2.03	2.99	1.45	2.56	1.63
Vehicle 5	2.30	1.94	2.61	1.92	1.90	2.32	1.53	1.89	2.19	4.99	2.76	1.76	1.95	1.69	1.70
Vehicle 6	2.76	2.37	2.07	1.62	1.91	2.24	1.94	3.86	1.79	1.73	1.13	3.16	1.85	3.23	1.77
Vehicle 7	2.46	1.64	2.18	3.52	1.53	1.69	2.89	1.92	1.47	1.47	3.23	2.20	1.25	2.44	2.98
Vehicle 8	1.48	1.02	1.86	1.47	2.58	2.14	2.20	2.64	1.72	1.45	3.06	2.07	1.45	1.92	1.27
Vehicle 9	1.67	1.03	1.74	2.31	1.72	1.42	1.39	1.64	1.16	2.32	1.89	1.43	1.52	1.08	1.68
Vehicle 10	0.89	1.94	2.44	1.56	1.47	2.80	1.75	1.49	2.28	2.34	2.25	2.02	2.89	2.40	1.27
Vehicle 11	2.50	1.69	2.10	1.11	2.31	1.45	2.16	1.83	1.23	2.28	2.02	1.81	1.37	1.33	2.20
Vehicle 12	2.66	1.46	1.46	1.35	1.80	1.40	2.03	1.12	1.38	1.66	1.89	1.31	1.78	2.53	1.11

	Study Results														
No. vehicles used in cycle	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
Time of Vehicle 4 (s)	10.00	9.05	7.93	11.53	8.85	9.19	15.44	10.36	10.22	10.33	8.83	10.96	13.67	9.99	11.03
Time of Last Vehicle (s)	26.72	22.14	24.39	26.39	24.07	24.65	31.33	26.75	23.44	28.57	27.06	26.72	27.73	26.61	25.01
Avg Sat Headway (s/veh)	2.09	1.64	2.06	1.86	1.90	1.93	1.99	2.05	1.65	2.28	2.28	1.97	1.76	2.08	1.75
Unadj. Sat. Flow (veh/h/ln)	1722	2200	1750	1938	1892	1863	1812	1757	2179	1579	1580	1827	2048	1733	2060
Start up lost time	1.64	2.51	-0.30	4.10	1.24	1.46	7.50	2.17	3.61	1.21	-0.28	3.08	6.64	1.68	4.04

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. The headway for vehicle 1 is the amount of time (in seconds) that passed between the light turning green and vehicle 1 crossing the stop bar into the intersection.

WisDOT Signalized Intersection Capacity Study

Location ID: 34
Intersection Location: WIS 59 & County O
Approach Direction: NB
Approach Configuration: 6
Population Group: > 250

Video Date: 10/1/2014
County: Waukesha
Region: SE
Municipality: Brookfield
Approach AADT: 34100

Cycle #	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Lane Studied	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Start of Green	7:51 AM	7:53 AM	7:56 AM	7:58 AM	8:00 AM	8:03 AM	8:05 AM	8:12 AM	8:14 AM	8:16 AM	8:19 AM	8:21 AM	4:03 PM	4:10 PM	4:18 PM
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)															
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	2.79	2.79	2.84	2.42	2.54	2.92	4.00	2.89	2.18	3.02	2.74	2.41	3.55	2.15	4.44
Vehicle 2	3.68	2.47	2.63	1.72	2.99	3.26	2.46	2.48	2.48	2.27	2.87	1.73	3.09	1.80	1.75
Vehicle 3	5.29	2.00	2.00	2.33	2.03	1.96	1.62	2.13	2.37	2.86	2.31	4.89	3.00	2.19	1.58
Vehicle 4	2.28	1.74	2.17	2.48	2.62	1.59	1.89	1.71	3.10	2.59	1.60	1.75	2.69	2.17	2.01
Vehicle 5	1.57	3.18	1.48	1.69	1.72	1.59	2.25	2.13	1.14	1.50	1.93	2.61	1.56	2.45	2.69
Vehicle 6	1.57	1.50	2.21	2.22	1.44	1.71	1.69	1.27	1.76	1.12	1.93	1.33	1.78	1.94	1.94
Vehicle 7	1.96	1.69	1.98	1.27	1.86	1.82	1.50	1.78	1.71	1.46	1.86	1.70	1.02	1.45	1.44
Vehicle 8	1.86	1.61	2.22	1.48	2.42	1.86	1.52	1.07	2.08	1.70	1.43	1.25	1.70	1.71	1.57
Vehicle 9	2.18	1.11	2.17	1.59	1.89		1.12	1.57	1.50	3.00	1.11	1.11			1.72
Vehicle 10	2.38	1.81	1.97		1.52		1.94	1.59	1.86	1.48	1.53				1.35
Vehicle 11	1.28	1.55			1.78		1.36	2.03		1.72	1.53				
Vehicle 12	2.41	1.95					1.90	1.41		0.85					

	Study Results														
No. vehicles used in cycle	12	12	10	9	11	8	12	12	10	12	11	9	8	8	10
Time of Vehicle 4 (s)	14.04	9.00	9.64	8.95	10.18	9.73	9.97	9.21	10.13	10.74	9.52	10.78	12.33	8.31	9.78
Time of Last Vehicle (s)	29.25	23.40	21.67	17.20	22.81	16.71	23.25	22.06	20.18	23.57	20.84	18.78	18.39	15.86	20.49
Avg Sat Headway (s/veh)	1.90	1.80	2.00	1.65	1.80	1.74	1.66	1.61	1.67	1.60	1.62	1.60	1.51	1.89	1.78
Unadj. Sat. Flow (veh/h/ln)	1893	2000	1796	2182	1995	2063	2169	2241	2149	2245	2226	2250	2376	1907	2017
Start up lost time	6.43	1.80	1.62	2.35	2.96	2.75	3.33	2.79	3.43	4.32	3.05	4.38	6.27	0.76	2.64

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. The headway for vehicle 1 is the amount of time (in seconds) that passed between the light turning green and vehicle 1 crossing the stop bar into the intersection.

WisDOT Signalized Intersection Capacity Study

Location ID: 34
Intersection Location: WIS 59 & County O
Approach Direction: NB
Approach Configuration: 6
Population Group: > 250

Video Date: 10/1/2014
County: Waukesha
Region: SE
Municipality: Brookfield
Approach AADT: 34100

Cycle #	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Lane Studied	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Start of Green	4:20 PM	4:22 PM	4:25 PM	4:32 PM	4:34 PM	4:36 PM	4:39 PM	4:46 PM	4:48 PM	4:50 PM	4:57 PM	5:04 PM	5:06 PM	5:11 PM	
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)															
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	2.28	3.73	3.39	1.68	2.72	3.86	2.98	3.42	5.33	3.59	3.48	2.58	3.00	3.90	
Vehicle 2	3.00	2.06	1.34	1.79	2.75	1.84	4.10	1.42	1.75	1.77	1.83	2.06	1.87	2.08	
Vehicle 3	2.97	2.19	1.91	2.03	2.12	1.32	1.39	3.25	1.53	1.84	1.83	2.45	2.03	2.03	
Vehicle 4	2.04	2.34	1.97	2.98	1.98	1.51	1.37	2.67	1.50	2.20	3.18	2.32	3.61	1.92	
Vehicle 5	2.02	1.03	2.09	2.86	1.79	1.41	0.91	1.38	1.86	2.16	1.68	1.50	1.89	2.32	
Vehicle 6	1.28	2.35	3.80	1.72	2.18	1.48	2.59	1.79	1.48	1.83	1.78	3.07	1.94	1.62	
Vehicle 7	2.38	1.89	1.53	1.39	1.18	1.89	1.39	1.47	1.75	1.48	1.98	1.71	1.28	1.74	
Vehicle 8	1.86	1.45	1.70	1.28	1.01	1.91	1.46	1.94	1.63	1.24	1.36	1.86	1.21	2.03	
Vehicle 9	2.42	1.94	2.19	1.61	2.17	1.23		2.09	1.54		2.03	2.09	1.76	1.42	
Vehicle 10		1.23			1.66			1.94	1.47		1.47	1.06	1.89	1.87	
Vehicle 11								1.84			1.49	1.83			
Vehicle 12								1.74			1.62	1.99			

	Study Results														
No. vehicles used in cycle	9	10	9	9	10	9	8	12	10	8	12	12	10	10	
Time of Vehicle 4 (s)	10.29	10.32	8.61	8.48	9.57	8.53	9.84	10.76	10.11	9.40	10.32	9.41	10.51	9.93	
Time of Last Vehicle (s)	20.25	20.21	19.92	17.34	19.56	16.45	16.19	24.95	19.84	16.11	23.73	24.52	20.48	20.93	
Avg Sat Headway (s/veh)	1.99	1.65	2.26	1.77	1.66	1.58	1.59	1.77	1.62	1.68	1.68	1.89	1.66	1.83	
Unadj. Sat. Flow (veh/h/ln)	1807	2184	1592	2032	2162	2273	2268	2030	2220	2146	2148	1906	2166	1964	
Start up lost time	2.32	3.73	-0.44	1.39	2.91	2.19	3.49	3.67	3.62	2.69	3.62	1.85	3.86	2.60	

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. The headway for vehicle 1 is the amount of time (in seconds) that passed between the light turning green and vehicle 1 crossing the stop bar into the intersection.

Saturation Flow Study Summary Sheet

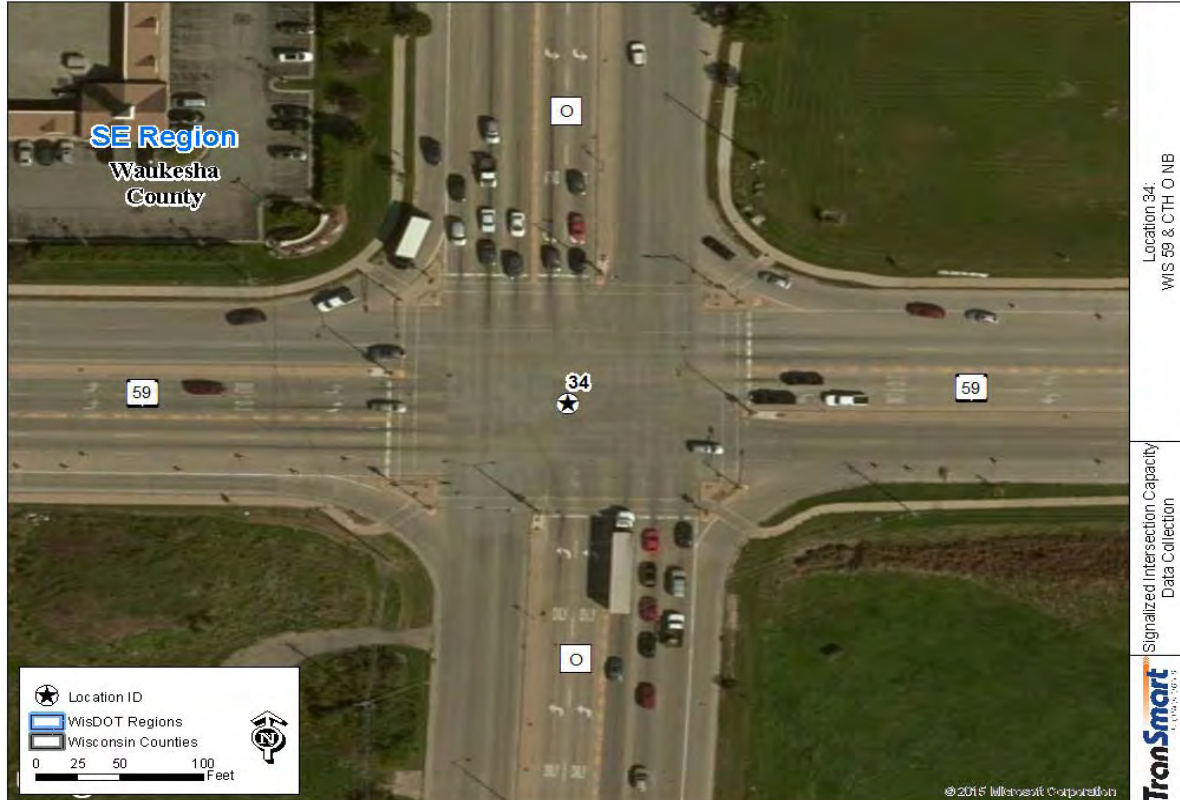
Intersection Information:

Intersection:	WIS 59 & County O
Major Street:	WIS 59
Minor Street:	County O
Study Approach:	NB
Approach Configuration:	6
Population Group:	> 250
Cycle by Date:	10/1/2014

Date:	10/1/2014
WisDOT Region:	SE
Nearest Municipality:	Brookfield
County:	Waukesha
Weather:	Clear
Pavement:	Dry
Observer:	

Data Collection Summary Data:

Cycles Studied:	59
Average number of vehicles per cycle:	11
Headways Measured (queue vehicles > 4) :	404
% Heavy Vehicles (of headways measured):	0.0%
% RT Vehicles (of headways measured):	0.0%
Average Saturation Flow Headway (s):	1.83
Standard Deviation of All Headways:	0.55
Standard Deviation of Cycle Headways:	0.20
Unadjusted Median Sat Flow Rate (veh/ln.hr):	2030
Unadjusted Avg Sat Flow Rate (veh/ln/hr):	1970
Average Start Up Lost Time (s):	2.90



WisDOT Signalized Intersection Capacity Study

Location ID: 35
 Intersection Location: WIS 100 & N 60th St
 Approach Direction: EB
 Approach Configuration: 3
 Population Group: > 250

Video Date: 5/14/2014
 County: Milwaukee
 Region: SE
 Municipality: Brown Deer
 Approach AADT: 27900

Cycle #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Lane Studied	1	2	1	1	1	1	1	1	1	2	1	2	1	1	1
Start of Green	7:17 AM	7:17 AM	7:27 AM	7:35 AM	7:36 AM	8:22 AM	8:31 AM	11:52 AM	12:30 PM	12:40 PM	12:43 PM	12:57 PM	1:21 PM	1:32 PM	1:55 PM
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)															
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	1.54	1.98	2.39	2.61	1.90	2.69	2.60	2.33	3.62	2.74	2.42	2.64	1.89	1.94	2.49
Vehicle 2	2.46	2.69	2.60	3.32	2.50	1.61	1.73	2.61	2.61	1.94	2.43	2.17	2.26	4.09	3.19
Vehicle 3	2.29	1.51	2.04	2.88	1.77	1.72	2.27	3.06	2.99	2.84	2.06	3.10	1.17	2.32	3.54
Vehicle 4	3.66	1.43	2.10	2.58	1.90	2.04	3.30	2.57	1.87	1.06	1.98	1.87	1.86	1.25	2.22
Vehicle 5	1.84	1.46	1.62	1.76	1.75	1.38	1.57	2.43	1.81	2.89	1.85	1.72	3.68	2.23	1.58
Vehicle 6	1.86	2.79	1.61	1.61	1.16	1.90	1.63	1.52	2.00	1.92	2.00	1.78	1.32	2.64	2.08
Vehicle 7	1.17	1.73	2.71	0.94	3.09	2.00	1.42	1.36	1.93	1.71	1.51	1.77	2.64	2.48	1.86
Vehicle 8	1.86	1.45	2.34	1.56	1.52	1.24	2.58	1.61	1.37	2.43	1.55	2.56	1.77	1.43	1.64
Vehicle 9			1.48	2.00	2.05		2.48	2.40	2.20			1.42	1.34	1.56	2.04
Vehicle 10			1.60	3.47								1.83		1.83	
Vehicle 11			2.06	0.72										1.08	
Vehicle 12			0.92	1.50											

	Study Results														
No. vehicles used in cycle	8	8	12	12	9	8	9	9	9	8	8	10	9	11	9
Time of Vehicle 4 (s)	9.95	7.61	9.13	11.39	8.07	8.06	9.90	10.57	11.09	8.58	8.89	9.78	7.18	9.60	11.44
Time of Last Vehicle (s)	16.68	15.04	23.47	24.95	17.64	14.58	19.58	19.89	20.40	17.53	15.80	20.86	17.93	22.85	20.64
Avg Sat Headway (s/veh)	1.68	1.86	1.79	1.69	1.91	1.63	1.94	1.86	1.86	2.24	1.73	1.85	2.15	1.89	1.84
Unadj. Sat. Flow (veh/h/ln)	2140	1938	2008	2124	1881	2209	1860	1931	1933	1609	2084	1949	1674	1902	1957
Start up lost time	3.22	0.18	1.96	4.61	0.41	1.54	2.16	3.11	3.64	-0.37	1.98	2.39	-1.42	2.03	4.08

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. The headway for vehicle 1 is the amount of time (in seconds) that passed between the light turning green and vehicle 1 crossing the stop bar into the intersection.

WisDOT Signalized Intersection Capacity Study

Location ID: 35
Intersection Location: WIS 100 & N 60th St
Approach Direction: EB
Approach Configuration: 3
Population Group: > 250

Video Date: 5/14/2014
County: Milwaukee
Region: SE
Municipality: Brown Deer
Approach AADT: 27900

Cycle #	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Lane Studied	2	1	2	2	1	2	1	2	1	2	1	2	1	2	1
Start of Green	1:55 PM	2:02 PM	2:13 PM	2:47 PM	3:16 PM	3:19 PM	3:23 PM	3:23 PM	3:25 PM	3:25 PM	3:26 PM	3:26 PM	3:32 PM	3:32 PM	3:41 PM
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)															
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	2.69	2.90	2.96	2.13	2.19	2.33	2.97	2.56	2.29	3.01	2.75	3.16	2.18	2.72	2.91
Vehicle 2	2.16	2.52	3.06	2.50	3.40	2.85	2.25	2.52	2.61	2.69	3.02	1.98	3.03	2.45	2.61
Vehicle 3	2.14	1.56	2.80	2.08	1.78	2.56	2.94	2.03	2.28	2.41	1.34	2.47	1.94	2.15	2.53
Vehicle 4	1.45	1.64	1.70	2.78	2.13	1.19	2.59	1.52	1.85	2.68	2.63	3.08	1.79	1.84	1.42
Vehicle 5	1.94	1.20	1.45	1.90	1.31	2.53	1.35	1.81	2.19	1.86	2.17	1.86	2.44	2.47	1.88
Vehicle 6	2.02	1.89	3.10	1.28	1.77	1.75	1.11	2.19	1.17	1.72	1.94	1.40	2.89	1.73	2.34
Vehicle 7	1.18	2.11	1.64	1.91	2.12	1.69	1.67	1.83	1.65	1.64	2.93	1.75	1.45	2.71	1.23
Vehicle 8	1.39	0.82	1.94	2.30	2.06	1.64	1.95	2.31	1.99	1.63	1.58	1.58	1.64	1.28	1.30
Vehicle 9			1.89	1.92	2.55		1.97		1.97		2.14	2.05	1.07		
Vehicle 10				1.95	1.45		1.34		1.59		1.75	1.34	1.50		
Vehicle 11					1.85				1.49		2.08				
Vehicle 12					1.06										

	Study Results														
No. vehicles used in cycle	8	8	9	10	12	8	10	8	11	8	11	10	10	8	8
Time of Vehicle 4 (s)	8.44	8.62	10.52	9.49	9.50	8.93	10.75	8.63	9.03	10.79	9.74	10.69	8.94	9.16	9.47
Time of Last Vehicle (s)	14.97	14.64	20.54	20.75	23.67	16.54	20.14	16.77	21.08	17.64	24.33	20.67	19.93	17.35	16.22
Avg Sat Headway (s/veh)	1.63	1.51	2.00	1.88	1.77	1.90	1.56	2.03	1.72	1.71	2.08	1.66	1.83	2.05	1.69
Unadj. Sat. Flow (veh/h/ln)	2205	2392	1796	1918	2032	1892	2300	1769	2091	2102	1727	2164	1965	1758	2133
Start up lost time	1.91	2.60	2.50	1.98	2.42	1.32	4.49	0.49	2.14	3.94	1.40	4.04	1.61	0.97	2.72

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. The headway for vehicle 1 is the amount of time (in seconds) that passed between the light turning green and vehicle 1 crossing the stop bar into the intersection.

WisDOT Signalized Intersection Capacity Study

Location ID: 35
Intersection Location: WIS 100 & N 60th St
Approach Direction: EB
Approach Configuration: 3
Population Group: > 250

Video Date: 5/14/2014
County: Milwaukee
Region: SE
Municipality: Brown Deer
Approach AADT: 27900

Cycle #	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Lane Studied	1	1	1	1	1	1	1	2	2	1	1	2	2	1	3
Start of Green	3:44 PM	3:48 PM	3:50 PM	3:52 PM	3:58 PM	4:07 PM	4:09 PM	4:09 PM	4:13 PM	4:25 PM	4:29 PM	4:29 PM	4:34 PM	4:38 PM	4:38 PM
Heavy Vehicles (1-4)		1			1										
Heavy Vehicles (5-12)	2											1			
Right Turns (1-4)															
Right Turns (5-12)															1

Vehicle	Headway ¹ (s)														
Vehicle 1	2.50	3.13	3.11	3.79	2.05	2.56	2.94	3.11	2.15	2.59	3.44	2.22	2.53	2.56	3.14
Vehicle 2	2.96	2.89	2.33	2.62	2.95	2.33	1.84	2.39	2.14	2.27	2.36	2.02	1.96	1.77	2.86
Vehicle 3	1.93	1.81	1.86	1.88	2.52	2.96	2.03	1.06	1.86	2.69	2.59	1.78	1.81	1.79	2.61
Vehicle 4	2.58	2.50	3.42	1.62	2.50	2.29	1.67	2.22	2.08	2.48	1.63	2.09	1.50	1.66	2.46
Vehicle 5	2.99	2.01	1.44	1.56	1.59	1.28	2.67	1.52	1.95	1.09	1.59	2.50	1.73	2.03	1.62
Vehicle 6	2.75	2.49	2.26	1.60	1.78	1.83	1.24	1.78	1.69	1.86	1.41	2.21	1.97	1.75	1.66
Vehicle 7	2.43	1.64	2.27	1.53	1.75	1.13	1.87	2.32	1.64	2.36	2.25	2.43	1.55	1.45	1.61
Vehicle 8	1.41	1.16	2.08	1.59	1.75	0.98	1.74	1.32	1.66	1.24	1.62	2.13	1.62	1.53	1.06
Vehicle 9			1.81	1.77	1.79		1.53	1.25	1.33		1.77	2.78	1.63	1.71	2.23
Vehicle 10			1.65	1.58	1.29				1.29		1.22		2.37		
Vehicle 11					1.67					1.38					
Vehicle 12									1.64						

	Study Results														
No. vehicles used in cycle	8	8	10	10	11	8	9	9	12	8	10	9	10	9	9
Time of Vehicle 4 (s)	9.97	10.33	10.72	9.91	10.02	10.14	8.48	8.78	8.23	10.03	10.02	8.11	7.80	7.78	11.07
Time of Last Vehicle (s)	19.55	17.63	22.23	19.54	21.64	15.36	17.53	16.97	20.81	16.58	19.88	20.16	18.67	16.25	19.25
Avg Sat Headway (s/veh)	2.40	1.82	1.92	1.60	1.66	1.31	1.81	1.64	1.57	1.64	1.64	2.41	1.81	1.69	1.64
Unadj. Sat. Flow (veh/h/ln)	1503	1973	1877	2243	2169	2759	1989	2198	2289	2198	2191	1494	1987	2125	2200
Start up lost time	0.39	3.03	3.05	3.49	3.38	4.92	1.24	2.23	1.94	3.48	3.45	-1.53	0.55	1.00	4.53

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. The headway for vehicle 1 is the amount of time (in seconds) that passed between the light turning green and vehicle 1 crossing the stop bar into the intersection.

WisDOT Signalized Intersection Capacity Study

Location ID: 35
Intersection Location: WIS 100 & N 60th St
Approach Direction: EB
Approach Configuration: 3
Population Group: > 250

Video Date: 5/14/2014
County: Milwaukee
Region: SE
Municipality: Brown Deer
Approach AADT: 27900

Cycle #	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Lane Studied	1	1	1	2	1	1	1	1	1	1	1	1	1		
Start of Green	4:40 PM	4:43 PM	4:47 PM	4:47 PM	4:49 PM	4:57 PM	4:59 PM	5:05 PM	5:09 PM	5:11 PM	5:13 PM	5:17 PM	5:18 PM		
Heavy Vehicles (1-4)									2						
Heavy Vehicles (5-12)												1			
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	2.40	2.11	2.59	3.30	2.39	2.72	3.04	2.32	2.17	2.34	2.97	3.69	2.34		
Vehicle 2	2.07	3.19	1.83	2.92	3.06	2.94	2.09	2.89	2.17	2.13	2.61	2.70	2.19		
Vehicle 3	2.54	2.09	2.40	1.84	4.38	2.36	3.67	2.29	1.68	1.79	1.84	2.03	1.77		
Vehicle 4	2.03	1.99	2.24	2.13	1.87	3.26	1.47	2.01	3.73	2.68	1.86	1.33	1.95		
Vehicle 5	1.57	3.06	2.34	1.56	2.08	1.44	2.55	2.16	2.63	1.34	2.41	1.69	1.47		
Vehicle 6	1.56	1.45	2.66	1.92	1.90	2.22	1.62	1.17	1.59	1.62	1.28	1.92	1.79		
Vehicle 7	1.87	1.36	1.34	2.16	1.55	1.39	2.00	1.44	1.70	1.66	2.20	1.16	1.29		
Vehicle 8	1.63	1.67	1.77	2.55	2.17	1.67	1.80	1.62	1.42	1.31	1.21	1.14	1.59		
Vehicle 9	1.65	2.00		1.56	1.38	1.36			1.19	1.72		1.76	2.22		
Vehicle 10	1.86	1.96		1.86		1.78			1.78	1.39		2.08	1.51		
Vehicle 11	1.97	1.59				1.66			1.57	1.99		1.09	1.94		
Vehicle 12		1.49				1.83				1.37		1.94	1.84		

	Study Results														
No. vehicles used in cycle	11	12	8	10	9	12	8	8	11	12	8	12	12		
Time of Vehicle 4 (s)	9.04	9.38	9.06	10.19	11.70	11.28	10.27	9.51	9.75	8.94	9.28	9.75	8.25		
Time of Last Vehicle (s)	21.15	23.96	17.17	21.80	20.78	24.63	18.24	15.90	21.63	21.34	16.38	22.53	21.90		
Avg Sat Headway (s/veh)	1.73	1.82	2.03	1.94	1.82	1.67	1.99	1.60	1.70	1.55	1.77	1.60	1.71		
Unadj. Sat. Flow (veh/h/ln)	2081	1975	1776	1860	1982	2157	1807	2254	2121	2323	2028	2254	2110		
Start up lost time	2.12	2.09	0.95	2.45	4.44	4.60	2.30	3.12	2.96	2.74	2.18	3.36	1.42		

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. The headway for vehicle 1 is the amount of time (in seconds) that passed between the light turning green and vehicle 1 crossing the stop bar into the intersection.

Saturation Flow Study Summary Sheet

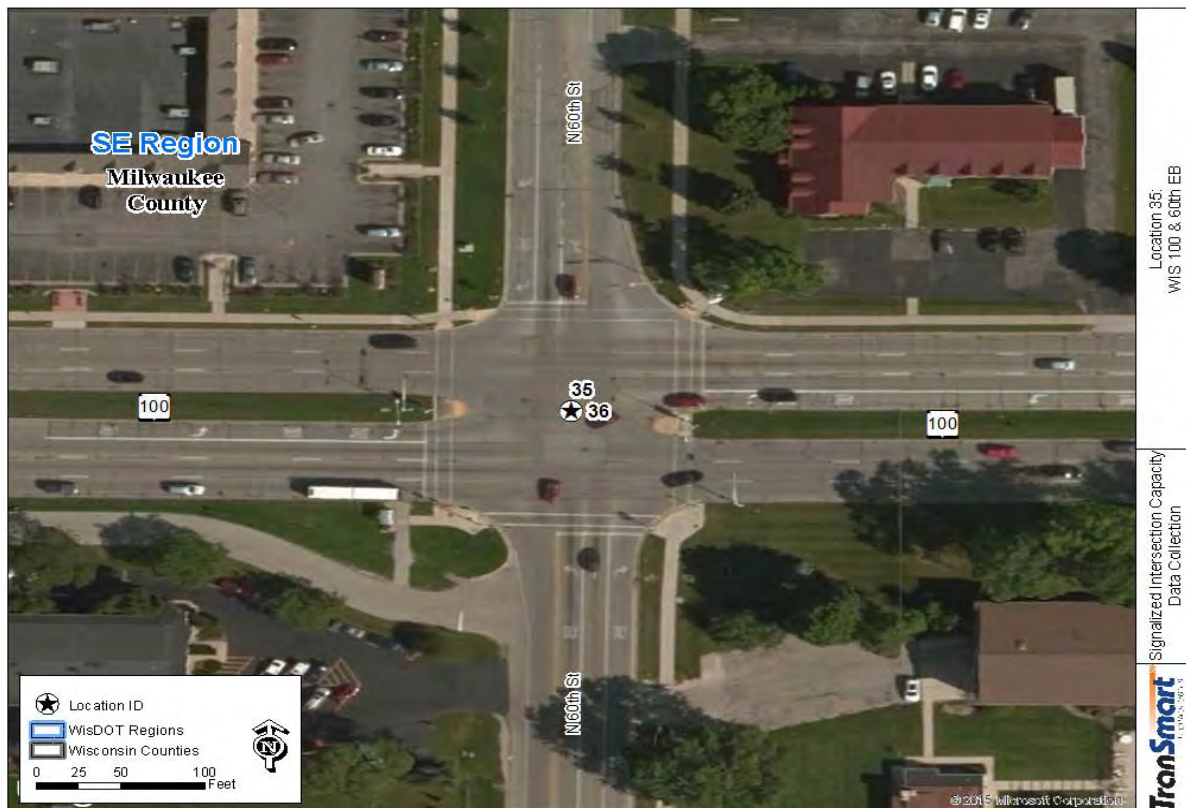
Intersection Information:

Intersection:	WIS 100 & N 60th St
Major Street:	WIS 100
Minor Street:	N 60th St.
Study Approach:	EB
Approach Configuration:	3
Population Group:	> 250
Cycle by Date:	5/14/2014

Date:	5/14/2014
WisDOT Region:	SE
Nearest Municipality:	Brown Deer
County:	Milwaukee
Weather:	Clear
Pavement:	Dry
Observer:	Matt Sudac

Data Collection Summary Data:

Cycles Studied:	58
Average number of vehicles per cycle:	10
Headways Measured (queue vehicles > 4) :	319
% Heavy Vehicles (of headways measured):	1.3%
% RT Vehicles (of headways measured):	0.3%
Average Saturation Flow Headway (s):	1.79
Standard Deviation of All Headways:	0.46
Standard Deviation of Cycle Headways:	0.21
Unadjusted Median Sat Flow Rate (veh/ln.hr):	2018
Unadjusted Avg Sat Flow Rate (veh/ln/hr):	2012
Average Start Up Lost Time (s):	2.31



WisDOT Signalized Intersection Capacity Study

Location ID: 36
Intersection Location: WIS 100 & N 60th St
Approach Direction: WB
Approach Configuration: 3
Population Group: > 250

Video Date: 5/14/2014
County: Milwaukee
Region: SE
Municipality: Brown Deer
Approach AADT: 27900

Cycle #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Lane Studied	1	2	1	1	2	1	1	1	2	1	1	1	2	1	2
Start of Green	7:21 AM	7:35 AM	7:48 AM	7:50 AM	7:50 AM	7:53 AM	8:41 AM	8:51 AM	9:57 AM	10:15 AM	10:17 AM	10:35 AM	10:51 AM	11:12 AM	11:14 AM
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)							1								2
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	3.03	3.91	3.21	1.79	2.32	2.96	1.94	3.06	3.41	4.03	2.63	3.06	2.84	3.18	2.62
Vehicle 3	3.43	1.73	2.04	2.37	2.29	1.86	1.32	2.30	3.01	3.60	2.19	2.42	2.65	1.82	1.43
Vehicle 4	1.93	1.46	2.03	1.16	2.74	1.72	1.97	1.70	1.82	1.58	2.26	1.42	2.53	1.83	2.14
Vehicle 5	1.78	2.35	1.88	2.17	1.90	1.77	1.35	1.58	1.59	1.56	2.58	2.49	1.82	1.31	2.15
Vehicle 6	1.40	1.35	1.34	1.53	1.96	1.73	1.48	3.22	1.95	1.55	1.52	1.56	1.61	2.13	1.86
Vehicle 7	1.30	1.36	1.80	1.89	1.18	1.80	3.28	2.10	2.07	1.45	3.50	3.08	1.61	1.53	2.64
Vehicle 8	1.92	1.53	1.89	2.27	3.18	1.55	1.33	2.40	1.31	2.16	1.62	1.92	2.39	2.00	2.41
Vehicle 9	2.38	1.73	1.84	2.00	1.89			1.89	1.84	1.71		1.92		2.09	1.61
Vehicle 10			0.99	1.46	1.32			2.28	1.11			1.45			2.28
Vehicle 11			2.03	2.15	1.29							1.57			
Vehicle 12			1.23		1.67							2.53			

	Study Results														
No. vehicles used in cycle	9	9	12	11	12	8	8	10	10	9	8	12	8	9	10
Time of Vehicle 4 (s)	8.39	7.10	7.28	5.32	7.35	6.54	5.23	7.06	8.24	9.21	7.08	6.90	8.02	6.83	6.19
Time of Last Vehicle (s)	17.17	15.42	20.28	18.79	21.74	13.39	12.67	20.53	18.11	17.64	16.30	23.42	15.45	15.89	19.14
Avg Sat Headway (s/veh)	1.76	1.66	1.63	1.92	1.80	1.71	1.86	2.24	1.64	1.69	2.31	2.07	1.86	1.81	2.16
Unadj. Sat. Flow (veh/h/ln)	2050	2163	2215	1871	2001	2102	1935	1604	2188	2135	1562	1743	1938	1987	1668

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection.
 There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

WisDOT Signalized Intersection Capacity Study

Location ID: 36
Intersection Location: WIS 100 & N 60th St
Approach Direction: WB
Approach Configuration: 3
Population Group: > 250

Video Date: 5/14/2014
County: Milwaukee
Region: SE
Municipality: Brown Deer
Approach AADT: 27900

Cycle #	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Lane Studied	1	2	1	1	2	3	1	1	1	1	1	1	1	1	2
Start of Green	11:42 AM	11:42 AM	11:48 AM	12:23 PM	12:23 PM	12:23 PM	12:47 PM	12:49 PM	12:55 PM	1:12 PM	1:27 PM	1:49 PM	1:51 PM	1:53 PM	1:53 PM
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)															2
Right Turns (1-4)						1									
Right Turns (5-12)						1									

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	3.37	2.33	3.64	2.76	2.36	3.66	3.21	2.88	2.60	2.69	2.89	3.26	3.00	3.92	3.39
Vehicle 3	2.11	1.97	2.06	2.50	1.89	1.76	2.43	2.91	2.17	1.95	2.20	1.83	2.28	2.21	2.48
Vehicle 4	2.34	2.45	2.58	1.47	2.27	1.80	2.03	2.45	2.00	1.14	2.24	1.61	2.90	2.09	2.65
Vehicle 5	1.68	2.96	1.47	2.27	2.81	1.53	1.91	1.78	1.39	1.80	1.54	1.42	1.54	2.67	1.64
Vehicle 6	1.31	1.95	1.94	1.53	1.75	2.33	1.52	1.08	1.92	1.68	1.77	1.69	1.40	2.03	2.46
Vehicle 7	2.12	2.84	2.31	2.17	2.39	1.69	1.75	1.47	1.75	2.89	2.22	2.37	1.81	2.41	2.33
Vehicle 8	2.53	2.27	2.76	2.17	2.41	1.75	1.29	1.72	1.81	1.41	2.53	1.25	1.83	2.17	3.74
Vehicle 9		3.09		1.85	1.31		1.49	1.00	1.10				1.74	1.34	1.42
Vehicle 10				1.51	1.78		1.90	1.90	1.92				2.04	1.61	2.06
Vehicle 11				1.88				2.50					1.14	1.63	1.85
Vehicle 12				1.40										2.09	

	Study Results														
No. vehicles used in cycle	8	9	8	12	10	8	10	11	10	8	8	8	11	12	11
Time of Vehicle 4 (s)	7.82	6.75	8.28	6.73	6.52	7.22	7.67	8.24	6.77	5.78	7.33	6.70	8.18	8.22	8.52
Time of Last Vehicle (s)	15.46	19.86	16.76	21.51	18.97	14.52	17.53	19.69	16.66	13.56	15.39	13.43	19.68	24.17	24.02
Avg Sat Headway (s/veh)	1.91	2.62	2.12	1.85	2.07	1.83	1.64	1.64	1.65	1.94	2.01	1.68	1.64	1.99	2.21
Unadj. Sat. Flow (veh/h/ln)	1885	1373	1698	1949	1735	1973	2191	2201	2184	1851	1787	2140	2191	1806	1626

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection.
 There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

WisDOT Signalized Intersection Capacity Study

Location ID: 36
Intersection Location: WIS 100 & N 60th St
Approach Direction: WB
Approach Configuration: 3
Population Group: > 250

Video Date: 5/14/2014
County: Milwaukee
Region: SE
Municipality: Brown Deer
Approach AADT: 27900

Cycle #	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Lane Studied	1	1	1	2	1	1	1	2	1	1	2	1	2	2	1
Start of Green	1:59 PM	2:14 PM	2:35 PM	3:17 PM	3:17 PM	3:19 PM	3:24 PM	3:35 PM	3:35 PM	3:42 PM	3:44 PM	3:46 PM	3:46 PM	15:52:25	3:52 PM
Heavy Vehicles (1-4)				1											
Heavy Vehicles (5-12)															
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	3.64	3.22	2.17	3.07	3.08	2.94	3.12	3.70	2.58	4.40	2.24	2.71	1.89	3.27	2.66
Vehicle 3	2.81	2.11	1.85	2.64	1.78	2.38	2.27	1.69	1.98	2.22	1.82	2.22	2.19	2.33	2.04
Vehicle 4	1.94	1.77	2.50	2.65	2.45	2.29	1.50	2.37	2.13	2.27	1.44	1.58	2.49	1.76	1.72
Vehicle 5	1.61	1.78	1.70	3.46	1.55	2.17	1.45	3.13	1.79	1.47	1.66	2.11	1.40	1.97	1.68
Vehicle 6	3.01	1.50	1.36	1.64	1.66	1.97	1.80	2.14	1.71	1.31	2.28	1.41	1.85	1.42	1.90
Vehicle 7	1.66	2.14	1.52	2.36	1.62	1.14	1.29	2.08	1.73	1.39	1.81	2.54	1.54	1.49	1.72
Vehicle 8	1.95	2.26	2.00	1.70	1.30	1.49	2.21	1.75	1.33	1.64	1.20	1.99	1.61	1.89	1.83
Vehicle 9	1.94	1.50	2.84	1.80	2.17					2.56		1.76	2.35		
Vehicle 10		2.77		2.10	1.61					2.02		2.11	1.34		
Vehicle 11				1.85	2.78					1.95		1.30	2.37		
Vehicle 12										1.41		1.62	1.49		

	Study Results														
No. vehicles used in cycle	9	10	9	11	11	8	8	8	8	12	8	12	12	8	8
Time of Vehicle 4 (s)	8.39	7.10	6.52	8.36	7.31	7.61	6.89	7.76	6.69	8.89	5.50	6.51	6.57	7.36	6.42
Time of Last Vehicle (s)	18.56	19.05	15.94	23.27	20.00	14.38	13.64	16.86	13.25	22.64	12.45	21.35	20.52	14.13	13.55
Avg Sat Headway (s/veh)	2.03	1.99	1.88	2.13	1.81	1.69	1.69	2.27	1.64	1.72	1.74	1.86	1.74	1.69	1.78
Unadj. Sat. Flow (veh/h/ln)	1770	1808	1911	1690	1986	2127	2133	1582	2195	2095	2072	1941	2065	2127	2020

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection.
 There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

WisDOT Signalized Intersection Capacity Study

Location ID: 36
Intersection Location: WIS 100 & N 60th St
Approach Direction: WB
Approach Configuration: 3
Population Group: > 250

Video Date: 5/14/2014
County: Milwaukee
Region: SE
Municipality: Brown Deer
Approach AADT: 27900

Cycle #	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Lane Studied	1	2	1	1	2	3	2	2	2	1	2				
Start of Green	3:54 PM	3:54 PM	3:56 PM	4:07 PM	4:07 PM	4:07 PM	4:10 PM	4:25 PM	4:43 PM	5:03 PM	5:06 PM				
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)															
Right Turns (1-4)						1									
Right Turns (5-12)						2									

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-				
Vehicle 2	2.23	3.06	2.49	3.31	3.22	2.45	2.63	3.03	2.31	2.38	2.56				
Vehicle 3	2.60	2.59	1.54	2.02	1.73	1.66	3.00	1.33	2.12	2.14	2.24				
Vehicle 4	2.03	1.94	2.27	1.95	1.63	1.88	2.19	2.03	3.44	2.47	1.97				
Vehicle 5	2.03	2.30	1.72	2.08	1.97	1.96	2.15	1.40	1.41	1.09	1.76				
Vehicle 6	1.44	2.23	1.79	1.84	1.51	1.49	1.14	1.75	1.31	2.86	1.99				
Vehicle 7	1.53	1.91	1.66	1.14	2.55	1.40	1.68	1.30	1.27	2.28	2.53				
Vehicle 8	1.54	1.25	1.45	1.16	1.31	2.44	1.00	1.83	1.56	1.52	1.67				
Vehicle 9	1.90	1.03	1.13	2.14	2.14			2.19	2.06	1.97	2.28				
Vehicle 10	2.06	1.41		1.92	2.13				1.61						
Vehicle 11	1.69	1.95		1.70	1.41				2.58						
Vehicle 12	1.26			2.29					1.40						

	Study Results														
No. vehicles used in cycle	12	11	9	12	11	8	8	9	12	9	9				
Time of Vehicle 4 (s)	6.86	7.59	6.30	7.28	6.58	5.99	7.82	6.39	7.87	6.99	6.77				
Time of Last Vehicle (s)	20.31	19.67	14.05	21.55	19.60	13.28	13.79	14.86	21.07	16.71	17.00				
Avg Sat Headway (s/veh)	1.68	1.73	1.55	1.78	1.86	1.82	1.49	1.69	1.65	1.94	2.05				
Unadj. Sat. Flow (veh/h/ln)	2141	2086	2323	2018	1935	1975	2412	2125	2182	1852	1760				

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection.
 There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

Saturation Flow Study Summary Sheet

Intersection Information:

Intersection:	WIS 100 & N 60th St
Major Street:	WIS 100
Minor Street:	N 60th St.
Study Approach:	WB
Approach Configuration:	3
Population Group:	> 250
Cycles by Date:	5/14/2014

Video Date:	5/14/2014
WisDOT Region:	SE
Nearest Municipality:	Brown Deer
County:	Milwaukee
Weather:	Clear
Pavement:	Dry
Observer:	Matt Sudac

Data Collection Summary Data:

Cycles Studied:	56
Average number of vehicles per cycle:	10
Headways Measured (queue vehicles > 4) :	317
% Heavy Vehicles (of headways measured):	1.6%
% RT Vehicles (of headways measured):	0.9%
Average Saturation Flow Headway (s):	1.85
Standard Deviation of All Headways:	0.48
Standard Deviation of All Cycle Headways:	0.22
Unadjusted Median Sat Flow Rate (veh/ln.hr):	1986
Unadjusted Avg Sat Flow Rate (veh/ln/hr):	1945



WisDOT Signalized Intersection Capacity Study

Location ID: 37
Intersection Location: WIS 100 & W Layton Ave
Approach Direction: SB
Approach Configuration: 3
Population Group: > 250

Video Date: 3/17/15 - 3/19/15
County: Milwaukee
Region: SE
Municipality: Greenfield
Approach AADT: 28600

Cycle #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Lane Studied	1	2	2	1	2	2	1	1	1	2	1	2	1	2	1
Start of Green	12:56 PM	12:56 PM	1:05 PM	2:42 PM	2:42 PM	2:44 PM	2:44 PM	2:50 PM	3:03 PM	3:03 PM	3:08 PM	3:08 PM	3:12 PM	3:22 PM	3:26 PM
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)															
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	3.21	3.33	2.47	3.02	2.25	3.34	3.06	3.00	1.82	2.18	1.84	2.05	2.01	2.50	2.41
Vehicle 3	1.74	2.64	2.32	2.29	1.52	2.19	1.51	1.71	2.19	2.01	1.87	1.92	2.66	2.00	1.71
Vehicle 4	2.74	1.80	1.84	1.17	1.24	2.35	1.49	1.99	2.38	2.08	1.47	1.73	1.93	3.22	2.77
Vehicle 5	1.45	2.15	1.97	1.29	1.31	2.88	2.14	2.06	1.97	1.92	1.52	2.24	1.82	1.69	1.38
Vehicle 6	2.41	2.14	2.16	1.58	1.67	2.10	1.96	1.96	1.49	2.62	1.40	2.65	1.53	1.72	2.23
Vehicle 7	2.17	2.32	1.58	1.21	2.60	2.86	2.07	1.75	2.65	1.95	1.76	1.98	2.81	1.89	1.48
Vehicle 8	1.77	1.68	1.97	2.50	2.20	1.22	2.25	1.59	1.72	1.44	2.91	2.29	2.09	2.05	2.22
Vehicle 9	2.09	2.52		1.33	1.37		1.63	2.34	1.79		1.82	2.23	1.52	1.81	2.30
Vehicle 10		1.65		1.48	1.93		1.66	1.55			1.84	1.09	1.91		
Vehicle 11		1.93		1.70	2.29		2.22								
Vehicle 12		1.93		0.25	1.48										

	Study Results														
No. vehicles used in cycle	9	12	8	12	12	8	11	10	9	8	10	10	10	9	9
Time of Vehicle 4 (s)	7.69	7.77	6.63	6.48	5.01	7.88	6.06	6.70	6.39	6.27	5.18	5.70	6.60	7.72	6.89
Time of Last Vehicle (s)	17.58	24.09	14.31	17.82	19.86	16.94	19.99	17.95	16.01	14.20	16.43	18.18	18.28	16.88	16.50
Avg Sat Headway (s/veh)	1.98	2.04	1.92	1.42	1.86	2.27	1.99	1.88	1.92	1.98	1.88	2.08	1.95	1.83	1.92
Unadj. Sat. Flow (veh/h/ln)	1820	1765	1875	2540	1939	1589	1809	1920	1871	1816	1920	1731	1849	1965	1873

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

WisDOT Signalized Intersection Capacity Study

Location ID: 37
Intersection Location: WIS 100 & W Layton Ave
Approach Direction: SB
Approach Configuration: 3
Population Group: > 250

Video Date: 3/17/15 - 3/19/15
County: Milwaukee
Region: SE
Municipality: Greenfield
Approach AADT: 28600

Cycle #	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Lane Studied	1	2	2	2	2	1	1	2	1	2	1	1	2	2	2
Start of Green	3:38 PM	3:44 PM	3:46 PM	3:49 PM	3:54 PM	8:02 AM	3:00 PM	3:00 PM	3:15 PM	3:15 PM	3:17 PM	3:20 PM	3:20 PM	3:24 PM	3:39 PM
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)	1							1							
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	1.73	2.59	2.85	2.70	1.65	2.04	2.27	2.39	2.91	2.72	2.65	2.59	2.26	1.89	4.28
Vehicle 3	1.61	1.87	2.70	2.10	3.51	2.39	1.96	2.03	1.81	1.42	2.21	2.97	2.62	1.88	2.10
Vehicle 4	2.33	3.12	1.87	2.16	1.79	2.80	2.07	2.02	1.62	2.60	2.47	1.68	1.49	1.03	1.70
Vehicle 5	2.08	1.88	1.82	2.72	2.35	2.26	1.61	1.79	1.89	2.41	2.08	1.86	3.35	1.93	1.41
Vehicle 6	1.60	1.63	2.01	1.77	2.65	1.30	2.10	1.86	1.97	1.74	3.35	2.30	1.57	1.89	2.36
Vehicle 7	1.60	1.68	2.15	1.86	1.56	1.61	1.84	1.75	1.96	2.03	1.26	2.01	3.26	1.90	1.12
Vehicle 8	2.72	1.64	1.70	2.45	1.53	2.05	2.73	2.91	2.24	1.77	1.16	2.98	1.27	1.73	1.22
Vehicle 9	1.75	1.53	1.73	1.74		2.79			1.84	1.62	2.67	2.41		1.79	1.73
Vehicle 10															
Vehicle 11															
Vehicle 12															

	Study Results														
No. vehicles used in cycle	9	9	9	9	8	9	8	8	9	9	9	9	8	9	9
Time of Vehicle 4 (s)	5.67	7.58	7.42	6.96	6.95	7.23	6.30	6.44	6.34	6.74	7.33	7.24	6.37	4.80	8.08
Time of Last Vehicle (s)	15.42	15.94	16.83	17.50	15.04	17.24	14.58	14.75	16.24	16.31	17.85	18.80	15.82	14.04	15.92
Avg Sat Headway (s/veh)	1.95	1.67	1.88	2.11	2.02	2.00	2.07	2.08	1.98	1.91	2.10	2.31	2.36	1.85	1.57
Unadj. Sat. Flow (veh/h/ln)	1846	2153	1913	1708	1780	1798	1739	1733	1818	1881	1711	1557	1524	1948	2296

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

WisDOT Signalized Intersection Capacity Study

Location ID: 37
Intersection Location: WIS 100 & W Layton Ave
Approach Direction: SB
Approach Configuration: 3
Population Group: > 250

Video Date: 3/17/15 - 3/19/15
County: Milwaukee
Region: SE
Municipality: Greenfield
Approach AADT: 28600

Cycle #	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Lane Studied	1	2	2	2	1	2	1	2	2	2	2	2	2	2	2
Start of Green	3:49 PM	3:49 PM	4:00 PM	4:02 PM	4:06 PM	4:12 PM	4:12 PM	4:20 PM	4:25 PM	4:36 PM	4:40 PM	7:56 AM	8:27 AM	3:10 PM	3:32 PM
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)			1					1							1
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	2.89	3.59	2.79	2.76	2.67	2.37	2.60	1.98	1.89	3.00	2.23	3.02	2.67	2.34	2.87
Vehicle 3	1.68	2.11	2.02	1.92	1.92	2.47	2.45	2.11	1.94	2.73	1.84	2.43	2.23	2.78	2.95
Vehicle 4	1.80	2.41	1.52	1.77	2.58	1.42	3.11	2.06	1.45	1.99	1.69	2.15	1.70	1.64	2.16
Vehicle 5	2.14	1.75	2.30	2.38	2.13	2.05	1.40	1.98	2.74	1.96	2.06	1.73	1.87	2.20	1.61
Vehicle 6	2.55	1.76	2.78	1.84	2.82	1.76	1.55	2.09	1.55	1.75	1.79	1.84	1.97	1.94	2.21
Vehicle 7	1.28	1.20	2.51	1.88	2.23	1.63	2.10	1.61	1.67	2.23	2.04	1.74	2.72	2.40	1.89
Vehicle 8	2.46	1.71	1.87	2.57	2.29	1.58	1.54	1.43	1.66	2.10	1.98	2.75	1.68	2.08	2.40
Vehicle 9	2.25		2.61	1.41		2.90	2.21	0.59	2.01	2.67	2.08	2.93		2.09	1.69
Vehicle 10			1.87	1.72		2.58	2.03	2.32	1.77	1.82	1.48	1.56			
Vehicle 11			1.39	0.99		1.84		1.59		1.31	1.99				
Vehicle 12			1.56			1.52		1.36		1.28					

	Study Results														
No. vehicles used in cycle	9	8	12	11	8	12	10	12	10	12	11	10	8	9	9
Time of Vehicle 4 (s)	6.37	8.11	6.33	6.45	7.17	6.26	8.16	6.15	5.28	7.72	5.76	7.60	6.60	6.76	7.98
Time of Last Vehicle (s)	17.05	14.53	23.22	19.24	16.64	22.12	18.99	19.12	16.68	22.84	19.18	20.15	14.84	17.47	17.78
Avg Sat Headway (s/veh)	2.14	1.61	2.11	1.83	2.37	1.98	1.81	1.62	1.90	1.89	1.92	2.09	2.06	2.14	1.96
Unadj. Sat. Flow (veh/h/ln)	1685	2243	1705	1970	1521	1816	1994	2221	1895	1905	1878	1721	1748	1681	1837

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

WisDOT Signalized Intersection Capacity Study

Location ID: 37
Intersection Location: WIS 100 & W Layton Ave
Approach Direction: SB
Approach Configuration: 3
Population Group: > 250

Video Date: 3/17/15 - 3/19/15
County: Milwaukee
Region: SE
Municipality: Greenfield
Approach AADT: 28600

Cycle #	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Lane Studied	2	1	2	2	2	2	2	2	2	1	2	2	2	2	2
Start of Green	3:36 PM	4:00 PM	4:04 PM	4:06 PM	4:10 PM	4:12 PM	4:18 PM	4:22 PM	4:25 PM	4:27 PM	4:34 PM	4:40 PM	4:44 PM	4:52 PM	4:56 PM
Heavy Vehicles (1-4)								1							
Heavy Vehicles (5-12)															
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	2.18	2.19	2.19	1.79	3.69	2.42	2.62	2.17	2.64	2.43	2.96	1.91	1.95	2.09	2.48
Vehicle 3	2.18	1.59	2.43	2.13	2.21	1.96	1.88	2.02	1.47	2.27	1.57	3.22	2.71	1.96	1.96
Vehicle 4	1.94	2.25	2.01	1.53	1.12	2.59	1.65	2.23	2.69	1.49	1.68	1.84	2.03	2.49	1.92
Vehicle 5	1.65	2.11	2.23	1.48	3.41	1.90	1.96	2.02	1.41	1.70	1.84	1.55	3.28	2.08	2.13
Vehicle 6	1.70	2.28	2.60	1.80	1.43	1.66	2.48	1.91	1.41	2.25	2.13	2.11	1.28	1.76	1.46
Vehicle 7	2.11	1.98	2.17	1.83	1.25	1.14	2.10	1.86	1.65	2.03	2.01	2.09	1.24	1.99	1.69
Vehicle 8	2.10	2.17	1.20	2.12	1.97	1.68	2.26	2.33	1.80	2.07	1.82	1.17	1.55	1.52	1.16
Vehicle 9		1.66	1.70		1.26		1.08		1.48	2.00	2.36	3.19	2.17	1.47	
Vehicle 10		1.39			1.65		2.79		1.33		1.54	1.58	1.38	2.72	
Vehicle 11		1.66			1.05		1.05		2.24		1.43	1.84	1.25	2.09	
Vehicle 12		2.52			2.11				1.91		2.64	1.66		1.83	

	Study Results														
No. vehicles used in cycle	8	12	9	8	12	8	11	8	12	9	12	12	11	12	8
Time of Vehicle 4 (s)	6.30	6.03	6.63	5.45	7.02	6.97	6.15	6.42	6.80	6.19	6.21	6.97	6.69	6.54	6.36
Time of Last Vehicle (s)	13.86	21.80	16.53	12.68	21.15	13.35	19.87	14.54	20.03	16.24	21.98	22.16	18.84	22.00	12.80
Avg Sat Headway (s/veh)	1.89	1.97	1.98	1.81	1.77	1.59	1.96	2.03	1.65	2.01	1.97	1.90	1.74	1.93	1.61
Unadj. Sat. Flow (veh/h/ln)	1905	1826	1818	1992	2038	2257	1837	1773	2177	1791	1826	1896	2074	1863	2236

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

Saturation Flow Study Summary Sheet

Intersection Information:

Intersection:	WIS 100 & W Layton Ave
Major Street:	WIS 100
Minor Street:	W Layton Ave
Study Approach:	SB
Approach Configuration:	3
Population Group:	> 250
Cycles by Date:	3/17 (1-20), 3/18 (21-41), 3/19 (42-60)

Video Date:	3/17/15 - 3/19/15
WisDOT Region:	SE
Nearest Municipality:	Greenfield
County:	Milwaukee
Weather:	Clear
Pavement:	Dry
Observer:	Kevin

Data Collection Summary Data:

Cycles Studied:	60
Average number of vehicles per cycle:	10
Headways Measured (queue vehicles > 4) :	341
% Heavy Vehicles (of headways measured):	1.5%
% RT Vehicles (of headways measured):	0.0%
Average Saturation Flow Headway (s):	1.92
Standard Deviation of All Headways:	0.47
Standard Deviation of All Cycles:	0.19
Unadjusted Median Sat Flow Rate (veh/ln.hr):	1848
Unadjusted Avg Sat Flow Rate (veh/ln/hr):	1874



WisDOT Signalized Intersection Capacity Study

Location ID: 38
Intersection Location: WIS 100 & W Hampton Ave
Approach Direction: EB
Approach Configuration: 5
Population Group: > 250

Video Date: 3/17/15 - 3/20/15
County: Milwaukee
Region: SE
Municipality: Milwaukee
Approach AADT: 14400

Cycle #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Lane Studied	1	1	1	2	1	2	2	2	1	2	2	1	1	1	2
Start of Green	3:15 PM	3:32 PM	3:38 PM	3:38 PM	3:51 PM	3:52 PM	4:00 PM	4:07 PM	4:11 PM	4:11 PM	4:13 PM	4:17 PM	4:36 PM	4:42 PM	4:42 PM
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)															
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	2.42	2.02	3.01	2.70	3.44	2.92	1.56	2.28	3.28	2.15	3.12	2.44	2.21	2.39	1.48
Vehicle 3	1.69	1.34	2.53	3.10	1.99	2.36	2.61	2.61	2.36	2.78	2.04	2.09	1.98	2.29	2.00
Vehicle 4	2.50	1.98	1.65	1.75	2.20	2.60	2.35	2.82	1.95	1.84	2.00	1.85	3.00	2.22	2.12
Vehicle 5	2.09	1.92	1.19	1.59	1.98	1.81	1.43	2.64	1.66	2.38	1.93	2.63	1.92	1.63	2.15
Vehicle 6	1.93	1.55	1.62	2.20	1.45	2.21	2.31	3.07	1.90	2.56	1.96	1.40	2.83	2.83	2.13
Vehicle 7	1.95	1.27	1.76	1.84	1.85	2.85	3.17	2.29	1.92	2.25	1.89	1.84	1.96	2.66	1.63
Vehicle 8	1.33	1.78	2.19	2.62	2.41	1.91	1.29	1.65	1.84	2.07	1.58	1.58	2.07	1.78	2.56
Vehicle 9	2.27		1.91		1.69	1.94	2.26	1.63	2.13	1.49	1.55	2.13	1.87	2.02	1.70
Vehicle 10	2.19				1.87	2.03		1.42	1.73	1.95	1.26	2.03	1.68	1.49	1.80
Vehicle 11	2.00							1.38		1.25	1.75	1.50	2.11	1.69	
Vehicle 12	1.05									1.46					

	Study Results														
No. vehicles used in cycle	12	8	9	8	10	10	9	11	10	12	11	11	11	11	10
Time of Vehicle 4 (s)	6.61	5.34	7.19	7.55	7.63	7.88	6.52	7.71	7.59	6.77	7.16	6.38	7.19	6.90	5.60
Time of Last Vehicle (s)	21.42	11.86	15.86	15.80	18.88	20.63	16.98	21.79	18.77	22.18	19.08	19.49	21.63	21.00	17.57
Avg Sat Headway (s/veh)	1.85	1.63	1.73	2.06	1.88	2.13	2.09	2.01	1.86	1.93	1.70	1.87	2.06	2.01	2.00
Unadj. Sat. Flow (veh/h/ln)	1945	2209	2076	1745	1920	1694	1721	1790	1932	1869	2114	1922	1745	1787	1805

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

WisDOT Signalized Intersection Capacity Study

Location ID: 38
Intersection Location: WIS 100 & W Hampton Ave
Approach Direction: EB
Approach Configuration: 5
Population Group: > 250

Video Date: 3/17/15 - 3/20/15
County: Milwaukee
Region: SE
Municipality: Milwaukee
Approach AADT: 14400

Cycle #	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Lane Studied	1	2	1	2	1	2	1	1	2	2	1	2	1	1	1
Start of Green	3:07 PM	3:07 PM	3:14 PM	3:14 PM	3:24 PM	3:30 PM	3:41 PM	3:48 PM	3:48 PM	3:51 PM	3:55 PM	3:56 PM	4:03 PM	4:11 PM	4:14 PM
Heavy Vehicles (1-4)	1														
Heavy Vehicles (5-12)															
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	2.76	2.68	2.33	3.35	2.78	2.16	2.14	2.48	2.75	2.00	1.99	2.05	2.63	1.99	2.60
Vehicle 3	1.93	2.64	2.51	2.09	2.87	2.56	2.54	2.07	2.52	2.72	2.36	1.97	1.92	2.27	2.19
Vehicle 4	2.37	1.87	2.52	1.75	2.14	1.74	1.65	1.85	2.92	1.70	2.13	2.31	2.24	2.68	1.94
Vehicle 5	2.01	1.48	1.71	3.17	2.17	2.59	1.57	2.28	2.14	1.72	2.60	1.92	1.65	1.84	1.51
Vehicle 6	2.43	1.49	1.91	2.11	2.10	2.06	1.76	1.94	1.12	1.81	3.00	1.71	1.76	1.68	2.20
Vehicle 7	2.05	1.94	1.44	1.93	1.60	1.82	1.89	1.51	1.82	2.76	1.53	1.61	1.87	1.29	2.91
Vehicle 8	2.28	1.99	1.67	1.69	1.71	1.31	2.38	1.74	1.41	1.46	0.67	1.62	1.42	2.12	2.95
Vehicle 9	2.02			2.02		1.74	1.63	1.49	2.13		2.50		1.71	2.05	
Vehicle 10							1.92	1.60	2.17				1.59		
Vehicle 11								2.08	2.29				2.33		
Vehicle 12													1.32		

	Study Results														
No. vehicles used in cycle	9	8	8	9	8	9	10	11	11	8	9	8	12	9	8
Time of Vehicle 4 (s)	7.06	7.19	7.36	7.19	7.79	6.46	6.33	6.40	8.19	6.42	6.48	6.33	6.79	6.94	6.73
Time of Last Vehicle (s)	17.85	14.09	14.09	18.11	15.37	15.98	17.48	19.04	21.27	14.17	16.78	13.19	20.44	15.92	16.30
Avg Sat Headway (s/veh)	2.16	1.73	1.68	2.18	1.90	1.90	1.86	1.81	1.87	1.94	2.06	1.72	1.71	1.80	2.39
Unadj. Sat. Flow (veh/h/ln)	1668	2087	2140	1648	1900	1891	1937	1994	1927	1858	1748	2099	2110	2004	1505

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

WisDOT Signalized Intersection Capacity Study

Location ID: 38
Intersection Location: WIS 100 & W Hampton Ave
Approach Direction: EB
Approach Configuration: 5
Population Group: > 250

Video Date: 3/17/15 - 3/20/15
County: Milwaukee
Region: SE
Municipality: Milwaukee
Approach AADT: 14400

Cycle #	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Lane Studied	2	1	1	2	1	2	2	2	1	2	1	2	2	1	2
Start of Green	7:22 AM	7:38 AM	5:01 PM	5:01 PM	5:04 PM	5:04 PM	5:06 PM	5:09 PM	5:16 PM	5:16 PM	5:19 PM	5:19 AM	5:23 PM	6:00 PM	6:00 PM
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)															
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	2.20	2.50	2.15	2.01	2.82	2.30	3.60	2.74	2.12	2.93	2.07	2.28	2.77	2.33	1.84
Vehicle 3	2.58	2.29	1.86	2.20	1.93	2.45	2.38	1.92	2.23	2.35	2.04	2.23	1.68	1.95	3.44
Vehicle 4	2.10	2.01	2.34	2.17	2.57	2.20	1.94	2.23	2.48	1.89	2.61	1.82	1.94	2.91	3.08
Vehicle 5	1.61	2.15	2.75	1.21	2.16	1.93	1.35	1.79	1.83	2.01	2.62	2.02	2.28	2.08	2.84
Vehicle 6	1.42	2.11	1.53	1.91	1.55	1.66	2.20	2.02	2.01	1.67	2.10	1.79	1.72	2.19	1.84
Vehicle 7	1.86	2.00	1.82	1.58	1.64	2.23	2.30	2.05	1.97	1.80	2.40	1.85	1.36	2.06	2.37
Vehicle 8	1.65	1.89	2.13	2.02	2.14	2.39	1.65	1.58	1.98	2.10	2.00	2.70	1.86	2.12	2.02
Vehicle 9				1.73	2.38	1.22		1.07		1.80		2.21			
Vehicle 10				1.36				1.22				1.44			
Vehicle 11								1.83				2.33			
Vehicle 12								2.01				1.72			

	Study Results														
No. vehicles used in cycle	8	8	8	10	9	9	8	12	8	9	8	12	8	8	8
Time of Vehicle 4 (s)	6.88	6.80	6.35	6.38	7.32	6.95	7.92	6.89	6.83	7.17	6.72	6.33	6.39	7.19	8.36
Time of Last Vehicle (s)	13.42	14.95	14.58	16.19	17.19	16.38	15.42	20.46	14.62	16.55	15.84	22.39	13.61	15.64	17.43
Avg Sat Headway (s/veh)	1.64	2.04	2.06	1.63	1.97	1.89	1.88	1.70	1.95	1.88	2.28	2.01	1.81	2.11	2.27
Unadj. Sat. Flow (veh/h/ln)	2202	1767	1750	2202	1824	1909	1920	2122	1849	1919	1579	1793	1994	1704	1588

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

WisDOT Signalized Intersection Capacity Study

Location ID: 38
Intersection Location: WIS 100 & W Hampton Ave
Approach Direction: EB
Approach Configuration: 5
Population Group: > 250

Video Date: 3/17/15 - 3/20/15
County: Milwaukee
Region: SE
Municipality: Milwaukee
Approach AADT: 14400

Cycle #	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Lane Studied	1	1	1	1	1	1	2	1	1	2	1	2	2	1	1
Start of Green	7:34 AM	8:06 AM	5:01 PM	5:03 PM	5:03 PM	5:06 PM	5:07 PM	5:07 PM	5:13 PM	5:13 PM	5:18 PM	5:22 PM	5:25 PM	5:29 PM	5:34 PM
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)					1										
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	2.43	2.34	3.34	3.71	2.65	2.29	2.34	2.93	1.56	2.36	2.43	2.29	1.92	2.31	2.21
Vehicle 3	3.10	2.23	2.37	1.83	1.94	2.61	1.91	2.04	1.75	2.37	1.93	1.52	1.65	1.71	2.15
Vehicle 4	2.77	1.85	1.52	2.26	2.11	1.51	3.36	2.23	2.65	2.58	1.48	1.81	1.86	1.69	2.80
Vehicle 5	1.85	2.09	1.68	2.63	1.77	2.23	2.64	1.88	1.34	2.12	1.97	2.04	1.75	1.49	1.86
Vehicle 6	1.74	1.65	1.79	2.09	2.01	1.94	1.46	1.53	1.55	1.64	1.86	2.01	1.51	2.51	2.27
Vehicle 7	1.44	2.83	1.98	2.89	1.86	2.02	1.83	1.76	2.22	1.90	2.09	1.85	1.52	1.80	1.76
Vehicle 8	1.36	2.22	1.98	2.65	1.48	1.80	1.43	1.42	1.58	1.77	1.46	1.45	1.75	2.18	2.06
Vehicle 9				1.58	1.47	2.02	1.28	1.53	1.81	2.18	1.34	1.44		2.20	1.26
Vehicle 10					1.65	1.97			1.74	2.01	1.73			2.67	2.00
Vehicle 11									1.39	1.76				2.81	2.34
Vehicle 12									1.62	1.98					

	Study Results														
No. vehicles used in cycle	8	8	8	9	10	10	9	9	12	12	10	9	8	11	11
Time of Vehicle 4 (s)	8.30	6.42	7.23	7.80	6.70	6.41	7.61	7.20	5.96	7.31	5.84	5.62	5.43	5.71	7.16
Time of Last Vehicle (s)	14.69	15.21	14.66	19.64	16.94	18.39	16.25	15.32	19.21	22.67	16.29	14.41	11.96	21.37	20.71
Avg Sat Headway (s/veh)	1.60	2.20	1.86	2.37	1.71	2.00	1.73	1.62	1.66	1.92	1.74	1.76	1.63	2.24	1.94
Unadj. Sat. Flow (veh/h/ln)	2254	1638	1938	1520	2109	1803	2083	2217	2174	1875	2067	2048	2205	1609	1860

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

Saturation Flow Study Summary Sheet

Intersection Information:

Intersection:	WIS 100 & W Hampton Ave
Major Street:	WIS 100
Minor Street:	W Hampton Ave
Study Approach:	EB
Approach Configuration:	5
Population Group:	> 250
Cycles by Date:	3/17 (1-15), 3/18 (16-30, 48-60), 3/19 (31-45), 3/20 (46-47)

Video Date:	3/17/15 - 3/20/15
WisDOT Region:	SE
Nearest Municipality:	Milwaukee
County:	Milwaukee
Weather:	Clear
Pavement:	Dry
Observer:	Kevin Brink

Data Collection Summary Data:

Cycles Studied:	60
Average number of vehicles per cycle:	9
Headways Measured (queue vehicles > 4) :	327
% Heavy Vehicles (of headways measured):	0.3%
% RT Vehicles (of headways measured):	0.0%
Average Saturation Flow Headway (s):	1.90
Standard Deviation of All Headways:	0.40
Standard Deviation of All Cycle Headways:	0.20
Unadjusted Median Sat Flow Rate (veh/ln.hr):	1914
Unadjusted Avg Sat Flow Rate (veh/ln/hr):	1891



WisDOT Signalized Intersection Capacity Study

Location ID: 39
Intersection Location: WIS 24 & Morgan/Cold Spring
Approach Direction: Multiple
Approach Configuration: 5
Population Group: > 250

Video Date: 9/18/2012
County: Milwaukee
Region: SE
Municipality: Milwaukee
Approach AADT: 19000

Cycle #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Lane Studied	1	1	1	1	1	2	1	1	1	2	2	1	2	1	1
Start of Green	4:07 PM	4:12 PM	3:12 PM	3:13 PM	3:15 PM	3:21 PM	3:24 PM	3:27 PM	3:36 PM	3:42 PM	3:45 PM	3:49 PM	3:51 PM	3:52 PM	3:55 PM
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)															
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	2.03	2.49	1.79	1.70	3.21	2.86	1.28	2.53	2.00	2.62	2.30	2.78	2.07	1.39	2.08
Vehicle 2	3.50	3.73	3.35	1.94	1.93	2.33	2.42	2.48	3.13	2.33	2.48	2.80	2.67	3.80	2.54
Vehicle 3	1.97	2.03	2.50	1.90	1.81	2.53	2.09	2.00	2.18	2.00	1.91	2.84	2.30	1.80	1.99
Vehicle 4	1.92	1.54	1.45	1.86	1.50	1.54	2.74	1.50	2.74	2.16	1.31	2.09	1.34	1.43	2.34
Vehicle 5	1.77	2.20	1.89	2.18	2.19	1.91	1.81	1.47	1.37	1.59	2.30	1.43	2.20	3.63	2.11
Vehicle 6	2.23	3.31	2.14	2.32	1.73	1.75	1.91	1.82	1.68	2.61	1.64	1.73	1.47	2.00	1.67
Vehicle 7	1.99	2.38	1.88	1.52	1.73	1.38	2.19	2.25	2.07	1.42	2.36	1.83	1.14	2.22	2.50
Vehicle 8	2.03	2.43	1.54	1.59	1.71	1.34	1.51	1.71	1.97	2.03	2.00	2.36	1.64	1.14	1.86
Vehicle 9	1.28	1.02				2.50	2.58			1.11	0.98	1.83	1.72	0.83	2.08
Vehicle 10	1.15	1.37					1.59					1.89	1.22	2.56	1.55
Vehicle 11		1.33					0.88					1.70	1.55	1.22	1.71
Vehicle 12		1.25										1.30		0.86	

	Study Results														
No. vehicles used in cycle	10	12	8	8	8	9	11	8	8	9	9	12	11	12	11
Time of Vehicle 4 (s)	9.42	9.79	9.09	7.40	8.45	9.26	8.53	8.51	10.05	9.11	8.00	10.51	8.38	8.42	8.95
Time of Last Vehicle (s)	19.87	25.08	16.54	15.01	15.81	18.14	21.00	15.76	17.14	17.87	17.28	24.58	19.32	22.88	22.43
Avg Sat Headway (s/veh)	1.74	1.91	1.86	1.90	1.84	1.78	1.78	1.81	1.77	1.75	1.86	1.76	1.56	1.81	1.93
Unadj. Sat. Flow (veh/h/ln)	2067	1884	1933	1892	1957	2027	2021	1986	2031	2055	1940	2047	2303	1992	1869
Start up lost time	2.45	2.15	1.64	-0.21	1.09	2.16	1.40	1.26	2.96	2.10	0.58	3.47	2.13	1.19	1.25

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. The headway for vehicle 1 is the amount of time (in seconds) that passed between the light turning green and vehicle 1 crossing the stop bar into the intersection.

WisDOT Signalized Intersection Capacity Study

Location ID: 39
Intersection Location: WIS 24 & Morgan/Cold Spring
Approach Direction: Multiple
Approach Configuration: 5
Population Group: > 250

Video Date: 9/18/2012
County: Milwaukee
Region: SE
Municipality: Milwaukee
Approach AADT: 19000

Cycle #	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Lane Studied	2	2	2	2	2	2	2	1	2	1	2				
Start of Green	3:00 PM	3:28 PM	4:12 PM	4:42 PM	7:43 AM	7:49 AM	8:37 AM	4:44 PM	7:27 AM	7:06 AM	7:16 AM				
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)			1	1											
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	3.08	1.77	3.10	2.52	2.69	2.00	2.19	1.50	2.00	2.61	2.24				
Vehicle 2	2.72	2.83	3.39	1.64	3.05	2.70	4.34	3.05	3.11	2.92	1.78				
Vehicle 3	1.97	2.45	2.17	2.51	3.08	2.03	2.55	2.68	1.67	2.31	2.26				
Vehicle 4	2.42	2.59	2.52	1.78	2.01	2.06	1.80	2.03	2.27	2.13	1.86				
Vehicle 5	1.94	1.57	1.56	3.02	1.17	2.72	1.78	1.74	1.00	2.42	1.55				
Vehicle 6	2.12	1.92	2.73	2.42	3.19	1.05	1.67	1.37	1.17	1.36	2.86				
Vehicle 7	2.00	1.51	2.63	2.11	1.13	1.62	1.64	2.64	1.72	1.22	2.19				
Vehicle 8	2.35	2.07		1.27	2.11	2.14	2.22	1.90	1.89	2.78	1.61				
Vehicle 9				3.22	2.61	1.35	1.92		2.44	1.59	1.75				
Vehicle 10				1.32	2.84				1.36	2.20	1.86				
Vehicle 11					1.33				1.19		1.64				
Vehicle 12					1.76				2.23						

	Study Results														
No. vehicles used in cycle	8	8	7	10	12	9	9	8	12	10	11				
Time of Vehicle 4 (s)	10.19	9.64	11.18	8.45	10.83	8.79	10.88	9.26	9.05	9.97	8.14				
Time of Last Vehicle (s)	18.60	16.71	18.10	21.81	26.97	17.67	20.11	16.91	22.05	21.54	21.60				
Avg Sat Headway (s/veh)	2.10	1.77	2.31	2.23	2.02	1.78	1.85	1.91	1.63	1.93	1.92				
Unadj. Sat. Flow (veh/h/ln)	1712	2037	1561	1617	1784	2027	1950	1882	2215	1867	1872				
Start up lost time	1.78	2.57	1.95	-0.46	2.76	1.69	3.50	1.61	2.55	2.26	0.45				

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. The headway for vehicle 1 is the amount of time (in seconds) that passed between the light turning green and vehicle 1 crossing the stop bar into the intersection.

Saturation Flow Study Summary Sheet

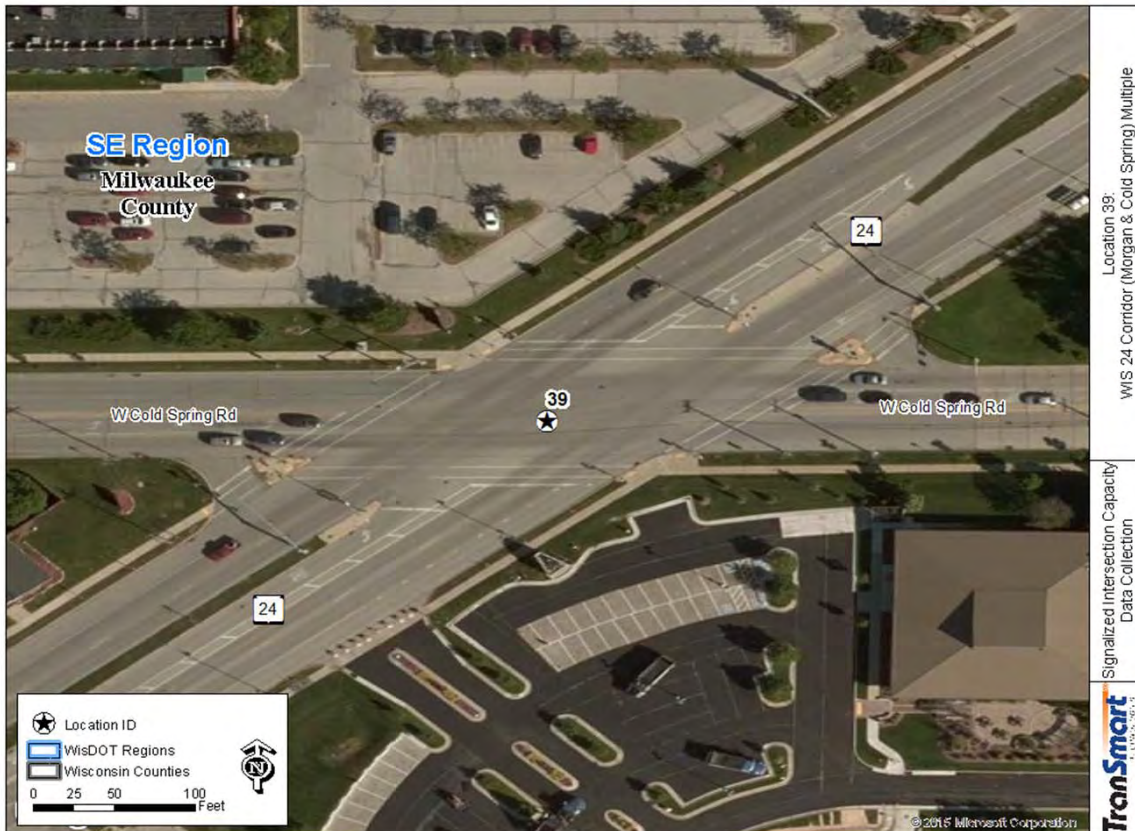
Intersection Information:

Intersection:	WIS 24 & Morgan/Cold Spring
Major Street:	WIS 24
Minor Street:	Morgan, Cold Spring
Study Approach:	Multiple
Approach Configuration:	5
Population Group:	> 250
Cycle by Date:	9/18/2012 (1-26)

Date:	9/18/2012
WisDOT Region:	SE
Nearest Municipality:	Milwaukee
County:	Milwaukee
Weather:	Dry
Pavement:	Clear
Observer:	Mitch S.

Data Collection Summary Data:

Cycles Studied:	26
Average number of vehicles per cycle:	10
Headways Measured (queue vehicles > 4) :	146
% Heavy Vehicles (of headways measured):	1.4%
% RT Vehicles (of headways measured):	0.0%
Average Saturation Flow Headway (s):	1.85
Standard Deviation of All Headways:	0.53
Standard Deviation of Cycle Headways:	0.16
Unadjusted Median Sat Flow Rate (veh/ln.hr):	1953
Unadjusted Avg Sat Flow Rate (veh/ln/hr):	1943
Average Start Up Lost Time (s):	1.78



WisDOT Signalized Intersection Capacity Study

Location ID: 40
Intersection Location: US 41 & Hampton, 91st
Approach Direction: Multiple
Approach Configuration: 5
Population Group: > 250

Video Date: 10/10 & 10/16/12
County: Milwaukee
Region: SE
Municipality: Milwaukee
Approach AADT: 14500

Cycle #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Lane Studied	2	1	1	1	1	1	2	2	1	1	2	2	1	2	2
Start of Green	5:21 PM	4:27 PM	4:31 PM	4:33 PM	4:42 PM	4:45 AM	4:51 PM	4:48 PM	5:03 PM	5:04 PM	4:54 PM	5:10 PM	5:15 PM	5:18 PM	5:19 PM
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)															
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	1.41	2.45	1.70	2.21	2.27	1.69	2.92	2.41	1.58	1.44	1.25	1.04	1.60	1.53	1.91
Vehicle 2	2.87	3.04	3.08	3.35	2.56	4.50	2.89	4.33	2.36	3.41	2.70	3.71	3.06	2.70	3.30
Vehicle 3	3.14	1.93	2.42	2.00	2.46	2.00	2.75	1.70	2.73	2.92	2.30	1.84	2.11	2.04	2.39
Vehicle 4	2.58	2.74	2.10	2.71	1.53	1.69	2.11	1.75	2.68	2.09	2.12	3.80	2.70	2.51	2.12
Vehicle 5	1.69	1.31	2.12	1.54	1.84	2.26	1.34	2.00	1.50	1.78	2.86	1.42	1.89	1.61	2.38
Vehicle 6	1.15	1.36	1.41	1.11	1.48	2.00	1.52	1.64	2.23	2.44	1.60	1.48	1.53	2.36	1.31
Vehicle 7	2.19	2.06	1.81	1.79	1.43	1.41	1.42	1.20	1.92	2.27	2.14	1.49	2.49	1.86	1.66
Vehicle 8	1.35	1.71	1.05	2.31	1.43	1.30	1.14	1.55	2.02	1.31	2.12	1.48	1.93	1.09	2.06
Vehicle 9	2.12	1.93				1.90	1.53			1.48	1.11		1.75	1.63	2.09
Vehicle 10						1.33									
Vehicle 11															
Vehicle 12															

	Study Results														
No. vehicles used in cycle	9	9	8	8	8	10	9	8	8	9	9	8	9	9	9
Time of Vehicle 4 (s)	10.00	10.16	9.30	10.27	8.82	9.88	10.67	10.19	9.35	9.86	8.37	10.39	9.47	8.78	9.72
Time of Last Vehicle (s)	18.50	18.53	15.69	17.02	15.00	20.08	17.62	16.58	17.02	19.14	18.20	16.26	19.06	17.33	19.22
Avg Sat Headway (s/veh)	1.70	1.67	1.60	1.69	1.54	1.70	1.39	1.60	1.92	1.86	1.97	1.47	1.92	1.71	1.90
Unadj. Sat. Flow (veh/h/ln)	2118	2151	2254	2133	2330	2118	2590	2254	1877	1940	1831	2453	1877	2105	1895
Start up lost time	3.20	3.46	2.91	3.52	2.64	3.08	5.11	3.80	1.68	2.44	0.51	4.52	1.80	1.94	2.12

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. The headway for vehicle 1 is the amount of time (in seconds) that passed between the light turning green and vehicle 1 crossing the stop bar into the intersection.

WisDOT Signalized Intersection Capacity Study

Location ID: 40
Intersection Location: US 41 & Hampton, 91st
Approach Direction: Multiple
Approach Configuration: 5
Population Group: > 250

Video Date: 10/10 & 10/16/12
County: Milwaukee
Region: SE
Municipality: Milwaukee
Approach AADT: 14500

Cycle #	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Lane Studied	2	2	2	2	2	1	2	2	2	2	2	2	2	2	2
Start of Green	7:07 AM	7:17 AM	7:22 AM	7:34 AM	7:36 AM	7:39 AM	7:41 AM	7:43 AM	7:46 AM	7:48 AM	7:51 AM	7:53 AM	7:56 AM	7:58 AM	3:29 PM
Heavy Vehicles (1-4)															1
Heavy Vehicles (5-12)							1						1	1	
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	1.51	3.86	3.60	2.78	3.04	1.61	3.29	3.28	0.60	2.56	3.64	1.70	3.94	4.87	3.55
Vehicle 2	2.19	1.78	2.18	1.97	2.88	4.10	2.53	4.50	3.14	3.11	2.39	3.28	3.14	2.13	2.79
Vehicle 3	3.39	3.29	2.03	2.07	2.62	2.00	2.43	1.32	2.42	2.23	1.64	1.77	1.97	1.81	2.55
Vehicle 4	1.42	1.83	2.58	2.47	1.74	2.20	1.80	1.64	2.70	2.99	2.48	3.55	2.20	2.25	3.67
Vehicle 5	2.13	1.86	1.52	1.19	1.12	1.70	1.49	2.45	2.08	1.89	1.47	1.39	1.94	3.12	1.91
Vehicle 6	1.98	1.83	3.06	2.63	3.60	2.21	1.26	1.66	2.31	1.06	1.91	2.48	1.55	2.18	2.56
Vehicle 7	1.21	2.11	1.72	1.12	2.26	2.09	2.20	1.81	2.22	1.89	2.45	2.94	3.42	1.18	1.46
Vehicle 8	2.48	2.59	1.47	1.91	1.60	2.01	1.88	1.55	1.41	2.91	1.52	1.41	2.20	1.47	1.65
Vehicle 9	1.69	1.92			2.06	1.43	2.64		1.64	1.79	2.72	1.54		2.64	1.81
Vehicle 10	1.93				1.47	1.90	2.18		1.97						2.22
Vehicle 11	1.08				1.40				1.39						1.44
Vehicle 12	1.52								1.50						1.77

	Study Results														
No. vehicles used in cycle	12	9	8	8	11	10	10	8	12	9	9	9	8	9	12
Time of Vehicle 4 (s)	8.51	10.76	10.39	9.29	10.28	9.91	10.05	10.74	8.86	10.89	10.15	10.30	11.25	11.06	12.56
Time of Last Vehicle (s)	22.53	21.07	18.16	16.14	23.79	21.25	21.70	18.21	23.38	20.43	20.22	20.06	20.36	21.65	27.38
Avg Sat Headway (s/veh)	1.75	2.06	1.94	1.71	1.93	1.89	1.94	1.87	1.82	1.91	2.01	1.95	2.28	2.12	1.85
Unadj. Sat. Flow (veh/h/ln)	2054	1746	1853	2102	1865	1905	1854	1928	1983	1887	1787	1844	1581	1700	1943
Start up lost time	1.50	2.51	2.62	2.44	2.56	2.35	2.28	3.27	1.60	3.26	2.09	2.49	2.14	2.59	5.15

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. The headway for vehicle 1 is the amount of time (in seconds) that passed between the light turning green and vehicle 1 crossing the stop bar into the intersection.

Saturation Flow Study Summary Sheet

Intersection Information:

Intersection:	US 41 & Hampton, 91st
Major Street:	US 41
Minor Street:	Hampton, 91st
Study Approach:	Multiple
Approach Configuration:	5
Population Group:	> 250
Cycle by Date:	10/10/12 (1 - 15) & 10/12/15 (16-30)

Date:	10/10 & 10/16/15
WisDOT Region:	SE
Nearest Municipality:	Milwaukee
County:	Milwaukee
Weather:	Dry
Pavement:	Clear
Observer:	

Data Collection Summary Data:

Cycles Studied:	30
Average number of vehicles per cycle:	9
Headways Measured (queue vehicles > 4) :	154
% Heavy Vehicles (of headways measured):	1.9%
% RT Vehicles (of headways measured):	0.0%
Average Saturation Flow Headway (s):	1.83
Standard Deviation of All Headways:	0.49
Standard Deviation of Cycle Headways:	0.19
Unadjusted Median Sat Flow Rate (veh/ln.hr):	1934
Unadjusted Avg Sat Flow Rate (veh/ln/hr):	1970
Average Start Up Lost Time (s):	2.72



WisDOT Signalized Intersection Capacity Study

Location ID: 41
Intersection Location: WIS 100 & Center St
Approach Direction: SB
Approach Configuration: 3
Population Group: > 250

Video Date: 4/25/13 & 5/11/13
County: Milwaukee
Region: SE
Municipality: Wauwatosa
Approach AADT: 23400

Cycle #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Lane Studied	2	2	1	2	1	2	2	1	1	2	1	2	1	1	2
Start of Green	8:00 AM	8:05 AM	8:32 AM	11:58 AM	11:58 AM	3:20 PM	3:22 PM	3:22 PM	3:25 PM	3:25 PM	3:37 PM	3:42 PM	3:42 PM	3:45 PM	3:45 PM
Heavy Vehicles (1-4)							1								
Heavy Vehicles (5-12)															
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	2.41	1.52	1.70	1.74	2.40	2.97	1.57	2.32	2.79	1.48	2.53	1.48	1.68	1.79	2.19
Vehicle 2	1.98	1.87	2.34	3.03	2.68	3.33	2.67	2.41	2.35	3.11	1.82	2.46	2.59	2.58	2.55
Vehicle 3	3.15	2.44	3.96	2.09	2.09	2.77	2.40	1.68	2.36	3.77	4.48	1.92	2.82	3.16	3.74
Vehicle 4	1.87	1.96	2.10	1.96	1.57	1.77	2.79	4.20	2.54	1.60	1.50	1.67	1.79	1.97	2.34
Vehicle 5	1.52	2.83	2.65	1.87	1.76	1.03	2.25	2.06	2.01	2.68	2.25	3.54	3.87	3.19	2.29
Vehicle 6	1.40	1.81	2.61	2.01	1.47	1.56	1.76	1.83	1.71	2.16	2.34	2.09	1.43	2.61	1.42
Vehicle 7	1.65	1.86	2.38	1.79	1.57	2.26	1.67	1.94	1.67	1.61	2.50	2.30	1.56	1.47	2.78
Vehicle 8	1.96	2.07	2.05	1.68	1.96	1.54	1.85	1.62	2.13	2.09	2.02	2.28	2.11	1.66	2.52
Vehicle 9	1.87	1.79		2.15	1.54		2.85		1.56		1.83	2.81	1.33	1.78	1.62
Vehicle 10				2.32	1.91				1.57		1.23	2.76	1.40	2.13	1.64
Vehicle 11					2.64						1.80	2.06	1.90		1.44
Vehicle 12											2.18		1.57		2.23

	Study Results														
No. vehicles used in cycle	9	9	8	10	11	8	9	8	10	8	12	11	12	10	12
Time of Vehicle 4 (s)	9.41	7.79	10.10	8.82	8.74	10.84	9.43	10.61	10.04	9.96	10.33	7.53	8.88	9.50	10.82
Time of Last Vehicle (s)	17.81	18.15	19.79	20.64	21.59	17.23	19.81	18.06	20.69	18.50	26.48	25.37	24.05	22.34	26.76
Avg Sat Headway (s/veh)	1.68	2.07	2.42	1.97	1.84	1.60	2.08	1.86	1.78	2.14	2.02	2.55	1.90	2.14	1.99
Unadj. Sat. Flow (veh/h/ln)	2143	1737	1486	1827	1961	2254	1734	1933	2028	1686	1783	1413	1898	1682	1807
Start up lost time	2.69	-0.50	0.41	0.94	1.40	4.45	1.13	3.16	2.94	1.42	2.26	-2.66	1.30	0.94	2.85

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. The headway for vehicle 1 is the amount of time (in seconds) that passed between the light turning green and vehicle 1 crossing the stop bar into the intersection.

WisDOT Signalized Intersection Capacity Study

Location ID: 41
Intersection Location: WIS 100 & Center St
Approach Direction: SB
Approach Configuration: 3
Population Group: > 250

Video Date: 4/25/13 & 5/11/13
County: Milwaukee
Region: SE
Municipality: Wauwatosa
Approach AADT: 23400

Cycle #	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Lane Studied	2	1	1	2	2	1	2	1	2	1	2	1	2	2	1
Start of Green	3:48 PM	3:50 PM	3:52 PM	3:52 PM	3:55 PM	4:05 PM	4:12 PM	4:12 PM	4:12 PM	4:15 PM	4:15 PM	4:17 PM	4:17 PM	4:25 PM	4:25 PM
Heavy Vehicles (1-4)				1	1	1									
Heavy Vehicles (5-12)															
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	1.85	2.25	2.09	2.19	1.67	2.92	1.81	1.72	1.92	2.34	2.25	2.11	1.56	2.65	1.80
Vehicle 2	2.42	1.71	1.53	3.54	2.70	2.18	2.46	3.28	2.24	2.51	1.85	2.11	2.07	2.56	2.54
Vehicle 3	1.92	2.80	1.96	2.36	3.25	2.40	2.01	1.88	2.11	2.77	2.44	2.46	2.37	2.84	1.97
Vehicle 4	2.12	2.40	2.51	1.84	1.62	2.37	2.35	3.07	2.32	2.14	3.37	1.71	1.82	2.46	3.01
Vehicle 5	2.10	2.22	1.66	2.91	3.26	1.85	1.56	1.34	1.58	2.18	1.98	2.09	2.44	2.61	2.07
Vehicle 6	1.99	1.50	2.76	1.99	2.29	1.91	2.69	1.40	2.63	1.67	2.30	1.52	2.02	1.56	2.25
Vehicle 7	2.21	1.72	1.38	1.17	1.37	2.52	1.82	1.40	1.80	1.47	2.89	1.74	1.58	2.13	3.09
Vehicle 8	1.93	1.51	1.30	2.00	1.21	1.81	2.40	2.75	2.36	1.47	0.79	1.74	2.12	1.76	2.35
Vehicle 9	2.23	1.88	1.38	1.82		0.93	1.67	1.20	1.81	2.06	2.63	2.26	2.54		1.78
Vehicle 10	2.07		1.55	2.13				3.09	2.32	2.12	1.23	1.56	3.37		
Vehicle 11	1.71		1.03	1.24				1.87		2.41		1.56	1.92		
Vehicle 12	1.54		1.02	2.00						1.39		1.87	2.03		

	Study Results														
No. vehicles used in cycle	12	9	12	12	8	9	9	11	10	12	10	12	12	8	9
Time of Vehicle 4 (s)	8.31	9.16	8.09	9.93	9.24	9.87	8.63	9.95	8.59	9.76	9.91	8.39	7.82	10.51	9.32
Time of Last Vehicle (s)	24.09	17.99	20.17	25.19	17.37	18.89	18.77	23.00	21.09	24.53	21.73	22.73	25.84	18.57	20.86
Avg Sat Headway (s/veh)	1.97	1.77	1.51	1.91	2.03	1.80	2.03	1.86	2.08	1.85	1.97	1.79	2.25	2.01	2.31
Unadj. Sat. Flow (veh/h/ln)	1825	2039	2384	1887	1771	1996	1775	1931	1728	1950	1827	2008	1598	1787	1560
Start up lost time	0.42	2.10	2.05	2.30	1.11	2.65	0.52	2.49	0.26	2.38	2.03	1.22	-1.19	2.45	0.09

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. The headway for vehicle 1 is the amount of time (in seconds) that passed between the light turning green and vehicle 1 crossing the stop bar into the intersection.

WisDOT Signalized Intersection Capacity Study

Location ID: 41
Intersection Location: WIS 100 & Center St
Approach Direction: SB
Approach Configuration: 3
Population Group: > 250

Video Date: 4/25/13 & 5/11/13
County: Milwaukee
Region: SE
Municipality: Wauwatosa
Approach AADT: 23400

Cycle #	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Lane Studied	1	1	1	2	1	1	1	2	2	1	2	1	1	1	1
Start of Green	4:34 PM	4:42 PM	4:45 PM	4:45 PM	4:47 PM	4:52 PM	5:00 PM	5:02 PM	5:02 PM	5:07 PM	5:07 PM	5:20 PM	5:25 PM	5:30 PM	5:45 PM
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)									1						
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	2.50	2.14	2.44	2.18	1.84	2.05	1.83	1.98	1.98	1.85	1.54	1.79	2.38	1.48	1.69
Vehicle 2	2.32	1.85	2.47	1.87	2.12	2.02	2.20	2.50	2.50	2.17	2.12	2.43	1.97	1.44	3.15
Vehicle 3	2.11	2.61	2.36	2.70	2.16	1.35	3.30	2.06	2.06	2.09	2.53	2.15	2.28	1.73	2.88
Vehicle 4	2.91	3.03	2.69	2.12	1.73	2.13	2.28	3.14	3.14	2.30	1.76	2.30	2.60	3.11	2.54
Vehicle 5	2.09	1.82	1.44	1.99	2.74	2.84	2.35	2.21	2.21	1.84	1.83	1.97	2.52	1.31	1.68
Vehicle 6	1.29	1.57	2.77	1.39	2.08	1.72	1.71	2.83	2.83	1.82	1.38	2.62	1.68	2.13	1.49
Vehicle 7	2.53	2.17	2.70	1.74	2.29	1.44	2.09	2.96	2.96	1.73	3.47	2.74	1.53	1.59	3.35
Vehicle 8	1.81	1.48	1.78	2.25	1.12	2.30	2.55	1.46	1.46	1.74	1.04	1.55	1.37	2.36	3.00
Vehicle 9	2.06	1.90	2.02	1.31		1.18	2.14	1.44	1.44	2.00	1.36	1.31	1.87	2.53	1.82
Vehicle 10		1.59	1.47				2.49				1.79	1.20		1.31	2.05
Vehicle 11		2.68									1.84	1.83		1.56	1.72
Vehicle 12											1.81			0.80	1.58

	Study Results														
No. vehicles used in cycle	9	11	10	9	8	9	10	9	9	9	12	11	9	12	12
Time of Vehicle 4 (s)	9.84	9.63	9.96	8.87	7.85	7.55	9.61	9.68	9.68	8.41	7.95	8.67	9.23	7.76	10.26
Time of Last Vehicle (s)	19.62	22.84	22.14	17.55	16.08	17.03	22.94	20.58	20.58	17.54	22.47	21.89	18.20	21.35	26.95
Avg Sat Headway (s/veh)	1.96	1.89	2.03	1.74	2.06	1.90	2.22	2.18	2.18	1.83	1.81	1.89	1.79	1.70	2.09
Unadj. Sat. Flow (veh/h/ln)	1840	1908	1773	2074	1750	1899	1620	1651	1651	1972	1983	1906	2007	2119	1726
Start up lost time	2.02	2.08	1.84	1.93	-0.38	-0.03	0.72	0.96	0.96	1.11	0.69	1.12	2.05	0.96	1.92

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. The headway for vehicle 1 is the amount of time (in seconds) that passed between the light turning green and vehicle 1 crossing the stop bar into the intersection.

WisDOT Signalized Intersection Capacity Study

Location ID: 41
Intersection Location: WIS 100 & Center St
Approach Direction: SB
Approach Configuration: 3
Population Group: > 250

Video Date: 4/25/13 & 5/11/13
County: Milwaukee
Region: SE
Municipality: Wauwatosa
Approach AADT: 23400

Cycle #	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Lane Studied	1	1	1	2	1	1	2	1	1	1	3	1	2	1	1
Start of Green	5:47 PM	5:55 PM	6:12 PM	6:15 PM	12:20 PM	12:30 PM	12:30 PM	12:51 PM	12:56 PM	1:05 PM	3:28 PM	4:36 PM	4:36 PM	4:45 PM	4:50 PM
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)															
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	1.90	2.63	1.61	1.78	2.48	2.03	2.89	1.97	1.83	2.72	1.97	1.73	2.53	2.22	2.62
Vehicle 2	1.90	2.15	1.97	2.05	2.47	2.66	3.50	2.37	2.72	3.49	2.46	3.25	2.76	2.25	1.76
Vehicle 3	1.88	2.55	1.97	2.18	2.67	2.30	2.48	2.09	1.96	2.60	2.65	2.94	2.84	2.24	1.99
Vehicle 4	2.90	1.78	2.61	1.85	1.79	2.13	2.33	3.16	2.27	1.97	2.12	2.82	1.58	2.40	1.83
Vehicle 5	1.59	2.10	1.89	2.55	1.67	2.60	2.42	2.01	3.09	1.65	2.35	1.70	1.65	1.90	1.53
Vehicle 6	2.15	2.39	1.56	2.29	1.70	1.90	2.25	1.91	2.53	1.67	2.61	2.32	2.33	1.80	1.88
Vehicle 7	1.85	1.26	2.00	2.52	1.91	2.09	1.67	2.08	1.93	2.23	2.95	2.60	1.90	1.39	1.69
Vehicle 8	1.88	1.22	2.78	1.38	2.23	1.11	1.64	1.16	1.25	2.32	2.06	1.94	2.00	1.58	2.23
Vehicle 9	2.03	1.53	2.05	1.91		1.90		1.52	1.34	2.09			1.90		2.18
Vehicle 10		1.24	1.64	1.86				2.68		1.94					2.18
Vehicle 11		2.14		1.84						1.33					
Vehicle 12		1.37		2.61						1.88					

	Study Results														
No. vehicles used in cycle	9	12	10	12	8	9	8	10	9	12	8	8	9	8	10
Time of Vehicle 4 (s)	8.58	9.11	8.16	7.86	9.41	9.12	11.20	9.59	8.78	10.78	9.20	10.74	9.71	9.11	8.20
Time of Last Vehicle (s)	18.08	22.36	20.08	24.82	16.92	18.72	19.18	20.95	18.92	25.89	19.17	19.30	19.49	15.78	19.89
Avg Sat Headway (s/veh)	1.90	1.66	1.99	2.12	1.88	1.92	2.00	1.89	2.03	1.89	2.49	2.14	1.96	1.67	1.95
Unadj. Sat. Flow (veh/h/ln)	1895	2174	1812	1698	1917	1875	1805	1901	1775	1906	1444	1682	1840	2159	1848
Start up lost time	0.98	2.49	0.21	-0.62	1.90	1.44	3.22	2.02	0.67	3.22	-0.77	2.18	1.89	2.44	0.41

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. The headway for vehicle 1 is the amount of time (in seconds) that passed between the light turning green and vehicle 1 crossing the stop bar into the intersection.

Saturation Flow Study Summary Sheet

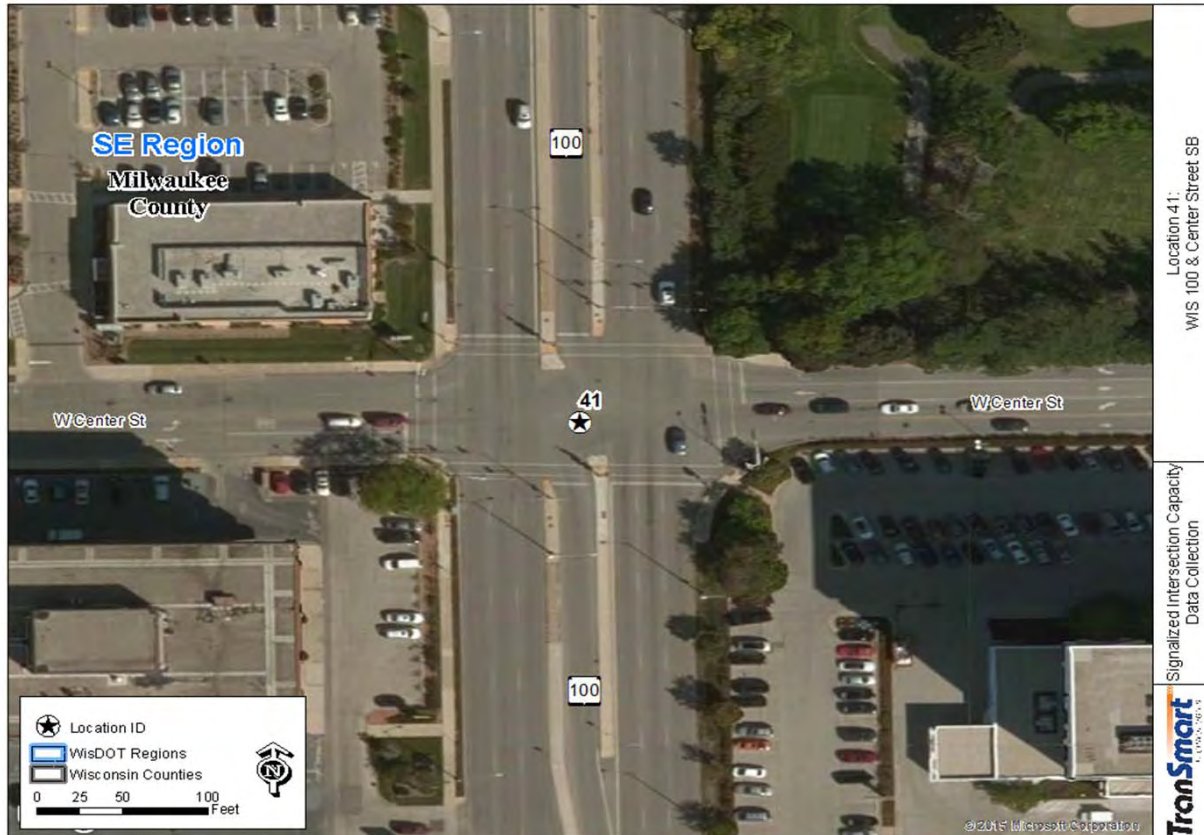
Intersection Information:

Intersection:	WIS 100 & Center St
Major Street:	WIS 100
Minor Street:	Center St
Study Approach:	SB
Approach Configuration:	3
Population Group:	> 250
Cycle by Date:	1-49 on 4/25, 50-60 on 5/11

Date:	4/25/13 & 5/11/13
WisDOT Region:	SE
Nearest Municipality:	Wauwatosa
County:	Milwaukee
Weather:	Clear
Pavement:	Dry
Observer:	Kevin Brink

Data Collection Summary Data:

Cycles Studied:	60
Average number of vehicles per cycle:	10
Headways Measured (queue vehicles > 4) :	353
% Heavy Vehicles (of headways measured):	0.3%
% RT Vehicles (of headways measured):	0.0%
Average Saturation Flow Headway (s):	1.96
Standard Deviation of All Headways:	0.51
Standard Deviation of Cycle Headways:	0.20
Unadjusted Median Sat Flow Rate (veh/ln.hr):	1840
Unadjusted Avg Sat Flow Rate (veh/ln/hr):	1840
Average Start Up Lost Time (s):	1.39



WisDOT Signalized Intersection Capacity Study

Location ID: 42
Intersection Location: WIS 100 & North Avenue
Approach Direction: SB
Approach Configuration: 6
Population Group: > 250

Video Date: 4/30/13, 5/1/13
County: Milwaukee
Region: SE
Municipality: Wauwatosa
Approach AADT: 23400

Cycle #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Lane Studied	2	2	2	2	2	3	1	2	1	2	1	1	2	1	2
Start of Green	7:38 AM	7:57 AM	8:00 AM	8:09 AM	8:17 AM	8:17 AM	8:17 AM	11:48 AM	11:48 AM	11:50 AM	12:55 PM	1:13 PM	1:39 PM	1:41 PM	1:52 PM
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)													1		
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	2.51	2.51	2.69	3.12	1.98	2.11	2.97	2.88	2.55	2.97	2.47	2.32	2.96	2.63	2.66
Vehicle 3	2.89	2.89	2.64	2.21	2.74	3.18	1.79	1.68	2.26	2.59	1.71	2.05	1.85	2.83	1.67
Vehicle 4	2.84	2.84	1.61	1.51	2.90	1.03	1.97	1.99	2.34	2.38	3.19	2.21	3.40	1.94	1.33
Vehicle 5	1.73	1.73	1.82	2.44	1.61	1.53	1.32	1.60	1.80	1.81	2.56	2.35	2.22	1.69	1.49
Vehicle 6	1.26	1.26	1.96	1.63	2.57	2.01	2.43	2.23	1.94	1.40	2.64	2.57	1.34	1.79	3.19
Vehicle 7	1.89	1.89	1.66	1.48	1.84	1.47	1.36	2.11	2.99	2.50	2.99	2.08	2.82	2.20	1.92
Vehicle 8	1.30	1.30	1.40	2.43	0.77	2.67	1.46	2.20	1.10	1.70	1.61	2.51	1.80	2.03	2.61
Vehicle 9	1.63	1.63	1.55	1.82	1.52	2.00		1.87		1.10		1.43	1.16	3.03	1.86
Vehicle 10	1.53	1.53	3.26		2.03			2.44		1.45		1.69			2.18
Vehicle 11	1.11	1.11	1.74		1.37			2.54		1.08					
Vehicle 12	1.42	1.42	1.63		1.81										

	Study Results														
No. vehicles used in cycle	12	12	12	9	12	9	8	11	8	11	8	10	9	9	10
Time of Vehicle 4 (s)	8.24	8.24	6.94	6.84	7.62	6.32	6.73	6.55	7.15	7.94	7.37	6.58	8.21	7.40	5.66
Time of Last Vehicle (s)	20.11	20.11	21.96	16.64	21.14	16.00	13.30	21.54	14.98	18.98	17.17	19.21	17.55	18.14	18.91
Avg Sat Headway (s/veh)	1.48	1.48	1.88	1.96	1.69	1.94	1.64	2.14	1.96	1.58	2.45	2.10	1.87	2.15	2.21
Unadj. Sat. Flow (veh/h/ln)	2426	2426	1917	1837	2130	1860	2192	1681	1839	2283	1469	1710	1927	1676	1630

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

WisDOT Signalized Intersection Capacity Study

Location ID: 42
Intersection Location: WIS 100 & North Avenue
Approach Direction: SB
Approach Configuration: 6
Population Group: > 250

Video Date: 4/30/13, 5/1/13
County: Milwaukee
Region: SE
Municipality: Wauwatosa
Approach AADT: 23400

Cycle #	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Lane Studied	2	2	2	2	2	1	1	2	1	2	1	2	2	1	2
Start of Green	2:26 PM	3:04 PM	3:11 PM	3:23 PM	3:32 AM	3:44 PM	3:47 PM	3:47 PM	3:58 PM	3:58 PM	4:04 PM	4:04 PM	4:09 PM	4:12 PM	4:12 PM
Heavy Vehicles (1-4)	1		1												
Heavy Vehicles (5-12)															
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	3.18	2.03	2.32	3.31	2.87	2.58	1.78	2.72	2.54	2.50	1.80	1.75	2.73	1.60	3.10
Vehicle 3	2.51	2.00	3.95	1.73	2.17	2.49	2.01	1.52	1.82	1.90	2.17	1.70	2.53	2.29	1.82
Vehicle 4	2.32	1.79	1.84	2.11	1.94	2.33	1.59	1.57	2.24	2.23	2.70	2.08	1.85	2.23	2.16
Vehicle 5	1.35	1.18	1.64	3.06	1.78	2.38	2.67	1.49	2.05	1.83	1.69	2.26	1.79	2.74	1.88
Vehicle 6	1.72	1.92	1.20	2.42	1.46	2.37	2.41	1.70	1.84	1.30	1.31	1.84	3.46	2.21	1.91
Vehicle 7	2.18	2.21	1.91	1.93	1.46	1.99	1.92	1.87	4.41	3.20	1.40	1.90	1.86	2.95	1.53
Vehicle 8	2.35	2.22	1.73	1.80	2.70	1.65	0.92	1.72	1.56	2.00	1.65	1.80	2.26	1.53	1.83
Vehicle 9	1.90	2.62		1.17	1.54	1.58	1.48	1.57	1.63	3.32	1.63	1.34	1.68	1.64	1.49
Vehicle 10					1.66			1.58	2.44	2.71	1.76	1.31	1.95	1.52	1.78
Vehicle 11					2.69			1.28	1.95	2.63	1.61	1.48		2.53	3.15
Vehicle 12					1.73			1.69	1.84	2.44	1.85				

	Study Results														
No. vehicles used in cycle	9	9	8	9	12	9	9	12	12	12	12	11	10	11	11
Time of Vehicle 4 (s)	8.01	5.82	8.11	7.15	6.98	7.40	5.38	5.81	6.60	6.63	6.67	5.53	7.11	6.12	7.08
Time of Last Vehicle (s)	17.51	15.97	14.59	17.53	22.00	17.37	14.78	18.71	24.32	26.06	19.57	17.46	20.11	21.24	20.65
Avg Sat Headway (s/veh)	1.90	2.03	1.62	2.08	1.88	1.99	1.88	1.61	2.22	2.43	1.61	1.70	2.17	2.16	1.94
Unadj. Sat. Flow (veh/h/ln)	1895	1773	2222	1734	1917	1805	1915	2233	1625	1482	2233	2112	1662	1667	1857

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

WisDOT Signalized Intersection Capacity Study

Location ID: 42
Intersection Location: WIS 100 & North Avenue
Approach Direction: SB
Approach Configuration: 6
Population Group: > 250

Video Date: 4/30/13, 5/1/13
County: Milwaukee
Region: SE
Municipality: Wauwatosa
Approach AADT: 23400

Cycle #	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Lane Studied	2	2	2	1	2	2	1	2	1	2	3	1	2	2	1
Start of Green	4:14 PM	4:22 PM	4:27 PM	4:29 PM	4:34 PM	4:37 PM	4:39 PM	4:39 PM	4:42 PM	4:42 PM	4:54 PM	4:59 PM	4:59 PM	5:02 PM	5:49 PM
Heavy Vehicles (1-4)					1										
Heavy Vehicles (5-12)							1								
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	3.69	1.57	3.51	3.56	2.50	2.25	1.39	1.92	1.48	1.88	3.65	2.14	2.97	1.82	1.36
Vehicle 3	1.28	2.07	2.91	2.92	3.88	1.52	1.79	1.84	1.93	2.62	2.79	2.49	1.73	1.79	3.14
Vehicle 4	2.70	3.90	2.21	1.70	1.85	1.75	2.04	1.99	1.85	2.04	2.33	2.95	2.27	1.30	1.61
Vehicle 5	1.59	2.24	1.56	1.74	1.93	1.61	1.72	1.68	1.73	2.92	2.25	2.00	1.75	2.14	1.99
Vehicle 6	1.32	1.61	1.59	1.77	0.77	2.56	1.98	1.72	1.65	3.16	2.28	3.06	1.89	2.29	1.63
Vehicle 7	1.22	1.50	1.08	1.74	1.20	2.14	2.04	1.87	1.83	1.26	1.55	1.85	1.82	2.37	1.85
Vehicle 8	1.50	1.83	1.70	0.86	1.99	2.05	2.21	1.62	2.37	1.55	1.60	1.67	1.78	3.02	2.29
Vehicle 9	2.58			2.15	2.72	1.76		1.93			2.81	1.52	1.83	2.26	1.47
Vehicle 10	1.35			1.34				1.61					1.33	1.82	2.56
Vehicle 11				2.35				1.52					1.71	2.43	1.44
Vehicle 12								1.90					2.24		

	Study Results														
No. vehicles used in cycle	10	8	8	11	9	9	8	12	8	8	9	9	12	11	11
Time of Vehicle 4 (s)	7.67	7.54	8.63	8.18	8.23	5.52	5.22	5.75	5.26	6.54	8.77	7.58	6.97	4.91	6.11
Time of Last Vehicle (s)	17.23	14.72	14.56	20.13	16.84	15.64	13.17	19.60	12.84	15.43	19.26	17.68	21.32	21.24	19.34
Avg Sat Headway (s/veh)	1.59	1.80	1.48	1.71	1.72	2.02	1.99	1.73	1.90	2.22	2.10	2.02	1.79	2.33	1.89
Unadj. Sat. Flow (veh/h/ln)	2259	2006	2428	2109	2091	1779	1811	2079	1900	1620	1716	1782	2007	1543	1905

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

WisDOT Signalized Intersection Capacity Study

Location ID: 42
Intersection Location: WIS 100 & North Avenue
Approach Direction: SB
Approach Configuration: 6
Population Group: > 250

Video Date: 4/30/13, 5/1/13
County: Milwaukee
Region: SE
Municipality: Wauwatosa
Approach AADT: 23400

Cycle #	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Lane Studied	2	2	2	2	2	2	2	2	1	2					
Start of Green	5:49 PM	5:59 PM	6:06 PM	8:09 AM	8:11 AM	8:21 AM	4:02 PM	4:05 PM	4:05 PM	4:15 PM					
Heavy Vehicles (1-4)								2							
Heavy Vehicles (5-12)															
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-				
Vehicle 2	2.25	2.20	2.65	3.52	2.13	2.12	2.17	3.20	1.46	1.56					
Vehicle 3	1.81	1.80	1.90	2.51	2.92	1.54	2.14	3.71	2.15	1.87					
Vehicle 4	2.02	2.54	1.87	1.97	1.95	1.98	2.25	4.55	2.88	2.41					
Vehicle 5	1.67	2.89	2.50	2.06	1.50	1.48	1.87	1.38	2.78	2.09					
Vehicle 6	1.42	1.44	1.44	2.30	2.44	2.36	2.68	2.60	2.64	1.54					
Vehicle 7	2.31	2.38	1.98	2.39	1.52	1.84	1.59	2.28	1.64	1.72					
Vehicle 8	1.82	1.98	2.77	1.62	1.64	1.78	1.54	2.68	2.22	1.78					
Vehicle 9	3.47	1.60	1.91	1.86			2.17	1.84	3.30	2.59					
Vehicle 10	1.33	1.86	2.06	1.40			2.25	2.12	2.31						
Vehicle 11				1.59			2.17	2.55	1.91						
Vehicle 12				1.75				1.08	2.26						

	Study Results														
No. vehicles used in cycle	10	10	10	12	8	8	11	12	12	9					
Time of Vehicle 4 (s)	6.08	6.54	6.42	8.00	7.00	5.64	6.56	11.46	6.49	5.84					
Time of Last Vehicle (s)	18.10	18.69	19.08	22.97	14.10	13.10	20.83	27.99	25.55	15.56					
Avg Sat Headway (s/veh)	2.00	2.03	2.11	1.87	1.77	1.86	2.04	2.07	2.38	1.94					
Unadj. Sat. Flow (veh/h/ln)	1797	1778	1706	1924	2028	1930	1766	1742	1511	1852					

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

Saturation Flow Study Summary Sheet

Intersection Information:

Intersection:	WIS 100 & North Avenue
Major Street:	WIS 100
Minor Street:	North Ave
Study Approach:	SB
Approach Configuration:	6
Population Group:	> 250
Cycles by Date:	1-48 on 4/30, 49-55 on 5/1

Video Date:	4/30/13, 5/1/13
WisDOT Region:	SE
Nearest Municipality:	Wauwatosa
County:	Milwaukee
Weather:	Clear
Pavement:	Dry
Observer:	Kevin Brink

Data Collection Summary Data:

Cycles Studied:	55
Average number of vehicles per cycle:	10
Headways Measured (queue vehicles > 4) :	331
% Heavy Vehicles (of headways measured):	0.6%
% RT Vehicles (of headways measured):	0.0%
Average Saturation Flow Headway (s):	1.93
Standard Deviation of All Headways:	0.53
Standard Deviation of Cycle Headways:	0.24
Unadjusted Median Sat Flow Rate (veh/ln.hr):	1857
Unadjusted Avg Sat Flow Rate (veh/ln/hr):	1869



WisDOT Signalized Intersection Capacity Study

Location ID: 43
Intersection Location: WIS 100 & Meinecke Ave
Approach Direction: SB
Approach Configuration: 6
Population Group: > 250

Video Date: 1/9/13, 4/28/13, 4/30/13, 5/1/13
County: Milwaukee
Region: SE
Municipality: Wauwatosa
Approach AADT: 31500

Cycle #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Lane Studied	3	3	1	3	3	3	3	3	3	3	3	3	3	3	3
Start of Green	12:09 PM	12:19 PM	12:19 PM	12:34 PM	12:52 PM	1:00 PM	5:07 PM	5:29 PM	5:36 PM	5:59 PM	6:07 PM	6:52 PM	5:12 PM	7:01 PM	5:01 PM
Heavy Vehicles (1-4)	1		1												
Heavy Vehicles (5-12)															
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	2.25	3.33	1.93	2.50	3.10	2.41	1.80	1.63	2.49	1.68	3.40	2.42	2.17	2.35	2.72
Vehicle 2	3.22	2.01	2.01	2.27	2.54	2.43	4.25	1.86	2.86	1.88	2.63	2.48	2.39	1.81	1.84
Vehicle 3	2.45	1.97	3.20	2.12	1.84	2.03	2.19	1.87	2.08	2.69	2.03	1.61	1.99	3.76	3.46
Vehicle 4	3.52	1.86	2.06	2.33	1.48	2.20	2.92	2.05	2.64	2.03	2.36	3.03	2.89	2.1	2.33
Vehicle 5	1.95	1.60	2.27	2.10	1.40	3.55	1.97	1.73	1.87	2.36	1.65	2.80	1.81	1.89	2.59
Vehicle 6	1.67	1.65	2.07	1.83	1.60	2.04	1.62	2.38	3.80	1.97	1.43	1.78	1.8	2.12	1.37
Vehicle 7	1.70	1.85	1.92	1.97	1.53	1.34	1.43	1.36	0.91	1.53	1.26	2.86	2.39	1.85	3.15
Vehicle 8	2.19	2.12	2.96	2.27	1.49	1.69	2.03	1.89	2.01	2.00	1.91	1.78	2.56	2.2	1.65
Vehicle 9	1.84	2.12		1.89	1.90	1.97	2.78	2.00			2.31	1.31	2.25		1.36
Vehicle 10	1.32	1.78			2.26	1.73	1.14	2.81			1.83	2.33	1.25		1.50
Vehicle 11		1.42			1.56	1.94					3.54		1.5		1.55
Vehicle 12		1.76				1.76									

	Study Results														
No. vehicles used in cycle	10	12	8	9	11	12	10	10	8	8	11	10	11	8	11
Time of Vehicle 4 (s)	11.44	9.17	9.20	9.22	8.96	9.07	11.16	7.41	10.07	8.28	10.42	9.54	9.44	10.02	10.35
Time of Last Vehicle (s)	22.11	23.47	18.42	19.28	20.70	25.09	22.13	19.58	18.66	16.14	24.35	22.40	23.00	18.08	23.52
Avg Sat Headway (s/veh)	1.78	1.79	2.31	2.01	1.68	2.00	1.83	2.03	2.15	1.97	1.99	2.14	1.94	2.01	1.88
Unadj. Sat. Flow (veh/h/ln)	2024	2014	1562	1789	2147	1798	1969	1775	1676	1832	1809	1680	1858	1787	1913
Start up lost time	4.33	2.02	-0.02	1.17	2.25	1.06	3.85	-0.70	1.48	0.42	2.46	0.97	1.69	1.96	2.82

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. The headway for vehicle 1 is the amount of time (in seconds) that passed between the light turning green and vehicle 1 crossing the stop bar into the intersection.

WisDOT Signalized Intersection Capacity Study

Location ID: 43
Intersection Location: WIS 100 & Meinecke Ave
Approach Direction: SB
Approach Configuration: 6
Population Group: > 250

Video Date: 1/9/13, 4/28/13, 4/30/13, 5/1/13
County: Milwaukee
Region: SE
Municipality: Wauwatosa
Approach AADT: 31500

Cycle #	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Lane Studied	3	3	3	3	3	3	3	3	3	3	3	3	3	3	1
Start of Green	5:08 PM	5:48 PM	12:42 PM	12:48 PM	12:53 PM	2:07 PM	2:10 PM	3:29 PM	3:31 PM	3:52 PM	3:54 PM	4:48 PM	4:51 PM	5:53 PM	6:03 PM
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)															
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	1.80	2.54	2.03	2.13	3.28	2.52	1.88	2.20	2.16	1.47	2.23	1.79	2.85	2.29	2.36
Vehicle 2	1.91	1.60	2.54	2.05	2.32	1.84	1.98	3.04	2.95	3.23	2.01	2.39	1.17	1.98	2.15
Vehicle 3	2.18	1.65	2.25	2.01	1.80	1.51	3.09	2.18	2.04	1.86	2.67	2.06	2.30	2.70	1.72
Vehicle 4	1.94	1.49	1.83	1.72	1.43	2.67	2.91	2.61	2.17	1.77	2.56	1.90	1.82	2.39	1.78
Vehicle 5	2.30	2.08	1.43	1.77	2.51	1.63	1.02	2.06	2.08	1.72	1.92	1.44	1.79	1.81	0.07
Vehicle 6	2.11	2.06	1.48	2.41	1.91	2.39	2.31	2.19	1.61	1.68	1.62	2.42	2.65	2.36	2.44
Vehicle 7	2.19	1.90	2.19	1.88	2.19	1.88	2.27	2.05	2.24	1.64	2.43	2.32	2.20	2.69	2.13
Vehicle 8	1.95	2.41	2.80	1.13	1.81	1.35	2.91	2.32	2.18	2.17	1.66	1.53	1.32	2.03	2.45
Vehicle 9			1.99				2.24			2.21			1.94	1.98	
Vehicle 10			1.71							1.72				1.69	
Vehicle 11										1.70					
Vehicle 12															

	Study Results														
No. vehicles used in cycle	8	8	10	8	8	8	9	8	8	11	8	8	9	10	8
Time of Vehicle 4 (s)	7.83	7.28	8.65	7.91	8.83	8.54	9.86	10.03	9.32	8.33	9.47	8.14	8.14	9.36	8.01
Time of Last Vehicle (s)	16.38	15.73	20.25	15.10	17.25	15.79	20.61	18.65	17.43	21.17	17.10	15.85	18.04	21.92	15.10
Avg Sat Headway (s/veh)	2.14	2.11	1.93	1.80	2.10	1.81	2.15	2.16	2.03	1.83	1.91	1.93	1.98	2.09	1.77
Unadj. Sat. Flow (veh/h/ln)	1684	1704	1862	2003	1710	1986	1674	1671	1776	1963	1887	1868	1818	1720	2031
Start up lost time	-0.72	-1.17	0.92	0.72	0.41	1.29	1.26	1.41	1.21	0.99	1.84	0.43	0.22	0.99	0.92

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. The headway for vehicle 1 is the amount of time (in seconds) that passed between the light turning green and vehicle 1 crossing the stop bar into the intersection.

WisDOT Signalized Intersection Capacity Study

Location ID: 43
Intersection Location: WIS 100 & Meinecke Ave
Approach Direction: SB
Approach Configuration: 6
Population Group: > 250

Video Date: 1/9/13, 4/28/13, 4/30/13, 5/1/13
County: Milwaukee
Region: SE
Municipality: Wauwatosa
Approach AADT: 31500

Cycle #	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Lane Studied	3	3	3	2	3	1	3	3	3	3	3	3	3	3	3
Start of Green	6:14 PM	12:12 PM	12:29 PM	12:38 PM	12:47 PM	12:47 PM	1:00 PM	1:17 PM	1:19 PM	1:28 PM	1:39 PM	1:43 PM	2:30 PM	2:35 PM	2:41 PM
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)			2												
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	2.51	2.09	2.61	2.55	1.85	2.27	2.03	3.33	2.25	1.74	2.73	1.63	2.42	1.89	3.29
Vehicle 2	1.71	2.36	1.93	2.53	2.95	2.54	2.13	2.51	2.46	1.60	2.52	2.00	3.91	1.80	2.45
Vehicle 3	1.59	1.65	1.93	2.57	2.44	3.18	1.99	1.57	1.88	1.61	2.00	2.45	2.29	2.90	2.49
Vehicle 4	1.90	2.54	1.65	1.90	1.72	1.80	3.00	2.32	1.48	2.79	2.02	1.51	1.50	1.90	1.56
Vehicle 5	2.03	1.28	3.18	2.59	1.67	1.24	3.94	1.77	1.90	2.62	3.39	2.65	1.50	2.20	2.02
Vehicle 6	1.95	2.16	1.70	2.77	1.47	2.32	1.60	1.99	2.10	1.92	1.73	1.40	1.92	2.26	2.17
Vehicle 7	2.42	1.66	1.29	1.80	1.82	1.49	1.75	1.45	3.71	1.32	1.96	1.82	2.35	2.92	1.60
Vehicle 8	1.43	2.07	2.02	1.96	1.66	1.98	1.90	1.49	1.57	2.86	1.56	1.17	2.38	1.96	1.86
Vehicle 9		1.68	2.02		2.16	1.36	1.51	2.14	1.67	1.60		1.71		2.57	
Vehicle 10		1.52	1.52		1.63	1.31	2.07	1.61	2.47	1.35		1.70			
Vehicle 11		2.59	1.28		1.59	1.90	1.99		1.75	2.05					
Vehicle 12		1.82			1.62		2.09		1.88	1.82					

	Study Results														
No. vehicles used in cycle	8	12	11	8	12	11	12	10	12	12	8	10	8	9	8
Time of Vehicle 4 (s)	7.71	8.64	8.12	9.55	8.96	9.79	9.15	9.73	8.07	7.74	9.27	7.59	10.12	8.49	9.79
Time of Last Vehicle (s)	15.54	23.42	21.13	18.67	22.58	21.39	26.00	20.18	25.12	23.28	17.91	18.04	18.27	20.40	17.44
Avg Sat Headway (s/veh)	1.96	1.85	1.86	2.28	1.70	1.66	2.11	1.74	2.13	1.94	2.16	1.74	2.04	2.38	1.91
Unadj. Sat. Flow (veh/h/ln)	1839	1949	1937	1579	2115	2172	1709	2067	1689	1853	1667	2067	1767	1511	1882
Start up lost time	-0.12	1.25	0.69	0.43	2.15	3.16	0.73	2.76	-0.46	-0.03	0.63	0.62	1.97	-1.04	2.14

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. The headway for vehicle 1 is the amount of time (in seconds) that passed between the light turning green and vehicle 1 crossing the stop bar into the intersection.

WisDOT Signalized Intersection Capacity Study

Location ID: 43
Intersection Location: WIS 100 & Meinecke Ave
Approach Direction: SB
Approach Configuration: 6
Population Group: > 250

Video Date: 1/9/13, 4/28/13, 4/30/13, 5/1/13
County: Milwaukee
Region: SE
Municipality: Wauwatosa
Approach AADT: 31500

Cycle #	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Lane Studied	3	3	3	3	3	3	1	3	3	2	1	1	1		
Start of Green	2:47 PM	3:04 PM	3:25 PM	3:37 PM	4:37 PM	4:42 PM	4:44 PM	5:09 PM	5:20 PM	5:20 PM	5:20 PM	5:35 PM	6:37 PM		
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)	1			1											
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	2.43	3.23	1.61	2.49	2.23	2.38	0.88	2.13	2.20	1.39	2.55	2.18	2.09		
Vehicle 2	2.06	1.88	2.28	2.17	2.63	1.58	2.69	1.93	1.91	2.43	2.26	2.46	1.72		
Vehicle 3	2.36	2.57	3.38	2.07	1.95	2.35	2.22	1.69	3.70	2.45	1.98	1.80	2.10		
Vehicle 4	1.19	1.91	2.37	2.32	2.37	1.97	1.62	2.89	3.28	2.69	1.76	2.93	1.84		
Vehicle 5	2.48	1.95	1.54	2.01	2.36	2.21	2.56	2.26	1.67	2.18	1.71	1.51	1.91		
Vehicle 6	2.45	1.80	1.67	3.27	1.91	1.67	1.86	2.09	1.95	2.39	2.03	2.19	1.68		
Vehicle 7	1.89	1.92	1.84	2.41	1.85	2.09	1.72	1.41	1.41	2.77	1.85	1.90	1.53		
Vehicle 8	2.16	1.84	1.72	2.22	1.84	1.86	2.11	2.12	2.42	2.21	1.72	1.51	1.63		
Vehicle 9	2.34	2.22	2.23	2.66		1.79		1.96	1.81	1.57	2.32	1.51	1.71		
Vehicle 10				2.72		1.61		2.34	1.44	1.93	1.80	1.43			
Vehicle 11				1.72				1.90	2.68	1.91	2.74				
Vehicle 12								1.70	2.53		1.77				

	Study Results														
No. vehicles used in cycle	9	9	9	11	8	10	8	12	12	11	12	10	9		
Time of Vehicle 4 (s)	8.04	9.59	9.64	9.05	9.18	8.28	7.41	8.64	11.09	8.96	8.55	9.37	7.75		
Time of Last Vehicle (s)	19.36	19.32	18.64	26.06	17.14	19.51	15.66	24.42	27.00	23.92	24.49	19.42	16.21		
Avg Sat Headway (s/veh)	2.26	1.95	1.80	2.43	1.99	1.87	2.06	1.97	1.99	2.14	1.99	1.68	1.69		
Unadj. Sat. Flow (veh/h/ln)	1590	1850	2000	1481	1809	1923	1745	1825	1810	1684	1807	2149	2128		
Start up lost time	-1.02	1.81	2.44	-0.67	1.22	0.79	-0.84	0.75	3.13	0.41	0.58	2.67	0.98		

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. The headway for vehicle 1 is the amount of time (in seconds) that passed between the light turning green and vehicle 1 crossing the stop bar into the intersection.

Saturation Flow Study Summary Sheet

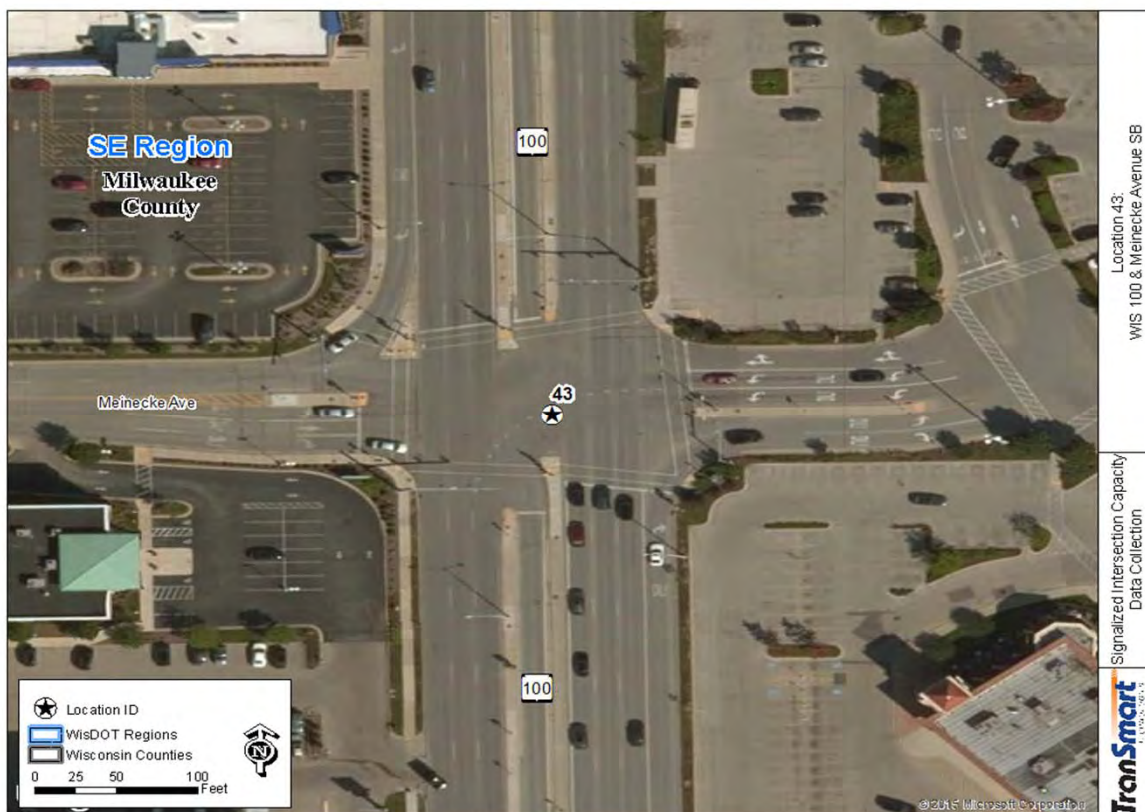
Intersection Information:

Intersection:	WIS 100 & Meinecke Ave
Major Street:	WIS 100
Minor Street:	Meinecke Ave
Study Approach:	SB
Approach Configuration:	6
Population Group:	> 250
Cycle by Date:	1-14 on 4/30, 15-17 on 1/9, 18-31 on 4/28, 32-58 on 5/1

Date:	1/9/13, 4/28/13, 4/30/13, 5/1/13
WisDOT Region:	SE
Nearest Municipality:	Wauwatosa
County:	Milwaukee
Weather:	Clear
Pavement:	Dry
Observer:	Kevin Brink

Data Collection Summary Data:

Cycles Studied:	58
Average number of vehicles per cycle:	10
Headways Measured (queue vehicles > 4) :	327
% Heavy Vehicles (of headways measured):	1.2%
% RT Vehicles (of headways measured):	0.0%
Average Saturation Flow Headway (s):	1.96
Standard Deviation of All Headways:	0.48
Standard Deviation of Cycle Headways:	0.18
Unadjusted Median Sat Flow Rate (veh/ln.hr):	1822
Unadjusted Avg Sat Flow Rate (veh/ln/hr):	1833
Average Start Up Lost Time (s):	1.10



WisDOT Signalized Intersection Capacity Study

Location ID: 44
Intersection Location: WIS 100 & W National Ave
Approach Direction: SWB
Approach Configuration: 5
Population Group: > 250

Video Date: 3/17/15 - 3/20/15
County: Milwaukee
Region: SE
Municipality: West Allis
Approach AADT: 17800

Cycle #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Lane Studied	1	1	1	1	1	1	1	1	2	1	1	2	1	1	1
Start of Green	1:40 PM	2:17 PM	2:21 AM	2:28 PM	2:39 PM	2:43 PM	2:50 PM	2:54 PM	2:54 PM	3:13 PM	3:20 PM	3:20 PM	3:25 PM	3:28 PM	3:43 PM
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)															
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	2.33	3.41	2.61	2.27	2.44	3.09	2.33	3.62	1.40	2.71	3.47	3.34	2.45	2.79	2.48
Vehicle 3	2.44	1.99	1.86	2.90	2.31	2.24	2.18	2.29	3.37	2.60	1.64	2.28	2.27	2.45	1.92
Vehicle 4	1.88	2.52	2.15	1.74	2.71	2.20	1.44	1.96	1.75	2.08	2.05	2.81	1.84	1.44	1.88
Vehicle 5	1.78	2.33	2.13	2.17	2.22	2.40	1.65	2.02	2.18	2.15	2.22	3.19	2.42	1.82	1.58
Vehicle 6	2.30	1.64	1.81	1.59	2.40	1.86	1.95	2.23	1.94	2.89	2.38	2.16	2.04	1.73	1.73
Vehicle 7	2.93	1.59	1.56	1.57	2.12	2.14	1.79	1.72	1.71	2.08	1.64	2.24	1.69	1.30	2.13
Vehicle 8	2.18	1.44	1.85	1.94	1.63	1.56	1.53	1.64	2.03	1.67	1.48	2.16	1.97	2.31	1.97
Vehicle 9				1.59			1.95	1.86			1.47	2.00	1.82		
Vehicle 10								1.48			1.90		1.46		
Vehicle 11								1.08					2.36		
Vehicle 12															

	Study Results														
No. vehicles used in cycle	8	8	8	9	8	8	9	11	8	8	10	9	11	8	8
Time of Vehicle 4 (s)	6.65	7.92	6.62	6.91	7.46	7.53	5.95	7.87	6.52	7.39	7.16	8.43	6.56	6.68	6.28
Time of Last Vehicle (s)	15.84	14.92	13.97	15.77	15.83	15.49	14.82	19.90	14.38	16.18	18.25	20.18	20.32	13.84	13.69
Avg Sat Headway (s/veh)	2.30	1.75	1.84	1.77	2.09	1.99	1.77	1.72	1.97	2.20	1.85	2.35	1.97	1.79	1.85
Unadj. Sat. Flow (veh/h/ln)	1567	2057	1959	2032	1720	1809	2029	2095	1832	1638	1948	1532	1831	2011	1943

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

WisDOT Signalized Intersection Capacity Study

Location ID: 44
Intersection Location: WIS 100 & W National Ave
Approach Direction: SWB
Approach Configuration: 5
Population Group: > 250

Video Date: 3/17/15 - 3/20/15
County: Milwaukee
Region: SE
Municipality: West Allis
Approach AADT: 17800

Cycle #	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Lane Studied	1	1	2	1	2	1	1	1	2	2	1	1	2	1	1
Start of Green	3:46 PM	8:18 AM	8:21 AM	3:03 PM	3:03 PM	3:13 PM	3:18 PM	3:21 PM	3:21 PM	3:26 PM	3:43 PM	3:51 PM	3:51 PM	3:53 PM	4:06 PM
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)															
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	1.79	2.26	3.43	2.52	3.11	2.88	3.78	2.33	2.78	1.80	2.38	3.50	3.79	3.23	2.74
Vehicle 3	3.48	3.59	2.16	2.44	1.77	2.58	2.11	2.98	1.90	1.72	2.86	2.89	2.20	1.87	1.96
Vehicle 4	2.53	2.38	2.09	2.52	1.87	2.55	2.10	2.34	1.83	1.98	3.19	1.50	1.99	2.30	2.41
Vehicle 5	1.79	1.65	1.61	2.26	1.47	1.61	1.54	2.41	3.07	1.65	2.18	1.37	1.58	2.62	1.66
Vehicle 6	1.83	1.91	1.51	3.20	1.78	1.62	1.59	1.65	2.03	2.11	1.89	1.86	2.14	2.69	1.81
Vehicle 7	2.27	1.89	1.62	2.51	2.29	2.04	1.77	1.72	1.68	1.86	2.33	1.49	2.05	1.92	1.43
Vehicle 8	2.14	2.02	1.63	1.43	2.11	1.96	1.41	2.38	1.41	2.11	1.50	1.37	1.62	1.86	1.33
Vehicle 9	1.66		2.52	2.45	1.89	1.61	1.30	1.51	1.78				1.68		
Vehicle 10	2.20		1.29	1.53	1.92	1.99	1.42	2.09	1.50				2.28		
Vehicle 11				1.45	2.38		1.69		1.28				2.04		
Vehicle 12				1.32	1.34		2.14		1.72						

	Study Results														
No. vehicles used in cycle	10	8	10	12	12	10	12	10	12	8	8	8	11	8	8
Time of Vehicle 4 (s)	7.80	8.23	7.68	7.48	6.75	8.01	7.99	7.65	6.51	5.50	8.43	7.89	7.98	7.40	7.11
Time of Last Vehicle (s)	19.69	15.70	17.86	23.63	21.93	18.84	20.85	19.41	20.98	13.23	16.33	13.98	21.37	16.49	13.34
Avg Sat Headway (s/veh)	1.98	1.87	1.70	2.02	1.90	1.81	1.61	1.96	1.81	1.93	1.98	1.52	1.91	2.27	1.56
Unadj. Sat. Flow (veh/h/ln)	1817	1928	2122	1783	1897	1994	2240	1837	1990	1863	1823	2365	1882	1584	2311

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

WisDOT Signalized Intersection Capacity Study

Location ID: 44
Intersection Location: WIS 100 & W National Ave
Approach Direction: SWB
Approach Configuration: 5
Population Group: > 250

Video Date: 3/17/15 - 3/20/15
County: Milwaukee
Region: SE
Municipality: West Allis
Approach AADT: 17800

Cycle #	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Lane Studied	1	2	1	1	2	1	2	1	2	1	2	1	1	1	1
Start of Green	4:08 PM	4:11 PM	4:13 PM	4:16 PM	4:18 PM	4:36 PM	4:36 PM	4:38 PM	4:38 PM	4:43 PM	4:43 PM	4:53 PM	4:56 PM	7:04 AM	7:31 AM
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)															
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	2.70	2.70	2.96	3.57	1.64	1.96	2.08	2.57	3.33	2.46	1.98	2.54	2.15	2.72	2.79
Vehicle 3	2.50	1.79	2.38	2.00	2.01	2.22	2.42	4.04	2.54	2.63	1.87	2.25	2.78	2.68	1.53
Vehicle 4	3.21	1.64	1.69	1.62	1.64	1.76	2.19	1.39	3.05	2.01	2.22	2.54	2.46	2.02	2.52
Vehicle 5	1.89	1.77	2.54	2.36	2.48	1.91	2.39	1.77	2.10	1.96	1.97	2.33	1.68	2.84	2.42
Vehicle 6	1.88	2.16	1.39	2.46	2.01	1.46	2.52	1.82	1.80	2.12	2.18	2.01	1.49	1.63	1.40
Vehicle 7	1.82	1.73	2.66	1.82	1.27	1.26	1.79	3.10	1.69	1.04	2.59	1.77	1.42	1.17	2.07
Vehicle 8	1.85	1.36	1.76	2.68	2.10	2.56	1.21	1.74	2.03	1.43	1.20	1.91	1.80	2.10	1.48
Vehicle 9		2.07	2.10			1.52	2.01	1.30	1.71	2.68	1.58	1.80	1.47		2.76
Vehicle 10			1.76					1.34	1.31	1.61	2.50	1.68			1.76
Vehicle 11								1.31	2.03		1.44				1.56
Vehicle 12									1.31		2.37				

	Study Results														
No. vehicles used in cycle	8	9	10	8	8	9	9	11	12	10	12	10	9	8	11
Time of Vehicle 4 (s)	8.41	6.13	7.03	7.19	5.29	5.94	6.69	8.00	8.92	7.10	6.07	7.33	7.39	7.42	6.84
Time of Last Vehicle (s)	15.85	15.22	19.24	16.51	13.15	14.65	16.61	20.38	22.90	17.94	21.90	18.83	15.25	15.16	20.29
Avg Sat Headway (s/veh)	1.86	1.82	2.04	2.33	1.97	1.74	1.98	1.77	1.75	1.81	1.98	1.92	1.57	1.93	1.92
Unadj. Sat. Flow (veh/h/ln)	1935	1980	1769	1545	1832	2067	1815	2036	2060	1993	1819	1878	2290	1860	1874

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

WisDOT Signalized Intersection Capacity Study

Location ID: 44
Intersection Location: WIS 100 & W National Ave
Approach Direction: SWB
Approach Configuration: 5
Population Group: > 250

Video Date: 3/17/15 - 3/20/15
County: Milwaukee
Region: SE
Municipality: West Allis
Approach AADT: 17800

Cycle #	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Lane Studied	1	1	1	1	1	1	1	1	1	1	1	1	2		
Start of Green	8:59 AM	9:22 AM	10:15 AM	10:17 AM	10:21 AM	10:26 AM	10:40 AM	11:05 AM	11:19 AM	5:03 PM	5:08 PM	5:11 PM	5:13 PM		
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)															
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	2.46	2.88	2.74	2.43	3.78	3.67	2.03	1.40	3.13	2.39	2.08	2.49	2.01		
Vehicle 3	2.15	2.64	1.82	2.57	2.83	1.44	2.74	1.65	2.85	2.57	2.23	2.41	2.76		
Vehicle 4	1.83	2.21	2.02	1.58	2.49	3.17	2.93	2.01	2.52	1.69	2.42	1.97	1.83		
Vehicle 5	2.06	1.80	1.46	2.03	2.31	2.02	2.01	2.52	2.03	2.02	2.07	2.07	1.62		
Vehicle 6	2.58	2.92	2.23	1.69	2.14	2.00	1.43	1.61	2.48	2.29	1.28	2.63	1.87		
Vehicle 7	1.79	2.45	2.23	1.16	1.78	1.62	1.46	1.45	1.69	1.31	1.60	1.63	1.67		
Vehicle 8	1.68	1.89	1.60	1.73	2.18	1.91	2.45	2.15	1.54	2.11	1.86	1.71	1.69		
Vehicle 9	1.66		1.96		1.54	1.48	1.76		1.70	2.34			1.32		
Vehicle 10			1.72		1.53		1.75			1.34			1.72		
Vehicle 11					1.50		1.83			2.04			1.68		
Vehicle 12													2.05		

	Study Results														
No. vehicles used in cycle	9	8	10	8	11	9	11	8	9	11	8	8	12		
Time of Vehicle 4 (s)	6.44	7.73	6.58	6.58	9.10	8.28	7.70	5.06	8.50	6.65	6.73	6.87	6.60		
Time of Last Vehicle (s)	16.21	16.79	17.78	13.19	22.08	17.31	20.39	12.79	17.94	20.10	13.54	14.91	20.22		
Avg Sat Headway (s/veh)	1.95	2.27	1.87	1.65	1.85	1.81	1.81	1.93	1.89	1.92	1.70	2.01	1.70		
Unadj. Sat. Flow (veh/h/ln)	1842	1589	1929	2179	1941	1993	1986	1863	1907	1874	2115	1791	2115		

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

Saturation Flow Study Summary Sheet

Intersection Information:

Intersection:	WIS 100 & W National Ave
Major Street:	WIS 100
Minor Street:	W National Ave
Study Approach:	SWB
Approach Configuration:	5
Population Group:	> 250
Cycles by Date:	3/17 (1-16), 3/18 (17-29,55-58), 3/19 (30-43), 3/20 (44-54)

Video Date:	3/17/15 - 3/20/15
WisDOT Region:	SE
Nearest Municipality:	West Allis
County:	Milwaukee
Weather:	Clear
Pavement:	Dry
Observer:	Kevin Brink

Data Collection Summary Data:

Cycles Studied:	58
Average number of vehicles per cycle:	9
Headways Measured (queue vehicles > 4) :	312
% Heavy Vehicles (of headways measured):	0.0%
% RT Vehicles (of headways measured):	0.0%
Average Saturation Flow Headway (s):	1.88
Standard Deviation of All Headways:	0.40
Standard Deviation of Cycle Headways:	0.18
Unadjusted Median Sat Flow Rate (veh/ln.hr):	1917
Unadjusted Avg Sat Flow Rate (veh/ln/hr):	1913



WisDOT Signalized Intersection Capacity Study

Location ID: 45
Intersection Location: Cleveland Ave & National Ave
Approach Direction: SWB
Approach Configuration: 5
Population Group: > 250

Video Date: 3/17/15 - 3/19/15
County: Milwaukee
Region: SE
Municipality: West Allis
Approach AADT: 22900

Cycle #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Lane Studied	1	1	1	1	1	1	1	1	2	1	1	1	2	1	1
Start of Green	2:17 PM	2:19 PM	2:54 PM	2:59 PM	3:08 PM	3:33 PM	3:43 PM	3:46 PM	3:48 PM	4:02 PM	4:10 PM	4:12 PM	4:20 PM	4:23 PM	4:39 PM
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)															
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	2.98	2.23	2.96	2.82	1.79	2.52	3.03	2.25	2.11	3.09	2.34	2.52	2.76	2.39	2.42
Vehicle 3	2.29	2.30	1.75	2.80	2.38	2.94	3.04	2.31	2.15	1.92	2.54	3.63	1.95	2.27	1.72
Vehicle 4	2.37	2.54	1.81	2.68	1.90	1.93	3.93	1.76	1.54	1.89	2.12	1.91	1.71	3.74	3.31
Vehicle 5	2.94	2.39	1.80	3.16	1.47	1.77	2.78	2.81	2.19	2.31	2.15	2.17	1.67	2.79	2.94
Vehicle 6	1.34	2.17	2.75	1.46	2.09	1.95	2.12	2.08	1.66	1.77	1.87	1.34	1.74	1.28	1.56
Vehicle 7	2.42	1.74	2.32	2.45	2.31	2.53	1.97	1.94	1.99	1.62	1.74	1.76	1.56	1.25	1.41
Vehicle 8	1.43	2.33	1.60	1.67	2.52	2.41	1.32	2.14	2.63	2.31	2.00	2.75	1.68	1.70	2.63
Vehicle 9		2.63	2.26	1.80	2.32	3.12	2.06	2.31			1.87	1.61	2.04	1.95	1.59
Vehicle 10		2.30	2.71			1.64	2.26	2.44				2.14	2.47	2.16	2.16
Vehicle 11		2.57				2.16	1.26	1.97					2.29		
Vehicle 12						1.43		1.57							

	Study Results														
No. vehicles used in cycle	8	11	10	9	9	12	11	12	8	8	9	10	11	10	10
Time of Vehicle 4 (s)	7.64	7.07	6.52	8.30	6.07	7.39	10.00	6.32	5.80	6.90	7.00	8.06	6.42	8.40	7.45
Time of Last Vehicle (s)	15.77	23.20	19.96	18.84	16.78	24.40	23.77	23.58	14.27	14.91	16.63	19.83	19.87	19.53	19.74
Avg Sat Headway (s/veh)	2.03	2.30	2.24	2.11	2.14	2.13	1.97	2.16	2.12	2.00	1.93	1.96	1.92	1.85	2.05
Unadj. Sat. Flow (veh/h/ln)	1771	1562	1607	1708	1681	1693	1830	1669	1700	1798	1869	1835	1874	1941	1758

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

WisDOT Signalized Intersection Capacity Study

Location ID: 45
Intersection Location: Cleveland Ave & National Ave
Approach Direction: SWB
Approach Configuration: 5
Population Group: > 250

Video Date: 3/17/15 - 3/19/15
County: Milwaukee
Region: SE
Municipality: West Allis
Approach AADT: 22900

Cycle #	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Lane Studied	1	1	1	1	1	1	2	1	1	2	2	1	2	1	1
Start of Green	4:42 PM	5:08 PM	5:14 PM	5:16 PM	8:04 AM	8:11 AM	3:06 PM	3:11 PM	3:17 PM	3:25 PM	3:30 PM	3:41 PM	3:49 PM	3:49 PM	3:51 PM
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)					1										
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	1.52	2.14	2.12	2.82	2.26	2.64	1.96	2.36	2.88	2.90	3.03	2.34	2.27	1.96	3.27
Vehicle 3	3.60	2.19	1.92	2.03	1.97	1.79	2.19	2.58	2.56	2.54	2.39	1.91	3.00	2.42	2.50
Vehicle 4	2.99	2.37	1.95	1.89	1.78	2.44	1.90	2.00	2.13	1.53	2.15	3.15	1.70	1.66	2.58
Vehicle 5	2.20	1.37	1.54	1.90	1.59	2.21	2.18	2.21	2.10	1.92	1.80	2.07	1.47	1.97	1.76
Vehicle 6	1.67	1.79	2.14	2.41	1.55	2.10	1.74	2.10	2.26	1.60	1.65	2.52	0.71	1.93	1.19
Vehicle 7	2.13	1.60	2.50	2.62	3.10	1.49	1.65	1.12	1.82	1.86	2.18	2.16	3.32	1.67	1.68
Vehicle 8	2.08	1.15	1.62	2.30	2.41	2.37	1.76	2.20	2.08	2.01	1.75	1.71	1.74	1.50	2.11
Vehicle 9	2.26	1.86	1.98	1.50	2.14	1.75	2.08	1.77		1.84	2.39			1.68	2.02
Vehicle 10	2.58	2.55		1.90	1.97		1.39	2.28			1.82			0.53	2.45
Vehicle 11		2.08			1.32									2.55	2.64
Vehicle 12		1.65			1.31									2.49	

	Study Results														
No. vehicles used in cycle	10	12	9	10	12	9	10	10	8	9	10	8	8	12	11
Time of Vehicle 4 (s)	8.11	6.70	5.99	6.74	6.01	6.87	6.05	6.94	7.57	6.97	7.57	7.40	6.97	6.04	8.35
Time of Last Vehicle (s)	21.03	20.75	15.77	19.37	21.40	16.79	16.85	18.62	15.83	16.20	19.16	15.86	14.21	20.36	22.20
Avg Sat Headway (s/veh)	2.15	1.76	1.96	2.10	1.92	1.98	1.80	1.95	2.07	1.85	1.93	2.11	1.81	1.79	1.98
Unadj. Sat. Flow (veh/h/ln)	1672	2050	1840	1710	1871	1815	2000	1849	1743	1950	1864	1702	1989	2011	1819

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

WisDOT Signalized Intersection Capacity Study

Location ID: 45
Intersection Location: Cleveland Ave & National Ave
Approach Direction: SWB
Approach Configuration: 5
Population Group: > 250

Video Date: 3/17/15 - 3/19/15
County: Milwaukee
Region: SE
Municipality: West Allis
Approach AADT: 22900

Cycle #	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Lane Studied	1	1	2	1	1	2	1	1	1	1	1	1	1	1	1
Start of Green	3:56 PM	4:10 PM	4:21 PM	4:21 PM	4:23 PM	4:26 PM	4:26 PM	4:34 PM	7:21 AM	7:31 AM	8:36 AM	4:02 PM	4:10 PM	4:13 PM	4:15 PM
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)															
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	3.31	2.66	2.27	2.10	1.63	1.98	2.42	3.04	3.05	1.89	2.06	2.09	2.47	2.24	1.83
Vehicle 3	2.07	2.38	1.67	1.82	1.73	1.84	1.84	1.74	2.11	2.48	2.49	2.60	1.44	2.75	3.26
Vehicle 4	1.85	1.53	2.57	1.99	2.83	2.49	2.44	2.22	1.82	2.08	2.04	1.99	1.74	1.89	2.01
Vehicle 5	1.83	1.94	3.22	2.90	1.35	1.62	2.17	1.73	2.14	1.75	2.77	1.88	1.68	1.42	2.20
Vehicle 6	2.38	2.08	1.64	2.82	2.31	2.47	1.48	2.35	1.47	2.53	0.59	1.96	2.01	1.50	2.46
Vehicle 7	2.97	2.42	1.70	1.61	1.28	2.09	1.74	1.64	2.71	2.76	3.08	2.37	1.70	1.83	3.50
Vehicle 8	1.57	2.64	1.73	2.53	3.14	2.18	1.37	1.71	1.64	1.88	1.91	2.19	2.36	2.29	1.32
Vehicle 9	2.55	1.36			2.03	1.92	1.89		1.79	2.20	1.65	1.76	2.41	2.06	
Vehicle 10	2.21	1.67			2.02		2.19			2.70	1.64			1.97	
Vehicle 11					2.38		1.79							1.89	
Vehicle 12					1.88										

	Study Results														
No. vehicles used in cycle	10	10	8	8	12	9	11	8	9	10	10	9	9	11	8
Time of Vehicle 4 (s)	7.23	6.57	6.51	5.91	6.19	6.31	6.70	7.00	6.98	6.45	6.59	6.68	5.65	6.88	7.10
Time of Last Vehicle (s)	20.74	18.68	14.80	15.77	22.58	16.59	19.33	14.43	16.73	20.27	18.23	16.84	15.81	19.84	16.58
Avg Sat Headway (s/veh)	2.25	2.02	2.07	2.47	2.05	2.06	1.80	1.86	1.95	2.30	1.94	2.03	2.03	1.85	2.37
Unadj. Sat. Flow (veh/h/ln)	1599	1784	1737	1460	1757	1751	1995	1938	1846	1563	1856	1772	1772	1944	1519

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

WisDOT Signalized Intersection Capacity Study

Location ID: 45
Intersection Location: Cleveland Ave & National Ave
Approach Direction: SWB
Approach Configuration: 5
Population Group: > 250

Video Date: 3/17/15 - 3/19/15
County: Milwaukee
Region: SE
Municipality: West Allis
Approach AADT: 22900

Cycle #	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Lane Studied	1	1	1	1	1	1	1	1	2	2	1	2	2		
Start of Green	4:21 PM	4:23 PM	4:31 PM	4:37 PM	4:42 PM	4:47 PM	4:50 PM	4:53 PM	5:03 PM	5:07 PM	5:09 PM	5:19 PM	5:22 PM		
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)															
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	1.70	2.82	3.29	2.39	2.59	2.01	2.38	2.53	2.84	1.81	3.62	2.25	2.36		
Vehicle 3	2.86	2.92	2.65	1.63	2.24	1.98	1.92	2.18	2.57	1.36	2.14	2.30	2.74		
Vehicle 4	2.68	2.68	2.03	1.59	1.49	1.63	2.23	2.51	2.28	2.77	2.88	2.53	1.25		
Vehicle 5	2.72	2.56	1.49	2.71	1.48	2.62	2.01	3.32	2.75	2.03	1.96	2.12	2.55		
Vehicle 6	2.32	2.30	1.61	2.21	1.54	3.21	1.89	2.44	1.65	1.63	1.91	2.06	1.92		
Vehicle 7	1.70	1.53	1.40	1.11	1.76	1.40	2.61	1.72	1.37	1.90	1.38	1.51	1.38		
Vehicle 8	2.15	2.03	2.20	1.49	2.44	1.94	1.40	1.59	1.78	1.57	1.84	2.00	1.81		
Vehicle 9	1.72	1.70	1.91	1.91			2.48	2.21	1.53	1.79	1.82				
Vehicle 10	2.48	1.95	1.45	1.54			2.07	1.39		2.21	1.79				
Vehicle 11	1.49		1.11	2.46			2.51			1.69	2.30				
Vehicle 12	1.48			2.11			1.74								

	Study Results														
No. vehicles used in cycle	12	10	11	12	8	8	12	10	9	11	11	8	8		
Time of Vehicle 4 (s)	7.24	8.42	7.97	5.61	6.32	5.62	6.53	7.22	7.69	5.94	8.64	7.08	6.35		
Time of Last Vehicle (s)	23.30	20.49	19.14	21.15	13.54	14.79	23.24	19.89	16.77	18.76	21.64	14.77	14.01		
Avg Sat Headway (s/veh)	2.01	2.01	1.60	1.94	1.81	2.29	2.09	2.11	1.82	1.83	1.86	1.92	1.91		
Unadj. Sat. Flow (veh/h/ln)	1793	1790	2256	1853	1994	1570	1724	1705	1982	1966	1938	1873	1880		

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

Saturation Flow Study Summary Sheet

Intersection Information:

Intersection:	Cleveland Ave & National Ave
Major Street:	National Ave
Minor Street:	Cleveland Ave
Study Approach:	SWB
Approach Configuration:	5
Population Group:	> 250
Cycles by Date:	3/17 (1-20), 3/18 (21-40), 3/19 (41-60)

Video Date:	3/17/15 - 3/19/15
WisDOT Region:	SE
Nearest Municipality:	West Allis
County:	Milwaukee
Weather:	Clear
Pavement:	Dry
Observer:	Kevin Brink

Data Collection Summary Data:

Cycles Studied:	58
Average number of vehicles per cycle:	10
Headways Measured (queue vehicles > 4) :	336
% Heavy Vehicles (of headways measured):	0.3%
% RT Vehicles (of headways measured):	0.0%
Average Saturation Flow Headway (s):	2.00
Standard Deviation of All Headways:	0.47
Standard Deviation of Cycle Headways:	0.17
Unadjusted Median Sat Flow Rate (veh/ln/hr):	1806
Unadjusted Avg Sat Flow Rate (veh/ln/hr):	1802



WisDOT Signalized Intersection Capacity Study

Location ID: 46
Intersection Location: WIS 26 & Hartwig Blvd
Approach Direction: SB
Approach Configuration: 5
Population Group: < 25

Video Date: 3/19/15 - 3/22/15
County: Jefferson
Region: SW
Municipality: Johnson Creek
Approach AADT: 15200

Cycle #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Lane Studied	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Start of Green	7:33 AM	7:40 AM	7:48 AM	7:49 AM	3:21 PM	3:42 PM	4:30 PM	4:52 PM	5:03 PM	5:06 PM	5:12 PM	5:19 PM	5:27 PM	7:48 AM	3:15 PM
Heavy Vehicles (1-4)							1								
Heavy Vehicles (5-12)														1	
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	3.53	2.99	2.67	2.76	1.93	2.40	3.76	3.10	2.78	2.66	3.47	2.83	1.82	3.43	3.05
Vehicle 3	1.36	1.88	1.72	2.45	1.75	2.53	3.80	3.76	2.09	2.36	2.70	2.04	1.85	2.60	1.61
Vehicle 4	1.84	2.42	2.65	2.17	1.80	1.89	1.64	2.44	1.95	1.83	2.18	2.03	1.78	1.51	2.29
Vehicle 5	1.47	2.42	1.61	1.53	1.94	1.26	2.49	2.39	2.20	1.68	1.93	1.77	1.94	1.25	1.37
Vehicle 6	1.74	1.48	1.52	1.85	1.98	2.44	1.62	1.99	1.76	1.94	1.83	2.84	1.20	1.99	2.19
Vehicle 7	1.77	1.32	1.36	2.22	2.25	1.50	1.41	1.92	1.25	2.40	2.54	1.41	2.47	2.32	1.70
Vehicle 8	1.96	1.74	1.59	2.42	2.13	1.34	2.16	2.37	1.53	1.62	1.34	2.36	1.61	1.92	1.54
Vehicle 9		1.40	1.54	1.70	1.83	1.42	1.83	1.94	1.98	1.55	1.74	1.21	1.54		1.41
Vehicle 10		1.80	1.47	1.35			1.80	1.65	0.83	1.78	1.87	1.84	1.76		
Vehicle 11		1.41					1.56	1.41		1.24	1.51	1.92	1.33		
Vehicle 12		1.70					2.17			1.40	1.38		1.86		

	Study Results														
No. vehicles used in cycle	8	12	10	10	9	9	12	11	10	12	12	11	12	8	9
Time of Vehicle 4 (s)	6.73	7.29	7.04	7.38	5.48	6.82	9.20	9.30	6.82	6.85	8.35	6.90	5.45	7.54	6.95
Time of Last Vehicle (s)	13.67	20.56	16.13	18.45	15.61	14.78	24.24	22.97	16.37	20.46	22.49	20.25	19.16	15.02	15.16
Avg Sat Headway (s/veh)	1.74	1.66	1.51	1.84	2.03	1.59	1.88	1.95	1.59	1.70	1.77	1.91	1.71	1.87	1.64
Unadj. Sat. Flow (veh/h/ln)	2075	2170	2376	1951	1777	2261	1915	1843	2262	2116	2037	1888	2101	1925	2192

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

WisDOT Signalized Intersection Capacity Study

Location ID: 46
Intersection Location: WIS 26 & Hartwig Blvd
Approach Direction: SB
Approach Configuration: 5
Population Group: < 25

Video Date: 3/19/15 - 3/22/15
County: Jefferson
Region: SW
Municipality: Johnson Creek
Approach AADT: 15200

Cycle #	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Lane Studied	1	1	1	1	1	2	1	1	1	1	2	1	1	1	1
Start of Green	3:45 PM	3:46 PM	3:53 PM	4:02 PM	4:06 PM	4:07 PM	4:09 PM	4:11 PM	4:16 PM	4:24 PM	4:30 PM	4:34 PM	4:36 PM	4:39 PM	4:40 PM
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)													1		
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	2.07	2.83	2.83	2.41	3.06	2.47	3.66	1.97	3.07	3.61	1.97	3.05	2.62	2.43	3.40
Vehicle 3	2.36	2.34	2.22	2.99	2.20	2.43	3.18	2.03	2.00	1.91	2.20	1.37	2.36	1.98	2.05
Vehicle 4	2.16	2.05	2.59	1.40	2.02	1.92	2.11	2.02	2.45	1.48	1.86	2.72	1.62	2.74	2.59
Vehicle 5	1.71	1.99	1.95	2.22	2.29	2.69	2.09	1.81	1.35	2.29	2.48	2.38	1.89	1.44	1.68
Vehicle 6	1.27	3.21	1.40	2.36	1.65	1.06	2.15	1.15	2.16	2.53	2.36	2.00	1.39	1.68	2.15
Vehicle 7	2.24	1.04	1.49	1.35	1.37	1.33	1.89	1.90	2.14	1.51	2.15	2.67	1.44	1.29	1.00
Vehicle 8	2.32	2.09	1.35	1.67	2.72	1.78	1.58	1.37	1.93	1.54	1.97	1.97	1.24	1.62	1.92
Vehicle 9		2.51	1.54	1.28	1.53	1.86	1.79	2.62	1.31	1.49		1.63	1.07	0.96	1.28
Vehicle 10			1.53	1.45	1.62	1.86	1.90		1.82			1.94	2.00		1.91
Vehicle 11					1.80				0.95				2.62		1.67
Vehicle 12					2.25				2.15						

	Study Results														
No. vehicles used in cycle	8	9	10	10	12	10	10	9	12	9	8	10	11	9	11
Time of Vehicle 4 (s)	6.59	7.22	7.64	6.80	7.28	6.82	8.95	6.02	7.52	7.00	6.03	7.14	6.60	7.15	8.04
Time of Last Vehicle (s)	14.13	18.06	16.90	17.13	22.51	17.40	20.35	14.87	21.33	16.36	14.99	19.73	18.25	14.14	19.65
Avg Sat Headway (s/veh)	1.89	2.17	1.54	1.72	1.90	1.76	1.90	1.77	1.73	1.87	2.24	2.10	1.66	1.40	1.66
Unadj. Sat. Flow (veh/h/ln)	1910	1661	2333	2091	1891	2042	1895	2034	2085	1923	1607	1716	2163	2575	2171

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

WisDOT Signalized Intersection Capacity Study

Location ID: 46
Intersection Location: WIS 26 & Hartwig Blvd
Approach Direction: SB
Approach Configuration: 5
Population Group: < 25

Video Date: 3/19/15 - 3/22/15
County: Jefferson
Region: SW
Municipality: Johnson Creek
Approach AADT: 15200

Cycle #	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Lane Studied	2	1	1	1	1	1	1	1	2	2	2	1	1	1	2
Start of Green	4:45 PM	4:59 PM	5:06 PM	5:12 PM	5:15 PM	3:03 PM	3:23 PM	3:45 PM	4:01 PM	4:25 PM	4:31 PM	4:37 PM	5:01 PM	5:07 PM	5:57 PM
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)															
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	3.22	1.90	3.05	2.22	2.68	2.98	2.89	4.40	3.37	2.30	3.41	2.80	1.95	2.58	2.75
Vehicle 3	2.12	2.21	2.50	2.50	2.63	2.39	1.88	1.72	3.24	1.80	2.03	1.86	2.65	2.01	2.74
Vehicle 4	3.05	2.17	1.83	1.84	2.16	1.48	1.55	1.56	1.58	2.70	1.72	1.39	1.47	1.62	2.22
Vehicle 5	2.36	2.86	1.54	2.13	1.87	2.47	2.00	2.00	2.63	2.19	1.91	1.84	1.72	2.48	3.34
Vehicle 6	1.18	1.65	2.68	1.55	2.19	3.06	1.62	2.24	1.70	1.40	2.03	1.70	1.53	1.63	1.86
Vehicle 7	2.05	1.64	1.19	1.30	1.97	1.70	1.38	1.55	1.65	1.84	1.54	1.49	1.85	1.78	2.52
Vehicle 8	1.52	2.03	1.65	2.09	1.46	2.27	1.38	2.05	2.04	1.83	2.85	2.01	1.71	1.01	2.39
Vehicle 9	1.75	1.84	2.15		0.89	1.52	1.25	1.74		2.22	1.56	1.93		1.64	2.43
Vehicle 10	1.82	1.03			2.40	1.41					1.14			1.73	1.57
Vehicle 11	2.10	2.04			2.89									1.57	2.29
Vehicle 12		1.76													2.07

	Study Results														
No. vehicles used in cycle	11	12	9	8	11	10	9	9	8	9	10	9	8	11	12
Time of Vehicle 4 (s)	8.39	6.28	7.38	6.56	7.47	6.85	6.32	7.68	8.19	6.80	7.16	6.05	6.07	6.21	7.71
Time of Last Vehicle (s)	21.17	21.13	16.59	13.63	21.14	19.28	13.95	17.26	16.21	16.28	18.19	15.02	12.88	18.05	26.18
Avg Sat Headway (s/veh)	1.83	1.86	1.84	1.77	1.95	2.07	1.53	1.92	2.00	1.90	1.84	1.79	1.70	1.69	2.31
Unadj. Sat. Flow (veh/h/ln)	1972	1939	1954	2037	1843	1738	2359	1879	1796	1899	1958	2007	2115	2128	1559

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

WisDOT Signalized Intersection Capacity Study

Location ID: 46
Intersection Location: WIS 26 & Hartwig Blvd
Approach Direction: SB
Approach Configuration: 5
Population Group: < 25

Video Date: 3/19/15 - 3/22/15
County: Jefferson
Region: SW
Municipality: Johnson Creek
Approach AADT: 15200

Cycle #	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Lane Studied	1	2	2	2	1	2	1	1	1	2	1	2	2	1	2
Start of Green	3:25 PM	3:25 PM	3:30 PM	3:36 PM	3:57 PM	3:57 PM	4:06 PM	4:10 PM	4:21 PM	4:29 PM	5:06 PM	5:21 PM	5:42 AM	5:18 PM	5:18 PM
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)							1								
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	2.38	3.54	3.00	2.18	3.21	2.77	2.59	2.73	2.58	3.70	3.51	3.46	2.66	2.75	3.05
Vehicle 3	1.34	2.61	1.77	3.24	2.73	2.62	2.24	2.10	3.06	2.36	1.81	2.33	1.94	1.82	2.87
Vehicle 4	1.69	1.87	1.84	2.40	1.85	2.20	1.40	1.51	2.24	3.08	1.64	2.43	1.87	2.44	2.55
Vehicle 5	2.82	2.51	2.49	1.95	2.15	1.17	1.70	0.05	1.57	2.10	1.73	2.20	2.08	1.81	1.10
Vehicle 6	1.22	1.47	1.30	2.06	1.72	1.49	1.87	1.41	1.46	1.54	2.11	2.96	1.94	1.53	2.32
Vehicle 7	1.59	2.53	3.35	2.15	2.21	2.07	1.67	1.82	1.50	1.94	1.55	2.38	2.09	2.15	1.21
Vehicle 8	1.76	1.28	1.85	1.31	2.71	2.17	2.73	1.91	2.01	2.25	1.63	1.96	1.40	1.52	2.63
Vehicle 9	1.17	1.65			1.56	2.13	1.62	1.80	2.00		1.44			1.40	
Vehicle 10	1.55	2.09				1.73	2.71	1.26							
Vehicle 11	2.03							2.18							
Vehicle 12								1.52							

	Study Results														
No. vehicles used in cycle	11	10	8	8	9	10	10	12	9	8	9	8	8	9	8
Time of Vehicle 4 (s)	5.41	8.02	6.61	7.82	7.79	7.59	6.23	6.34	7.88	9.14	6.96	8.22	6.47	7.01	8.47
Time of Last Vehicle (s)	17.55	19.55	15.60	15.29	18.14	18.35	18.53	18.29	16.42	16.97	15.42	17.72	13.98	15.42	15.73
Avg Sat Headway (s/veh)	1.73	1.92	2.25	1.87	2.07	1.79	2.05	1.49	1.71	1.96	1.69	2.38	1.88	1.68	1.81
Unadj. Sat. Flow (veh/h/ln)	2076	1873	1602	1928	1739	2007	1756	2410	2108	1839	2128	1516	1917	2140	1983

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

Saturation Flow Study Summary Sheet

Intersection Information:

Intersection:	WIS 26 & Hartwig Blvd
Major Street:	WIS 26
Minor Street:	Hartwig Blvd
Study Approach:	SB
Approach Configuration:	5
Population Group:	< 25
Cycles by Date:	3/19 (1-13), 3/20 (14-35, 59-60), 3/21 (36-45), 3/22 (46-58)

Video Date:	3/19/15 - 3/22/15
WisDOT Region:	SW
Nearest Municipality:	Johnson Creek
County:	Jefferson
Weather:	Clear
Pavement:	Dry
Observer:	Kevin Brink

Data Collection Summary Data:

Cycles Studied:	60
Average number of vehicles per cycle:	10
Headways Measured (queue vehicles > 4) :	346
% Heavy Vehicles (of headways measured):	0.9%
% RT Vehicles (of headways measured):	0.0%
Average Saturation Flow Headway (s):	1.82
Standard Deviation of All Headways:	0.46
Standard Deviation of Cycle Headways:	0.20
Unadjusted Median Sat Flow Rate (veh/ln.hr):	1965
Unadjusted Avg Sat Flow Rate (veh/ln/hr):	1974



WisDOT Signalized Intersection Capacity Study

Location ID: 47
Intersection Location: WIS 26 & I-94 EB Ramps
Approach Direction: NB
Approach Configuration: 6
Population Group: < 25

Video Date: 3/19/15 - 3/21/15
County: Jefferson
Region: SW
Municipality: Johnson Creek
Approach AADT: 15200

Cycle #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Lane Studied	4	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Start of Green	8:27 AM	8:53 AM	3:24 PM	3:33 PM	3:38 PM	3:48 PM	3:50 PM	4:02 PM	4:06 PM	4:09 PM	4:11 PM	4:14 PM	4:17 PM	4:18 PM	4:20 PM
Heavy Vehicles (1-4)					1										
Heavy Vehicles (5-12)															
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	2.14	1.71	2.79	5.15	2.64	4.77	3.45	2.38	3.51	2.47	2.80	2.41	2.64	2.44	2.07
Vehicle 2	2.18	3.28	3.26	2.46	2.48	2.92	3.68	3.45	2.09	2.12	1.88	2.45	2.52	2.77	2.27
Vehicle 3	3.21	1.93	2.06	1.80	2.55	2.57	2.00	1.92	2.82	2.92	2.15	2.21	1.99	2.12	2.57
Vehicle 4	1.99	1.55	1.91	1.77	2.86	1.55	1.65	2.23	1.74	2.36	1.96	1.84	2.15	2.41	1.53
Vehicle 5	2.82	2.11	1.86	2.27	2.51	2.08	1.59	2.17	1.95	1.67	2.15	1.35	2.09	1.60	1.87
Vehicle 6	1.58	2.03	2.03	1.86	3.00	2.13	1.43	1.85	1.60	2.16	1.56	1.55	1.76	2.93	2.09
Vehicle 7	1.88	1.61	1.84	1.64	2.72	2.32	1.67	1.92	2.13	1.48	2.15	2.01	1.95	1.95	0.96
Vehicle 8	1.59	1.70	1.99	1.34	1.57	1.31	1.45	1.75	1.54	1.50	2.69	2.64	1.20	1.70	3.66
Vehicle 9	2.61	1.75		1.53	1.64		2.09	1.80		1.63			1.37		
Vehicle 10	2.72	1.83		1.56	2.14		2.11	2.06		1.17					
Vehicle 11					2.03					1.62					
Vehicle 12															

	Study Results														
No. vehicles used in cycle	10	10	8	10	11	8	10	10	8	11	8	8	9	8	8
Time of Vehicle 4 (s)	9.52	8.47	10.02	11.18	10.53	11.81	10.78	9.98	10.16	9.87	8.79	8.91	9.30	9.74	8.44
Time of Last Vehicle (s)	22.72	19.50	17.74	21.38	26.14	19.65	21.12	21.53	17.38	21.10	17.34	16.46	17.67	17.92	17.02
Avg Sat Headway (s/veh)	2.20	1.84	1.93	1.70	2.23	1.96	1.72	1.92	1.81	1.60	2.14	1.89	1.67	2.05	2.15
Unadj. Sat. Flow (veh/h/ln)	1636	1958	1865	2118	1614	1837	2089	1870	1994	2244	1684	1907	2151	1760	1678
Start up lost time	0.72	1.12	2.30	4.38	1.61	3.97	3.89	2.28	2.94	3.45	0.24	1.36	2.60	1.56	-0.14

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. The headway for vehicle 1 is the amount of time (in seconds) that passed between the light turning green and vehicle 1 crossing the stop bar into the intersection.

WisDOT Signalized Intersection Capacity Study

Location ID: 47
Intersection Location: WIS 26 & I-94 EB Ramps
Approach Direction: NB
Approach Configuration: 6
Population Group: < 25

Video Date: 3/19/15 - 3/21/15
County: Jefferson
Region: SW
Municipality: Johnson Creek
Approach AADT: 15200

Cycle #	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Lane Studied	4	3	3	3	3	3	3	3	3	3	3	4	3	4	3
Start of Green	4:23 PM	4:50 PM	4:53 PM	4:59 PM	5:06 PM	5:14 PM	5:41 PM	7:15 AM	3:05 PM	3:11 PM	3:21 PM	3:21 PM	3:24 PM	3:28 PM	3:38 PM
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)															
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	1.74	2.12	1.92	2.36	2.70	1.83	2.25	2.71	1.40	1.80	2.47	1.55	1.54	2.29	1.90
Vehicle 2	2.20	2.03	2.55	2.30	2.50	1.63	2.07	2.59	2.48	3.55	2.94	2.63	2.10	2.04	1.48
Vehicle 3	2.53	1.93	2.18	1.91	1.72	2.44	2.39	2.05	1.57	2.28	1.34	3.17	2.25	2.44	1.43
Vehicle 4	2.90	2.77	1.87	2.75	2.62	2.16	2.64	1.77	1.97	2.12	2.04	1.78	1.97	2.21	2.34
Vehicle 5	1.84	2.25	3.73	1.31	3.42	1.96	2.10	1.95	1.82	1.86	2.04	1.83	2.11	1.86	2.29
Vehicle 6	2.35	2.26	2.59	2.73	1.39	2.11	1.39	1.84	1.71	2.38	2.34	1.86	1.87	2.07	2.50
Vehicle 7	2.10	1.48	1.83	2.52	1.64	1.92	1.56	1.57	1.67	2.48	1.82	2.48	1.67	1.91	2.39
Vehicle 8	1.87	1.76	1.64	1.69	1.80	2.48	1.49	1.47	2.40	2.53	1.56	2.11	1.68	2.16	2.09
Vehicle 9	1.49	2.15	1.54			2.17		2.32			1.99		2.24	2.10	
Vehicle 10	1.69		1.39								2.17		3.08		
Vehicle 11	1.46		1.71								1.71		1.31		
Vehicle 12	2.50										1.47				

	Study Results														
No. vehicles used in cycle	12	9	11	8	8	9	8	9	8	8	12	8	11	9	8
Time of Vehicle 4 (s)	9.37	8.85	8.52	9.32	9.54	8.06	9.35	9.12	7.42	9.75	8.79	9.13	7.86	8.98	7.15
Time of Last Vehicle (s)	24.67	18.75	22.95	17.57	17.79	18.70	15.89	18.27	15.02	19.00	23.89	17.41	21.82	19.08	16.42
Avg Sat Headway (s/veh)	1.91	1.98	2.06	2.06	2.06	2.13	1.64	1.83	1.90	2.31	1.89	2.07	1.99	2.02	2.32
Unadj. Sat. Flow (veh/h/ln)	1882	1818	1746	1745	1745	1692	2202	1967	1895	1557	1907	1739	1805	1782	1553
Start up lost time	1.72	0.93	0.27	1.07	1.29	-0.45	2.81	1.80	-0.18	0.50	1.24	0.85	-0.12	0.90	-2.12

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. The headway for vehicle 1 is the amount of time (in seconds) that passed between the light turning green and vehicle 1 crossing the stop bar into the intersection.

WisDOT Signalized Intersection Capacity Study

Location ID: 47
Intersection Location: WIS 26 & I-94 EB Ramps
Approach Direction: NB
Approach Configuration: 6
Population Group: < 25

Video Date: 3/19/15 - 3/21/15
County: Jefferson
Region: SW
Municipality: Johnson Creek
Approach AADT: 15200

Cycle #	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Lane Studied	3	3	3	3	3	3	3	3	3	4	3	3	3	3	3
Start of Green	3:41 PM	3:44 PM	3:45 PM	3:48 PM	3:52 PM	3:58 PM	3:39 PM	4:00 PM	4:02 PM	4:05 PM	4:10 PM	4:14 PM	4:34 PM	4:36 PM	4:43 PM
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)	1										1				
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	2.22	1.98	2.55	3.00	1.45	2.17	1.92	1.61	1.97	1.47	1.87	2.52	2.47	2.03	1.85
Vehicle 2	3.29	2.81	2.85	3.35	1.99	2.71	1.98	4.23	3.56	2.55	2.29	3.18	2.59	2.87	3.60
Vehicle 3	2.51	2.15	2.21	2.08	1.83	2.12	2.49	1.97	2.06	3.13	2.40	2.63	1.91	1.92	2.95
Vehicle 4	2.37	2.32	1.71	1.37	1.94	3.00	2.65	1.86	2.39	2.34	2.25	2.10	2.11	2.55	1.98
Vehicle 5	2.05	1.70	1.91	2.30	2.45	1.84	2.38	1.87	4.20	1.19	1.54	1.98	2.04	2.69	1.93
Vehicle 6	1.75	2.52	2.21	1.57	1.86	2.10	2.16	2.00	1.74	1.56	2.69	2.66	1.78	1.58	1.94
Vehicle 7	1.71	1.16	2.06	1.90	2.11	2.33	2.18	2.19	1.58	1.61	1.73	2.10	1.82	1.39	1.60
Vehicle 8	1.65	2.68	1.73	1.92	2.25	1.96	1.68	1.39	1.78	2.32	1.94	1.37	2.03	1.51	1.20
Vehicle 9	2.71	2.46	1.22		1.64		3.32	1.53	2.33	2.30	1.68	2.14	1.58	2.07	1.77
Vehicle 10	1.72		1.54				2.47		1.79			1.69	1.42	2.16	
Vehicle 11	1.75						1.53					1.71			
Vehicle 12							1.37					1.46			

	Study Results														
No. vehicles used in cycle	11	9	10	8	9	8	12	9	10	9	9	12	10	10	9
Time of Vehicle 4 (s)	10.39	9.26	9.32	9.80	7.21	10.00	9.04	9.67	9.98	9.49	8.81	10.43	9.08	9.37	10.38
Time of Last Vehicle (s)	23.73	19.78	19.99	17.49	17.52	18.23	26.13	18.65	23.40	18.47	18.39	25.54	19.75	20.77	18.82
Avg Sat Headway (s/veh)	1.91	2.10	1.78	1.92	2.06	2.06	2.14	1.80	2.24	1.80	1.92	1.89	1.78	1.90	1.69
Unadj. Sat. Flow (veh/h/ln)	1889	1711	2024	1873	1746	1750	1685	2004	1610	2004	1879	1906	2024	1895	2133
Start up lost time	2.77	0.84	2.21	2.11	-1.04	1.77	0.50	2.49	1.03	2.31	1.15	2.88	1.97	1.77	3.63

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. The headway for vehicle 1 is the amount of time (in seconds) that passed between the light turning green and vehicle 1 crossing the stop bar into the intersection.

WisDOT Signalized Intersection Capacity Study

Location ID: 47
Intersection Location: WIS 26 & I-94 EB Ramps
Approach Direction: NB
Approach Configuration: 6
Population Group: < 25

Video Date: 3/19/15 - 3/21/15
County: Jefferson
Region: SW
Municipality: Johnson Creek
Approach AADT: 15200

Cycle #	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Lane Studied	3	3	3	4	3	4	3	3	3	3	3	3	3	3	
Start of Green	4:47 PM	4:49 PM	4:56 PM	4:56 PM	3:05 PM	3:13 PM	3:14 PM	3:18 PM	3:26 PM	3:31 PM	3:34 PM	3:37 PM	3:38 PM	3:50 PM	
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)				1											
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	2.07	2.09	2.15	2.25	2.09	1.89	1.71	1.79	1.89	2.23	2.02	1.65	2.09	2.23	
Vehicle 2	2.18	3.35	2.58	2.31	3.36	2.59	2.73	2.09	2.76	1.69	1.96	2.32	3.80	1.95	
Vehicle 3	3.41	2.35	2.00	2.88	2.08	2.65	3.27	2.11	1.90	2.92	2.32	1.72	3.36	3.80	
Vehicle 4	1.88	2.08	2.58	1.94	2.00	1.59	2.13	2.76	1.95	2.62	2.24	1.85	2.07	2.35	
Vehicle 5	1.55	2.59	1.55	1.69	1.73	2.18	1.84	2.01	1.89	1.87	2.55	2.31	1.80	2.42	
Vehicle 6	1.72	1.26	1.97	2.80	4.16	2.10	2.13	2.32	1.77	0.55	1.62	1.62	2.05	2.00	
Vehicle 7	2.61	2.78	1.78	1.52	2.45	1.50	1.75	1.72	1.69	2.54	1.83	1.88	1.40	2.18	
Vehicle 8	2.04	1.52	1.81	2.13	1.70	2.44	2.26	2.56	2.53	1.72	1.73	2.05	1.37	2.40	
Vehicle 9		1.46		2.19			2.31		1.40		2.09	2.02	1.93		
Vehicle 10		1.92		1.35					2.53		2.28				
Vehicle 11									1.59		2.64				
Vehicle 12									1.45		1.60				

	Study Results														
No. vehicles used in cycle	8	10	8	10	8	8	9	8	12	8	12	9	9	8	
Time of Vehicle 4 (s)	9.54	9.87	9.31	9.38	9.53	8.72	9.84	8.75	8.50	9.46	8.54	7.54	11.32	10.33	
Time of Last Vehicle (s)	17.46	21.40	16.42	21.06	19.57	16.94	20.13	17.36	23.35	16.14	24.88	17.42	19.87	19.33	
Avg Sat Headway (s/veh)	1.98	1.92	1.78	1.95	2.51	2.05	2.06	2.15	1.86	1.67	2.04	1.98	1.71	2.25	
Unadj. Sat. Flow (veh/h/ln)	1818	1873	2025	1849	1434	1752	1749	1672	1939	2156	1763	1822	2105	1600	
Start up lost time	1.62	2.18	2.20	1.59	-0.51	0.50	1.61	0.14	1.07	2.78	0.37	-0.36	4.48	1.33	

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. The headway for vehicle 1 is the amount of time (in seconds) that passed between the light turning green and vehicle 1 crossing the stop bar into the intersection.

Saturation Flow Study Summary Sheet

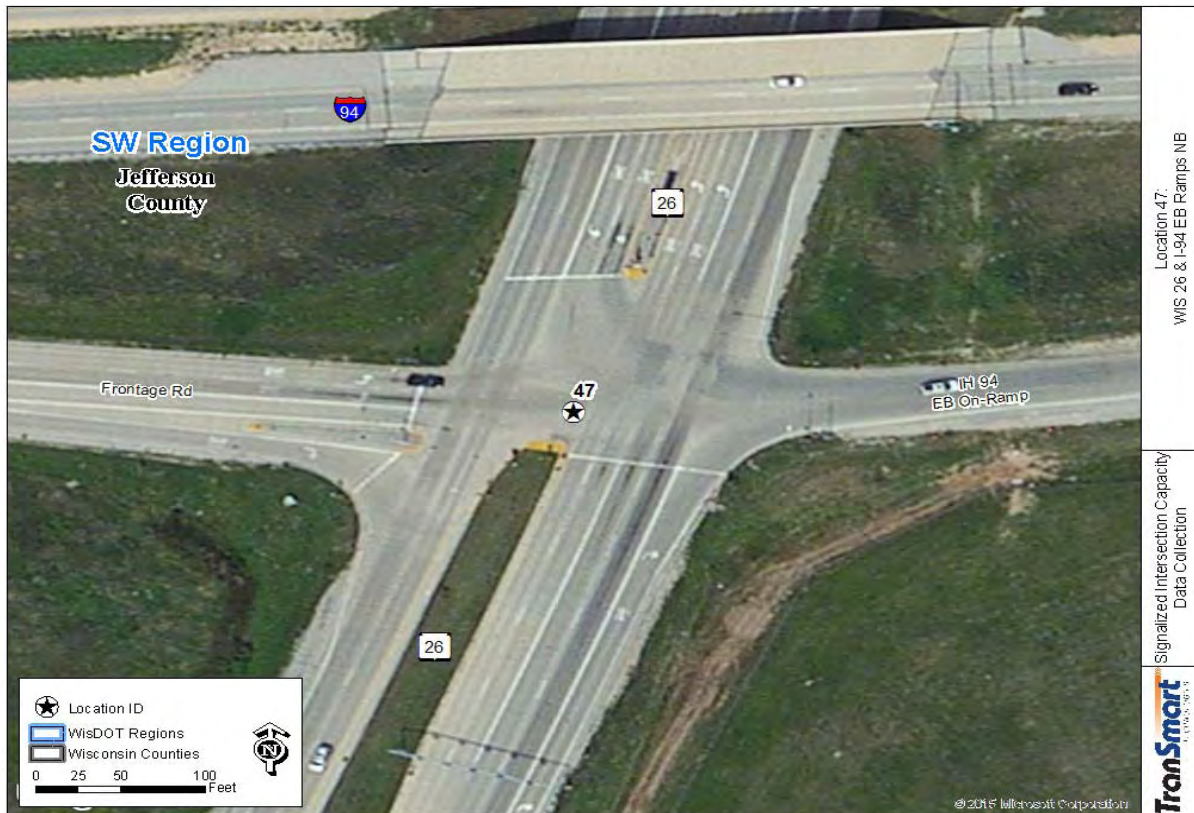
Intersection Information:

Intersection:	WIS 26 & I-94 EB Ramps
Major Street:	I-94 EB Ramps
Minor Street:	WIS 26
Study Approach:	NB
Approach Configuration:	6
Population Group:	< 25
Cycle by Date:	3/19(1-23), 3/20(24-50), 3/21(51- 60)

Date:	3/19/15 - 3/21/15
WisDOT Region:	SW
Nearest Municipality:	Johnson Creek
County:	Jefferson
Weather:	Clear
Pavement:	Dry
Observer:	Kevin Brink

Data Collection Summary Data:

Cycles Studied:	59
Average number of vehicles per cycle:	9
Headways Measured (queue vehicles > 4) :	311
% Heavy Vehicles (of headways measured):	1.0%
% RT Vehicles (of headways measured):	0.0%
Average Saturation Flow Headway (s):	1.96
Standard Deviation of All Headways:	0.47
Standard Deviation of Cycle Headways:	0.19
Unadjusted Median Sat Flow Rate (veh/ln.hr):	1849
Unadjusted Avg Sat Flow Rate (veh/ln/hr):	1840
Average Start Up Lost Time (s):	1.49



Location 47:
WIS 26 & I-94 EB Ramps NB

Signalized Intersection Capacity
Data Collection



©2015 Intellectus Corporation

WisDOT Signalized Intersection Capacity Study

Location ID: 48
Intersection Location: US 18/151/Verona Rd & County PD/McKee Rd
Approach Direction: NB
Approach Configuration: 5
Population Group: > 250

Video Date: 3/31/2015
County: Dane
Region: SW
Municipality: Fitchburg
Approach AADT: 32900

Cycle #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Lane Studied	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Start of Green	2:57 PM	3:04 PM	3:13 PM	3:15 PM	3:17 PM	3:21 PM	3:24 PM	3:36 PM	3:29 PM	3:30 PM	3:33 PM	3:36 PM	3:38 PM	3:41 PM	3:44 PM
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)															
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	2.48	3.00	3.20	2.58	4.33	2.83	2.71	3.45	2.90	3.64	4.02	1.73	3.42	4.21	2.47
Vehicle 2	2.03	3.05	3.05	1.70	2.34	2.36	1.84	2.50	2.16	1.98	3.67	2.28	1.33	3.51	2.04
Vehicle 3	1.39	1.36	2.67	2.62	1.77	1.37	1.66	2.33	1.47	1.80	2.66	1.69	3.52	2.30	2.00
Vehicle 4	2.16	2.19	2.31	2.64	3.11	1.93	2.93	1.83	1.69	1.40	2.00	2.31	2.51	1.39	2.43
Vehicle 5	3.00	1.82	1.44	2.02	2.22	1.56	4.05	2.00	2.81	2.93	1.30	1.33	1.22	2.20	1.06
Vehicle 6	2.39	1.57	1.51	2.55	1.64	1.73	2.14	2.06	1.91	1.79	1.60	2.39	2.00	1.89	0.86
Vehicle 7	1.25	0.97	1.93	1.89	1.54	3.13	1.92	3.45	1.60	1.60	1.32	1.86	1.66	1.80	3.12
Vehicle 8	2.81	2.48	1.50	1.62	1.47	1.73	1.83	1.22	1.41	1.12	1.78	1.35	2.91	1.14	1.58
Vehicle 9	1.63	1.50		1.75	1.38	1.39	1.64	2.08	1.70	1.33	2.12	2.68	1.62	1.22	1.70
Vehicle 10	1.06	1.28		2.99	1.50	1.96	1.86	2.81	1.69	1.37	1.25	3.21	1.55	2.03	1.44
Vehicle 11	1.53	2.14			1.48	1.84	1.83		2.13		2.08	1.73	1.70	1.61	2.00
Vehicle 12		1.67			2.39	1.69	1.58					2.36	2.08	1.45	2.49

	Study Results														
No. vehicles used in cycle	11	12	8	10	12	12	12	10	11	10	11	12	12	12	12
Time of Vehicle 4 (s)	8.06	9.60	11.23	9.54	11.55	8.49	9.14	10.11	8.22	8.82	12.35	8.01	10.78	11.41	8.94
Time of Last Vehicle (s)	21.73	23.03	17.61	22.36	25.17	23.52	25.99	23.73	21.47	18.96	23.80	24.92	25.52	24.75	23.19
Avg Sat Headway (s/veh)	1.95	1.68	1.60	2.14	1.70	1.88	2.11	2.27	1.89	1.69	1.64	2.11	1.84	1.67	1.78
Unadj. Sat. Flow (veh/h/ln)	1843	2144	2257	1685	2115	1916	1709	1586	1902	2130	2201	1703	1954	2159	2021
Start up lost time	0.25	2.88	4.85	0.99	4.74	0.97	0.71	1.03	0.65	2.06	5.81	-0.45	3.41	4.74	1.81

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. The headway for vehicle 1 is the amount of time (in seconds) that passed between the light turning green and vehicle 1 crossing the stop bar into the intersection.

WisDOT Signalized Intersection Capacity Study

Location ID: 48
Intersection Location: US 18/151/Verona Rd & County PD/McKee Rd
Approach Direction: NB
Approach Configuration: 5
Population Group: > 250

Video Date: 3/31/2015
County: Dane
Region: SW
Municipality: Fitchburg
Approach AADT: 32900

Cycle #	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Lane Studied	1	1	2	1	1	2	1	2	1	1	1	1	1	2	1
Start of Green	3:46 PM	3:49 PM	5:52 PM	3:54 PM	3:57 PM	4:00 PM	4:02 PM	4:02 PM	4:05 PM	4:07 PM	4:09 PM	4:12 PM	4:17 PM	4:17 PM	4:20 PM
Heavy Vehicles (1-4)			2												
Heavy Vehicles (5-12)															
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	2.98	2.30	4.18	3.42	4.64	3.18	3.97	4.59	3.69	3.22	3.50	2.58	5.25	2.78	3.83
Vehicle 2	1.45	3.84	2.57	3.12	2.86	3.17	2.97	3.27	1.60	2.00	3.78	3.14	1.69	2.67	2.80
Vehicle 3	2.07	2.74	1.75	1.97	2.14	2.51	2.47	3.65	1.96	1.74	1.50	1.66	3.02	1.87	1.95
Vehicle 4	1.65	1.15	2.62	1.69	1.14	2.43	1.62	1.64	1.55	3.01	1.58	1.84	1.09	4.99	1.94
Vehicle 5	2.22	1.55	1.72	1.17	1.08	1.90	1.74	1.03	2.77	1.89	1.86	1.80	2.05	2.67	1.53
Vehicle 6	1.56	1.92	2.20	1.59	2.19	1.03	2.20	2.61	2.92	2.52	1.21	1.28	1.65	2.05	1.53
Vehicle 7	1.39	2.14	2.00	2.88	1.33	1.61	1.52	1.30	2.19	2.00	1.36	1.84	2.04	1.65	0.77
Vehicle 8	1.50	2.49	1.89	1.50	1.57	1.86	1.98	3.34	2.12	1.62	1.16	1.92	2.12	1.63	1.51
Vehicle 9	1.55	1.44	2.35	2.36	1.72	2.64	1.74	2.58	1.52	2.30	2.66	2.67	1.27	1.87	1.16
Vehicle 10	1.44	1.57		1.33		2.10	1.42	2.36	2.59	1.39	3.01	2.22	1.78	1.89	1.05
Vehicle 11	1.58	1.83		1.48		1.43			2.06	1.67	1.85	1.99	1.84	2.15	1.60
Vehicle 12	2.26			2.50					2.08	1.63	2.46	2.45	1.16	1.68	1.18

	Study Results														
No. vehicles used in cycle	12	11	9	12	9	11	10	10	12	12	12	12	12	12	12
Time of Vehicle 4 (s)	8.15	10.03	11.12	10.20	10.78	11.29	11.03	13.15	8.80	9.97	10.36	9.22	11.05	12.31	10.52
Time of Last Vehicle (s)	21.65	22.97	21.28	25.01	18.67	23.86	21.63	26.37	27.05	24.99	25.93	25.39	24.96	27.90	20.85
Avg Sat Headway (s/veh)	1.69	1.85	2.03	1.85	1.58	1.80	1.77	2.20	2.28	1.88	1.95	2.02	1.74	1.95	1.29
Unadj. Sat. Flow (veh/h/ln)	2133	1947	1772	1945	2281	2005	2038	1634	1578	1917	1850	1781	2070	1847	2788
Start up lost time	1.40	2.64	2.99	2.80	4.47	4.11	3.96	4.34	-0.32	2.46	2.58	1.14	4.09	4.51	5.36

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. The headway for vehicle 1 is the amount of time (in seconds) that passed between the light turning green and vehicle 1 crossing the stop bar into the intersection.

WisDOT Signalized Intersection Capacity Study

Location ID: 48
Intersection Location: US 18/151/Verona Rd & County PD/McKee Rd
Approach Direction: NB
Approach Configuration: 5
Population Group: > 250

Video Date: 3/31/2015
County: Dane
Region: SW
Municipality: Fitchburg
Approach AADT: 32900

Cycle #	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Lane Studied	1	1	1	1	1	1	2	1	1	1	1	2	1	1	2
Start of Green	4:24 PM	4:27 PM	4:30 PM	4:32 PM	4:35 PM	4:41 PM	4:41 PM	4:44 PM	4:47 PM	4:52 PM	4:55 PM	4:55 PM	5:01 PM	5:04 PM	5:04 PM
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)															
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	5.50	2.98	4.25	2.58	2.60	3.03	5.14	4.01	4.07	4.88	2.27	3.84	2.33	3.62	4.41
Vehicle 2	1.33	2.24	1.75	2.49	2.18	2.46	2.66	2.72	1.93	1.45	2.06	2.00	1.42	2.72	1.69
Vehicle 3	1.69	1.78	1.94	2.90	2.04	1.72	1.78	2.28	1.89	1.58	2.84	2.00	2.38	1.24	1.28
Vehicle 4	1.55	2.33	2.05	1.50	1.42	2.15	1.37	1.60	2.05	1.45	2.10	2.61	1.34	2.78	1.29
Vehicle 5	1.45	1.42	1.54	1.63	1.62	2.47	1.24	2.98	1.34	2.79	2.00	1.67	1.52	2.79	1.46
Vehicle 6	0.97	1.75	3.38	1.22	1.89	2.64	1.58	1.14	1.66	1.43	3.46	2.38	1.51	0.07	3.33
Vehicle 7	1.41	2.98	1.42	1.64	2.78	1.31	0.57	1.58	1.53	1.53	1.75	2.39	1.86	3.28	1.48
Vehicle 8	2.39	2.64	2.30	1.22	1.74	1.94	1.54	1.62	2.16	1.97	0.96	1.65	1.66	1.54	1.48
Vehicle 9	2.00	2.64	1.40	1.64	1.28	2.66	1.78	1.27	2.14	1.16	1.40	1.47	2.14	1.71	1.60
Vehicle 10	1.20	1.47	1.49	1.81	1.72	1.90	1.64	1.13	1.33	1.42	2.91	1.81		1.08	1.00
Vehicle 11	2.47	1.88	2.37	1.58	1.08	1.77	2.56	1.20	2.50	2.02	1.83			1.87	1.15
Vehicle 12	1.98	1.58	1.57	1.28	1.45	2.05		2.37	1.48	2.06	2.08				2.19

	Study Results														
No. vehicles used in cycle	12	12	12	12	12	12	11	12	12	12	12	10	9	11	12
Time of Vehicle 4 (s)	10.07	9.33	9.99	9.47	8.24	9.36	10.95	10.61	9.94	9.36	9.27	10.45	7.47	10.36	8.67
Time of Last Vehicle (s)	23.94	25.69	25.46	21.49	21.80	26.10	21.86	23.90	24.08	23.74	25.66	21.82	16.16	22.70	22.36
Avg Sat Headway (s/veh)	1.73	2.05	1.93	1.50	1.69	2.09	1.56	1.66	1.77	1.80	2.05	1.90	1.74	1.76	1.71
Unadj. Sat. Flow (veh/h/ln)	2076	1760	1862	2396	2124	1720	2310	2167	2037	2003	1757	1900	2071	2042	2104
Start up lost time	3.14	1.15	2.26	3.46	1.46	0.99	4.72	3.97	2.87	2.17	1.07	2.87	0.52	3.31	1.82

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. The headway for vehicle 1 is the amount of time (in seconds) that passed between the light turning green and vehicle 1 crossing the stop bar into the intersection.

WisDOT Signalized Intersection Capacity Study

Location ID: 48
Intersection Location: US 18/151/Verona Rd & County PD/McKee Rd
Approach Direction: NB
Approach Configuration: 5
Population Group: > 250

Video Date: 3/31/2015
County: Dane
Region: SW
Municipality: Fitchburg
Approach AADT: 32900

Cycle #	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Lane Studied	1	1	2	1	2	1	1	1	1	1	1				
Start of Green	5:07 PM	5:10 PM	5:10 PM	5:30 PM	5:30 PM	5:16 PM	5:22 PM	5:24 PM	5:27 PM	5:30 PM	5:33 PM				
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)															
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	2.61	3.69	3.56	3.43	1.97	4.63	3.81	5.03	4.42	4.19	2.34				
Vehicle 2	1.99	1.61	2.11	1.71	2.20	1.98	1.88	1.34	2.28	2.46	3.03				
Vehicle 3	1.31	2.41	3.69	1.50	2.62	1.88	2.22	1.63	1.46	1.46	1.50				
Vehicle 4	3.09	1.54	1.62	1.66	3.03	1.73	1.30	1.90	1.60	2.17	1.22				
Vehicle 5	2.72	1.99	2.27	1.89	1.79	1.44	2.53	1.68	1.71	1.72	1.50				
Vehicle 6	1.66	1.61	1.98	2.80	1.42	1.86	2.00	1.89	2.34	1.95	1.74				
Vehicle 7	2.97	2.95	2.06	1.30	1.45	2.33	2.76	2.46	3.58	1.72	1.40				
Vehicle 8	1.53	1.95	1.52	1.57	2.39	1.45	2.27	1.85	1.37	1.05	2.47				
Vehicle 9	0.76	1.36	0.83	1.69	2.97	1.49	2.01	1.36	1.71	2.48	1.63				
Vehicle 10	2.21	2.07	1.43	1.83	2.64	2.26	2.71	1.65	1.58	1.47	1.04				
Vehicle 11	1.28	2.92	2.38	0.95	1.47	1.52	2.39	1.52	1.34	1.06	1.24				
Vehicle 12	1.40	1.97	1.16	1.17	1.53	2.01	1.89	1.25	1.61	1.13					

	Study Results														
No. vehicles used in cycle	12	12	12	12	12	12	12	12	12	12	11				
Time of Vehicle 4 (s)	9.00	9.25	10.98	8.30	9.82	10.22	9.21	9.90	9.76	10.28	8.09				
Time of Last Vehicle (s)	23.53	26.07	24.61	21.50	25.48	24.58	27.77	23.56	25.00	22.86	19.11				
Avg Sat Headway (s/veh)	1.82	2.10	1.70	1.65	1.96	1.80	2.32	1.71	1.90	1.57	1.57				
Unadj. Sat. Flow (veh/h/ln)	1982	1712	2113	2182	1839	2006	1552	2108	1890	2289	2287				
Start up lost time	1.74	0.84	4.16	1.70	1.99	3.04	-0.07	3.07	2.14	3.99	1.79				

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. The headway for vehicle 1 is the amount of time (in seconds) that passed between the light turning green and vehicle 1 crossing the stop bar into the intersection.

Saturation Flow Study Summary Sheet

Intersection Information:

Intersection:	US 18/151/Verona Rd & County PD/McKee
Major Street:	US 18/151/Verona Rd
Minor Street:	County PD/McKee Rd.
Study Approach:	NB
Approach Configuration:	5
Population Group:	> 250
Cycle by Date:	3/31/2015

Date:	3/31/2015
WisDOT Region:	SW
Nearest Municipality:	Fitchburg
County:	Dane
Weather:	Clear
Pavement:	Dry
Observer:	Lee Kutzke

Data Collection Summary Data:

Cycles Studied:	56
Average number of vehicles per cycle:	11
Headways Measured (queue vehicles > 4) :	415
% Heavy Vehicles (of headways measured):	0.0%
% RT Vehicles (of headways measured):	0.0%
Average Saturation Flow Headway (s):	1.84
Standard Deviation of All Headways:	0.56
Standard Deviation of Cycle Headways:	0.21
Unadjusted Median Sat Flow Rate (veh/ln.hr):	2004
Unadjusted Avg Sat Flow Rate (veh/ln/hr):	1959
Average Start Up Lost Time (s):	2.52



WisDOT Signalized Intersection Capacity Study

Location ID: 49
Intersection Location: Whitney Way & Odana Rd
Approach Direction: SB
Approach Configuration: 3
Population Group: > 250

Video Date: 3/31/2015
County: Dane
Region: SW
Municipality: Madison
Approach AADT: 23450

Cycle #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Lane Studied	1	1	1	1	1	1	1	1	1	1	1	1	2	1	1
Start of Green	7:09 AM	7:26 AM	7:42 AM	7:46 AM	7:55 AM	8:10 AM	8:14 AM	8:17 AM	3:04 PM	3:08 PM	3:10 PM	3:11 PM	3:11 PM	3:13 PM	3:16 PM
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)							1								
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	2.28	1.62	1.75	1.95	1.91	2.89	2.58	2.30	2.02	3.10	1.56	1.55	1.72	1.87	1.17
Vehicle 2	2.26	1.36	2.27	4.36	2.15	3.17	3.55	2.19	3.69	2.00	2.50	1.78	3.47	2.88	1.70
Vehicle 3	2.74	2.41	3.18	1.78	2.71	1.96	2.21	2.04	2.43	2.01	2.14	1.94	2.89	2.06	2.02
Vehicle 4	2.03	2.51	2.46	1.92	1.69	2.01	2.40	1.97	1.93	1.32	2.35	2.36	1.51	2.92	1.95
Vehicle 5	2.66	1.63	1.50	2.60	1.81	1.50	2.03	2.16	1.43	3.62	1.65	2.33	2.11	2.19	2.02
Vehicle 6	1.40	2.72	1.43	1.82	2.03	1.89	1.95	2.25	1.47	2.61	2.28	1.31	1.60	1.22	2.19
Vehicle 7	2.07	2.05	2.46	1.46	2.08	2.36	1.59	2.47	1.41	1.48	1.93	1.36	1.92	2.36	1.73
Vehicle 8	3.95	1.17	1.76	1.59	1.97	2.19	2.30	1.51	1.30	2.07	2.15	1.81	1.95	1.95	1.89
Vehicle 9			2.27		2.06	1.78			1.75	1.68	2.88	2.03	2.92		1.69
Vehicle 10									2.26		2.37	1.71			
Vehicle 11											1.63	1.79			
Vehicle 12												1.16			

	Study Results														
No. vehicles used in cycle	8	8	9	8	9	9	8	8	10	9	11	12	9	8	9
Time of Vehicle 4 (s)	9.31	7.90	9.66	10.01	8.46	10.03	10.74	8.50	10.07	8.43	8.55	7.63	9.59	9.73	6.84
Time of Last Vehicle (s)	19.39	15.47	19.08	17.48	18.41	19.75	18.61	16.89	19.69	19.89	23.44	21.13	20.09	17.45	16.36
Avg Sat Headway (s/veh)	2.52	1.89	1.88	1.87	1.99	1.94	1.97	2.10	1.60	2.29	2.13	1.69	2.10	1.93	1.90
Unadj. Sat. Flow (veh/h/ln)	1429	1902	1911	1928	1809	1852	1830	1716	2245	1571	1692	2133	1714	1865	1891
Start up lost time	-0.77	0.33	2.12	2.54	0.50	2.25	2.87	0.11	3.66	-0.74	0.04	0.88	1.19	2.01	-0.78

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. The headway for vehicle 1 is the amount of time (in seconds) that passed between the light turning green and vehicle 1 crossing the stop bar into the intersection.

WisDOT Signalized Intersection Capacity Study

Location ID: 49
Intersection Location: Whitney Way & Odana Rd
Approach Direction: SB
Approach Configuration: 3
Population Group: > 250

Video Date: 3/31/2015
County: Dane
Region: SW
Municipality: Madison
Approach AADT: 23450

Cycle #	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Lane Studied	2	2	1	1	2	1	1	1	1	1	2	1	1	1	1
Start of Green	3:16 PM	3:19 PM	3:19 PM	3:22 PM	3:23 PM	3:25 PM	3:28 PM	3:28 PM	3:30 PM	3:31 PM	3:31 PM	3:33 PM	3:34 PM	3:34 PM	3:36 PM
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)															
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	1.90	2.04	1.36	2.24	2.22	1.85	1.66	1.88	1.53	3.33	2.82	1.77	1.88	2.29	1.77
Vehicle 2	1.28	2.72	3.38	2.41	2.27	2.78	2.20	2.31	3.16	2.41	3.13	3.01	2.92	2.85	2.26
Vehicle 3	1.93	1.92	2.59	2.48	2.06	2.55	2.29	1.98	1.94	1.94	2.23	2.05	1.78	1.78	2.02
Vehicle 4	1.73	1.18	1.92	2.86	3.44	3.56	1.85	1.99	1.84	2.32	2.19	3.75	1.84	1.79	2.15
Vehicle 5	1.72	1.81	1.93	1.42	1.53	1.76	2.72	2.51	2.67	2.33	2.38	1.22	1.63	1.74	1.11
Vehicle 6	1.80	1.97	1.29	2.24	2.59	2.03	1.66	1.66	1.56	1.45	3.14	2.03	1.39	1.26	2.38
Vehicle 7	1.62	3.31	1.24	1.90	2.52	2.24	1.44	1.36	1.88	1.65	3.04	1.55	2.48	2.49	2.00
Vehicle 8	2.27	1.83	1.78	2.38	1.76	3.33	1.25	1.37	1.39	1.78	1.78	2.17	1.99	1.87	1.97
Vehicle 9	1.36	1.84	2.36		1.79					1.57		2.61	1.50	1.63	1.08
Vehicle 10			1.65									2.14	1.76	1.73	1.70
Vehicle 11												1.67	1.54	1.64	
Vehicle 12												1.30	1.45	1.36	

	Study Results														
No. vehicles used in cycle	9	9	10	8	9	8	8	8	8	9	8	12	12	12	10
Time of Vehicle 4 (s)	6.84	7.86	9.25	9.99	9.99	10.74	8.00	8.16	8.47	10.00	10.37	10.58	8.42	8.71	8.20
Time of Last Vehicle (s)	15.61	18.62	19.50	17.93	20.18	20.10	15.07	15.06	15.97	18.78	20.71	25.27	22.16	22.43	18.44
Avg Sat Headway (s/veh)	1.75	2.15	1.71	1.99	2.04	2.34	1.77	1.73	1.88	1.76	2.58	1.84	1.72	1.72	1.71
Unadj. Sat. Flow (veh/h/ln)	2052	1673	2107	1814	1766	1538	2037	2087	1920	2050	1393	1961	2096	2099	2109
Start up lost time	-0.18	-0.75	2.42	2.05	1.84	1.38	0.93	1.26	0.97	2.98	0.03	3.24	1.55	1.85	1.37

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. The headway for vehicle 1 is the amount of time (in seconds) that passed between the light turning green and vehicle 1 crossing the stop bar into the intersection.

WisDOT Signalized Intersection Capacity Study

Location ID: 49
Intersection Location: Whitney Way & Odana Rd
Approach Direction: SB
Approach Configuration: 3
Population Group: > 250

Video Date: 3/31/2015
County: Dane
Region: SW
Municipality: Madison
Approach AADT: 23450

Cycle #	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Lane Studied	2	1	1	1	1	1	1	1	1	2	1	1	1	1	1
Start of Green	3:36 PM	3:37 PM	3:39 PM	3:42 PM	3:44 PM	3:46 PM	3:48 PM	3:39 PM	3:51 PM	3:51 PM	5:52:00 PM	3:54 PM	3:56 PM	3:58 PM	3:39 PM
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)															
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	2.98	1.67	0.80	2.36	1.92	1.86	2.06	2.08	2.39	3.22	1.78	2.25	1.72	2.80	3.10
Vehicle 2	2.36	2.50	2.77	2.87	2.47	2.35	2.86	2.83	4.25	2.42	3.31	2.59	2.36	2.25	2.40
Vehicle 3	2.28	1.48	1.89	1.57	2.14	2.90	2.39	2.09	1.94	1.44	2.34	2.90	2.18	2.33	2.16
Vehicle 4	1.97	1.93	2.17	1.90	1.78	1.94	2.42	1.99	1.87	2.16	3.30	2.28	2.39	1.87	1.47
Vehicle 5	1.80	1.78	2.44	2.05	2.29	2.14	2.00	2.60	1.27	1.67	1.98	1.90	1.11	2.30	2.15
Vehicle 6	1.70	0.92	2.42	1.73	1.11	2.39	1.83	1.99	1.65	1.75	1.54	2.17	2.10	1.66	2.21
Vehicle 7	1.63	1.30	2.58	2.38	2.14	1.97	0.86	2.12	1.42	1.87	1.78	2.02	1.48	1.90	1.70
Vehicle 8	2.26	2.64	2.51	2.95	2.11	2.08	1.44	3.22	2.39	1.58	1.53	2.23	3.14	1.66	1.31
Vehicle 9	2.14	1.84	1.91	1.55	2.68	2.90	2.47	2.10		2.27	1.97	1.33	1.95	1.66	2.02
Vehicle 10		1.31	1.23	1.39	1.83	1.78		1.95		2.23	2.57	2.24	1.75		2.15
Vehicle 11		1.75	1.63	1.91		1.18				2.16	1.77				1.25
Vehicle 12		2.11		1.54		2.20				1.86	1.52				2.04

	Study Results														
No. vehicles used in cycle	9	12	11	12	10	12	9	10	8	12	12	10	10	9	12
Time of Vehicle 4 (s)	9.59	7.58	7.63	8.70	8.31	9.05	9.73	8.99	10.45	9.24	10.73	10.02	8.65	9.25	9.13
Time of Last Vehicle (s)	19.12	21.23	22.35	24.20	20.47	25.69	18.33	22.97	17.18	24.63	25.39	21.91	20.18	18.43	23.96
Avg Sat Headway (s/veh)	1.91	1.71	2.10	1.94	2.03	2.08	1.72	2.33	1.68	1.92	1.83	1.98	1.92	1.84	1.85
Unadj. Sat. Flow (veh/h/ln)	1889	2110	1712	1858	1776	1731	2093	1545	2140	1871	1965	1817	1873	1961	1942
Start up lost time	1.97	0.75	-0.78	0.95	0.20	0.73	2.85	-0.33	3.72	1.54	3.40	2.09	0.96	1.91	1.72

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. The headway for vehicle 1 is the amount of time (in seconds) that passed between the light turning green and vehicle 1 crossing the stop bar into the intersection.

WisDOT Signalized Intersection Capacity Study

Location ID: 49
Intersection Location: Whitney Way & Odana Rd
Approach Direction: SB
Approach Configuration: 3
Population Group: > 250

Video Date: 3/31/2015
County: Dane
Region: SW
Municipality: Madison
Approach AADT: 23450

Cycle #	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Lane Studied	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1
Start of Green	4:01 PM	4:01 PM	4:03 PM	4:04 PM	4:08 PM	4:09 PM	4:11 PM	4:13 PM	4:14 PM	4:14 PM	4:16 PM	4:19 PM	4:21 PM	4:24 PM	4:33 PM
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)															
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	1.12	1.33	1.46	1.56	2.29	2.11	2.16	1.54	2.31	2.31	1.95	2.31	1.69	1.31	2.54
Vehicle 2	1.63	2.08	3.58	2.22	1.88	2.86	3.06	2.16	3.58	3.58	2.61	2.43	2.45	1.21	3.67
Vehicle 3	2.67	2.62	2.53	2.38	3.08	3.14	1.39	1.94	1.75	1.75	1.52	2.03	2.86	2.34	2.00
Vehicle 4	1.25	1.69	2.08	1.82	1.95	2.67	2.08	1.68	2.06	2.06	1.95	1.76	3.17	2.64	2.59
Vehicle 5	1.92	1.67	1.45	2.16	1.62	1.73	2.29	2.55	2.53	2.53	1.72	1.60	1.77	2.38	1.88
Vehicle 6	1.38	2.27	1.80	1.56	2.32	2.33	0.99	1.53	2.19	2.19	2.23	2.64	3.00	1.42	2.45
Vehicle 7	1.53	2.33	1.22	1.27	2.67	1.84	1.69	2.17	1.83	1.83	1.67	1.29	1.51	1.23	1.20
Vehicle 8	2.44	2.97	1.28	3.09	2.48	1.61	1.81	2.64	1.61	1.61	2.35	2.19	1.35	2.70	1.42
Vehicle 9		2.56	1.58	1.49	1.25	2.24	1.83	1.72	1.80	1.80	1.20	2.28	2.48		1.72
Vehicle 10				1.72	1.55	1.61	2.61	1.44	1.62	1.62	2.50	1.43	1.77		2.42
Vehicle 11				1.64	1.19	1.45	1.42	1.55	2.00	2.00	2.08	2.43	2.89		1.36
Vehicle 12				2.23	1.43	1.94	1.75	1.43			2.22	1.99	1.73		1.83

	Study Results														
No. vehicles used in cycle	8	9	9	12	12	12	12	12	11	11	12	12	12	8	12
Time of Vehicle 4 (s)	6.67	7.72	9.65	7.98	9.20	10.78	8.69	7.32	9.70	9.70	8.03	8.53	10.17	7.50	10.80
Time of Last Vehicle (s)	13.94	19.52	16.98	23.14	23.71	25.53	23.08	22.35	23.28	23.28	24.00	24.38	26.67	15.23	25.08
Avg Sat Headway (s/veh)	1.82	2.36	1.47	1.89	1.81	1.84	1.80	1.88	1.94	1.94	2.00	1.98	2.06	1.93	1.78
Unadj. Sat. Flow (veh/h/ln)	1981	1525	2456	1900	1985	1953	2001	1916	1856	1856	1803	1817	1745	1863	2017
Start up lost time	-0.60	-1.72	3.79	0.40	1.95	3.40	1.50	-0.20	1.94	1.94	0.04	0.60	1.92	-0.23	3.66

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. The headway for vehicle 1 is the amount of time (in seconds) that passed between the light turning green and vehicle 1 crossing the stop bar into the intersection.

Saturation Flow Study Summary Sheet

Intersection Information:

Intersection:	Whitney Way & Odana Rd
Major Street:	Whitney Way
Minor Street:	Odana Rd
Study Approach:	SB
Approach Configuration:	3
Population Group:	> 250
Cycle by Date:	Cycles 1-60 (3/31/2015)

Date:	3/31/2015
WisDOT Region:	SW
Nearest Municipality:	Madison
County:	Dane
Weather:	Clear
Pavement:	Dry
Observer:	Lee Kutzke

Data Collection Summary Data:

Cycles Studied:	60
Average number of vehicles per cycle:	10
Headways Measured (queue vehicles > 4) :	357
% Heavy Vehicles (of headways measured):	0.3%
% RT Vehicles (of headways measured):	0.0%
Average Saturation Flow Headway (s):	1.92
Standard Deviation of All Headways:	0.48
Standard Deviation of Cycle Headways:	0.21
Unadjusted Median Sat Flow Rate (veh/ln.hr):	1890
Unadjusted Avg Sat Flow Rate (veh/ln/hr):	1877
Average Start Up Lost Time (s):	1.29



WisDOT Signalized Intersection Capacity Study

Location ID: 50
Intersection Location: Mineral Point & Gammon
Approach Direction: SB
Approach Configuration: 5
Population Group: > 250

Video Date: 3/31/15 - 4/2/15
County: Dane
Region: SW
Municipality: Madison
Approach AADT: 23100

Cycle #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Lane Studied	2	2	2	2	2	2	2	2	1	2	2	1	2	1	2
Start of Green	3:07 PM	3:50 PM	4:12 PM	4:45 PM	4:49 PM	4:50 PM	4:55 PM	4:58 PM	5:02 PM	5:02 PM	5:07 PM	5:07 PM	5:10 PM	5:12 PM	5:12 PM
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)	1														
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	4.39	2.41	2.36	1.55	3.07	2.83	1.06	2.07	2.92	1.48	3.07	1.95	1.75	1.57	2.46
Vehicle 2	3.48	2.68	2.89	1.37	2.98	1.90	1.49	2.75	3.78	2.34	1.97	1.65	2.73	2.23	2.34
Vehicle 3	2.42	2.92	1.96	3.40	3.16	2.03	2.04	1.67	2.05	2.37	1.93	2.30	1.75	1.76	1.75
Vehicle 4	1.67	2.27	1.93	1.86	1.55	2.33	1.97	5.26	1.14	2.38	1.44	1.98	3.09	2.35	2.43
Vehicle 5	1.84	2.29	1.93	1.71	2.12	2.55	2.53	1.80	2.49	2.22	1.96	1.04	2.41	2.99	1.66
Vehicle 6	1.90	1.90	2.15	2.16	1.42	1.63	1.62	1.63	1.61	1.59	0.90	1.70	1.50	1.91	1.22
Vehicle 7	1.37	1.63	1.94	1.88	0.99	1.46	2.42	1.83	0.67	1.68	2.66	1.81	2.33	1.40	1.83
Vehicle 8	1.45	1.82	1.71	2.04	1.17	1.94	2.26	2.10	1.87	3.00	0.96	2.92	2.00	1.09	1.84
Vehicle 9		1.90	2.70	1.48			1.72		1.47	1.03	1.01		1.89	2.04	1.89
Vehicle 10				1.74						1.16	1.61		2.12		1.90
Vehicle 11										1.03					
Vehicle 12										1.43					

	Study Results														
No. vehicles used in cycle	8	9	9	10	8	8	9	8	9	12	10	8	10	9	10
Time of Vehicle 4 (s)	11.96	10.28	9.14	8.18	10.76	9.09	6.56	11.75	9.89	8.57	8.41	7.88	9.32	7.91	8.98
Time of Last Vehicle (s)	18.52	19.82	19.57	19.19	16.46	16.67	17.11	19.11	18.00	21.71	17.51	15.35	21.57	17.34	19.32
Avg Sat Headway (s/veh)	1.64	1.91	2.09	1.83	1.42	1.90	2.11	1.84	1.62	1.64	1.52	1.87	2.04	1.89	1.72
Unadj. Sat. Flow (veh/h/ln)	2195	1887	1726	1962	2526	1900	1706	1957	2219	2192	2374	1928	1763	1909	2089
Start up lost time	5.40	2.65	0.80	0.84	5.06	1.51	-1.88	4.39	3.40	2.00	2.34	0.41	1.15	0.37	2.09

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. The headway for vehicle 1 is the amount of time (in seconds) that passed between the light turning green and vehicle 1 crossing the stop bar into the intersection.

WisDOT Signalized Intersection Capacity Study

Location ID: 50
Intersection Location: Mineral Point & Gammon
Approach Direction: SB
Approach Configuration: 5
Population Group: > 250

Video Date: 3/31/15 - 4/2/15
County: Dane
Region: SW
Municipality: Madison
Approach AADT: 23100

Cycle #	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Lane Studied	1	2	1	2	1	2	1	2	1	2	2	2	2	1	2
Start of Green	5:15 PM	5:15 PM	5:17 PM	5:17 PM	5:19 PM	5:19 PM	5:22 PM	5:24 PM	5:24 PM	5:29 PM	5:34 PM	5:36 PM	5:47 PM	5:01 PM	5:16 PM
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)															
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	2.20	2.13	0.86	0.98	1.98	2.40	1.96	1.87	2.03	1.28	1.40	1.16	1.85	1.47	1.75
Vehicle 2	2.36	3.27	1.54	1.34	2.06	3.51	1.24	1.97	2.27	2.58	2.58	1.89	2.26	2.39	2.68
Vehicle 3	1.42	1.74	2.06	1.19	1.62	1.67	3.59	2.49	1.44	1.87	2.81	2.51	2.31	2.28	2.49
Vehicle 4	2.55	1.73	1.29	1.93	2.75	2.60	2.41	2.35	2.56	3.14	1.39	2.33	2.66	3.05	2.05
Vehicle 5	3.94	1.59	2.90	2.16	1.78	2.20	2.21	1.26	2.34	2.42	2.35	2.70	2.29	1.40	1.56
Vehicle 6	1.65	2.87	2.25	1.65	2.22	2.79	1.32	1.81	1.33	1.83	2.43	2.02	2.56	1.27	2.94
Vehicle 7	2.03	1.47	1.32	1.41	2.70	1.50	1.42	2.11	2.67	2.27	1.28	1.97	2.57	2.41	2.19
Vehicle 8	1.36	1.37	1.76	1.32	1.37	1.13	1.70	1.31	1.80	2.11	2.28	1.67	2.58	1.64	2.06
Vehicle 9	1.55	2.65	1.20	1.17	1.20	1.57		2.08	1.98	2.07	1.74	1.72	2.32	2.37	
Vehicle 10			1.22		2.74			2.52			2.14	2.10	2.67		
Vehicle 11					2.75							2.13			
Vehicle 12															

	Study Results														
No. vehicles used in cycle	9	9	10	9	11	9	8	10	9	9	10	11	10	9	8
Time of Vehicle 4 (s)	8.53	8.87	5.75	5.44	8.41	10.18	9.20	8.68	8.30	8.87	8.18	7.89	9.08	9.19	8.97
Time of Last Vehicle (s)	19.06	18.82	16.40	13.15	23.17	19.37	15.85	19.77	18.42	19.57	20.40	22.20	24.07	18.28	17.72
Avg Sat Headway (s/veh)	2.11	1.99	1.78	1.54	2.11	1.84	1.66	1.85	2.02	2.14	2.04	2.04	2.50	1.82	2.19
Unadj. Sat. Flow (veh/h/ln)	1709	1809	2028	2335	1707	1959	2165	1948	1779	1682	1768	1761	1441	1980	1646
Start up lost time	0.11	0.91	-1.35	-0.73	-0.02	2.83	2.55	1.29	0.20	0.31	0.03	-0.29	-0.91	1.92	0.22

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. The headway for vehicle 1 is the amount of time (in seconds) that passed between the light turning green and vehicle 1 crossing the stop bar into the intersection.

WisDOT Signalized Intersection Capacity Study

Location ID: 50
Intersection Location: Mineral Point & Gammon
Approach Direction: SB
Approach Configuration: 5
Population Group: > 250

Video Date: 3/31/15 - 4/2/15
County: Dane
Region: SW
Municipality: Madison
Approach AADT: 23100

Cycle #	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Lane Studied	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1
Start of Green	5:22 PM	4:20 PM	4:39 PM	4:48 PM	4:50 PM	4:59 PM	3:48 PM	3:50 PM	5:01 PM	5:10 PM	5:16 PM	5:22 PM	5:44 PM	4:02 PM	4:30 AM
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)															
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	1.93	1.77	2.01	1.55	1.56	1.62	1.68	1.50	3.20	2.06	2.64	2.17	1.70	2.24	2.04
Vehicle 2	1.90	2.05	1.48	2.00	2.33	2.20	2.00	2.72	2.17	3.16	2.08	1.96	2.80	2.06	2.12
Vehicle 3	2.67	1.93	1.96	2.83	2.27	5.33	2.63	2.73	1.56	2.46	2.00	2.78	2.28	2.27	2.17
Vehicle 4	2.79	2.16	2.33	2.03	2.50	2.35	3.08	1.40	2.25	2.39	2.14	2.42	1.69	2.18	2.12
Vehicle 5	2.37	2.50	2.46	1.68	1.66	1.97	1.83	1.32	1.47	3.25	1.56	2.44	1.84	2.05	3.41
Vehicle 6	2.06	1.50	2.65	2.40	2.01	1.67	1.60	2.39	1.69	2.16	2.81	1.77	1.73	1.52	1.88
Vehicle 7	1.13	1.50	1.97	2.37	2.60	2.01	2.50	3.92	2.13	2.25	2.60	1.48	1.48	2.19	1.44
Vehicle 8	1.61	2.50	1.73	3.43	1.41	2.27	1.52	1.81	1.56	1.94	1.85	1.36	1.61	1.76	1.84
Vehicle 9					2.83		1.98		2.16	1.61			2.02		
Vehicle 10										1.24					
Vehicle 11															
Vehicle 12															

	Study Results														
No. vehicles used in cycle	8	8	8	8	9	8	9	8	9	10	8	8	9	8	8
Time of Vehicle 4 (s)	9.29	7.91	7.78	8.41	8.66	11.50	9.39	8.35	9.18	10.07	8.86	9.33	8.47	8.75	8.45
Time of Last Vehicle (s)	16.46	15.91	16.59	18.29	19.17	19.42	18.82	17.79	18.19	22.52	17.68	16.38	17.15	16.27	17.02
Avg Sat Headway (s/veh)	1.79	2.00	2.20	2.47	2.10	1.98	1.89	2.36	1.80	2.07	2.20	1.76	1.74	1.88	2.14
Unadj. Sat. Flow (veh/h/ln)	2008	1800	1635	1457	1713	1818	1909	1525	1998	1735	1633	2043	2074	1915	1680
Start up lost time	2.12	-0.09	-1.03	-1.47	0.25	3.58	1.85	-1.09	1.97	1.77	0.04	2.28	1.53	1.23	-0.12

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. The headway for vehicle 1 is the amount of time (in seconds) that passed between the light turning green and vehicle 1 crossing the stop bar into the intersection.

WisDOT Signalized Intersection Capacity Study

Location ID: 50
Intersection Location: Mineral Point & Gammon
Approach Direction: SB
Approach Configuration: 5
Population Group: > 250

Video Date: 3/31/15 - 4/2/15
County: Dane
Region: SW
Municipality: Madison
Approach AADT: 23100

Cycle #	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Lane Studied	2	1	1	1											
Start of Green	4:30 PM	3:03 PM	3:09 PM	3:59 PM											
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)															
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	1.69	1.60	2.03	1.68											
Vehicle 2	2.04	1.88	2.38	1.92											
Vehicle 3	2.16	2.70	2.09	2.78											
Vehicle 4	2.37	2.40	1.81	2.63											
Vehicle 5	1.60	1.78	1.69	2.03											
Vehicle 6	2.03	2.27	2.05	1.74											
Vehicle 7	1.66	2.41	2.03	1.34											
Vehicle 8	2.86	2.13	2.00	1.44											
Vehicle 9				1.87											
Vehicle 10															
Vehicle 11															
Vehicle 12															

	Study Results														
No. vehicles used in cycle	8	8	8	9											
Time of Vehicle 4 (s)	8.26	8.58	8.31	9.01											
Time of Last Vehicle (s)	16.41	17.17	16.08	17.43											
Avg Sat Headway (s/veh)	2.04	2.15	1.94	1.68											
Unadj. Sat. Flow (veh/h/ln)	1767	1676	1853	2138											
Start up lost time	0.11	-0.01	0.54	2.27											

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. The headway for vehicle 1 is the amount of time (in seconds) that passed between the light turning green and vehicle 1 crossing the stop bar into the intersection.

Saturation Flow Study Summary Sheet

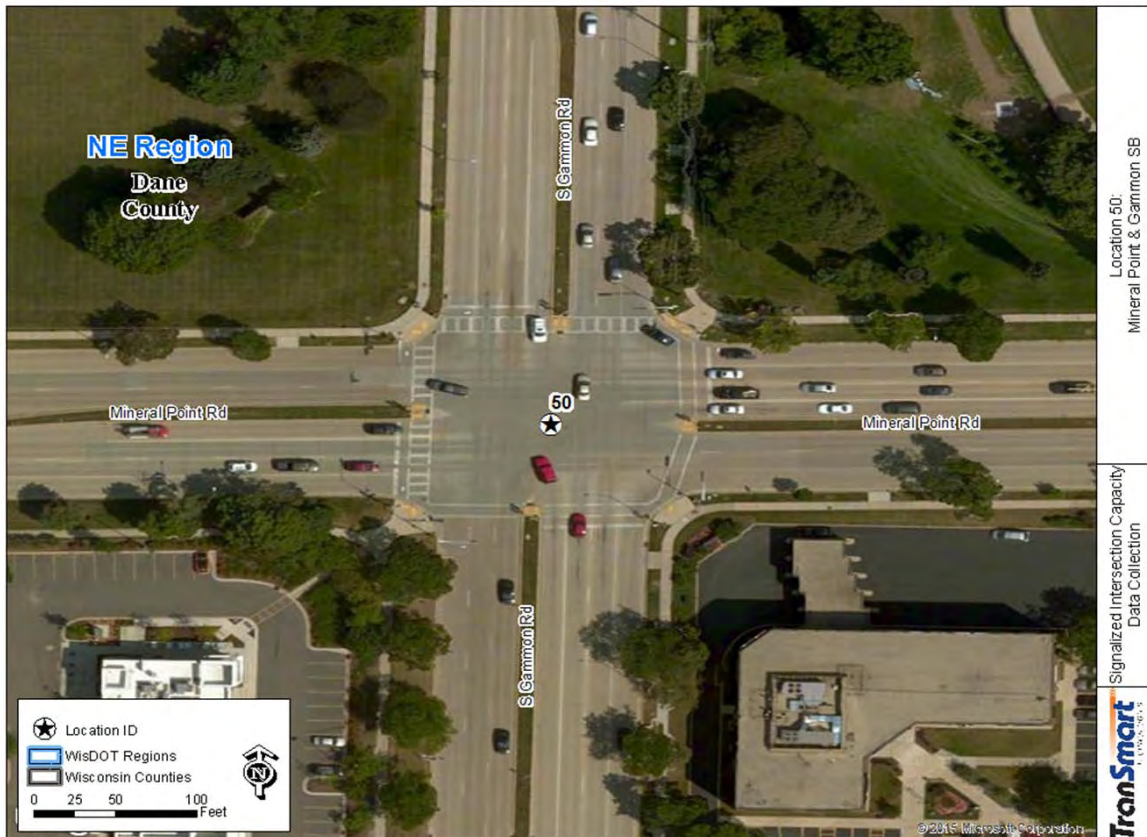
Intersection Information:

Intersection:	Mineral Point & Gammon
Major Street:	Mineral Point
Minor Street:	Gammon
Study Approach:	SB
Approach Configuration:	5
Population Group:	> 250
Cycle by Date:	3/31/2015 (1-31) , 4/1/2015(32-43), 4/2 (44-49)

Date:	3/31/15 - 4/2/15
WisDOT Region:	SW
Nearest Municipality:	Madison
County:	Dane
Weather:	Dry
Pavement:	Clear
Observer:	Vivian

Data Collection Summary Data:

Cycles Studied:	49
Average number of vehicles per cycle:	9
Headways Measured (queue vehicles > 4) :	241
% Heavy Vehicles (of headways measured):	0.4%
% RT Vehicles (of headways measured):	0.0%
Average Saturation Flow Headway (s):	1.93
Standard Deviation of All Headways:	0.53
Standard Deviation of Cycle Headways:	0.23
Unadjusted Median Sat Flow Rate (veh/ln.hr):	1887
Unadjusted Avg Sat Flow Rate (veh/ln/hr):	1864
Average Start Up Lost Time (s):	1.09



WisDOT Signalized Intersection Capacity Study

Location ID: 51
Intersection Location: US 51 & Pflaum Rd
Approach Direction: NB
Approach Configuration: 5
Population Group: > 250

Video Date: 3/30/15 - 4/3/15
County: Dane
Region: SW
Municipality: Madison
Approach AADT: 49100

Cycle #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Lane Studied	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Start of Green	2:14 PM	2:19 PM	2:40 PM	2:48 PM	2:50 PM	2:58 PM	3:02 PM	3:06 PM	3:10 PM	3:26 PM	3:30 PM	3:46 PM	3:48 PM	3:50 PM	6:31 AM
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)															
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	4.42	3.67	1.64	2.43	2.90	1.68	2.29	2.25	2.74	3.15	2.34	2.65	2.54	2.50	3.11
Vehicle 3	2.42	2.21	2.36	2.14	2.60	2.57	2.56	2.22	2.28	3.07	1.97	2.47	2.52	1.95	2.00
Vehicle 4	2.32	1.80	1.46	1.71	2.41	1.87	1.54	2.58	1.71	1.60	1.79	2.83	3.03	1.84	1.94
Vehicle 5	2.56	1.63	1.63	2.29	1.77	1.79	1.35	1.75	1.79	1.99	2.41	2.15	1.60	1.98	1.51
Vehicle 6	1.27	1.84	2.45	3.11	1.56	2.20	3.03	1.62	1.95	2.02	2.01	1.63	1.45	1.80	1.97
Vehicle 7	2.95	1.82	2.91	1.54	1.86	3.27	1.73	1.52	1.90	1.31	2.06	1.13	1.43	2.35	2.10
Vehicle 8	1.15	2.68	1.54	1.30	2.29	1.93	1.36	2.08	1.84	1.97	1.78	1.26	1.28	1.94	1.70
Vehicle 9	1.25	1.35	1.30	1.76	1.20	1.55	2.37	1.62	1.28	1.58	1.53	2.38	1.30	1.40	1.61
Vehicle 10	1.44		2.06	2.16	1.70	1.99	1.62	1.69	2.17	1.89	1.70	1.42	2.57		2.09
Vehicle 11	2.24		2.13	1.57	2.09	2.06	2.19	1.19	1.56	1.78	2.27		1.08		
Vehicle 12	1.59				1.33	2.13		1.05	1.61	2.27			2.19		

	Study Results														
No. vehicles used in cycle	12	9	11	11	12	12	11	12	12	12	11	10	12	9	10
Time of Vehicle 4 (s)	9.16	7.68	5.46	6.28	7.91	6.12	6.39	7.05	6.73	7.82	6.10	7.95	8.09	6.29	7.05
Time of Last Vehicle (s)	23.61	17.00	19.48	20.01	21.71	23.04	20.04	19.57	20.83	22.63	19.86	17.92	20.99	15.76	18.03
Avg Sat Headway (s/veh)	1.81	1.86	2.00	1.96	1.72	2.12	1.95	1.56	1.76	1.85	1.97	1.66	1.61	1.89	1.83
Unadj. Sat. Flow (veh/h/ln)	1993	1931	1797	1835	2087	1702	1846	2300	2043	1945	1831	2166	2233	1901	1967

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

WisDOT Signalized Intersection Capacity Study

Location ID: 51
Intersection Location: US 51 & Pflaum Rd
Approach Direction: NB
Approach Configuration: 5
Population Group: > 250

Video Date: 3/30/15 - 4/3/15
County: Dane
Region: SW
Municipality: Madison
Approach AADT: 49100

Cycle #	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Lane Studied	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Start of Green	6:44 AM	7:02 AM	7:04 AM	7:06 AM	7:14 AM	7:16 AM	7:23 AM	7:24 AM	3:06 PM	3:13 PM	3:30 PM	3:35 PM	4:02 PM	4:30 PM	7:00 AM
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)															
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	3.05	2.89	2.94	2.94	4.01	2.60	2.61	2.14	1.97	1.81	2.36	2.91	2.55	2.34	2.43
Vehicle 3	2.70	2.42	1.77	1.58	1.87	1.55	2.29	2.34	2.80	2.84	2.33	1.98	1.74	1.83	2.03
Vehicle 4	1.84	1.36	1.57	2.04	2.61	1.54	1.44	2.20	2.67	1.94	1.82	1.86	2.76	1.78	1.76
Vehicle 5	1.49	1.90	1.59	2.52	1.58	1.57	2.75	2.79	1.81	1.95	1.65	1.95	1.71	2.74	1.78
Vehicle 6	1.65	1.23	3.22	1.99	1.83	1.72	2.00	1.88	1.41	2.09	1.98	2.13	1.65	1.78	1.34
Vehicle 7	2.09	1.33	2.09	2.11	1.24	1.85	1.41	2.28	1.34	1.70	1.90	1.35	1.46	2.85	1.37
Vehicle 8	2.27	2.00	1.56	2.47	2.20	1.94	1.37	2.25	1.24	1.75	1.87	1.87	1.74	1.13	1.61
Vehicle 9	1.33	1.56	1.38	3.14	1.85	1.06	1.51	2.55	2.05	2.64	1.80	2.18	1.89	1.28	1.96
Vehicle 10	1.74	1.64	2.58			2.17	1.08	1.42	1.35	1.63	2.20	2.18	1.69	1.99	2.60
Vehicle 11		2.33	3.31			1.11		1.55	1.97		1.76	2.35	2.37	1.12	2.38
Vehicle 12								1.65	1.54		1.65			2.30	1.59

	Study Results														
No. vehicles used in cycle	10	11	11	9	9	11	10	12	12	10	12	11	11	12	12
Time of Vehicle 4 (s)	7.59	6.67	6.28	6.56	8.49	5.69	6.34	6.68	7.44	6.59	6.51	6.75	7.05	5.95	6.22
Time of Last Vehicle (s)	18.16	18.66	22.01	18.79	17.19	17.11	16.46	23.05	20.15	18.35	21.32	20.76	19.56	21.14	20.85
Avg Sat Headway (s/veh)	1.76	1.71	2.25	2.45	1.74	1.63	1.69	2.05	1.59	1.96	1.85	2.00	1.79	1.90	1.83
Unadj. Sat. Flow (veh/h/ln)	2044	2102	1602	1472	2069	2207	2134	1759	2266	1837	1945	1799	2014	1896	1969

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

WisDOT Signalized Intersection Capacity Study

Location ID: 51
Intersection Location: US 51 & Pflaum Rd
Approach Direction: NB
Approach Configuration: 5
Population Group: > 250

Video Date: 3/30/15 - 4/3/15
County: Dane
Region: SW
Municipality: Madison
Approach AADT: 49100

Cycle #	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Lane Studied	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Start of Green	7:08 AM	7:18 AM	7:26 AM	7:32 AM	7:42 AM	7:45 AM	7:49 AM	7:51 AM	7:54 AM	7:57 AM	8:05 AM	8:15 AM	8:16 AM	8:22 AM	8:28 AM
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)															
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	3.00	3.20	2.78	2.22	2.91	1.99	2.57	2.44	2.28	2.48	2.47	3.26	2.82	3.02	2.18
Vehicle 3	1.91	2.62	2.37	2.58	2.38	2.87	1.66	2.11	2.18	2.84	2.48	1.88	2.27	2.27	2.22
Vehicle 4	1.96	1.95	1.92	1.39	1.89	1.90	2.18	1.96	1.34	1.26	2.00	1.74	2.03	2.96	2.24
Vehicle 5	2.47	1.58	2.80	2.80	1.91	2.17	1.49	1.40	1.53	2.41	1.34	2.31	2.20	2.23	2.45
Vehicle 6	1.47	1.20	1.78	1.99	1.71	1.51	2.02	1.99	1.86	1.48	3.10	1.64	1.68	2.13	2.30
Vehicle 7	2.31	1.09	1.75	1.28	1.00	1.79	1.60	2.08	1.60	2.12	1.82	2.00	2.42	2.32	1.33
Vehicle 8	1.30	2.38	1.51	1.81	2.21	0.32	1.30	2.47	1.35	1.40	2.61	1.67	1.73	2.04	1.63
Vehicle 9	1.66	1.45	1.35	1.82	1.79	2.64	1.53	1.62	1.56	1.62	1.52	1.55	2.13	1.59	1.50
Vehicle 10	1.19	2.02	2.49	1.94	2.01	1.42	2.85		1.91	1.95	1.86		1.29	1.86	1.68
Vehicle 11		1.11	1.38	2.06	1.01	0.88	1.08		1.33	1.14	1.96		1.71	1.15	1.10
Vehicle 12		1.79		1.70	2.24	2.03	1.21		1.41	2.29	1.52			1.85	2.03

	Study Results														
No. vehicles used in cycle	10	12	11	12	12	12	12	9	12	12	12	9	11	12	12
Time of Vehicle 4 (s)	6.87	7.77	7.07	6.19	7.18	6.76	6.41	6.51	5.80	6.58	6.95	6.88	7.12	8.25	6.64
Time of Last Vehicle (s)	17.27	20.39	20.13	21.59	21.06	19.52	19.49	16.07	18.35	20.99	22.68	16.05	20.28	23.42	20.66
Avg Sat Headway (s/veh)	1.73	1.58	1.87	1.93	1.73	1.60	1.64	1.91	1.57	1.80	1.97	1.83	1.88	1.90	1.75
Unadj. Sat. Flow (veh/h/ln)	2077	2282	1930	1870	2075	2257	2202	1883	2295	1999	1831	1963	1915	1898	2054

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

WisDOT Signalized Intersection Capacity Study

Location ID: 51
Intersection Location: US 51 & Pflaum Rd
Approach Direction: NB
Approach Configuration: 5
Population Group: > 250

Video Date: 3/30/15 - 4/3/15
County: Dane
Region: SW
Municipality: Madison
Approach AADT: 49100

Cycle #	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Lane Studied	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Start of Green	7:31 AM	7:43 AM	7:44 AM	3:06 PM	3:13 PM	3:15 PM	3:17 PM	3:22 PM	3:25 PM	3:29 PM	3:30 PM	6:40 AM	6:54 AM	7:00 AM	7:06 AM
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)															
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	2.37	3.27	2.60	3.93	2.87	2.51	3.54	3.84	3.25	3.26	2.90	2.67	2.34	2.68	3.10
Vehicle 3	2.02	2.51	2.60	2.31	1.51	1.82	3.22	1.74	2.30	1.62	2.91	2.18	1.45	2.47	1.90
Vehicle 4	1.75	1.64	1.87	2.22	1.97	2.12	1.33	1.79	2.00	1.82	1.65	1.67	1.82	1.73	1.17
Vehicle 5	1.98	1.77	1.64	1.99	2.07	2.01	1.97	1.78	1.64	2.17	2.90	1.33	1.63	1.39	2.50
Vehicle 6	1.81	2.10	1.60	1.40	1.68	2.05	1.77	1.22	1.61	2.03	1.89	1.35	1.97	2.16	1.13
Vehicle 7	1.41	1.93	1.85	1.51	1.34	1.39	1.46	2.20	0.95	1.59	1.31	2.19	1.83	1.59	2.09
Vehicle 8	1.48	1.69	1.89	1.52	2.07	1.35	1.36	1.78	2.02	1.62	1.65	1.34	1.28	1.83	1.65
Vehicle 9	2.39	1.61	1.89	1.50	1.68	2.09	1.73	2.95	2.31	2.50	1.37	1.46	1.72	1.94	1.55
Vehicle 10	2.26	2.02	2.29	1.29	1.35	2.01	1.81	0.88	1.11	2.00	2.12	1.77	2.64	1.35	1.70
Vehicle 11	1.31	1.66	1.83		1.57	1.83		1.14	1.38	1.81	1.51		1.38		
Vehicle 12		1.69	2.08		1.71	2.10		1.26	1.35	1.38			1.91		

	Study Results														
No. vehicles used in cycle	11	12	12	10	12	12	10	12	12	12	11	10	12	10	10
Time of Vehicle 4 (s)	6.14	7.42	7.07	8.46	6.35	6.45	8.09	7.37	7.55	6.70	7.46	6.52	5.61	6.88	6.17
Time of Last Vehicle (s)	18.78	21.89	22.14	17.67	19.82	21.28	18.19	20.58	19.92	21.80	20.21	15.96	19.97	17.14	16.79
Avg Sat Headway (s/veh)	1.81	1.81	1.88	1.53	1.68	1.85	1.68	1.65	1.55	1.89	1.82	1.57	1.80	1.71	1.77
Unadj. Sat. Flow (veh/h/ln)	1994	1990	1911	2345	2138	1942	2139	2180	2328	1907	1976	2288	2006	2105	2034

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

Saturation Flow Study Summary Sheet

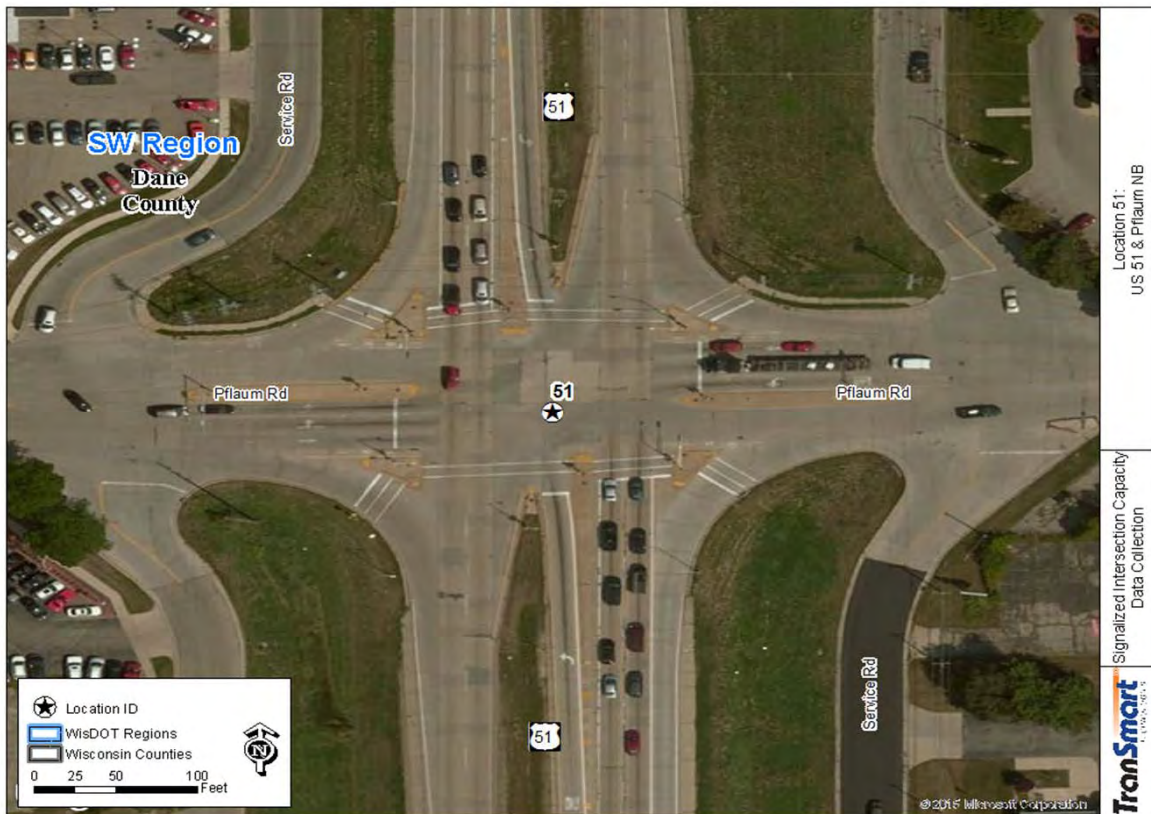
Intersection Information:

Intersection:	US 51 & Pflaum Rd
Major Street:	US 51
Minor Street:	Pflaum Rd
Study Approach:	NB
Approach Configuration:	5
Population Group:	> 250
Cycles by Date:	3/30 (1-14), 3/31 (15-29), 4/1 (30-45), 4/2 (46-56), 4/3 (57-60)

Video Date:	3/30/15 - 4/3/15
WisDOT Region:	SW
Nearest Municipality:	Madison
County:	Dane
Weather:	Clear
Pavement:	Dry
Observer:	Kevin Brink

Data Collection Summary Data:

Cycles Studied:	60
Average number of vehicles per cycle:	11
Headways Measured (queue vehicles > 4) :	427
% Heavy Vehicles (of headways measured):	0.0%
% RT Vehicles (of headways measured):	0.0%
Average Saturation Flow Headway (s):	1.80
Standard Deviation of All Headways:	0.45
Standard Deviation of Cycle Headways:	0.17
Unadjusted Median Sat Flow Rate (veh/ln.hr):	1993
Unadjusted Avg Sat Flow Rate (veh/ln/hr):	1996



WisDOT Signalized Intersection Capacity Study

Location ID: 52
Intersection Location: US 51 & EB Beltline Ramps
Approach Direction: NB
Approach Configuration: 6
Population Group: > 250

Video Date: 3/31/15 & 4/1/15
County: Dane
Region: SW
Municipality: Madison
Approach AADT: 23900

Cycle #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Lane Studied	1	1	2	1	1	1	1	1	1	1	2	1	1	1	1
Start of Green	4:09 PM	4:13 PM	4:13 PM	4:15 PM	4:17 PM	4:21 PM	4:23 PM	4:35 PM	4:37 PM	4:38 PM	4:38 PM	4:43 PM	4:47 PM	4:48 PM	4:50 PM
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)															
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	1.83	2.07	2.99	3.38	2.57	1.81	2.77	2.45	2.25	4.11	2.59	2.17	2.37	2.40	3.07
Vehicle 3	2.26	4.69	1.56	1.79	1.56	1.61	1.00	3.19	1.86	2.50	1.77	1.64	2.14	1.82	3.82
Vehicle 4	2.97	3.11	1.61	2.14	2.76	1.48	3.84	1.81	2.18	1.67	2.23	1.70	2.63	1.62	2.52
Vehicle 5	1.24	1.50	1.59	2.19	2.19	2.04	1.87	1.35	2.14	1.94	2.30	1.45	3.34	1.25	1.44
Vehicle 6	1.54	2.05	1.61	2.61	1.88	2.09	1.72	2.14	1.69	3.47	1.66	2.30	1.72	1.53	1.83
Vehicle 7	1.81	2.47	1.80	1.61	1.68	1.98	1.74	2.06	2.31	2.04	1.93	1.94	1.66	1.80	2.50
Vehicle 8	1.86	2.46	1.89	2.45	1.52	2.02	2.00	2.20	1.86	2.41	2.80	1.40	3.12	1.89	3.34
Vehicle 9			2.44	2.74	3.37	1.84	1.39	2.66	2.00	1.83	1.97	2.99	1.63		
Vehicle 10			1.75			1.69	3.09	1.44	1.44		1.53	1.73	2.01		
Vehicle 11							1.47	1.42	2.08			1.66			
Vehicle 12									1.05			1.45			

	Study Results														
No. vehicles used in cycle	8	8	10	9	9	10	11	11	12	9	10	12	10	8	8
Time of Vehicle 4 (s)	7.06	9.87	6.16	7.31	6.89	4.90	7.61	7.45	6.29	8.28	6.59	5.51	7.14	5.84	9.41
Time of Last Vehicle (s)	13.51	18.35	17.24	18.91	17.53	16.56	20.89	20.72	20.86	19.97	18.78	20.43	20.62	12.31	18.52
Avg Sat Headway (s/veh)	1.61	2.12	1.85	2.32	2.13	1.94	1.90	1.90	1.82	2.34	2.03	1.86	2.25	1.62	2.28
Unadj. Sat. Flow (veh/h/ln)	2233	1698	1949	1552	1692	1852	1898	1899	1977	1540	1772	1930	1602	2226	1581

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

WisDOT Signalized Intersection Capacity Study

Location ID: 52
Intersection Location: US 51 & EB Beltline Ramps
Approach Direction: NB
Approach Configuration: 6
Population Group: > 250

Video Date: 3/31/15 & 4/1/15
County: Dane
Region: SW
Municipality: Madison
Approach AADT: 23900

Cycle #	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Lane Studied	1	1	1	5	1	1	1	1	5	1	5	1	1	1	2
Start of Green	4:55 PM	4:57 PM	5:07 PM	5:07 PM	5:09 PM	5:09 PM	5:11 PM	5:13 PM	5:13 PM	5:19 PM	5:19 PM	5:21 PM	5:23 PM	5:29 PM	5:29 PM
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)															
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	1.69	3.50	3.41	2.54	1.69	1.74	2.42	2.21	3.22	2.47	2.92	2.17	2.31	2.94	4.71
Vehicle 3	2.44	1.21	2.11	2.64	1.90	2.28	2.53	2.17	1.86	1.64	1.50	2.75	2.28	2.53	3.19
Vehicle 4	1.83	1.48	2.14	1.58	1.89	1.67	1.94	2.01	2.14	4.79	1.16	1.90	2.33	1.45	1.77
Vehicle 5	3.73	1.55	2.31	2.77	1.97	2.35	2.58	1.78	2.16	2.17	1.31	1.90	2.42	2.44	3.03
Vehicle 6	2.05	1.64	1.89	2.01	1.71	1.43	1.48	2.44	2.30	1.99	3.06	2.29	1.77	2.00	3.05
Vehicle 7	1.28	1.98	2.93	2.92	1.37	1.64	2.58	2.95	1.72	1.59	1.52	2.89	1.97	1.76	1.84
Vehicle 8	1.50	1.46	1.21	2.11	2.05	1.82	2.90	1.83	1.67	1.63	1.86	1.71	2.19	1.75	2.17
Vehicle 9	2.08	2.06	1.68	1.93			0.99		3.47			2.21	2.50	1.63	
Vehicle 10			2.95				1.34					1.41		3.26	
Vehicle 11															
Vehicle 12															

	Study Results														
No. vehicles used in cycle	9	9	10	9	8	8	10	8	9	8	8	10	9	10	8
Time of Vehicle 4 (s)	5.96	6.19	7.66	6.76	5.48	5.69	6.89	6.39	7.22	8.90	5.58	6.82	6.92	6.92	9.67
Time of Last Vehicle (s)	16.60	14.88	20.63	18.50	12.58	12.93	18.76	15.39	18.54	16.28	13.33	19.23	17.77	19.76	19.76
Avg Sat Headway (s/veh)	2.13	1.74	2.16	2.35	1.77	1.81	1.98	2.25	2.26	1.85	1.94	2.07	2.17	2.14	2.52
Unadj. Sat. Flow (veh/h/ln)	1692	2071	1665	1533	2028	1989	1820	1600	1590	1951	1858	1741	1659	1682	1427

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

WisDOT Signalized Intersection Capacity Study

Location ID: 52
Intersection Location: US 51 & EB Beltline Ramps
Approach Direction: NB
Approach Configuration: 6
Population Group: > 250

Video Date: 3/31/15 & 4/1/15
County: Dane
Region: SW
Municipality: Madison
Approach AADT: 23900

Cycle #	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Lane Studied	1	1	1	5	2	5	4	1	1	1	1	1	1	1	2
Start of Green	5:31 PM	5:33 PM	5:35 PM	5:35 PM	5:37 PM	5:37 PM	5:39 PM	5:47 PM	5:51 PM	4:01 PM	4:06 PM	4:07 PM	4:09 PM	4:11 PM	4:11 PM
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)															
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	2.50	1.31	1.48	2.31	3.64	2.11	2.05	2.07	2.44	2.23	2.53	2.42	2.55	2.83	1.72
Vehicle 3	2.83	1.91	2.02	3.05	3.03	1.76	2.33	1.62	2.03	1.66	2.39	3.89	1.61	2.80	1.92
Vehicle 4	2.52	1.81	3.64	3.84	1.07	1.99	2.34	1.94	2.92	1.78	1.90	1.50	1.95	1.12	2.50
Vehicle 5	1.97	1.81	3.83	2.03	1.33	1.80	2.22	1.41	2.44	1.66	2.05	1.58	4.11	1.65	2.06
Vehicle 6	1.93	1.80	1.17	2.08	1.07	2.39	2.53	2.35	1.59	2.03	1.31	2.29	1.39	2.06	1.81
Vehicle 7	2.33	1.79	2.05	1.72	1.75	2.37	1.97	2.16	2.19	2.37	3.11	2.50	1.52	1.90	1.44
Vehicle 8	2.30	1.61	2.17	2.09	1.24	1.80	2.45	1.89	1.09	2.10	2.02	1.83	1.81	1.14	1.36
Vehicle 9	2.03	2.11	1.70	1.71	2.64		1.74		1.44	1.47		1.74		2.18	1.72
Vehicle 10		2.25					1.86		1.45			1.46		2.68	1.22
Vehicle 11		1.71							1.69						
Vehicle 12															

	Study Results														
No. vehicles used in cycle	9	11	9	9	9	8	10	8	11	9	8	10	8	10	10
Time of Vehicle 4 (s)	7.85	5.03	7.14	9.20	7.74	5.86	6.72	5.63	7.39	5.67	6.82	7.81	6.11	6.75	6.14
Time of Last Vehicle (s)	18.41	18.11	18.06	18.83	15.77	14.22	19.49	13.44	19.28	15.30	15.31	19.21	14.94	18.36	15.75
Avg Sat Headway (s/veh)	2.11	1.87	2.18	1.93	1.61	2.09	2.13	1.95	1.70	1.93	2.12	1.90	2.21	1.93	1.60
Unadj. Sat. Flow (veh/h/ln)	1705	1927	1648	1869	2242	1722	1691	1844	2119	1869	1696	1895	1631	1860	2248

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

WisDOT Signalized Intersection Capacity Study

Location ID: 52
Intersection Location: US 51 & EB Beltline Ramps
Approach Direction: NB
Approach Configuration: 6
Population Group: > 250

Video Date: 3/31/15 & 4/1/15
County: Dane
Region: SW
Municipality: Madison
Approach AADT: 23900

Cycle #	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Lane Studied	1	2	1	1	2	2	1								
Start of Green	4:13 PM	4:13 PM	4:15 PM	4:17 PM	4:17 PM	4:19 PM	4:21 PM								
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)			2												
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-								
Vehicle 2	1.17	1.89	3.02	1.99	1.89	4.60	1.62								
Vehicle 3	1.56	2.44	2.39	3.39	2.15	2.56	2.18								
Vehicle 4	3.85	1.64	2.30	1.06	1.99	2.01	2.82								
Vehicle 5	1.86	2.22	1.61	1.59	2.54	2.16	1.21								
Vehicle 6	1.75	1.92	3.53	1.75	1.69	1.61	1.51								
Vehicle 7	1.62	1.49	1.54	3.35	1.70	1.19	2.02								
Vehicle 8	3.06	1.28	1.58	2.12	2.08	1.61	2.39								
Vehicle 9			3.08	3.14	1.72	2.54	2.34								
Vehicle 10			1.55		1.74										
Vehicle 11															
Vehicle 12															

	Study Results														
No. vehicles used in cycle	8	8	10	9	10	9	9								
Time of Vehicle 4 (s)	6.58	5.97	7.71	6.44	6.03	9.17	6.62								
Time of Last Vehicle (s)	14.87	12.88	20.60	18.39	17.50	18.28	16.09								
Avg Sat Headway (s/veh)	2.07	1.73	2.15	2.39	1.91	1.82	1.89								
Unadj. Sat. Flow (veh/h/ln)	1737	2084	1676	1506	1883	1976	1901								

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

Saturation Flow Study Summary Sheet

Intersection Information:

Intersection:	US 51 & EB Beltline Ramps
Major Street:	US 51
Minor Street:	EB Beltline Ramps
Study Approach:	NB
Approach Configuration:	6
Population Group:	> 250
Cycles by Date:	1-39 (3/31), 40-52 (4/1)

Video Date:	3/31/15 & 4/1/15
WisDOT Region:	SW
Nearest Municipality:	Madison
County:	Dane
Weather:	Clear
Pavement:	Dry
Observer:	Lee K.

Data Collection Summary Data:

Cycles Studied:	52
Average number of vehicles per cycle:	9
Headways Measured (queue vehicles > 4) :	272
% Heavy Vehicles (of headways measured):	0.7%
% RT Vehicles (of headways measured):	0.0%
Average Saturation Flow Headway (s):	2.00
Standard Deviation of All Headways:	0.55
Standard Deviation of Cycle Headways:	0.22
Unadjusted Median Sat Flow Rate (veh/ln.hr):	1832
Unadjusted Avg Sat Flow Rate (veh/ln/hr):	1802



WisDOT Signalized Intersection Capacity Study

Location ID: 53
Intersection Location: US 51 & Broadway
Approach Direction: NB
Approach Configuration: 6
Population Group: > 250

Video Date: 3/31 & 4/1/15
County: Dane
Region: SW
Municipality: Madison
Approach AADT: 40200

Cycle #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Lane Studied	1	2	1	3	3	2	3	2	2	3	2	3	2	3	2
Start of Green	4:02 PM	4:02 PM	4:09 PM	4:15 PM	4:18 PM	4:36 PM	4:38 PM	4:38 PM	4:42 PM	4:46 PM	4:46 PM	4:48 PM	4:48 PM	4:50 PM	4:50 PM
Heavy Vehicles (1-4)				1	2										
Heavy Vehicles (5-12)								1							
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	1.70	2.42	1.58	2.11	2.11	1.29	1.87	2.43	1.74	2.31	1.52	2.05	3.37	1.86	1.28
Vehicle 3	1.86	2.06	2.67	1.54	3.49	1.50	1.56	0.92	1.48	1.14	1.48	1.42	1.59	1.19	2.23
Vehicle 4	2.23	1.52	1.11	2.33	1.98	1.43	2.27	1.56	3.03	1.25	1.31	2.14	1.16	1.87	1.86
Vehicle 5	2.18	2.06	1.94	1.78	1.92	1.61	1.95	1.20	0.88	2.57	2.41	2.06	2.27	3.35	1.61
Vehicle 6	1.68	1.76	1.28	2.89	1.38	2.45	1.77	0.96	1.82	1.37	2.02	3.86	1.57	1.39	1.69
Vehicle 7	1.49	1.99	3.04	2.41	1.67	1.31	1.80	2.72	0.52	1.34	1.57	0.94	2.15	1.42	1.56
Vehicle 8	2.87	2.04	1.77	1.70	1.30	1.61	2.14	1.90	2.67	2.30	1.33	2.12	1.00	1.50	1.47
Vehicle 9		3.05		2.27		2.03			2.24	2.63	2.61		2.71	2.22	1.59
Vehicle 10		2.53									1.44		1.66	1.87	2.44
Vehicle 11		2.89											0.58	1.91	1.41
Vehicle 12		1.22													1.83

	Study Results														
No. vehicles used in cycle	8	12	8	9	8	9	8	8	9	9	10	8	11	11	12
Time of Vehicle 4 (s)	5.79	6.00	5.36	5.98	7.58	4.22	5.70	4.91	6.25	4.70	4.31	5.61	6.12	4.92	5.37
Time of Last Vehicle (s)	14.01	23.54	13.39	17.03	13.85	13.23	13.36	11.69	14.38	14.91	15.69	14.59	18.06	18.58	18.97
Avg Sat Headway (s/veh)	2.06	2.19	2.01	2.21	1.57	1.80	1.92	1.69	1.63	2.04	1.90	2.24	1.71	1.95	1.70
Unadj. Sat. Flow (veh/h/ln)	1752	1642	1793	1629	2297	1998	1880	2124	2214	1763	1898	1604	2111	1845	2118

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection.
 There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

WisDOT Signalized Intersection Capacity Study

Location ID: 53
Intersection Location: US 51 & Broadway
Approach Direction: NB
Approach Configuration: 6
Population Group: > 250

Video Date: 3/31 & 4/1/15
County: Dane
Region: SW
Municipality: Madison
Approach AADT: 40200

Cycle #	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Lane Studied	2	2	2	3	3	2	3	2	3	3	2	3	2	2	2
Start of Green	4:52 PM	4:58 PM	5:00 PM	5:02 PM	5:02 PM	5:04 PM	5:06 PM	5:08 PM	5:10 PM	5:12 PM	5:12 PM	5:14 PM	5:14 PM	5:17 PM	5:20 PM
Heavy Vehicles (1-4)						1	1								
Heavy Vehicles (5-12)															
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	1.88	1.32	1.16	2.83	1.60	0.17	2.01	1.98	1.81	1.58	1.97	3.54	1.72	1.08	1.37
Vehicle 3	1.48	2.34	1.12	1.66	1.67	0.89	2.08	1.42	1.97	1.88	1.09	1.93	0.80	1.40	1.50
Vehicle 4	1.86	1.70	2.41	4.11	1.84	0.64	2.99	1.42	1.56	1.32	2.53	2.42	1.25	1.17	1.72
Vehicle 5	1.16	2.08	2.68	1.23	2.13	1.52	1.06	1.13	1.61	1.55	1.46	0.78	2.36	1.49	1.24
Vehicle 6	0.87	1.45	1.19	1.39	1.94	3.10	1.61	1.39	1.28	2.97	1.15	1.94	1.37	2.08	1.67
Vehicle 7	1.29	1.75	1.38	1.38	1.23	0.54	2.61	1.67	1.55	2.23	1.74	1.81	2.00	3.20	1.23
Vehicle 8	1.89	2.10	2.67	3.40	3.45	1.20	1.65	1.72	1.78	1.43	1.42	2.17	1.58	2.59	1.28
Vehicle 9	1.45	2.17	0.84	2.21	1.66	1.23		1.56			1.91		1.64	2.79	1.74
Vehicle 10	1.28	2.41	1.50		1.86	0.57							2.11	1.42	1.39
Vehicle 11		1.42	2.66		2.02	2.37							2.74	3.56	2.62
Vehicle 12		0.53			1.76									1.08	1.27

	Study Results														
No. vehicles used in cycle	10	12	11	9	12	11	8	9	8	8	9	8	11	12	12
Time of Vehicle 4 (s)	5.22	5.36	4.69	8.60	5.11	1.70	7.08	4.82	5.34	4.78	5.59	7.89	3.77	3.65	4.59
Time of Last Vehicle (s)	13.16	19.27	17.61	18.21	21.16	12.23	14.01	12.29	11.56	12.96	13.27	14.59	17.57	21.86	17.03
Avg Sat Headway (s/veh)	1.32	1.74	1.85	1.92	2.01	1.50	1.73	1.49	1.56	2.05	1.54	1.67	1.97	2.28	1.56
Unadj. Sat. Flow (veh/h/ln)	2720	2070	1950	1873	1794	2393	2078	2410	2315	1760	2344	2149	1826	1582	2315

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection.
 There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

WisDOT Signalized Intersection Capacity Study

Location ID: 53
Intersection Location: US 51 & Broadway
Approach Direction: NB
Approach Configuration: 6
Population Group: > 250

Video Date: 3/31 & 4/1/15
County: Dane
Region: SW
Municipality: Madison
Approach AADT: 40200

Cycle #	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Lane Studied	2	2	2	3	2	3	2	3	2	2	2	3	2	3	2
Start of Green	5:22 PM	5:24 PM	5:26 PM	5:28 PM	5:28 PM	5:30 PM	5:30 PM	5:34 PM	5:34 PM	5:36 PM	5:38 PM	4:42 PM	4:42 PM	4:46 PM	4:46 PM
Heavy Vehicles (1-4)			1												
Heavy Vehicles (5-12)															
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	1.31	2.64	2.17	1.85	1.68	2.15	1.66	2.84	1.00	1.66	1.53	2.25	1.64	1.63	1.35
Vehicle 3	1.49	1.46	1.55	1.36	1.28	2.40	1.45	2.44	1.03	0.84	1.85	1.85	1.30	1.25	2.06
Vehicle 4	0.72	2.03	1.48	2.07	1.50	1.52	2.88	1.95	1.62	2.19	1.47	1.83	1.46	2.77	1.70
Vehicle 5	2.81	2.23	1.58	1.04	3.17	1.40	0.90	1.05	0.85	1.26	0.93	3.35	1.82	1.60	1.85
Vehicle 6	1.81	2.59	2.84	1.56	1.78	1.83	1.38	2.55	1.17	1.52	1.27	1.50	2.22	1.77	2.20
Vehicle 7	1.82	2.10	1.64	2.58	1.99	1.49	2.54	2.67	3.28	1.27	2.00	2.36	2.12	1.41	2.31
Vehicle 8	1.95	1.76	1.57	3.79	1.67	2.59	3.04	2.95	1.15	1.65	1.83	2.46	2.53	2.53	2.69
Vehicle 9	2.14	3.35	1.20	1.89	3.36	2.22	2.75	1.56			2.03	2.85	1.88		1.64
Vehicle 10	2.42	1.58		2.35	2.25		1.67	1.30				1.42	1.86		2.61
Vehicle 11	1.99						1.67								1.95
Vehicle 12	1.40						1.56								1.30

	Study Results														
No. vehicles used in cycle	12	10	9	10	10	9	12	10	8	8	9	10	10	8	12
Time of Vehicle 4 (s)	3.52	6.13	5.20	5.28	4.46	6.07	5.99	7.23	3.65	4.69	4.85	5.93	4.40	5.65	5.11
Time of Last Vehicle (s)	19.86	19.74	14.03	18.49	18.68	15.60	21.50	19.31	10.10	10.39	12.91	19.87	16.83	12.96	21.66
Avg Sat Headway (s/veh)	2.04	2.27	1.77	2.20	2.37	1.91	1.94	2.01	1.61	1.42	1.61	2.32	2.07	1.83	2.07
Unadj. Sat. Flow (veh/h/ln)	1763	1587	2039	1635	1519	1889	1857	1788	2233	2526	2233	1549	1738	1970	1740

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection.
 There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

WisDOT Signalized Intersection Capacity Study

Location ID: 53
Intersection Location: US 51 & Broadway
Approach Direction: NB
Approach Configuration: 6
Population Group: > 250

Video Date: 3/31 & 4/1/15
County: Dane
Region: SW
Municipality: Madison
Approach AADT: 40200

Cycle #	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Lane Studied	3	2	3	2	3	2	2	1	2	2	1	1	2	1	
Start of Green	4:48 PM	4:48 PM	4:50 PM	4:50 PM	4:52 PM	4:52 PM	4:52 PM	4:16 PM	4:16 PM	4:26 PM	4:28 PM	4:38 AM	4:38 PM	4:52 PM	
Heavy Vehicles (1-4)														3	
Heavy Vehicles (5-12)															
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	2.61	1.89	1.43	3.58	2.36	1.31	1.77	2.81	2.83	1.57	2.74	2.70	3.40	3.02	
Vehicle 3	2.44	1.23	2.36	1.83	2.39	1.88	1.58	2.75	2.33	3.15	3.19	1.56	1.91	2.08	
Vehicle 4	1.85	2.24	2.90	1.95	1.70	1.79	1.81	1.94	1.83	1.92	2.42	2.32	2.19	2.74	
Vehicle 5	1.60	1.69	1.67	1.45	2.24	1.71	2.08	1.65	1.69	2.05	1.55	2.22	2.23	1.52	
Vehicle 6	3.46	1.34	1.46	1.75	1.19	2.22	0.97	1.88	1.64	2.23	1.29	1.64	1.70	1.54	
Vehicle 7	1.59	1.75	1.31	1.83	1.56	0.84	2.01	2.20	1.55	2.67	2.08	1.75	1.74	1.77	
Vehicle 8	1.72	2.83	2.41	1.31	2.72	1.34	2.32	1.62	2.60	1.54	1.81	2.30	1.51	1.75	
Vehicle 9	3.36	1.17	2.04	0.97			1.26	1.84	2.48	1.28	1.56	1.56	0.98	2.34	
Vehicle 10	2.67	0.92	1.67	1.42					1.28	1.66	1.35	2.25	2.10		
Vehicle 11	1.94	1.22		2.11					1.27				1.70		
Vehicle 12	2.20			1.72					1.11						

	Study Results														
No. vehicles used in cycle	12	11	10	12	8	8	9	9	12	10	10	10	11	9	
Time of Vehicle 4 (s)	6.90	5.36	6.69	7.36	6.45	4.98	5.16	7.50	6.99	6.64	8.35	6.58	7.50	7.84	
Time of Last Vehicle (s)	25.44	16.28	17.25	19.92	14.16	11.09	13.80	16.69	20.61	18.07	17.99	18.30	19.46	16.76	
Avg Sat Headway (s/veh)	2.32	1.56	1.76	1.57	1.93	1.53	1.73	1.84	1.70	1.91	1.61	1.95	1.71	1.78	
Unadj. Sat. Flow (veh/h/ln)	1553	2308	2045	2293	1868	2357	2083	1959	2115	1890	2241	1843	2107	2018	

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection.
 There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

Saturation Flow Study Summary Sheet

Intersection Information:

Intersection:	US 51 & Broadway
Major Street:	US 51
Minor Street:	Broadway
Study Approach:	NB
Approach Configuration:	6
Population Group:	> 250
Cycles by Date:	3/31 (1-52), 4/1 (53-59)

Video Date:	3/31 & 4/1
WisDOT Region:	SW
Nearest Municipality:	Madison
County:	Dane
Weather:	Clear
Pavement:	Dry
Observer:	Lee K.

Data Collection Summary Data:

Cycles Studied:	59
Average number of vehicles per cycle:	10
Headways Measured (queue vehicles > 4) :	342
% Heavy Vehicles (of headways measured):	0.3%
% RT Vehicles (of headways measured):	0.0%
Average Saturation Flow Headway (s):	1.86
Standard Deviation of All Headways:	0.62
Standard Deviation of Cycle Headways:	0.25
Unadjusted Median Sat Flow Rate (veh/ln/hr):	1959
Unadjusted Avg Sat Flow Rate (veh/ln/hr):	1935



WisDOT Signalized Intersection Capacity Study

Location ID: 54
Intersection Location: US 14 & Deming Way
Approach Direction: EB
Approach Configuration: 5
Population Group: > 250

Video Date: 4/7/15 - 4/10/15
County: Dane
Region: SW
Municipality: Middleton
Approach AADT: 19500

Cycle #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Lane Studied	1	2	2	2	2	1	2	2	1	1	2	2	2	1	2
Start of Green	4:08 PM	4:08 PM	4:09 PM	4:13 PM	4:21 PM	4:34 PM	4:34 PM	4:42 PM	4:55 PM	5:07 PM	5:22 PM	3:14 PM	3:54 PM	4:05 PM	4:05 PM
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)															
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	1.39	2.90	1.67	1.33	1.44	1.40	1.32	2.37	1.71	1.09	1.78	1.86	1.32	1.54	2.31
Vehicle 2	3.16	2.23	1.17	1.73	2.20	2.49	2.79	2.54	2.80	1.24	2.98	2.89	2.40	2.98	2.00
Vehicle 3	1.59	2.20	3.07	2.98	1.93	2.26	1.69	2.54	3.12	2.42	3.05	1.87	3.27	3.06	2.26
Vehicle 4	2.31	2.37	1.95	1.89	1.98	1.27	2.01	1.97	2.28	1.88	2.21	2.05	1.75	2.34	1.88
Vehicle 5	1.87	2.20	1.88	1.08	2.85	1.48	1.82	1.68	1.65	3.01	0.99	2.29	1.62	2.22	1.94
Vehicle 6	1.84	1.84	2.11	2.53	2.57	2.34	2.70	2.12	1.80	2.46	1.66	1.95	2.46	1.41	1.96
Vehicle 7	1.65	1.96	1.60	1.39	1.61	1.19	2.96	1.33	1.43	2.06	2.08	1.45	1.82	2.37	1.77
Vehicle 8	2.56	2.14	1.22	2.08	1.92	2.74	3.03	1.95	1.33	1.61	2.02	2.71	1.50	1.80	1.24
Vehicle 9		2.31	2.13	1.68	1.86		1.79	3.47	2.34	1.79	2.93	1.44	2.03	1.74	1.29
Vehicle 10		2.09	1.81	1.50			2.44	2.18	1.70	1.06	1.65	1.59			2.35
Vehicle 11		1.48	1.91	1.45			1.88	1.74		1.46	2.32	2.14			
Vehicle 12		1.48	1.32	1.75			2.13	1.84		1.80	1.66				

	Study Results														
No. vehicles used in cycle	8	12	12	12	9	8	12	12	10	12	12	11	9	9	10
Time of Vehicle 4 (s)	8.45	9.70	7.86	7.93	7.55	7.42	7.81	9.42	9.91	6.63	10.02	8.67	8.74	9.92	8.45
Time of Last Vehicle (s)	16.37	25.20	21.84	21.39	18.36	15.17	26.56	25.73	20.16	21.88	25.33	22.24	18.17	19.46	19.00
Avg Sat Headway (s/veh)	1.98	1.94	1.75	1.68	2.16	1.94	2.34	2.04	1.71	1.91	1.91	1.94	1.89	1.91	1.76
Unadj. Sat. Flow (veh/h/ln)	1818	1858	2060	2140	1665	1858	1536	1766	2107	1889	1881	1857	1909	1887	2047
Start up lost time	0.53	1.95	0.87	1.20	-1.10	-0.33	-1.57	1.27	3.08	-1.00	2.36	0.92	1.20	2.29	1.42

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. The headway for vehicle 1 is the amount of time (in seconds) that passed between the light turning green and vehicle 1 crossing the stop bar into the intersection.

WisDOT Signalized Intersection Capacity Study

Location ID: 54
Intersection Location: US 14 & Deming Way
Approach Direction: EB
Approach Configuration: 5
Population Group: > 250

Video Date: 4/7/15 - 4/10/15
County: Dane
Region: SW
Municipality: Middleton
Approach AADT: 19500

Cycle #	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Lane Studied	2	2	2	1	2	2	2	2	2	2	2	2	1	2	2
Start of Green	4:07 PM	4:11 PM	4:13 PM	4:32 PM	4:37 PM	4:39 PM	5:04 PM	5:08 PM	5:14 PM	3:10 PM	3:48 PM	4:02 PM	4:10 PM	4:10 PM	4:17 PM
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)															
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	2.66	1.79	1.43	2.18	1.28	1.62	1.86	1.55	1.54	1.44	1.83	1.58	1.78	1.85	1.95
Vehicle 2	1.52	1.74	1.70	3.21	2.20	2.46	2.16	2.62	2.44	2.21	2.40	2.42	2.15	2.31	2.17
Vehicle 3	2.29	2.25	2.84	2.35	1.57	3.22	2.84	1.83	2.14	2.11	2.80	1.77	2.07	2.56	2.44
Vehicle 4	2.75	2.35	2.33	2.00	2.34	1.83	2.29	1.86	1.93	2.35	2.10	2.35	2.59	1.80	3.17
Vehicle 5	1.25	1.90	1.76	1.67	2.59	1.39	2.81	1.54	1.82	1.67	1.71	1.45	1.74	2.47	2.30
Vehicle 6	1.75	1.84	1.50	1.96	1.43	1.82	2.21	2.39	1.60	2.00	1.07	1.63	2.36	2.08	2.18
Vehicle 7	1.48	3.21	0.92	2.17	2.38	1.71	1.42	1.50	1.75	1.99	1.89	1.85	1.19	2.08	1.75
Vehicle 8	2.35	1.48	3.10	1.69	2.94	2.20	1.25	1.76	1.28	1.87	1.74	1.30	2.70	1.38	1.67
Vehicle 9	2.49	1.59	1.24	1.73	1.64	1.63	1.89	0.87	2.29		1.40	1.93	1.01	1.70	1.83
Vehicle 10	1.81	1.42	1.50		1.40	1.73		1.91	1.28		1.28		1.21		1.45
Vehicle 11	1.83	1.48	1.23		1.30	1.57		2.12					2.06		
Vehicle 12	1.62	1.26	2.16			1.88		2.05					2.01		

	Study Results														
No. vehicles used in cycle	12	12	12	9	11	12	9	12	10	8	10	9	12	9	10
Time of Vehicle 4 (s)	9.22	8.13	8.30	9.74	7.39	9.13	9.15	7.86	8.05	8.11	9.13	8.12	8.59	8.52	9.73
Time of Last Vehicle (s)	23.80	22.31	21.71	18.96	21.07	23.06	18.73	22.00	18.07	15.64	18.22	16.28	22.87	18.23	20.91
Avg Sat Headway (s/veh)	1.82	1.77	1.68	1.84	1.95	1.74	1.92	1.77	1.67	1.88	1.51	1.63	1.78	1.94	1.86
Unadj. Sat. Flow (veh/h/ln)	1975	2031	2148	1952	1842	2067	1879	2037	2156	1912	2376	2206	2017	1854	1932
Start up lost time	1.93	1.04	1.60	2.36	-0.43	2.16	1.49	0.79	1.37	0.58	3.07	1.59	1.45	0.75	2.28

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. The headway for vehicle 1 is the amount of time (in seconds) that passed between the light turning green and vehicle 1 crossing the stop bar into the intersection.

WisDOT Signalized Intersection Capacity Study

Location ID: 54
Intersection Location: US 14 & Deming Way
Approach Direction: EB
Approach Configuration: 5
Population Group: > 250

Video Date: 4/7/15 - 4/10/15
County: Dane
Region: SW
Municipality: Middleton
Approach AADT: 19500

Cycle #	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Lane Studied	2	1	1	2	1	2	2	2	2	2	2	1	2	1	1
Start of Green	4:19 PM	4:28 PM	4:42 PM	5:06 PM	5:12 PM	5:16 PM	5:19 PM	5:22 PM	6:57 AM	7:02 AM	7:21 AM	7:24 AM	7:24 AM	7:35 AM	7:38 AM
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)															
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	2.23	1.66	1.98	2.04	1.58	2.21	1.63	2.02	2.28	2.17	1.90	1.71	1.50	1.72	1.97
Vehicle 2	1.92	2.36	2.58	2.29	3.17	1.67	2.85	2.28	2.47	1.98	2.02	3.13	2.65	3.17	2.03
Vehicle 3	2.44	2.62	2.67	1.91	3.08	2.46	2.42	1.23	2.33	2.13	2.34	2.97	2.41	2.73	2.24
Vehicle 4	2.65	1.63	1.88	2.93	2.79	2.50	2.03	1.56	2.16	1.49	1.46	1.95	2.05	1.99	1.68
Vehicle 5	1.96	2.17	1.78	1.36	2.11	2.18	2.11	1.64	2.86	1.62	1.71	1.74	1.52	2.75	1.81
Vehicle 6	2.02	2.28	1.39	1.79	2.12	1.57	2.29	1.67	1.69	2.04	1.73	1.80	1.96	1.33	1.64
Vehicle 7	3.06	2.03	1.43	0.96	1.06	1.65	1.46	1.62	2.06	1.51	1.37	1.26	2.72	2.62	2.71
Vehicle 8	2.79	1.47	1.48	1.28	2.79	2.17	2.03	1.88	1.91	1.87	1.71	2.12	2.41	1.48	1.25
Vehicle 9	1.60	2.43	3.79		1.39	1.52	2.07	1.48	1.90	1.30	1.61	1.58	2.99	2.36	1.79
Vehicle 10	1.44		1.31		2.45	2.04		1.54	2.06			1.57	1.33	1.34	2.15
Vehicle 11			2.15					2.24	2.56			1.34		1.25	1.89
Vehicle 12			1.57					0.95	1.58			1.59			1.28

	Study Results														
No. vehicles used in cycle	10	9	12	8	10	10	9	12	12	9	9	12	10	11	12
Time of Vehicle 4 (s)	9.24	8.27	9.11	9.17	10.62	8.84	8.93	7.09	9.24	7.77	7.72	9.76	8.61	9.61	7.92
Time of Last Vehicle (s)	22.11	18.65	24.01	14.56	22.54	19.97	18.89	20.11	25.86	16.11	15.85	22.76	21.54	22.74	22.44
Avg Sat Headway (s/veh)	2.15	2.08	1.86	1.35	1.99	1.85	1.99	1.63	2.08	1.67	1.63	1.63	2.15	1.88	1.82
Unadj. Sat. Flow (veh/h/ln)	1678	1734	1933	2672	1812	1941	1807	2212	1733	2158	2214	2215	1671	1919	1983
Start up lost time	0.66	-0.03	1.66	3.78	2.67	1.42	0.96	0.58	0.93	1.10	1.22	3.26	-0.01	2.11	0.66

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. The headway for vehicle 1 is the amount of time (in seconds) that passed between the light turning green and vehicle 1 crossing the stop bar into the intersection.

WisDOT Signalized Intersection Capacity Study

Location ID: 54
Intersection Location: US 14 & Deming Way
Approach Direction: EB
Approach Configuration: 5
Population Group: > 250

Video Date: 4/7/15 - 4/10/15
County: Dane
Region: SW
Municipality: Middleton
Approach AADT: 19500

Cycle #	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Lane Studied	1	1	2	1	1	1	1	2	1	2	2	1	2		
Start of Green	7:40 AM	7:42 AM	7:43 AM	7:57 AM	8:01 AM	8:03 AM	8:11 AM	8:12 AM	8:16 AM	5:33 PM	5:17 PM	7:14 AM	7:25 AM		
Heavy Vehicles (1-4)								1							
Heavy Vehicles (5-12)															
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	1.59	1.72	1.80	2.15	1.82	2.01	2.49	1.90	1.90	1.95	1.51	1.75	1.15		
Vehicle 2	2.48	3.33	1.59	3.99	2.38	2.52	2.56	3.38	1.37	3.05	1.52	3.26	3.29		
Vehicle 3	2.37	3.50	1.89	2.29	2.07	2.67	2.37	2.25	2.86	2.10	2.03	1.62	1.61		
Vehicle 4	1.67	2.30	2.04	2.64	2.88	2.26	2.08	3.35	1.88	3.43	1.75	2.28	2.01		
Vehicle 5	1.52	1.92	2.26	1.70	1.33	2.17	2.38	1.93	1.92	1.91	2.02	1.89	1.87		
Vehicle 6	2.94	1.48	1.43	1.98	2.90	1.63	2.51	2.60	1.21	0.70	2.16	1.58	1.84		
Vehicle 7	1.75	1.44	1.93	2.71	2.33	2.09	1.86	1.59	3.93	2.51	1.79	1.97	1.90		
Vehicle 8	2.77	2.04	1.70	1.91	2.25	1.58	1.28	2.21	1.77	1.81	1.94	1.04	2.33		
Vehicle 9		1.66	1.42	1.51	1.03	2.23	2.60	1.63	1.21			1.84	1.89		
Vehicle 10		1.74		1.40	1.37	1.10	1.29	1.71	1.55			1.61	1.78		
Vehicle 11				2.72	1.40		0.77	1.70	2.19			1.84			
Vehicle 12					1.58			2.19	1.39			1.72			

	Study Results														
No. vehicles used in cycle	8	10	9	11	12	10	11	12	12	8	8	12	10		
Time of Vehicle 4 (s)	8.11	10.85	7.32	11.07	9.15	9.46	9.50	10.88	8.01	10.53	6.81	8.91	8.06		
Time of Last Vehicle (s)	17.09	21.13	16.06	25.00	23.34	20.26	22.19	26.44	23.18	17.46	14.72	22.40	19.67		
Avg Sat Headway (s/veh)	2.25	1.71	1.75	1.99	1.77	1.80	1.81	1.95	1.90	1.73	1.98	1.69	1.94		
Unadj. Sat. Flow (veh/h/ln)	1604	2101	2059	1809	2030	2000	1986	1851	1898	2078	1820	2135	1860		
Start up lost time	-0.87	4.00	0.33	3.11	2.05	2.26	2.25	3.10	0.42	3.60	-1.10	2.16	0.32		

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. The headway for vehicle 1 is the amount of time (in seconds) that passed between the light turning green and vehicle 1 crossing the stop bar into the intersection.

Saturation Flow Study Summary Sheet

Intersection Information:

Intersection:	US 14 & Deming Way
Major Street:	US 14
Minor Street:	Deming Way
Study Approach:	EB
Approach Configuration:	5
Population Group:	> 250
Cycle by Date:	4/7 (1-12, 57-58), 4/8 (13-25, 59-60), 4/9 (26-39), 4/10 (40-56)

Date:	4/7/15 - 4/10/15
WisDOT Region:	SW
Nearest Municipality:	Middleton
County:	Dane
Weather:	Clear
Pavement:	Dry
Observer:	Kevin Brink

Data Collection Summary Data:

Cycles Studied:	58
Average number of vehicles per cycle:	10
Headways Measured (queue vehicles > 4) :	371
% Heavy Vehicles (of headways measured):	0.0%
% RT Vehicles (of headways measured):	0.0%
Average Saturation Flow Headway (s):	1.85
Standard Deviation of All Headways:	0.49
Standard Deviation of Cycle Headways:	0.18
Unadjusted Median Sat Flow Rate (veh/ln.hr):	1932
Unadjusted Avg Sat Flow Rate (veh/ln/hr):	1942
Average Start Up Lost Time (s):	1.34



Location 54:
US 14 & Deming Way EB

Signalized Intersection Capacity
Data Collection

TransSmart
by WISCONSIN

© 2015 WIPressit Corporation

WisDOT Signalized Intersection Capacity Study

Location ID: 55
Intersection Location: WIS 19/113 & Raemisch Rd / Schumacher Rd
Approach Direction: WB
Approach Configuration: 4
Population Group: > 250

Video Date: 4/7/15-4/10/15
County: Dane
Region: SW
Municipality: Waunakee
Approach AADT: 18000

Cycle #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Lane Studied	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Start of Green	3:49 PM	4:14 PM	4:18 PM	4:20 PM	4:25 PM	4:44 PM	4:47 PM	4:48 PM	4:55 PM	4:58 PM	5:01 PM	5:04 PM	5:08 AM	5:16 PM	5:17 PM
Heavy Vehicles (1-4)							1								
Heavy Vehicles (5-12)															
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	3.36	3.69	2.69	2.20	2.58	2.98	4.76	2.80	2.71	3.93	2.54	2.44	3.72	3.17	2.20
Vehicle 3	2.17	2.73	1.83	2.36	2.03	2.35	2.06	2.18	2.50	1.97	1.53	1.38	1.47	1.46	1.92
Vehicle 4	1.94	1.71	2.31	2.13	1.54	1.79	1.85	1.35	1.87	2.00	2.27	1.60	2.23	2.96	0.37
Vehicle 5	3.13	1.38	1.81	2.41	1.64	1.89	2.02	2.52	1.38	2.23	2.40	1.77	1.25	2.30	3.22
Vehicle 6	1.41	1.65	1.83	2.55	1.75	1.91	2.01	1.97	1.43	1.33	1.67	1.95	1.71	1.37	2.71
Vehicle 7	1.29	1.90	1.33	1.94	1.90	1.75	2.90	1.79	1.38	2.61	1.52	1.53	1.41	1.51	1.24
Vehicle 8	1.18	2.09	1.83	3.97	1.80	1.74	1.27	2.58	1.53	2.47	1.47	1.74	1.62	2.18	1.20
Vehicle 9	1.30	1.32	1.36	1.88		1.56	1.93	1.84	2.20	2.26	2.07	1.92	2.16	1.75	1.57
Vehicle 10	1.06	2.29				2.04	1.36	2.12		1.23	2.48	3.15	1.74		1.82
Vehicle 11	1.83	2.09					2.26	1.27			1.70	1.95			1.87
Vehicle 12		1.76					2.03	1.19			2.15	2.42			1.12

	Study Results														
No. vehicles used in cycle	11	12	9	9	8	10	12	12	9	10	12	12	10	9	12
Time of Vehicle 4 (s)	7.47	8.13	6.83	6.69	6.15	7.12	8.67	6.33	7.08	7.90	6.34	5.42	7.42	7.59	4.49
Time of Last Vehicle (s)	18.67	22.61	14.99	19.44	13.24	18.01	24.45	21.61	15.00	20.03	21.80	21.85	17.31	16.70	19.24
Avg Sat Headway (s/veh)	1.60	1.81	1.63	2.55	1.77	1.81	1.97	1.91	1.58	2.02	1.93	2.05	1.65	1.82	1.84
Unadj. Sat. Flow (veh/h/ln)	2250	1989	2206	1412	2031	1983	1825	1885	2273	1781	1863	1753	2184	1976	1953

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

WisDOT Signalized Intersection Capacity Study

Location ID: 55
Intersection Location: WIS 19/113 & Raemisch Rd / Schumacher Rd
Approach Direction: WB
Approach Configuration: 4
Population Group: > 250

Video Date: 4/7/15-4/10/15
County: Dane
Region: SW
Municipality: Waunakee
Approach AADT: 18000

Cycle #	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Lane Studied	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Start of Green	5:21 PM	5:24 PM	3:39 PM	3:50 PM	3:51 PM	4:04 PM	4:10 PM	4:23 PM	4:36 PM	4:40 PM	4:49 PM	4:50 PM	4:52 PM	4:57 PM	4:59 PM
Heavy Vehicles (1-4)						1									
Heavy Vehicles (5-12)															
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	1.58	3.09	2.21	3.04	2.36	4.67	2.90	2.46	3.44	3.30	2.77	2.52	2.95	2.69	1.93
Vehicle 3	2.64	2.32	2.46	1.71	2.25	0.78	2.11	2.53	1.41	2.16	2.11	2.02	2.41	2.03	2.27
Vehicle 4	1.73	1.78	1.63	1.73	1.86	3.42	2.36	1.40	1.68	1.62	1.73	2.26	1.57	2.53	1.62
Vehicle 5	2.88	2.02	1.41	1.81	1.58	1.65	1.95	2.05	1.51	1.84	1.68	1.50	2.44	1.76	1.96
Vehicle 6	1.69	1.27	1.94	2.45	2.18	1.31	2.57	1.62	2.37	1.38	1.99	2.31	1.78	1.56	1.65
Vehicle 7	1.38	1.52	2.27	1.89	1.92	1.51	1.57	1.41	1.68	1.84	1.55	2.37	2.27	2.80	1.81
Vehicle 8	2.26	1.74	1.87	1.87	1.63	2.72	2.67	1.17	1.75	1.39	2.23	1.28	1.75	2.00	1.88
Vehicle 9	2.24	1.65		2.07	1.89	1.83	2.19	2.06	1.61	1.52	1.83	1.62	1.39	1.97	2.47
Vehicle 10	1.54	2.30		1.73		2.36	1.13	2.20	1.72	2.80	2.44		2.12	1.64	1.46
Vehicle 11		2.41				2.06		1.34		2.19	1.58				
Vehicle 12		1.88				2.21		2.32		2.41	1.56				

	Study Results														
No. vehicles used in cycle	10	12	8	10	9	12	10	12	10	12	12	9	10	10	10
Time of Vehicle 4 (s)	5.95	7.19	6.30	6.48	6.47	8.87	7.37	6.39	6.53	7.08	6.61	6.80	6.93	7.25	5.82
Time of Last Vehicle (s)	17.94	21.98	13.79	18.30	15.67	24.52	19.45	20.56	17.17	22.45	21.47	15.88	18.68	18.98	17.05
Avg Sat Headway (s/veh)	2.00	1.85	1.87	1.97	1.84	1.96	2.01	1.77	1.77	1.92	1.86	1.82	1.96	1.95	1.87
Unadj. Sat. Flow (veh/h/ln)	1802	1947	1923	1827	1957	1840	1788	2032	2030	1874	1938	1982	1838	1841	1923

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

WisDOT Signalized Intersection Capacity Study

Location ID: 55
Intersection Location: WIS 19/113 & Raemisch Rd / Schumacher Rd
Approach Direction: WB
Approach Configuration: 4
Population Group: > 250

Video Date: 4/7/15-4/10/15
County: Dane
Region: SW
Municipality: Waunakee
Approach AADT: 18000

Cycle #	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Lane Studied	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Start of Green	5:00 PM	5:02 PM	5:04 PM	5:23 PM	5:25 PM	3:42 PM	3:46 PM	3:49 PM	4:23 PM	4:27 PM	4:37 PM	4:39 PM	4:55 PM	5:04 PM	5:17 PM
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)															
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	2.56	2.18	2.34	3.03	2.67	2.38	3.27	3.90	2.42	1.91	2.16	2.67	3.07	2.69	3.20
Vehicle 3	2.32	2.27	2.47	2.25	2.33	2.30	2.21	2.02	2.32	1.79	3.51	2.70	1.76	1.90	2.28
Vehicle 4	1.48	2.46	1.16	1.33	1.77	2.18	2.22	1.73	1.84	2.21	3.15	1.95	2.36	2.40	2.09
Vehicle 5	2.10	1.66	2.33	2.44	1.29	1.94	1.78	1.78	1.47	2.53	2.99	1.78	2.10	2.17	1.93
Vehicle 6	2.09	2.02	1.53	2.79	1.29	1.14	1.79	1.89	2.31	2.97	1.91	2.04	2.04	1.80	1.94
Vehicle 7	1.77	2.28	1.80	1.40	1.49	1.75	2.21	1.29	2.65	1.49	1.80	1.82	2.02	2.21	2.15
Vehicle 8	1.63	1.44	1.94	2.59	1.63	1.73	1.92	1.45	1.58	1.30	1.32	2.20	1.76	2.44	2.75
Vehicle 9	1.78	1.98	1.90	2.41	1.72	1.94	2.15	1.19	2.36	2.17	3.62	1.75	2.27	1.91	3.09
Vehicle 10	1.40	1.64		2.00	2.58		1.94		1.86	1.58	1.61	2.25	1.96	1.76	2.03
Vehicle 11	1.20			2.04	1.54		2.68				1.98		2.27	1.52	1.23
Vehicle 12	1.47			1.91	1.61		1.36				1.92		1.42		1.15

	Study Results														
No. vehicles used in cycle	12	10	9	12	12	9	12	9	10	10	12	10	12	11	12
Time of Vehicle 4 (s)	6.36	6.91	5.97	6.61	6.77	6.86	7.70	7.65	6.58	5.91	8.82	7.32	7.19	6.99	7.57
Time of Last Vehicle (s)	19.80	17.93	15.47	24.19	19.92	15.36	23.53	15.25	18.81	17.95	25.97	19.16	23.03	20.80	23.84
Avg Sat Headway (s/veh)	1.68	1.84	1.90	2.20	1.64	1.70	1.98	1.52	2.04	2.01	2.14	1.97	1.98	1.97	2.03
Unadj. Sat. Flow (veh/h/ln)	2143	1960	1895	1638	2190	2118	1819	2368	1766	1794	1679	1824	1818	1825	1770

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

WisDOT Signalized Intersection Capacity Study

Location ID: 55
Intersection Location: WIS 19/113 & Raemisch Rd / Schumacher Rd
Approach Direction: WB
Approach Configuration: 4
Population Group: > 250

Video Date: 4/7/15-4/10/15
County: Dane
Region: SW
Municipality: Waunakee
Approach AADT: 18000

Cycle #	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Lane Studied	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Start of Green	5:18 PM	5:25 PM	5:29 PM	5:30 PM	7:08 AM	7:11 AM	7:19 AM	7:24 AM	7:28 AM	7:29 AM	7:42 AM	5:27 PM	5:28 PM	5:31 AM	5:37 AM
Heavy Vehicles (1-4)															
Heavy Vehicles (5-12)															
Right Turns (1-4)															
Right Turns (5-12)															

Vehicle	Headway ¹ (s)														
Vehicle 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle 2	3.65	2.21	3.90	3.36	2.17	3.05	2.84	1.89	2.11	3.55	3.78	2.55	4.11	2.37	2.11
Vehicle 3	1.58	2.19	2.08	2.36	1.51	2.20	2.36	1.80	1.52	2.10	1.78	1.92	2.58	1.84	2.28
Vehicle 4	2.48	2.15	1.90	1.70	1.97	1.85	2.75	1.72	1.99	2.09	2.39	2.34	2.91	2.21	1.67
Vehicle 5	3.16	2.15	1.29	2.34	1.92	1.45	1.75	2.05	1.68	2.56	1.52	2.53	1.58	2.20	1.76
Vehicle 6	2.00	1.62	1.39	1.86	2.85	1.52	1.62	1.54	1.92	2.16	1.25	1.70	1.73	2.50	1.96
Vehicle 7	1.54	1.69	2.14	1.60	1.92	1.28	1.76	1.85	1.62	2.34	1.25	1.66	1.21	1.75	1.95
Vehicle 8	1.82	1.38	1.89	1.67	1.71	1.56	1.74	1.65	1.24	1.95	1.69	1.34	1.63	2.17	1.70
Vehicle 9	2.38	1.92	1.54	1.43	1.66	1.06	1.27	1.97	1.93	1.09	1.32	1.83		1.58	0.19
Vehicle 10	1.26	2.26	2.04	1.61	1.34	1.31	1.57	1.31	2.18	1.92					2.55
Vehicle 11	2.00	1.43			1.61	1.95	1.28	1.52	1.41	2.41					1.33
Vehicle 12	1.82					2.37	1.79	1.42	1.96	1.44					

	Study Results														
No. vehicles used in cycle	12	11	10	10	11	12	12	12	12	12	9	9	8	9	11
Time of Vehicle 4 (s)	7.71	6.55	7.88	7.42	5.65	7.10	7.95	5.41	5.62	7.74	7.95	6.81	9.60	6.42	6.06
Time of Last Vehicle (s)	23.69	19.00	18.17	17.93	18.66	19.60	20.73	18.72	19.56	23.61	14.98	15.87	15.75	16.62	17.50
Avg Sat Headway (s/veh)	2.00	1.78	1.71	1.75	1.86	1.56	1.60	1.66	1.74	1.98	1.41	1.81	1.54	2.04	1.63
Unadj. Sat. Flow (veh/h/ln)	1802	2024	2099	2055	1937	2304	2254	2164	2066	1815	2560	1987	2341	1765	2203

1. The headway values listed for vehicles 2 - 12 above represent the measure of time (in seconds) between subsequent vehicles crossing the stop bar into the intersection. There is no headway value for vehicle 1 because the signal indications for this approach cannot be seen in the video.

Saturation Flow Study Summary Sheet

Intersection Information:

Intersection:	WIS 19/113 & Raemisch Rd / Schumacher Rd
Major Street:	WIS 19/113
Minor Street:	Raemisch Rd/Schumacher Rd
Study Approach:	WB
Approach Configuration:	4
Population Group:	> 250
Cycles by Date:	4/7 (1-17), 4/8 (18-35, 57-60), 4/9 (36-49), 4/10 (50-56)

Video Date:	4/7/15-4/10/15
WisDOT Region:	SW
Nearest Municipality:	Waunakee
County:	Dane
Weather:	Cloudy
Pavement:	Dry
Observer:	Kevin Brink

Data Collection Summary Data:

Cycles Studied:	60
Average number of vehicles per cycle:	11
Headways Measured (queue vehicles > 4) :	395
% Heavy Vehicles (of headways measured):	0.0%
% RT Vehicles (of headways measured):	0.0%
Average Saturation Flow Headway (s):	1.86
Standard Deviation of All Headways:	0.46
Standard Deviation of Cycle Headways:	0.19
Unadjusted Median Sat Flow Rate (veh/ln.hr):	1943
Unadjusted Avg Sat Flow Rate (veh/ln/hr):	1939



Appendix E: Right Turn On Red Data

Location ID: 56
Main Hwy/Road: WIS 54
Cross Hwy/Road: County QQ/Grand Seasons Dr.
RT Studied: WB
Int. Type: Intersection
Single/Dual RT: Single
Population Group: < 25

Video Date: 9/9/2015
Start Time: 7:00 AM
End Time: 8:00 AM
County: Waupaca
Region: NC
Municipality: Waupaca

Cycle Length Information

	Hour # 1		
	1	2	3
Cycle Start	7:00:49	7:19:04	7:39:32
Change to Red	7:02:04	7:19:50	7:40:03
Cycle End	7:02:24	7:20:15	7:40:22
Cycle Length	0:01:35	0:01:11	0:00:50
Green Time	0:01:15	0:00:46	0:00:31

Note maximum # of vehicles that can be seen in the right turn lane queue:

4

Cycle	Right Turning Vehicles			Volume of Conflicting Vehicles			Queue in Right Turn Lane		Pedestrian Conflict? (G/R)
	Total	On Green (RTOG)	On Red (RTOR)	Total	Thru Movement	Left Turn Movement	At Start of Green	At End of Green	
1	1	1	0	0	0	0	0	0	
2	1	1	0	0	0	0	0	0	
3	0	0	0	0	0	0	0	0	
4	3	1	2	0	0	0	0	0	
5	3	2	1	0	0	0	0	0	
6	0	0	0	0	0	0	0	0	
7	1	0	1	0	0	0	0	0	
8	0	0	0	0	0	0	0	0	
9	1	1	0	0	0	0	0	0	
10	1	1	0	0	0	0	0	0	
11	1	1	0	0	0	0	1	0	
12	2	2	0	0	0	0	0	0	

Cycle	Right Turning Vehicles			Volume of Conflicting Vehicles			Queue in Right Turn Lane		Pedestrian Conflict? (G/R)
	Total	On Green (RTOG)	On Red (RTOR)	Total	Thru Movement	Left Turn Movement	At Start of Green	At End of Green	
13	4	4	0	0	0	0	0	0	
14	1	1	0	1	1	0	1	0	
15	1	1	0	0	0	0	0	0	
16	1	0	1	0	0	0	0	0	
17	1	1	0	0	0	0	0	0	
18	1	1	0	0	0	0	1	0	
19	0	0	0	0	0	0	0	0	
20	1	1	0	1	1	0	1	0	
21	4	2	2	1	1	0	0	0	
22	0	0	0	0	0	0	0	0	
23	0	0	0	0	0	0	0	0	
24	4	3	1	0	0	0	1	1	
25	0	0	0	0	0	0	0	0	
26	3	2	1	0	0	0	0	0	
27	2	2	0	0	0	0	1	0	
28	2	1	1	2	2	0	1	0	
29	3	3	0	0	0	0	0	0	
30	2	1	1	1	1	0	0	0	
31	3	3	0	1	1	0	0	0	
32	1	1	0	0	0	0	0	0	
33	2	2	0	0	0	0	0	0	
34	5	3	2	0	0	0	0	0	

Cycle	Right Turning Vehicles			Volume of Conflicting Vehicles			Queue in Right Turn Lane		Pedestrian Conflict? (G/R)
	Total	On Green (RTOG)	On Red (RTOR)	Total	Thru Movement	Left Turn Movement	At Start of Green	At End of Green	
35	1	0	1	0	0	0	0	1	
36	1	0	1	1	1	0	0	1	
37	2	2	0	1	1	0	0	0	
38	3	1	2	1	1	0	0	0	
39	1	0	1	1	0	1	0	0	
40	3	2	1	2	2	0	0	0	
41	2	2	0	0	0	0	0	0	
42	1	0	1	1	1	0	0	1	
43	0	0	0	0	0	0	0	0	
44	1	0	1	1	1	0	0	0	
45	2	2	0	0	0	0	2	0	
46	2	0	2	0	0	0	0	0	
47	4	3	1	1	1	0	0	0	
48	2	2	0	0	0	0	0	0	
49	3	3	0	2	2	0	0	0	

	Total	%
Green Arrival	54	65.1%
Red Arrival	29	34.9%
Unknown	0	0.0%
All Vehicles	83	100.0%

Location ID: 56
Main Hwy/Road: WIS 54
Cross Hwy/Road: County QQ/Grand Seasons Dr.
RT Studied: WB
Int. Type: Intersection
Single/Dual RT: Single
Population Group: < 25

Video Date: 9/9/2015
Start Time: 4:00 PM
End Time: 5:00 PM
County: Waupaca
Region: NC
Municipality: Waupaca

Cycle Length Information

	Hour # 1		
	1	2	3
	Cycle Start	16:00:40	16:19:52
Change to Red	16:01:11	16:20:30	16:40:40
Cycle End	16:01:46	16:20:58	16:41:03
Cycle Length	0:01:06	0:01:06	0:01:12
Green Time	0:00:31	0:00:38	0:00:49

Note maximum # of vehicles that can be seen in the right turn lane queue:

4

Cycle	Right Turning Vehicles			Volume of Conflicting Vehicles			Queue in Right Turn Lane		Pedestrian Conflict? (G/R)
	Total	On Green (RTOG)	On Red (RTOR)	Total	Thru Movement	Left Turn Movement	At Start of Green	At End of Green	
1	1	1	0	1	1	0	1	0	
2	0	0	0	0	0	0	0	0	
3	5	3	2	0	0	0	1	0	
4	1	0	1	0	0	0	0	0	
5	1	0	1	0	0	0	0	0	
6	1	0	1	1	1	0	0	0	
7	2	1	1	1	1	0	1	0	
8	1	0	1	1	1	0	0	0	
9	3	3	0	0	0	0	2	0	
10	1	1	0	0	0	0	1	0	
11	0	0	0	0	0	0	0	0	
12	2	1	1	0	0	0	0	0	

Cycle	Right Turning Vehicles			Volume of Conflicting Vehicles			Queue in Right Turn Lane		Pedestrian Conflict? (G/R)
	Total	On Green (RTOG)	On Red (RTOR)	Total	Thru Movement	Left Turn Movement	At Start of Green	At End of Green	
13	0	0	0	1	1	0	0	0	
14	0	0	0	0	0	0	0	0	
15	1	1	0	0	0	0	0	0	
16	0	0	0	1	1	0	0	0	
17	4	2	2	1	1	0	0	1	
18	0	0	0	1	1	0	0	0	
19	0	0	0	1	1	0	0	0	
20	3	2	1	0	0	0	0	0	
21	0	0	0	0	0	0	0	0	
22	1	1	0	1	1	0	0	0	
23	0	0	0	1	1	0	0	0	
24	1	0	1	0	0	0	0	0	
25	0	0	0	0	0	0	0	0	
26	1	1	0	0	0	0	0	0	
27	0	0	0	0	0	0	0	0	
28	1	1	0	1	1	0	0	0	
29	0	0	0	0	0	0	0	0	
30	2	0	2	1	1	0	0	1	
31	0	0	0	0	0	0	0	0	
32	2	0	2	0	0	0	0	0	
33	1	0	1	0	0	0	0	0	R
34	1	1	0	0	0	0	1	0	

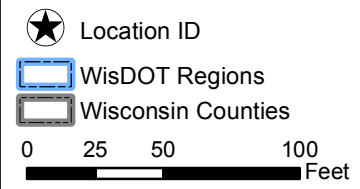
Cycle	Right Turning Vehicles			Volume of Conflicting Vehicles			Queue in Right Turn Lane		Pedestrian Conflict? (G/R)
	Total	On Green (RTOG)	On Red (RTOR)	Total	Thru Movement	Left Turn Movement	At Start of Green	At End of Green	
35	2	1	1	0	0	0	0	0	
36	2	1	1	0	0	0	0	0	
37	0	0	0	0	0	0	0	0	
38	0	0	0	1	1	0	0	0	
39	0	0	0	0	0	0	0	0	
40	2	2	0	1	1	0	0	0	
41	1	0	1	0	0	0	0	0	
42	0	0	0	0	0	0	0	0	
43	0	0	0	1	1	0	0	0	
44	2	2	0	0	0	0	0	0	
45	0	0	0	0	0	0	0	0	
46	2	2	0	0	0	0	0	0	
47	1	1	0	0	0	0	1	0	

	Total	%
Green Arrival	22	45.8%
Red Arrival	25	52.1%
Unknown	1	2.1%
All Vehicles	48	100.0%

NC Region

Waupaca
County

56



★ Location ID

□ WisDOT Regions

□ Wisconsin Counties



Location 56:
WIS 54 & County QQ / Grand Seasons Dr WB

Right Turn on Red
Data Collection



© 2015 Microsoft Corporation

Location ID: 57
Main Hwy/Road: US 51
Cross Hwy/Road: WIS 47
RT Studied: EB
Int. Type: Intersection
Single/Dual RT: Single
Population Group: < 25

Video Date: 9/5/2015
Start Time: 8:00 AM
End Time: 9:00 AM
County: Oneida
Region: NC
Municipality: Woodruff

Cycle Length Information

	Hour # 1		
	1	2	3
Cycle Start	8:00:40	8:20:11	8:40:08
Change to Red	8:00:58	8:20:26	8:40:33
Cycle End	8:01:57	8:21:59	8:42:10
Cycle Length	0:01:17	0:01:48	0:02:02
Green Time	0:00:18	0:00:15	0:00:25

Note maximum # of vehicles that can be seen in the right turn lane queue:

5

Cycle	Right Turning Vehicles			Volume of Conflicting Vehicles			Queue in Right Turn Lane		Pedestrian Conflict? (G/R)
	Total	On Green (RTOG)	On Red (RTOR)	Total	Thru Movement	Left Turn Movement	At Start of Green	At End of Green	
1	1	0	1	6	6	0	0	0	
2	1	0	1	5	4	1	0	0	
3	2	0	2	7	6	1	0	0	
4	0	0	0	8	7	1	0	0	
5	6	4	2	19	13	6	4	0	
6	1	1	0	4	4	0	1	0	
7	6	0	6	6	6	0	0	2	
8	0	0	0	3	1	2	0	0	
9	2	0	2	6	5	1	0	0	R
10	1	0	1	12	10	2	0	0	
11	3	0	3	7	5	2	0	0	
12	7	3	4	16	12	4	2	0	
13	2	1	1	9	8	1	0	0	
14	1	1	0	11	11	0	0	0	

Cycle	Right Turning Vehicles			Volume of Conflicting Vehicles			Queue in Right Turn Lane		Pedestrian Conflict? (G/R)
	Total	On Green (RTOG)	On Red (RTOR)	Total	Thru Movement	Left Turn Movement	At Start of Green	At End of Green	
15	3	0	3	11	6	5	0	0	
16	5	2	3	12	10	2	1	0	
17	2	2	0	0	0	0	1	0	
18	3	0	3	24	19	5	0	0	
19	3	0	3	15	15	0	0	0	
20	2	0	2	11	7	4	0	0	
21	0	0	0	11	11	0	0	0	
22	5	1	4	15	12	3	0	0	
23	6	1	5	14	12	2	1	0	
24	3	1	2	9	8	1	1	0	
25	1	0	1	17	12	5	0	0	
26	4	2	2	19	17	2	1	0	
27	0	0	0	10	8	2	0	0	
28	8	3	5	14	12	2	3	0	
29	4	2	2	15	15	0	2	0	
30	4	3	1	20	17	3	1	0	
31	3	0	3	13	10	3	0	1	

	Total	%
Green Arrival	12	13.5%
Red Arrival	77	86.5%
Unknown	0	0.0%
All Vehicles	89	100.0%

Location ID: 57
Main Hwy/Road: US 51
Cross Hwy/Road: WIS 47
RT Studied: EB
Int. Type: Intersection
Single/Dual RT: Single
Population Group: < 25

Video Date: 9/5/2015
Start Time: 4:00 PM
End Time: 5:00 PM
County: Oneida
Region: NC
Municipality: Woodruff

Cycle Length Information

	Hour # 1		
	1	2	3
Cycle Start	16:00:24	16:20:44	16:40:54
Change to Red	16:00:38	16:21:04	16:41:14
Cycle End	16:02:25	16:22:35	16:42:45
Cycle Length	0:02:01	0:01:51	0:01:51
Green Time	0:00:14	0:00:20	0:00:20

Note maximum # of vehicles that can be seen in the right turn lane queue:

5

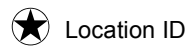
Cycle	Right Turning Vehicles			Volume of Conflicting Vehicles			Queue in Right Turn Lane		Pedestrian Conflict? (G/R)
	Total	On Green (RTOG)	On Red (RTOR)	Total	Thru Movement	Left Turn Movement	At Start of Green	At End of Green	
1	1	0	1	16	13	3	0	0	
2	3	0	3	10	7	3	0	0	
3	1	0	1	11	8	3	0	0	
4	1	0	1	15	15	0	0	0	
5	0	0	0	14	11	3	0	0	
6	0	0	0	14	11	3	0	0	
7	2	1	1	10	6	4	0	0	
8	1	0	1	10	9	1	0	0	
9	1	0	1	14	13	1	0	0	
10	0	0	0	10	8	2	0	0	
11	2	1	1	11	9	2	0	0	
12	4	0	4	24	21	3	0	0	
13	6	4	2	30	30	0	1	0	
14	4	2	2	9	8	1	1	0	

Cycle	Right Turning Vehicles			Volume of Conflicting Vehicles			Queue in Right Turn Lane		Pedestrian Conflict? (G/R)
	Total	On Green (RTOG)	On Red (RTOR)	Total	Thru Movement	Left Turn Movement	At Start of Green	At End of Green	
15	1	0	1	7	5	2	0	0	
16	1	1	0	9	6	3	0	0	
17	1	0	1	16	15	1	0	0	
18	3	2	1	19	17	2	0	0	
19	2	0	2	16	15	1	0	1	
20	6	1	5	31	27	4	0	0	
21	5	1	4	8	8	0	1	0	
22	1	0	1	14	10	4	0	0	
23	2	0	2	15	14	1	0	0	
24	5	3	2	10	8	2	2	0	
25	1	1	0	10	10	0	0	0	
26	3	0	3	9	7	2	0	0	
27	3	1	2	14	12	2	1	0	
28	3	0	3	6	6	0	0	0	
29	2	0	2	11	8	3	0	0	

	Total	%
Green Arrival	13	20.0%
Red Arrival	52	80.0%
Unknown	0	0.0%
All Vehicles	65	100.0%

NC Region

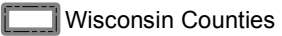
Oncida
County



Location ID



WisDOT Regions



Wisconsin Counties

0 25 50 100
Feet



©2015 Microsoft Corporation

Right Turn on Red
Data Collection

Location 57:
US 51 & WIS 47 EB

TranSmart
TECHNOLOGIES

Location ID: 58
Main Hwy/Road: Bus 51
Cross Hwy/Road: WIS 29 WB Ramp / W Grand Ave
RT Studied: NB
Int. Type: Intersection
Single/Dual RT: Single
Population Group: 25 to 100

Video Date: 9/2/2015
Start Time: 7:00 AM
End Time: 8:00 AM
County: Marathon
Region: NC
Municipality: Rothschild

Cycle Length Information

	Hour # 1		
	1	2	3
Cycle Start	7:00:16	7:19:49	7:39:51
Change to Red	7:00:40	7:20:39	7:40:41
Cycle End	7:01:20	7:21:23	7:41:28
Cycle Length	0:01:04	0:01:34	0:01:37
Green Time	0:00:24	0:00:50	0:00:50

Note maximum # of vehicles that can be seen in the right turn lane queue:

2

Cycle	Right Turning Vehicles			Volume of Conflicting Vehicles			Queue in Right Turn Lane		Pedestrian Conflict? (G/R)
	Total	On Green (RTOG)	On Red (RTOR)	Total	Thru Movement	Left Turn Movement	At Start of Green	At End of Green	
1	4	2	2	4	0	4	1	0	
2	3	2	1	0	0	0	2	0	
3	5	2	3	3	0	3	0	2	
4	7	6	1	15	1	14	1	0	
5	5	5	0	10	1	9	2	0	
6	5	4	1	10	4	6	1	0	
7	4	4	0	10	0	10	0	0	
8	6	4	2	15	3	12	2	0	
9	2	2	0	9	3	6	0	0	
10	5	4	1	7	1	6	0	0	
11	6	3	3	9	3	6	0	0	
12	6	5	1	15	0	15	2	0	
13	3	2	1	10	3	7	1	0	
14	3	1	2	8	1	7	0	0	

Cycle	Right Turning Vehicles			Volume of Conflicting Vehicles			Queue in Right Turn Lane		Pedestrian Conflict? (G/R)
	Total	On Green (RTOG)	On Red (RTOR)	Total	Thru Movement	Left Turn Movement	At Start of Green	At End of Green	
15	9	6	3	10	4	6	2	2	
16	3	1	2	7	0	7	0	0	
17	4	3	1	13	2	11	1	1	
18	6	1	5	6	1	5	0	1	
19	8	5	3	10	4	6	1	0	
20	8	5	3	10	4	6	1	2	
21	5	4	1	13	3	10	0	0	
22	8	2	6	2	0	2	1	0	
23	4	3	1	12	5	7	2	0	
24	7	4	3	14	9	5	2	0	
25	6	1	5	10	3	7	0	2	
26	7	3	4	8	3	5	1	0	
27	7	4	3	6	2	4	2	1	
28	13	10	3	15	6	9	2	1	
29	10	9	1	11	2	9	2	0	
30	6	0	6	9	5	4	1	2	
31	6	4	2	3	3	0	2	0	
32	11	6	5	7	2	5	0	2	
33	8	3	5	7	4	3	1	0	
34	5	4	1	3	0	3	2	0	
35	5	3	2	7	4	3	0	0	
36	4	2	2	4	2	2	1	0	

	Total	%
Green Arrival	69	32.2%
Red Arrival	86	40.2%
Unknown	59	27.6%
All Vehicles	214	100.0%

Location ID: 58
Main Hwy/Road: Bus 51
Cross Hwy/Road: WIS 29 WB Ramp / W Grand Ave
RT Studied: NB
Int. Type: Intersection
Single/Dual RT: Single
Population Group: 25 to 100

Video Date: 9/2/2015
Start Time: 4:00 PM
End Time: 5:00 PM
County: Marathon
Region: NC
Municipality: Rothschild

Cycle Length Information

	Hour # 1		
	1	2	3
Cycle Start	3:59:57	4:20:36	4:40:11
Change to Red	4:00:46	4:21:46	4:41:01
Cycle End	4:01:28	4:22:40	4:41:56
Cycle Length	0:01:31	0:02:04	0:01:45
Green Time	0:00:49	0:01:10	0:00:50

Note maximum # of vehicles that can be seen in the right turn lane queue:

2

Cycle	Right Turning Vehicles			Volume of Conflicting Vehicles			Queue in Right Turn Lane		Pedestrian Conflict? (G/R)
	Total	On Green (RTOG)	On Red (RTOR)	Total	Thru Movement	Left Turn Movement	At Start of Green	At End of Green	
1	6	5	1	7	0	7	1	0	
2	3	3	0	10	1	9	2	0	
3	2	2	0	15	2	13	2	0	
4	7	7	0	18	5	13	2	0	
5	3	3	0	15	3	12	2	0	
6	10	10	0	17	5	12	2	0	
7	5	2	3	14	0	14	0	0	
8	10	8	2	15	4	11	2	0	
9	5	3	2	17	2	15	2	0	
10	2	0	2	8	2	6	0	0	
11	10	9	1	20	2	18	1	0	
12	6	6	0	17	6	11	1	0	
13	5	4	1	14	3	11	0	0	
14	5	4	1	5	1	4	1	0	

Cycle	Right Turning Vehicles			Volume of Conflicting Vehicles			Queue in Right Turn Lane		Pedestrian Conflict? (G/R)
	Total	On Green (RTOG)	On Red (RTOR)	Total	Thru Movement	Left Turn Movement	At Start of Green	At End of Green	
15	4	3	1	4	0	4	2	0	
16	0	0	0	13	2	11	0	0	
17	4	4	0	17	3	14	1	0	
18	5	3	2	9	3	6	2	0	
19	5	5	0	9	3	6	1	0	
20	2	2	0	7	2	5	0	0	
21	8	8	0	17	5	12	2	0	
22	4	3	1	12	2	10	1	0	
23	4	3	1	18	4	14	2	0	
24	1	1	0	18	4	14	0	0	
25	2	2	0	19	4	15	0	0	
26	5	4	1	17	7	10	2	0	R
27	4	4	0	16	5	11	0	0	
28	4	4	0	17	6	11	2	0	
29	3	2	1	16	4	12	2	0	
30	3	3	0	21	4	17	2	0	
31	6	3	3	15	4	11	2	0	
32	1	1	0	16	2	14	1	0	
33	5	5	0	16	3	13	2	0	
34	3	1	2	9	1	8	0	0	

	Total	%
Green Arrival	45	29.6%
Red Arrival	66	43.4%
Unknown	41	27.0%
All Vehicles	152	100.0%

NC Region

Marathon
County


58

★ Location ID

□ WisDOT Regions

□ Wisconsin Counties

0 25 50 100 Feet



Location 58:
Bus 51 & WIS 29 WB Ramp / W Grand Ave NB

Right Turn on Red
Data Collection



Location ID: 4
Main Hwy/Road: WIS 66
Cross Hwy/Road: Country Club Dr
RT Studied: EB
Int. Type: Intersection
Single/Dual RT: Single
Population Group: 25 to 100

Video Date: 9/2/2015
Start Time: 7:00 AM
End Time: 8:00 AM
County: Portage
Region: NC
Municipality: Stevens Point

Cycle Length Information

	Hour # 1		
	1	2	3
Cycle Start	7:00:22	7:20:21	7:41:12
Change to Red	7:01:14	7:21:04	7:42:19
Cycle End	7:01:46	7:21:47	7:43:04
Cycle Length	0:01:24	0:01:26	0:01:52
Green Time	0:00:52	0:00:43	0:01:07

Note maximum # of vehicles that can be seen in the right turn lane queue:

4

Cycle	Right Turning Vehicles			Volume of Conflicting Vehicles			Queue in Right Turn Lane		Pedestrian Conflict? (G/R)
	Total	On Green (RTOG)	On Red (RTOR)	Total	Thru Movement	Left Turn Movement	At Start of Green	At End of Green	
1	3	2	1	0	0	0	0	0	
2	0	0	0	1	1	0	0	0	
3	1	1	0	4	3	1	0	0	
4	2	2	0	0	0	0	0	0	
5	1	0	1	2	1	1	0	0	
6	3	2	1	0	0	0	0	1	
7	2	2	0	1	0	1	0	0	
8	1	1	0	0	0	0	0	0	
9	0	0	0	0	0	0	0	0	
10	0	0	0	0	0	0	0	0	

Cycle	Right Turning Vehicles			Volume of Conflicting Vehicles			Queue in Right Turn Lane		Pedestrian Conflict? (G/R)
	Total	On Green (RTOG)	On Red (RTOR)	Total	Thru Movement	Left Turn Movement	At Start of Green	At End of Green	
11	2	2	0	0	0	0	0	0	
12	1	1	0	0	0	0	0	0	
13	3	3	0	0	0	0	1	0	
14	2	1	1	4	2	2	0	0	
15	1	1	0	0	0	0	0	0	
16	2	2	0	0	0	0	1	0	
17	3	3	0	0	0	0	0	0	
18	0	0	0	0	0	0	0	0	
19	1	1	0	0	0	0	0	0	
20	1	1	0	0	0	0	1	0	
21	1	1	0	0	0	0	0	0	
22	0	0	0	0	0	0	0	0	
23	3	1	2	0	0	0	0	0	
24	3	1	2	0	0	0	0	0	
25	2	1	1	0	0	0	0	0	
26	1	0	1	0	0	0	0	1	
27	0	0	0	0	0	0	0	0	
28	4	3	1	0	0	0	0	0	
29	3	1	2	0	0	0	0	1	
30	2	2	0	0	0	0	0	0	
31	3	1	2	4	3	1	0	0	
32	1	0	1	0	0	0	0	1	

Cycle	Right Turning Vehicles			Volume of Conflicting Vehicles			Queue in Right Turn Lane		Pedestrian Conflict? (G/R)
	Total	On Green (RTOG)	On Red (RTOR)	Total	Thru Movement	Left Turn Movement	At Start of Green	At End of Green	
33	1	1	0	0	0	0	0	0	
34	4	2	2	2	0	2	0	0	
35	7	4	3	5	0	5	1	1	
36	5	4	1	0	0	0	2	0	
37	3	1	2	0	0	0	0	0	
38	3	3	0	0	0	0	1	0	
39	2	2	0	0	0	0	0	0	
40	6	4	2	0	0	0	0	0	
41	3	3	0	0	0	0	1	0	
42	1	0	1	0	0	0	1	1	
43	2	1	1	0	0	0	0	0	

	Total	%
Green Arrival	58	65.2%
Red Arrival	31	34.8%
Unknown	0	0.0%
All Vehicles	89	100.0%

Location ID: 4
Main Hwy/Road: WIS 66
Cross Hwy/Road: Country Club Dr
RT Studied: EB
Int. Type: Intersection
Single/Dual RT: Single
Population Group: 25 to 100

Video Date: 9/2/2015
Start Time: 4:00 PM
End Time: 5:00 PM
County: Portage
Region: NC
Municipality: Stevens Point

Cycle Length Information

	Hour # 1		
	1	2	3
Cycle Start	16:00:42	16:21:10	16:41:04
Change to Red	16:01:58	16:22:08	16:42:18
Cycle End	16:02:46	16:22:58	16:43:09
Cycle Length	0:02:04	0:01:48	0:02:05
Green Time	0:01:16	0:00:58	0:01:14

Note maximum # of vehicles that can be seen in the right turn lane queue:

4

Cycle	Right Turning Vehicles			Volume of Conflicting Vehicles			Queue in Right Turn Lane*		Pedestrian Conflict? (G/R)
	Total	On Green (RTOG)	On Red (RTOR)	Total	Thru Movement	Left Turn Movement	At Start of Green	At End of Green	
1	1	1	0	2	0	2	0	0	
2	3	1	2	0	0	0	0	0	
3	6	5	1	3	1	2	0	1	
4	1	0	1	0	0	0	0	0	
5	4	3	1	1	0	1	0	0	
6	8	5	3	2	0	2	0	1	
7	6	2	4	2	0	2	0	1	
8	5	1	4	4	1	3	0	1	
9	6	4	2	0	0	0	0	0	
10	1	1	0	0	0	0	0	0	
11	5	1	4	5	1	4	0	1	
12	5	4	1	1	0	1	0	0	
13	3	2	1	3	0	3	0	0	
14	1	1	0	2	0	2	0	0	

Cycle	Right Turning Vehicles			Volume of Conflicting Vehicles			Queue in Right Turn Lane*		Pedestrian Conflict? (G/R)
	Total	On Green (RTOG)	On Red (RTOR)	Total	Thru Movement	Left Turn Movement	At Start of Green	At End of Green	
15	4	2	2	0	0	0	0	1	
16	5	5	0	0	0	0	0	0	
17	2	1	1	2	1	1	0	0	
18	3	1	2	0	0	0	0	0	
19	8	6	2	1	1	0	0	0	
20	2	0	2	2	0	2	1	1	
21	3	1	2	1	0	1	0	0	
22	3	2	1	1	1	0	0	0	
23	4	4	0	2	0	2	0	0	
24	3	3	0	3	0	3	0	0	
25	8	5	3	0	0	0	0	0	
26	4	3	1	3	0	3	0	0	
27	1	1	0	1	0	1	0	0	
28	4	4	0	3	1	2	0	0	
29	7	4	3	1	1	0	0	0	
30	2	1	1	0	0	0	0	0	
31	1	1	0	0	0	0	0	0	
32	0	0	0	0	0	0	0	0	

	Total	%
Green Arrival	81	68.1%
Red Arrival	38	31.9%
Unknown	0	0.0%
All Vehicles	119	100.0%

Location ID: 4
Main Hwy/Road: WIS 66
Cross Hwy/Road: Country Club Dr
RT Studied: WB
Int. Type: Intersection
Single/Dual RT: Dual
Population Group: 25 to 100

Video Date: 9/2/2015
Start Time: 7:00 AM
End Time: 8:00 AM
County: Portage
Region: NC
Municipality: Stevens Point

Cycle Length Information

	Hour # 1		
	1	2	3
Cycle Start	7:00:12	7:20:13	7:39:50
Change to Red	7:01:15	7:21:04	7:40:55
Cycle End	7:01:51	7:21:36	7:41:13
Cycle Length	0:01:39	0:01:23	0:01:23
Green Time	0:01:03	0:00:51	0:01:05

Note maximum # of vehicles that can be seen in the right turn lane queue:

2

Cycle	Right Turning Vehicles			Volume of Conflicting Vehicles			Queue in Right Turn Lane		Pedestrian Conflict? (G/R)
	Total	On Green (RTOG)	On Red (RTOR)	Total	Thru Movement	Left Turn Movement	At Start of Green	At End of Green	
1	1	0	1	1	1	0	0	0	
2	0	0	0	0	0	0	0	0	
3	0	0	0	1	1	0	0	0	
4	0	0	0	1	1	0	0	0	
5	0	0	0	0	0	0	0	0	
6	0	0	0	1	1	0	0	0	
7	0	0	0	0	0	0	0	0	
8	0	0	0	0	0	0	0	0	
9	1	1	0	1	1	0	0	0	
10	1	1	0	0	0	0	0	0	
11	0	0	0	2	2	0	0	0	
12	2	2	0	0	0	0	0	0	
13	0	0	0	0	0	0	0	0	
14	2	2	0	0	0	0	0	0	

Cycle	Right Turning Vehicles			Volume of Conflicting Vehicles			Queue in Right Turn Lane		Pedestrian Conflict? (G/R)
	Total	On Green (RTOG)	On Red (RTOR)	Total	Thru Movement	Left Turn Movement	At Start of Green	At End of Green	
15	0	0	0	0	0	0	0	0	
16	2	1	1	1	1	0	0	0	
17	2	2	0	0	0	0	0	0	
18	0	0	0	1	1	0	0	0	
19	2	1	1	0	0	0	0	0	
20	0	0	0	1	1	0	0	0	
21	1	1	0	0	0	0	0	0	
22	0	0	0	0	0	0	0	0	
23	0	0	0	0	0	0	0	0	
24	0	0	0	1	1	0	0	0	
25	2	2	0	0	0	0	0	0	
26	0	0	0	1	1	0	0	0	
27	3	3	0	0	0	0	0	0	
28	0	0	0	1	1	0	0	0	
29	2	2	0	0	0	0	0	0	
30	1	1	0	0	0	0	0	0	
31	0	0	0	1	1	0	0	0	
32	0	0	0	0	0	0	0	0	
33	1	1	0	1	1	0	0	0	
34	1	1	0	0	0	0	0	0	
35	1	1	0	0	0	0	0	0	
36	0	0	0	0	0	0	0	0	
37	0	0	0	0	0	0	0	0	
38	0	0	0	0	0	0	0	0	
39	2	1	1	0	0	0	0	0	
40	1	1	0	0	0	0	0	0	
41	0	0	0	0	0	0	0	0	

	Total	%
Green Arrival	24	85.7%
Red Arrival	4	14.3%
Unknown	0	0.0%
All Vehicles	28	100.0%

Location ID: 4
Main Hwy/Road: WIS 66
Cross Hwy/Road: Country Club Dr
RT Studied: WB
Int. Type: Intersection
Single/Dual RT: Single
Population Group: 25 to 100

Video Date: 9/2/2015
Start Time: 4:00 PM
End Time: 5:00 PM
County: Portage
Region: NC
Municipality: Stevens Point

Cycle Length Information

	Hour # 1		
	1	2	3
Cycle Start	4:00:42	4:21:11	4:41:05
Change to Red	4:01:57	4:22:09	4:42:18
Cycle End	4:02:24	4:22:58	4:43:10
Cycle Length	0:01:42	0:01:47	0:02:05
Green Time	0:01:15	0:00:58	0:01:13

Note maximum # of vehicles that can be seen in the right turn lane queue:

2

Cycle	Right Turning Vehicles			Volume of Conflicting Vehicles			Queue in Right Turn Lane		Pedestrian Conflict? (G/R)
	Total	On Green (RTOG)	On Red (RTOR)	Total	Thru Movement	Left Turn Movement	At Start of Green	At End of Green	
1	1	1	0	1	1	0	0	0	
2	4	4	0	0	0	0	0	0	
3	2	0	2	1	0	1	0	0	
4	1	1	0	0	0	0	0	0	
5	1	0	1	0	0	0	0	0	
6	2	1	1	0	0	0	0	0	
7	2	2	0	0	0	0	1	0	
8	3	1	2	0	0	0	0	0	
9	0	0	0	0	0	0	0	0	
10	6	3	3	1	0	1	0	0	
11	4	3	1	0	0	0	0	0	
12	1	1	0	1	1	0	0	0	
13	1	1	0	1	1	0	0	0	
14	1	1	0	0	0	0	0	0	

Cycle	Right Turning Vehicles			Volume of Conflicting Vehicles			Queue in Right Turn Lane		Pedestrian Conflict? (G/R)
	Total	On Green (RTOG)	On Red (RTOR)	Total	Thru Movement	Left Turn Movement	At Start of Green	At End of Green	
15	0	0	0	1	1	0	0	0	
16	3	2	1	0	0	0	0	1	
17	3	3	0	1	1	0	0	0	
18	0	0	0	1	1	0	0	0	
19	0	0	0	2	2	0	0	0	
20	0	0	0	1	1	0	0	0	
21	0	0	0	1	1	0	0	0	
22	3	2	1	1	1	0	0	0	
23	0	0	0	0	0	0	0	0	
24	1	1	0	0	0	0	0	0	
25	2	2	0	0	0	0	0	0	
26	3	2	1	1	0	1	1	0	
27	1	0	1	0	0	0	0	0	
28	0	0	0	1	1	0	0	0	
29	1	1	0	4	2	2	0	0	
30	1	0	1	0	0	0	0	0	
31	1	1	0	0	0	0	0	0	
32	3	3	0	2	2	0	0	0	

	Total	%
Green Arrival	35	68.6%
Red Arrival	16	31.4%
Unknown	0	0.0%
All Vehicles	51	100.0%

Location ID: 13
Main Hwy/Road: US 45/N Main St
Cross Hwy/Road: WIS 23/W Johnson St
RT Studied: SB
Int. Type: Intersection
Single/Dual RT: Single
Population Group: 25 to 100

Video Date: 5/13/2015
Start Time: 7:00 AM
End Time: 8:00 AM
County: Fond Du Lac
Region: NE
Municipality: Fond Du Lac

Cycle Length Information

	Hour # 1		
	1	2	3
Cycle Start	7:01:37	7:20:28	7:40:45
Change to Red	7:02:03	7:20:55	7:41:16
Cycle End	7:03:25	7:22:07	7:42:33
Cycle Length	0:01:48	0:01:39	0:01:48
Green Time	0:00:26	0:00:27	0:00:31

Note maximum # of vehicles that can be seen in the right turn lane queue:

1

Cycle	Right Turning Vehicles			Volume of Conflicting Vehicles			Queue in Right Turn Lane		Pedestrian Conflict? (G/R)
	Total	On Green (RTOG)	On Red (RTOR)	Total	Thru Movement	Left Turn Movement	At Start of Green	At End of Green	
1	1	1	0	12	6	6	0	0	
2	2	0	2	27	20	7	0	0	
3	1	0	1	17	15	2	0	0	
4	8	2	6	34	29	5	0	0	
5	0	0	0	16	11	5	0	0	
6	2	1	1	15	15	0	0	0	
7	2	0	2	24	16	8	0	0	
8	0	0	0	15	10	5	0	0	
9	6	3	3	13	11	2	0	0	
10	7	1	6	32	24	8	0	0	
11	2	0	2	16	16	0	0	0	
12	2	1	1	29	22	7	0	0	
13	6	3	3	37	25	12	0	0	
14	2	1	1	24	17	7	0	0	

Cycle	Right Turning Vehicles			Volume of Conflicting Vehicles			Queue in Right Turn Lane		Pedestrian Conflict? (G/R)
	Total	On Green (RTOG)	On Red (RTOR)	Total	Thru Movement	Left Turn Movement	At Start of Green	At End of Green	
15	1	0	1	12	10	2	0	0	
16	4	1	3	32	24	8	0	0	
17	3	1	2	35	24	11	0	0	
18	2	1	1	23	17	6	0	0	
19	0	0	0	27	20	7	0	0	
20	3	0	3	20	14	6	0	0	
21	0	0	0	22	19	3	0	0	
22	7	4	3	34	23	11	0	0	
23	4	2	2	34	26	8	0	0	
24	3	2	1	29	20	9	0	0	
25	2	1	1	27	20	7	0	0	
26	2	1	1	37	27	10	0	0	
27	3	1	2	35	25	10	0	0	
28	1	0	1	25	16	9	0	0	
29	1	0	1	36	22	14	0	0	
30	3	3	0	26	26	0	0	0	
31	1	0	1	43	31	12	0	0	
32	2	0	2	34	28	6	0	0	

	Total	%
Green Arrival	30	36.1%
Red Arrival	53	63.9%
Unknown	0	0.0%
All Vehicles	83	100.0%

Location ID: 13
Main Hwy/Road: US 45/N Main St
Cross Hwy/Road: WIS 23/W Johnson St
RT Studied: SB
Int. Type: Intersection
Single/Dual RT: Single
Population Group: 25 to 100

Video Date: 5/13/2015
Start Time: 4:00 PM
End Time: 5:00 PM
County: Fond Du Lac
Region: NE
Municipality: Fond Du Lac

Cycle Length Information

	Hour # 1		
	1	2	3
Cycle Start	4:00:36	4:21:00	4:41:24
Change to Red	4:01:05	4:21:28	4:41:56
Cycle End	4:02:20	4:22:43	4:43:09
Cycle Length	0:01:44	0:01:43	0:01:45
Green Time	0:00:29	0:00:28	0:00:32

Note maximum # of vehicles that can be seen in the right turn lane queue:

1

Cycle	Right Turning Vehicles			Volume of Conflicting Vehicles			Queue in Right Turn Lane		Pedestrian Conflict? (G/R)
	Total	On Green (RTOG)	On Red (RTOR)	Total	Thru Movement	Left Turn Movement	At Start of Green	At End of Green	
1	7	3	4	32	21	11	0	0	
2	3	3	0	37	22	15	0	0	
3	5	3	2	29	18	11	0	0	
4	2	1	1	29	20	9	0	0	
5	1	0	1	42	27	15	0	0	
6	6	3	3	45	28	17	0	0	
7	5	4	1	37	23	14	0	0	
8	0	0	0	29	20	9	0	0	
9	4	1	3	27	14	13	0	0	
10	2	2	0	41	30	11	0	0	
11	1	1	0	37	27	10	0	0	
12	6	5	1	30	18	12	0	0	
13	2	2	0	41	24	17	0	0	
14	1	0	1	39	26	13	0	0	

Cycle	Right Turning Vehicles			Volume of Conflicting Vehicles			Queue in Right Turn Lane		Pedestrian Conflict? (G/R)
	Total	On Green (RTOG)	On Red (RTOR)	Total	Thru Movement	Left Turn Movement	At Start of Green	At End of Green	
15	5	5	0	46	29	17	0	0	
16	3	0	3	47	29	18	0	0	
17	4	0	4	34	25	9	0	0	
18	2	0	2	45	28	17	0	0	
19	2	1	1	38	19	19	0	0	
20	4	2	2	33	17	16	0	0	
21	2	0	2	35	24	11	0	0	
22	2	0	2	40	30	10	0	0	
23	3	2	1	35	23	12	0	0	
24	1	1	0	40	24	16	0	0	
25	7	5	2	40	24	16	0	0	
26	1	0	1	40	28	12	0	0	
27	1	1	0	39	28	11	0	0	
28	9	4	5	27	19	8	0	0	
29	6	4	2	46	27	19	0	0	
30	6	6	0	42	28	14	0	0	
31	4	3	1	28	13	15	0	0	
32	9	2	7	35	24	11	0	0	
33	3	0	3	42	27	15	0	0	
34	3	0	3	38	23	15	0	0	
35	1	1	0	33	23	10	0	0	

	Total	%
Green Arrival	65	52.8%
Red Arrival	58	47.2%
Unknown	0	0.0%
All Vehicles	123	100.0%

Location ID: 14
Main Hwy/Road: WIS 47/N Richmond St
Cross Hwy/Road: WIS 125/College Ave
RT Studied: SB
Int. Type: Interchange
Single/Dual RT: Single
Population Group: 100 to 250

Video Date: 5/12/2015
Start Time: 7:00 AM
End Time: 8:00 AM
County: Outagamie
Region: NE
Municipality: Appleton

Cycle Length Information

	Hour # 1		
	1	2	3
Cycle Start	7:00:57	7:20:38	7:39:57
Change to Red	7:01:42	7:21:13	7:40:42
Cycle End	7:02:27	7:21:58	7:41:27
Cycle Length	0:01:30	0:01:20	0:01:30
Green Time	0:00:45	0:00:35	0:00:45

Note maximum # of vehicles that can be seen in the right turn lane queue:

1

Cycle	Right Turning Vehicles			Volume of Conflicting Vehicles			Queue in Right Turn Lane		Pedestrian Conflict? (G/R)
	Total	On Green (RTOG)	On Red (RTOR)	Total	Thru Movement	Left Turn Movement	At Start of Green	At End of Green	
1	1	1	0	6	6	0	0	0	
2	2	0	2	3	3	0	0	0	
3	0	0	0	16	16	0	0	0	
4	1	1	0	9	8	1	0	0	
5	2	2	0	15	15	0	0	0	
6	3	2	1	11	11	0	0	0	
7	6	1	5	3	3	0	0	0	
8	1	1	0	15	13	2	0	0	
9	2	2	0	13	13	0	0	0	
10	1	1	0	15	15	0	0	0	
11	7	6	1	4	4	0	0	0	
12	5	3	2	14	14	0	0	0	
13	1	1	0	9	9	0	0	0	
14	3	1	2	14	14	0	0	0	

Cycle	Right Turning Vehicles			Volume of Conflicting Vehicles			Queue in Right Turn Lane		Pedestrian Conflict? (G/R)
	Total	On Green (RTOG)	On Red (RTOR)	Total	Thru Movement	Left Turn Movement	At Start of Green	At End of Green	
15	2	0	2	8	8	0	0	0	
16	3	1	2	5	5	0	0	0	
17	2	0	2	10	10	0	0	0	
18	6	2	4	10	10	0	0	0	
19	2	1	1	13	13	0	0	0	
20	4	2	2	15	15	0	0	0	
21	5	3	2	14	14	0	0	0	
22	3	1	2	14	14	0	0	0	
23	5	1	4	5	4	1	0	0	
24	3	2	1	16	16	0	0	0	
25	2	1	1	8	7	1	0	0	
26	5	3	2	18	18	0	0	0	
27	3	2	1	10	10	0	0	0	
28	3	1	2	12	12	0	0	0	
29	2	1	1	8	8	0	0	0	
30	7	3	4	27	22	5	0	0	
31	1	0	1	21	19	2	0	0	
32	4	1	3	16	16	0	0	0	
33	6	2	4	18	15	3	0	0	
34	4	3	1	23	23	0	0	0	
35	3	2	1	14	14	0	0	0	
36	0	0	0	11	11	0	0	0	
37	0	0	0	8	8	0	0	0	
38	4	2	2	11	11	0	0	0	
39	2	1	1	9	9	0	0	0	

	Total	%
Green Arrival	57	49.1%
Red Arrival	59	50.9%
Unknown	0	0.0%
All Vehicles	116	100.0%

Location ID: 14
Main Hwy/Road: WIS 47/N Richmond St
Cross Hwy/Road: WIS 125/College Ave
RT Studied: SB
Int. Type: Interchange
Single/Dual RT: Single
Population Group: 100 to 250

Video Date: 5/12/2015
Start Time: 4:00 PM
End Time: 5:00 PM
County: Outagamie
Region: NE
Municipality: Appleton

Cycle Length Information

	Hour # 1		
	1	2	3
Cycle Start	4:01:34	4:20:51	4:40:21
Change to Red	4:02:05	4:21:34	4:41:03
Cycle End	4:03:01	4:22:21	4:42:03
Cycle Length	0:01:27	0:01:30	0:01:42
Green Time	0:00:31	0:00:43	0:00:42

Note maximum # of vehicles that can be seen in the right turn lane queue:

1

Cycle	Right Turning Vehicles			Volume of Conflicting Vehicles			Queue in Right Turn Lane		Pedestrian Conflict? (G/R)
	Total	On Green (RTOG)	On Red (RTOR)	Total	Thru Movement	Left Turn Movement	At Start of Green	At End of Green	
1	5	3	2	19	17	2	0	0	
2	2	1	1	18	18	0	0	0	
3	3	2	1	19	19	0	0	0	
4	4	2	2	18	17	1	0	0	
5	1	1	0	17	15	2	0	0	
6	3	2	1	10	10	0	0	0	
7	5	2	3	16	14	2	0	0	
8	2	2	0	14	14	0	0	0	
9	4	2	2	13	13	0	0	0	
10	3	3	0	12	12	0	0	0	
11	4	2	2	13	12	1	0	0	
12	3	3	0	20	20	0	0	0	
13	6	2	4	20	20	0	0	0	
14	4	2	2	14	14	0	0	0	

Cycle	Right Turning Vehicles			Volume of Conflicting Vehicles			Queue in Right Turn Lane		Pedestrian Conflict? (G/R)
	Total	On Green (RTOG)	On Red (RTOR)	Total	Thru Movement	Left Turn Movement	At Start of Green	At End of Green	
15	2	0	2	7	7	0	0	0	
16	5	5	0	14	14	0	0	0	
17	2	2	0	11	11	0	0	0	
18	5	1	4	15	15	0	0	0	
19	4	3	1	14	14	0	0	0	
20	3	3	0	16	16	0	0	0	
21	6	4	2	11	11	0	0	0	
22	2	0	2	14	14	0	0	0	
23	6	4	2	17	15	2	0	0	
24	1	1	0	19	19	0	0	0	
25	4	2	2	14	14	0	0	0	
26	5	5	0	23	23	0	0	0	
27	5	3	2	22	17	5	0	0	
28	3	3	0	13	13	0	0	0	
29	3	3	0	20	20	0	0	0	
30	2	2	0	19	16	3	0	0	
31	3	3	0	17	17	0	0	0	
32	2	2	0	14	14	0	0	0	
33	8	5	3	22	22	0	0	0	
34	3	1	2	16	16	0	0	0	
35	2	1	1	17	17	0	0	0	
36	8	7	1	14	14	0	0	0	
37	5	3	2	15	15	0	0	0	
38	3	2	1	11	11	0	0	0	

	Total	%
Green Arrival	94	66.7%
Red Arrival	47	33.3%
Unknown	0	0.0%
All Vehicles	141	100.0%

Location ID: 15
Main Hwy/Road: Bluemound Dr
Cross Hwy/Road: WIS 25
RT Studied: SB
Int. Type: Intersection
Single/Dual RT: Single
Population Group: 100 to 250

Video Date: 5/13/2015
Start Time: 4:30 PM
End Time: 5:30 PM
County: Outagamie
Region: NE
Municipality: Appleton

Cycle Length Information

	Hour # 1		
	1	2	3
Cycle Start	16:40:10	17:00:10	17:20:10
Change to Red	16:40:30	17:00:30	17:20:30
Cycle End	16:41:51	17:01:50	17:21:51
Cycle Length	0:01:41	0:01:40	0:01:41
Green Time	0:00:20	0:00:20	0:00:20

Note maximum # of vehicles that can be seen in the right turn lane queue:

4

Cycle	Right Turning Vehicles			Volume of Conflicting Vehicles			Queue in Right Turn Lane		Pedestrian Conflict? (G/R)
	Total	On Green (RTOG)	On Red (RTOR)	Total	Thru Movement	Left Turn Movement	At Start of Green	At End of Green	
1	1	0	1	25	21	4	0	0	
2	3	1	2	25	22	3	0	0	
3	1	0	1	29	23	6	0	0	
4	3	2	1	16	14	2	1	0	
5	2	1	1	24	20	4	1	0	
6	3	2	1	35	30	5	1	0	
7	4	1	3	30	30	0	1	1	
8	5	3	2	29	22	7	0	1	
9	4	0	4	36	31	5	0	0	

Cycle	Right Turning Vehicles			Volume of Conflicting Vehicles			Queue in Right Turn Lane		Pedestrian Conflict? (G/R)
	Total	On Green (RTOG)	On Red (RTOR)	Total	Thru Movement	Left Turn Movement	At Start of Green	At End of Green	
10	2	1	1	33	29	4	0	0	
11	9	5	4	38	33	5	4	1	
12	1	0	1	43	39	4	0	0	
13	2	2	0	37	32	5	2	0	
14	4	1	3	35	33	2	1	0	
15	1	0	1	38	33	5	0	0	
16	3	0	3	22	19	3	0	1	
17	2	1	1	43	34	9	1	0	
18	5	1	4	35	29	6	1	0	
19	3	1	2	35	31	4	0	0	
20	7	4	3	24	22	2	3	0	
21	5	2	3	23	21	2	1	1	
22	4	1	3	26	22	4	1	0	
23	4	1	3	38	33	5	1	0	
24	0	0	0	40	32	8	0	0	
25	0	0	0	38	31	7	0	0	
26	2	1	1	36	31	5	0	0	
27	3	0	3	31	26	5	0	0	
28	3	0	3	24	20	4	0	0	
29	2	1	1	41	36	5	1	1	
30	5	2	3	41	35	6	2	0	
31	5	2	3	41	35	6	0	0	
32	1	1	0	41	37	4	0	0	
33	6	2	4	35	29	6	1	1	

Cycle	Right Turning Vehicles			Volume of Conflicting Vehicles			Queue in Right Turn Lane		Pedestrian Conflict? (G/R)
	Total	On Green (RTOG)	On Red (RTOR)	Total	Thru Movement	Left Turn Movement	At Start of Green	At End of Green	
34	4	1	3	22	18	4	1	0	
35	4	2	2	48	40	8	1	0	
36	4	4	0	32	28	4	3	0	

Green Arrival	23	19.7%
Red Arrival	92	78.6%
Unknown	2	1.7%
All Vehicles	117	100.0%

Location ID: 17
Main Hwy/Road: WIS 32 / S Ashland Ave
Cross Hwy/Road: County VK / Lombardi Ave
RT Studied: SB
Int. Type: Intersection
Single/Dual RT: Single
Population Group: 100 to 250

Video Date: 5/13/2015
Start Time: 8:00 AM
End Time: 9:00 AM
County: Brown
Region: NE
Municipality: Green Bay

Cycle Length Information

	Hour # 1		
	1	2	3
Cycle Start	8:00:31	8:20:34	8:40:27
Change to Red	8:01:00	8:21:07	8:40:52
Cycle End	8:01:50	8:21:36	8:41:37
Cycle Length	0:01:19	0:01:02	0:01:10
Green Time	0:00:29	0:00:33	0:00:25

Note maximum # of vehicles that can be seen in the right turn lane queue:

6

Cycle	Right Turning Vehicles			Volume of Conflicting Vehicles			Queue in Right Turn Lane		Pedestrian Conflict? (G/R)
	Total	On Green (RTOG)	On Red (RTOR)	Total	Thru Movement	Left Turn Movement	At Start of Green	At End of Green	
1	3	0	3	10	2	8	0	0	
2	2	2	0	0	0	0	1	0	
3	5	2	3	1	0	1	0	0	
4	4	1	3	0	0	0	0	0	
5	0	0	0	0	0	0	0	0	
6	3	2	1	0	0	0	0	0	
7	1	0	1	0	0	0	0	0	
8	1	1	0	0	0	0	1	0	
9	2	2	0	0	0	0	0	0	
10	4	2	2	1	1	0	0	0	
11	3	2	1	0	0	0	0	0	
12	1	0	1	6	0	6	0	0	
13	1	0	1	0	0	0	0	0	
14	4	0	4	2	0	2	0	0	
15	1	0	1	0	0	0	0	1	

Cycle	Right Turning Vehicles			Volume of Conflicting Vehicles			Queue in Right Turn Lane		Pedestrian Conflict? (G/R)
	Total	On Green (RTOG)	On Red (RTOR)	Total	Thru Movement	Left Turn Movement	At Start of Green	At End of Green	
16	1	1	0	0	0	0	0	0	
17	2	1	1	0	0	0	1	0	
18	2	1	1	2	0	2	0	0	
19	2	2	0	2	0	2	0	0	
20	6	4	2	0	0	0	1	1	
21	2	0	2	0	0	0	0	0	
22	4	4	0	0	0	0	4	0	
23	1	1	0	0	0	0	0	0	
24	5	4	1	4	2	2	0	0	
25	1	0	1	1	1	0	0	0	
26	4	4	0	1	0	1	0	0	
27	2	2	0	0	0	0	0	0	
28	2	1	1	0	0	0	0	1	
29	2	0	2	0	0	0	0	0	
30	0	0	0	0	0	0	0	0	
31	3	3	0	0	0	0	1	0	
32	2	1	1	0	0	0	0	0	
33	0	0	0	3	3	0	0	0	
34	2	0	2	3	0	3	0	0	R
35	2	0	2	2	1	1	0	1	

Cycle	Right Turning Vehicles			Volume of Conflicting Vehicles			Queue in Right Turn Lane		Pedestrian Conflict? (G/R)
	Total	On Green (RTOG)	On Red (RTOR)	Total	Thru Movement	Left Turn Movement	At Start of Green	At End of Green	
36	2	0	2	0	0	0	0	1	
37	5	1	4	4	2	2	0	0	
38	3	3	0	2	0	2	1	0	
39	8	5	3	5	0	5	1	0	
40	3	2	1	0	0	0	0	0	
41	6	4	2	4	1	3	1	1	
42	1	0	1	2	0	2	0	0	
43	2	2	0	1	1	0	2	0	
44	5	4	1	1	1	0	1	0	
45	0	0	0	0	0	0	0	0	
46	3	2	1	3	0	3	0	0	
47	4	3	1	0	0	0	0	1	
48	2	2	0	4	1	3	0	0	
49	1	1	0	1	0	1	0	0	
50	1	0	1	1	1	0	0	0	
51	4	1	3	1	0	1	0	0	

	Total	%
Green Arrival	65	50.0%
Red Arrival	65	50.0%
Unknown	0	0.0%
All Vehicles	130	100.0%

Location ID: 17
Main Hwy/Road: WIS 32 / S Ashland Ave
Cross Hwy/Road: County VK / Lombardi Ave
RT Studied: SB
Int. Type: Intersection
Single/Dual RT: Single
Population Group: 100 to 250

Video Date: 5/13/2015
Start Time: 4:00 PM
End Time: 5:00 PM
County: Brown
Region: NE
Municipality: Green Bay

Cycle Length Information

	Hour # 1		
	1	2	3
Cycle Start	16:00:48	16:21:02	16:40:44
Change to Red	16:01:29	16:21:44	16:41:23
Cycle End	16:02:14	16:22:14	16:42:21
Cycle Length	0:01:26	0:01:12	0:01:37
Green Time	0:00:41	0:00:42	0:00:39

Note maximum # of vehicles that can be seen in the right turn lane queue:

6

Cycle	Right Turning Vehicles			Volume of Conflicting Vehicles			Queue in Right Turn Lane		Pedestrian Conflict? (G/R)
	Total	On Green (RTOG)	On Red (RTOR)	Total	Thru Movement	Left Turn Movement	At Start of Green	At End of Green	
1	3	2	1	4	2	2	1	0	
2	2	2	0	3	3	0	0	0	
3	2	1	1	7	3	4	0	0	
4	5	5	0	6	4	2	0	0	
5	6	5	1	4	4	0	1	0	
6	3	1	2	13	5	8	0	0	
7	5	3	2	10	7	3	2	1	
8	3	1	2	11	9	2	0	1	
9	4	3	1	11	8	3	2	0	
10	7	5	2	8	6	2	0	0	
11	7	4	3	11	6	5	1	0	
12	5	1	4	5	3	2	0	0	
13	1	1	0	11	6	5	0	0	
14	3	2	1	4	3	1	0	0	
15	1	1	0	3	3	0	0	0	

Cycle	Right Turning Vehicles			Volume of Conflicting Vehicles			Queue in Right Turn Lane		Pedestrian Conflict? (G/R)
	Total	On Green (RTOG)	On Red (RTOR)	Total	Thru Movement	Left Turn Movement	At Start of Green	At End of Green	
16	4	0	4	7	2	5	0	0	
17	1	1	0	6	6	0	0	0	
18	6	2	4	7	1	6	0	1	
19	3	2	1	8	3	5	0	0	
20	2	1	1	0	0	0	0	0	
21	1	1	0	4	1	3	1	0	
22	7	4	3	1	0	1	1	1	
23	0	0	0	4	4	0	0	0	
24	1	1	0	1	1	0	0	0	
25	7	6	1	14	5	9	1	0	
26	0	0	0	10	2	8	0	0	
27	8	8	0	11	7	4	8	0	
28	4	2	2	14	6	8	0	0	
29	9	9	0	12	6	6	5	0	
30	4	3	1	13	5	8	2	1	
31	13	11	2	9	3	6	4	0	
32	11	10	1	4	4	0	0	0	
33	4	3	1	6	0	6	0	0	
34	9	6	3	9	7	2	0	0	R
35	11	5	6	20	11	9	1	1	
36	0	0	0	10	4	6	0	0	
37	13	12	1	7	3	4	6	0	
38	7	6	1	4	4	0	0	0	
39	6	4	2	6	3	3	1	0	
40	7	3	4	4	4	0	0	1	
41	9	5	4	5	1	4	3	0	
42	3	1	2	3	3	0	1	0	

	Total	%
Green Arrival	103	49.8%
Red Arrival	97	46.9%
Unknown	7	3.4%
All Vehicles	207	100.0%

Location ID: 17
Main Hwy/Road: WIS 32/S Ashland Ave
Cross Hwy/Road: County VK/Lombardi Ave
RT Studied: NB
Int. Type: Intersection
Single/Dual RT: Single
Population Group: 100 to 250

Video Date: 5/13/2015
Start Time: 7:00 AM
End Time: 8:00 AM
County: Brown
Region: NE
Municipality: Green Bay

Cycle Length Information

	Hour # 1		
	1	2	3
Cycle Start	7:00:26	7:19:37	7:40:51
Change to Red	7:01:02	7:20:38	7:41:45
Cycle End	7:01:21	7:21:17	7:42:28
Cycle Length	0:00:55	0:01:40	0:01:37
Green Time	0:00:36	0:01:01	0:00:54

Note maximum # of vehicles that can be seen in the right turn lane queue:

6

Cycle	Right Turning Vehicles			Volume of Conflicting Vehicles			Queue in Right Turn Lane		Pedestrian Conflict? (G/R)
	Total	On Green (RTOG)	On Red (RTOR)	Total	Thru Movement	Left Turn Movement	At Start of Green	At End of Green	
1	1	1	0	0	0	0	1	0	
2	0	0	0	0	0	0	0	0	
3	0	0	0	12	10	2	0	0	
4	4	4	0	7	7	0	0	0	
5	3	1	2	6	6	0	0	0	
6	4	3	1	1	1	0	1	0	
7	5	3	2	3	3	0	2	0	
8	0	0	0	0	0	0	0	0	
9	3	3	0	0	0	0	0	0	
10	2	1	1	3	3	0	0	0	
11	5	3	2	4	4	0	0	2	
12	3	0	3	4	4	0	0	0	

Cycle	Right Turning Vehicles			Volume of Conflicting Vehicles			Queue in Right Turn Lane		Pedestrian Conflict? (G/R)
	Total	On Green (RTOG)	On Red (RTOR)	Total	Thru Movement	Left Turn Movement	At Start of Green	At End of Green	
13	4	0	4	0	0	0	0	0	
14	2	1	1	3	2	1	0	0	
15	1	1	0	4	3	1	1	0	
16	4	4	0	4	4	0	1	0	
17	4	4	0	6	5	1	0	0	
18	2	1	1	4	4	0	1	0	
19	3	2	1	5	5	0	0	0	
20	1	1	0	1	1	0	1	0	
21	5	5	0	0	0	0	0	0	
22	3	1	2	0	0	0	0	1	
23	1	0	1	5	5	0	0	1	
24	2	1	1	8	8	0	0	0	
25	2	2	0	2	2	0	0	0	
26	1	1	0	4	4	0	0	0	
27	0	0	0	2	2	0	0	0	
28	3	3	0	1	1	0	1	0	
29	0	0	0	3	3	0	0	0	
30	1	1	0	1	1	0	0	0	
31	2	2	0	4	4	0	1	0	

Cycle	Right Turning Vehicles			Volume of Conflicting Vehicles			Queue in Right Turn Lane		Pedestrian Conflict? (G/R)
	Total	On Green (RTOG)	On Red (RTOR)	Total	Thru Movement	Left Turn Movement	At Start of Green	At End of Green	
32	1	1	0	2	2	0	1	0	
33	0	0	0	1	1	0	0	0	
34	0	0	0	2	2	0	0	0	
35	2	1	1	1	1	0	0	0	
36	1	1	0	3	3	0	0	0	
37	3	3	0	0	0	0	0	0	
38	2	2	0	7	7	0	1	0	
39	0	0	0	3	3	0	0	0	
40	2	2	0	1	1	0	0	0	
41	1	1	0	3	3	0	0	0	
42	1	1	0	3	3	0	1	0	
43	2	1	1	0	0	0	0	0	
44	3	3	0	4	4	0	1	0	
45	3	2	1	8	8	0	0	0	
46	0	0	0	0	0	0	0	0	
47	0	0	0	3	3	0	0	0	

	Total	%
Green Arrival	57	62.0%
Red Arrival	34	37.0%
Unknown	1	1.1%
All Vehicles	92	100.0%

Location ID: 17
Main Hwy/Road: WIS 32/S Ashland Ave
Cross Hwy/Road: County VK/Lombardi Ave
RT Studied: NB
Int. Type: Intersection
Single/Dual RT: Single
Population Group: 100 to 250

Video Date: 5/13/2015
Start Time: 4:00 PM
End Time: 5:00 PM
County: Brown
Region: NE
Municipality: Green Bay

Cycle Length Information

	Hour # 1		
	1	2	3
Cycle Start	4:00:48	4:19:21	4:40:26
Change to Red	4:01:28	4:20:18	4:41:23
Cycle End	4:01:59	4:20:53	4:42:03
Cycle Length	0:01:11	0:01:32	0:01:37
Green Time	0:00:40	0:00:57	0:00:57

Note maximum # of vehicles that can be seen in the right turn lane queue:

6

Cycle	Right Turning Vehicles			Volume of Conflicting Vehicles			Queue in Right Turn Lane*		Pedestrian Conflict? (G/R)
	Total	On Green (RTOG)	On Red (RTOR)	Total	Thru Movement	Left Turn Movement	At Start of Green	At End of Green	
1	0	0	0	0	0	0	0	0	
2	0	0	0	2	2	0	0	0	
3	0	0	0	3	3	0	0	0	
4	0	0	0	0	0	0	0	0	
5	1	0	1	1	1	0	0	0	
6	0	0	0	2	2	0	0	0	
7	1	1	0	0	0	0	0	0	
8	1	1	0	1	1	0	0	0	
9	1	1	0	2	2	0	0	0	
10	1	1	0	1	1	0	0	0	
11	0	0	0	1	1	0	0	0	
12	0	0	0	0	0	0	0	0	
13	0	0	0	3	3	0	0	0	
14	2	1	1	2	2	0	0	0	

Cycle	Right Turning Vehicles			Volume of Conflicting Vehicles			Queue in Right Turn Lane*		Pedestrian Conflict? (G/R)
	Total	On Green (RTOG)	On Red (RTOR)	Total	Thru Movement	Left Turn Movement	At Start of Green	At End of Green	
15	1	0	1	2	2	0	0	1	
16	0	0	0	2	2	0	0	0	
17	0	0	0	1	1	0	0	0	
18	0	0	0	0	0	0	0	0	
19	0	0	0	3	3	0	0	0	
20	0	0	0	1	1	0	0	0	
21	0	0	0	0	0	0	0	0	
22	0	0	0	0	0	0	0	0	
23	1	1	0	1	1	0	0	0	
24	0	0	0	0	0	0	0	0	
25	0	0	0	0	0	0	0	0	
26	0	0	0	5	5	0	0	0	
27	1	0	1	1	1	0	0	0	
28	2	2	0	1	1	0	0	0	
29	2	2	0	0	0	0	0	1	
30	1	1	0	2	2	0	1	0	
31	1	1	0	4	3	1	1	0	
32	0	0	0	1	1	0	0	0	
33	2	0	2	0	0	0	0	0	
34	2	1	1	3	3	0	0	0	
35	1	1	0	1	1	0	1	0	
36	1	1	0	0	0	0	0	0	
37	2	1	1	2	1	1	1	0	
38	0	0	0	1	1	0	0	0	
39	1	1	0	2	2	0	0	0	
40	0	0	0	3	3	0	0	0	
41	2	0	2	4	4	0	0	1	

	Total	%
Green Arrival	16	59.3%
Red Arrival	11	40.7%
Unknown	0	0.0%
All Vehicles	27	100.0%

Location ID: 18
Main Hwy/Road: E Mason St
Cross Hwy/Road: S Webster St
RT Studied: WB
Int. Type: Intersection
Single/Dual RT: Single
Population Group: 100 to 250

Video Date: 5/13/2015
Start Time: 7:00 AM
End Time: 8:00 AM
County: Brown
Region: NE
Municipality: Green Bay

Cycle Length Information

	Hour # 1		
	1	2	3
Cycle Start	7:00:10	7:21:21	7:40:53
Change to Red	7:00:52	7:21:52	7:41:23
Cycle End	7:01:42	7:22:46	7:42:26
Cycle Length	0:01:32	0:01:25	0:01:33
Green Time	0:00:42	0:00:31	0:00:30

Note maximum # of vehicles that can be seen in the right turn lane queue:

4

Cycle	Right Turning Vehicles			Volume of Conflicting Vehicles			Queue in Right Turn Lane		Pedestrian Conflict? (G/R)
	Total	On Green (RTOG)	On Red (RTOR)	Total	Thru Movement	Left Turn Movement	At Start of Green	At End of Green	
1	0	0	0	7	4	3	0	0	
2	1	1	0	7	4	3	0	0	
3	0	0	0	8	6	2	0	0	
4	1	1	0	6	4	2	0	0	
5	0	0	0	5	2	3	0	0	
6	0	0	0	5	3	2	0	0	
7	2	2	0	12	7	5	0	0	
8	4	2	2	6	3	3	1	0	
9	0	0	0	10	6	4	0	0	
10	3	1	2	1	1	0	0	0	
11	1	1	0	9	5	4	0	0	
12	1	1	0	11	6	5	0	0	
13	1	1	0	7	6	1	0	0	
14	2	0	2	13	7	6	0	0	

Cycle	Right Turning Vehicles			Volume of Conflicting Vehicles			Queue in Right Turn Lane		Pedestrian Conflict? (G/R)
	Total	On Green (RTOG)	On Red (RTOR)	Total	Thru Movement	Left Turn Movement	At Start of Green	At End of Green	
15	1	0	1	4	2	2	0	0	
16	0	0	0	12	6	6	0	0	
17	3	3	0	15	8	7	0	0	
18	2	2	0	5	3	2	0	0	
19	0	0	0	6	3	3	0	0	
20	3	3	0	12	12	0	1	0	
21	0	0	0	9	4	5	0	0	
22	4	1	3	8	5	3	0	1	
23	3	1	2	8	5	3	0	2	
24	2	2	0	6	4	2	0	0	
25	2	2	0	13	8	5	0	0	
26	1	1	0	10	6	4	0	0	
27	0	0	0	24	16	8	0	0	
28	4	1	3	16	12	4	0	0	
29	4	3	1	8	4	4	1	0	
30	1	1	0	8	6	2	0	0	
31	1	0	1	7	7	0	0	1	
32	2	2	0	15	9	6	0	0	
33	3	2	1	7	2	5	1	1	
34	4	2	2	10	8	2	0	1	R
35	3	2	1	4	4	0	0	0	
36	2	2	0	10	4	6	0	0	
37	4	2	2	15	11	4	1	0	
38	3	1	2	8	8	0	0	1	
39	3	1	2	13	7	6	0	1	

	Total	%
Green Arrival	47	66.2%
Red Arrival	24	33.8%
Unknown	0	0.0%
All Vehicles	71	100.0%

Location ID: 18
Main Hwy/Road: E Mason St
Cross Hwy/Road: S Webster St
RT Studied: WB
Int. Type: Intersection
Single/Dual RT: Single
Population Group: 100 to 250

Video Date: 5/13/2015
Start Time: 4:00 PM
End Time: 5:00 PM
County: Brown
Region: NE
Municipality: Green Bay

Cycle Length Information

	Hour # 1		
	1	2	3
Cycle Start	16:00:20	16:19:50	16:40:49
Change to Red	16:00:50	16:20:20	16:41:19
Cycle End	16:01:50	16:21:20	16:42:19
Cycle Length	0:01:30	0:01:30	0:01:30
Green Time	0:00:30	0:00:30	0:00:30

Note maximum # of vehicles that can be seen in the right turn lane queue:

4

Cycle	Right Turning Vehicles			Volume of Conflicting Vehicles			Queue in Right Turn Lane*		Pedestrian Conflict? (G/R)
	Total	On Green (RTOG)	On Red (RTOR)	Total	Thru Movement	Left Turn Movement	At Start of Green	At End of Green	
1	2	1	1	9	5	4	0	0	R
2	2	2	0	16	10	6	0	0	
3	3	3	0	12	6	6	3	0	G
4	2	1	1	14	9	5	0	0	
5	1	0	1	16	12	4	0	0	
6	2	1	1	14	9	5	0	0	
7	3	2	1	14	8	6	0	0	G
8	2	1	1	17	11	6	0	0	
9	5	3	2	16	10	6	0	0	
10	2	1	1	15	9	6	0	0	
11	2	2	0	17	9	8	0	0	
12	0	0	0	15	11	4	0	0	
13	3	1	2	11	8	3	0	0	
14	5	1	4	14	7	7	0	0	R

Cycle	Right Turning Vehicles			Volume of Conflicting Vehicles			Queue in Right Turn Lane*		Pedestrian Conflict? (G/R)
	Total	On Green (RTOG)	On Red (RTOR)	Total	Thru Movement	Left Turn Movement	At Start of Green	At End of Green	
15	2	2	0	11	5	6	2	0	
16	3	2	1	17	10	7	0	0	
17	1	1	0	11	5	6	0	0	
18	0	0	0	16	8	8	0	0	
19	4	4	0	12	6	6	0	0	
20	3	2	1	7	0	7	0	0	
21	4	1	3	12	7	5	0	0	
22	0	0	0	13	8	5	0	0	
23	1	1	0	10	9	1	0	0	
24	5	4	1	14	10	4	2	0	
25	0	0	0	10	7	3	0	0	
26	0	0	0	15	8	7	0	0	
27	1	1	0	17	12	5	0	0	
28	2	0	2	10	7	3	0	0	
29	3	1	2	14	10	4	0	0	
30	0	0	0	14	9	5	0	0	
31	1	1	0	6	3	3	1	0	
32	1	1	0	14	8	6	0	0	
33	4	3	1	10	2	8	0	0	
34	0	0	0	2	2	0	0	0	
35	3	2	1	7	4	3	0	0	
36	1	0	1	18	12	6	0	0	
37	0	0	0	9	4	5	0	0	
38	2	1	1	12	4	8	0	1	
39	3	2	1	9	4	5	1	0	

	Total	%
Green Arrival	40	51.3%
Red Arrival	38	48.7%
Unknown	0	0.0%
All Vehicles	78	100.0%

Location ID: 19
Main Hwy/Road: WIS 54/W Mason St.
Cross Hwy/Road: N Military Ave
RT Studied: EB
Int. Type: Intersection
Single/Dual RT: Single
Population Group: 100 to 250

Video Date: 5/13/2015
Start Time: 7:00 AM
End Time: 8:00 AM
County: Brown
Region: NE
Municipality: Green Bay

Cycle Length Information

	Hour # 1		
	1	2	3
Cycle Start	7:00:31	7:19:56	7:40:56
Change to Red	7:00:55	7:20:32	7:41:32
Cycle End	7:01:56	7:21:26	7:42:26
Cycle Length	0:01:25	0:01:30	0:01:30
Green Time	0:00:24	0:00:36	0:00:36

Note maximum # of vehicles that can be seen in the right turn lane queue:

4

Cycle	Right Turning Vehicles			Volume of Conflicting Vehicles			Queue in Right Turn Lane		Pedestrian Conflict? (G/R)
	Total	On Green (RTOG)	On Red (RTOR)	Total	Thru Movement	Left Turn Movement	At Start of Green	At End of Green	
1	1	1	0	4	4	0	0	0	
2	0	0	0	1	1	0	0	0	
3	1	0	1	0	0	0	0	0	
4	1	1	0	2	2	0	0	0	
5	1	0	1	3	3	0	0	0	
6	1	1	0	5	5	0	0	0	
7	2	2	0	2	2	0	0	0	
8	2	0	2	11	11	0	0	2	
9	2	1	1	0	0	0	1	0	
10	0	0	0	5	5	0	0	0	
11	2	0	2	9	9	0	0	0	
12	0	0	0	6	6	0	0	0	
13	2	1	1	6	6	0	0	0	
14	1	0	1	7	7	0	0	1	

Cycle	Right Turning Vehicles			Volume of Conflicting Vehicles			Queue in Right Turn Lane		Pedestrian Conflict? (G/R)
	Total	On Green (RTOG)	On Red (RTOR)	Total	Thru Movement	Left Turn Movement	At Start of Green	At End of Green	
15	1	0	1	4	4	0	0	0	
16	3	0	3	11	11	0	0	0	
17	2	0	2	0	0	0	0	0	
18	0	0	0	7	7	0	0	0	
19	1	0	1	6	6	0	0	0	
20	1	0	1	6	6	0	0	0	
21	2	1	1	6	6	0	0	0	
22	1	0	1	5	5	0	0	0	
23	1	1	0	2	2	0	0	0	
24	2	0	2	3	3	0	0	0	
25	1	1	0	8	8	0	0	0	
26	0	0	0	5	5	0	0	0	
27	0	0	0	3	3	0	0	0	
28	2	1	1	7	7	0	0	0	
29	2	1	1	11	10	1	0	0	
30	0	0	0	4	4	0	0	0	
31	4	3	1	6	3	3	2	0	
32	5	4	1	7	7	0	0	1	
33	4	1	3	9	8	1	0	1	
34	1	1	0	11	11	0	1	0	
35	2	1	1	13	11	2	0	0	
36	0	0	0	0	0	0	0	0	
37	0	0	0	4	4	0	0	0	
38	3	1	2	8	8	0	0	0	
39	1	0	1	8	8	0	0	0	

	Total	%
Green Arrival	24	43.6%
Red Arrival	31	56.4%
Unknown	0	0.0%
All Vehicles	55	100.0%

Location ID: 19
Main Hwy/Road: WIS 54/W Mason St.
Cross Hwy/Road: N Military Ave
RT Studied: EB
Int. Type: Intersection
Single/Dual RT: Single
Population Group: 100 to 250

Video Date: 5/13/2015
Start Time: 4:00 PM
End Time: 5:00 PM
County: Brown
Region: NE
Municipality: Green Bay

Cycle Length Information

Hour # 1			
	1	2	3
Cycle Start	4:01:28	4:20:57	4:40:26
Change to Red	4:02:04	4:21:31	4:41:04
Cycle End	4:02:58	4:22:28	4:41:55
Cycle Length	0:01:30	0:01:31	0:01:29
Green Time	0:00:36	0:00:34	0:00:38

Note maximum # of vehicles that can be seen in the right turn lane queue:

4

Cycle	Right Turning Vehicles			Volume of Conflicting Vehicles			Queue in Right Turn Lane		Pedestrian Conflict? (G/R)
	Total	On Green (RTOG)	On Red (RTOR)	Total	Thru Movement	Left Turn Movement	At Start of Green	At End of Green	
1	3	2	1	10	10	0	1	0	
2	4	3	1	15	15	0	2	0	
3	2	1	1	6	6	0	0	0	
4	3	1	2	14	14	0	0	0	
5	1	1	0	8	7	1	0	0	
6	7	4	3	19	19	0	0	0	
7	7	3	4	18	18	0	0	0	
8	5	0	5	7	7	0	0	0	
9	2	2	0	9	9	0	0	0	
10	3	1	2	11	11	0	0	0	
11	0	0	0	2	2	0	0	0	
12	1	1	0	13	13	0	0	0	
13	6	2	4	9	9	0	0	0	
14	1	0	1	15	14	1	0	1	

Cycle	Right Turning Vehicles			Volume of Conflicting Vehicles			Queue in Right Turn Lane		Pedestrian Conflict? (G/R)
	Total	On Green (RTOG)	On Red (RTOR)	Total	Thru Movement	Left Turn Movement	At Start of Green	At End of Green	
15	3	1	2	11	11	0	0	0	
16	0	0	0	10	10	0	0	0	
17	1	1	0	11	11	0	0	0	
18	3	2	1	7	7	0	0	0	
19	3	1	2	7	7	0	1	0	
20	2	0	2	11	11	0	0	0	
21	2	1	1	9	9	0	0	0	
22	5	3	2	10	9	1	3	2	
23	2	1	1	11	11	0	0	0	
24	6	1	5	12	12	0	1	0	
25	6	3	3	5	5	0	2	0	
26	0	0	0	7	7	0	0	0	
27	1	1	0	10	10	0	1	0	
28	4	2	2	18	18	0	1	0	
29	3	1	2	14	14	0	0	0	
30	1	0	1	13	13	0	0	0	
31	1	1	0	10	10	0	0	0	
32	5	3	2	10	7	3	3	0	
33	3	1	2	13	13	0	0	2	
34	3	1	2	14	14	0	0	0	
35	1	0	1	15	13	2	0	0	
36	3	0	3	5	5	0	0	0	
37	3	1	2	9	9	0	1	1	
38	2	1	1	9	9	0	0	0	

	Total	%
Green Arrival	37	34.3%
Red Arrival	70	64.8%
Unknown	1	0.9%
All Vehicles	108	100.0%

Location ID: 59
Main Hwy/Road: WIS 35/2nd St
Cross Hwy/Road: Buckeye St/Coulee Rd
RT Studied: WB
Int. Type: Intersection
Single/Dual RT: Single
Population Group: < 25

Video Date: 4/28/2015
Start Time: 7:00 AM
End Time: 8:00 AM
County: St. Croix
Region: NW
Municipality: Hudson

Cycle Length Information

	Hour # 1		
	1	2	3
Cycle Start	7:01:32	7:21:22	7:39:55
Change to Red	7:01:47	7:21:36	7:40:09
Cycle End	7:02:53	7:23:00	7:41:34
Cycle Length	0:01:21	0:01:38	0:01:39
Green Time	0:00:15	0:00:14	0:00:14

Note maximum # of vehicles that can be seen in the right turn lane queue:

5

Cycle	Right Turning Vehicles			Volume of Conflicting Vehicles			Queue in Right Turn Lane		Pedestrian Conflict? (G/R)
	Total	On Green (RTOG)	On Red (RTOR)	Total	Thru Movement	Left Turn Movement	At Start of Green	At End of Green	
1	1	0	1	7	7	0	0	0	
2	2	0	2	9	9	0	0	0	
3	0	0	0	2	2	0	0	0	
4	0	0	0	7	7	0	0	0	
5	0	0	0	9	8	1	0	0	
6	2	1	1	7	7	0	0	0	
7	1	1	0	7	7	0	0	0	
8	1	1	0	0	0	0	1	0	
9	2	0	2	2	2	0	0	0	
10	3	1	2	11	11	0	0	0	
11	1	0	1	10	10	0	0	0	
12	3	2	1	9	9	0	0	0	
13	3	2	1	9	9	0	0	0	
14	2	0	2	10	10	0	0	0	

Cycle	Right Turning Vehicles			Volume of Conflicting Vehicles			Queue in Right Turn Lane		Pedestrian Conflict? (G/R)
	Total	On Green (RTOG)	On Red (RTOR)	Total	Thru Movement	Left Turn Movement	At Start of Green	At End of Green	
15	4	0	4	10	9	1	0	0	
16	2	0	2	9	9	0	0	0	
17	1	0	1	11	11	0	0	0	
18	4	0	4	13	12	1	0	0	
19	4	0	4	5	5	0	0	0	
20	0	0	0	9	7	2	0	0	
21	0	0	0	5	5	0	0	0	
22	0	0	0	5	5	0	0	0	
23	1	0	1	16	16	0	0	0	
24	1	1	0	6	6	0	1	0	
25	4	2	2	11	11	0	1	1	G
26	4	2	2	7	7	0	2	0	
27	5	0	5	14	14	0	0	0	
28	4	1	3	12	12	0	1	1	
29	4	2	2	10	10	0	1	1	

	Total	%
Green Arrival	12	20.3%
Red Arrival	46	78.0%
Unknown	1	1.7%
All Vehicles	59	100.0%

Location ID: 59
Main Hwy/Road: WIS 35/2nd St
Cross Hwy/Road: Buckeye St/Coulee Rd
RT Studied: WB
Int. Type: Intersection
Single/Dual RT: Single
Population Group: < 25

Video Date: 4/28/2015
Start Time: 4:00 PM
End Time: 5:00 PM
County: St. Croix
Region: NW
Municipality: Hudson

Cycle Length Information

	Hour # 1		
	1	2	3
Cycle Start	4:00:31	4:20:21	4:39:33
Change to Red	4:00:55	4:20:48	4:40:07
Cycle End	4:02:27	4:22:42	4:41:51
Cycle Length	0:01:56	0:02:21	0:02:18
Green Time	0:00:24	0:00:27	0:00:34

Note maximum # of vehicles that can be seen in the right turn lane queue:

5

Cycle	Right Turning Vehicles			Volume of Conflicting Vehicles			Queue in Right Turn Lane*		Pedestrian Conflict? (G/R)
	Total	On Green (RTOG)	On Red (RTOR)	Total	Thru Movement	Left Turn Movement	At Start of Green	At End of Green	
1	14	6	8	29	28	1	1	0	
2	4	2	2	24	24	0	2	0	
3	2	1	1	12	12	0	1	1	
4	2	2	0	12	12	0	2	0	
5	10	5	5	11	11	0	5	1	
6	6	4	2	11	11	0	2	0	
7	7	5	2	8	7	1	2	2	
8	9	4	5	30	29	1	4	1	
9	8	7	1	10	8	2	5	0	
10	4	3	1	20	20	0	0	1	
11	11	6	5	11	11	0	4	2	
12	5	4	1	17	17	0	3	0	
13	10	7	3	21	21	0	2	0	
14	13	4	9	20	20	0	3	0	

Cycle	Right Turning Vehicles			Volume of Conflicting Vehicles			Queue in Right Turn Lane*		Pedestrian Conflict? (G/R)
	Total	On Green (RTOG)	On Red (RTOR)	Total	Thru Movement	Left Turn Movement	At Start of Green	At End of Green	
15	7	3	4	15	15	0	2	0	
16	6	0	6	14	14	0	0	1	
17	8	4	4	10	10	0	0	0	
18	10	5	5	16	16	0	2	1	
19	1	0	1	11	11	0	0	0	
20	6	3	3	26	26	0	2	2	
21	6	2	4	17	17	0	2	0	
22	8	4	4	21	20	1	2	0	
23	8	4	4	20	20	0	1	0	
24	6	1	5	25	25	0	0	0	
25	10	6	4	25	25	0	5	1	
26	6	4	2	29	29	0	2	0	
27	15	7	8	23	23	0	5	1	
28	6	3	3	25	24	1	3	0	
29	9	3	6	18	18	0	3	1	
30	3	1	2	4	4	0	0	0	
31	6	3	3	21	21	0	1	0	
32	11	5	6	24	24	0	2	1	
33	3	1	2	25	24	1	0	0	

	Total	%
Green Arrival	59	24.6%
Red Arrival	170	70.8%
Unknown	11	4.6%
All Vehicles	240	100.0%

NW Region

St. Croix
County


59

★ Location ID

▭ WisDOT Regions

▭ Wisconsin Counties

0 25 50 100 Feet



Location 59:
WIS 35 / 2nd St & Buckeye St / Coulee Rd WB

Right Turn on Red
Data Collection



Location ID: 26
Main Hwy/Road: WIS 25 (S Broadway St)
Cross Hwy/Road: WIS 29 (Main St)
RT Studied: NB
Int. Type: Intersection
Single/Dual RT: Single
Population Group: < 25

Video Date: 4/28/2015
Start Time: 7:00 AM
End Time: 8:00 AM
County: Dunn
Region: NW
Municipality: Menomonie

Cycle Length Information

	Hour # 1		
	1	2	3
Cycle Start	7:01:05	7:20:35	7:40:04
Change to Red	7:01:50	7:21:20	7:40:50
Cycle End	7:02:35	7:22:05	7:41:35
Cycle Length	0:01:30	0:01:30	0:01:31
Green Time	0:00:45	0:00:45	0:00:46

Note maximum # of vehicles that can be seen in the right turn lane queue:

6

Cycle	Right Turning Vehicles			Volume of Conflicting Vehicles			Queue in Right Turn Lane		Pedestrian Conflict? (G/R)
	Total	On Green (RTOG)	On Red (RTOR)	Total	Thru Movement	Left Turn Movement	At Start of Green	At End of Green	
1	2	0	2	2	2	0	0	0	R
2	3	1	2	2	2	0	0	0	
3	3	0	3	3	3	0	0	0	G
4	0	0	0	1	1	0	0	0	
5	1	1	0	4	4	0	0	0	
6	5	4	1	1	1	0	0	1	
7	3	1	2	3	3	0	0	0	G
8	4	2	2	2	2	0	0	0	
9	2	0	2	0	0	0	0	0	
10	4	4	0	2	2	0	1	0	
11	2	1	1	3	2	1	1	0	
12	4	3	1	0	0	0	0	0	
13	1	0	1	6	6	0	0	1	
14	2	1	1	2	2	0	0	0	R
15	4	3	1	4	4	0	0	0	

Cycle	Right Turning Vehicles			Volume of Conflicting Vehicles			Queue in Right Turn Lane		Pedestrian Conflict? (G/R)
	Total	On Green (RTOG)	On Red (RTOR)	Total	Thru Movement	Left Turn Movement	At Start of Green	At End of Green	
16	5	3	2	2	2	0	2	0	
17	2	1	1	5	5	0	1	0	
18	5	4	1	2	2	0	2	0	
19	7	4	3	1	1	0	2	0	
20	5	3	2	5	5	0	1	0	
21	8	4	4	2	2	0	0	0	
22	3	3	0	0	0	0	0	0	
23	3	1	2	1	1	0	0	0	
24	5	2	3	5	5	0	0	0	
25	10	4	6	2	1	1	0	0	
26	6	3	3	3	3	0	3	0	
27	3	2	1	2	2	0	0	0	
28	5	2	3	7	7	0	0	0	
29	1	1	0	0	0	0	1	0	
30	6	3	3	4	4	0	2	1	
31	1	0	1	2	2	0	0	0	
32	2	1	1	2	2	0	0	0	
33	4	3	1	1	1	0	0	0	
34	2	1	1	0	0	0	1	0	
35	4	3	1	4	4	0	2	0	
36	5	4	1	0	0	0	3	0	
37	4	3	1	0	0	0	0	0	
38	4	3	1	1	1	0	0	0	
39	0	0	0	0	0	0	0	0	

	Total	%
Green Arrival	60	42.9%
Red Arrival	80	57.1%
Unknown	0	0.0%
All Vehicles	140	100.0%

Location ID: 26
Main Hwy/Road: WIS 25 (S Broadway St)
Cross Hwy/Road: WIS 29 (Main St)
RT Studied: NB
Int. Type: Intersection
Single/Dual RT: Single
Population Group: < 25

Video Date: 4/28/2015
Start Time: 5:00 PM
End Time: 6:00 PM
County: Dunn
Region: NW
Municipality: Menomonie

Cycle Length Information

	Hour # 1		
	1	2	3
Cycle Start	17:01:09	17:20:38	17:40:09
Change to Red	17:01:54	17:21:24	17:40:54
Cycle End	17:02:39	17:22:09	17:41:39
Cycle Length	0:01:30	0:01:31	0:01:30
Green Time	0:00:45	0:00:46	0:00:45

Note maximum # of vehicles that can be seen in the right turn lane queue:

6

Cycle	Right Turning Vehicles			Volume of Conflicting Vehicles			Queue in Right Turn Lane		Pedestrian Conflict? (G/R)
	Total	On Green (RTOG)	On Red (RTOR)	Total	Thru Movement	Left Turn Movement	At Start of Green	At End of Green	
1	4	3	1	0	0	0	1	0	R
2	6	3	3	4	4	0	1	0	
3	6	6	0	2	0	2	2	0	G
4	4	4	0	3	3	0	2	0	
5	1	1	0	1	1	0	0	0	
6	9	7	2	0	0	0	5	0	
7	5	0	5	3	3	0	0	1	G
8	9	2	7	1	1	0	2	0	
9	6	3	3	2	2	0	0	0	
10	5	5	0	0	0	0	1	0	
11	8	7	1	3	3	0	5	0	
12	10	8	2	6	6	0	0	0	
13	8	6	2	1	1	0	4	0	
14	5	5	0	1	1	0	0	0	R
15	2	1	1	3	2	1	0	1	

Cycle	Right Turning Vehicles			Volume of Conflicting Vehicles			Queue in Right Turn Lane		Pedestrian Conflict? (G/R)
	Total	On Green (RTOG)	On Red (RTOR)	Total	Thru Movement	Left Turn Movement	At Start of Green	At End of Green	
16	9	8	1	3	3	0	2	0	
17	4	2	2	1	1	0	0	0	
18	5	3	2	4	4	0	1	1	
19	7	7	0	2	2	0	3	0	
20	7	6	1	1	1	0	3	0	
21	4	2	2	1	1	0	1	0	
22	1	0	1	2	2	0	0	0	
23	6	3	3	0	0	0	1	0	
24	4	3	1	2	2	0	1	0	
25	8	8	0	3	3	0	2	0	
26	3	2	1	1	1	0	0	0	
27	4	2	2	0	0	0	0	0	
28	2	2	0	4	4	0	0	0	
29	6	3	3	0	0	0	2	0	
30	3	2	1	0	0	0	0	0	
31	2	1	1	1	1	0	0	0	
32	4	3	1	3	3	0	0	0	
33	7	6	1	1	1	0	0	0	
34	2	1	1	1	1	0	0	1	
35	5	4	1	0	0	0	1	0	
36	4	2	2	3	3	0	0	0	
37	2	1	1	2	1	1	0	0	

	Total	%
Green Arrival	96	51.3%
Red Arrival	89	47.6%
Unknown	2	1.1%
All Vehicles	187	100.0%

Location ID: 27
Main Hwy/Road: US 12/Crescent St.
Cross Hwy/Road: WIS 25/Broadway St/4th Ave.
RT Studied: SB
Int. Type: Intersection
Single/Dual RT: Single
Population Group: < 25

Video Date: 4/28/2015
Start Time: 7:00 AM
End Time: 8:00 AM
County: Dunn
Region: NW
Municipality: Menomonie

Cycle Length Information

	Hour # 1		
	1	2	3
Cycle Start	7:01:28	7:20:58	7:40:28
Change to Red	7:02:01	7:21:31	7:41:01
Cycle End	7:02:58	7:22:28	7:41:58
Cycle Length	0:01:30	0:01:30	0:01:30
Green Time	0:00:33	0:00:33	0:00:33

Note maximum # of vehicles that can be seen in the right turn lane queue:

3

Cycle	Right Turning Vehicles			Volume of Conflicting Vehicles			Queue in Right Turn Lane		Pedestrian Conflict? (G/R)
	Total	On Green (RTOG)	On Red (RTOR)	Total	Thru Movement	Left Turn Movement	At Start of Green	At End of Green	
1	2	0	2	0	0	0	0	0	
2	0	0	0	0	0	0	0	0	
3	0	0	0	0	0	0	0	0	
4	0	0	0	0	0	0	0	0	
5	0	0	0	0	0	0	0	0	
6	1	1	0	0	0	0	0	0	
7	1	1	0	0	0	0	1	0	
8	0	0	0	0	0	0	0	0	
9	0	0	0	0	0	0	0	0	
10	0	0	0	0	0	0	0	0	
11	1	0	1	0	0	0	0	0	
12	2	0	2	0	0	0	0	0	
13	0	0	0	0	0	0	0	0	
14	0	0	0	0	0	0	0	0	

Cycle	Right Turning Vehicles			Volume of Conflicting Vehicles			Queue in Right Turn Lane		Pedestrian Conflict? (G/R)
	Total	On Green (RTOG)	On Red (RTOR)	Total	Thru Movement	Left Turn Movement	At Start of Green	At End of Green	
15	1	1	0	0	0	0	0	0	
16	2	1	1	0	0	0	0	0	
17	2	0	2	0	0	0	0	0	R
18	0	0	0	0	0	0	0	0	
19	0	0	0	0	0	0	0	0	
20	1	0	1	0	0	0	0	0	
21	1	1	0	0	0	0	0	0	
22	0	0	0	0	0	0	0	0	
23	0	0	0	0	0	0	0	0	
24	0	0	0	0	0	0	0	0	
25	1	1	0	0	0	0	0	0	
26	2	1	1	0	0	0	1	0	
27	0	0	0	0	0	0	0	0	
28	1	1	0	0	0	0	0	0	
29	0	0	0	0	0	0	0	0	
30	1	1	0	0	0	0	0	0	
31	0	0	0	0	0	0	0	0	
32	0	0	0	0	0	0	0	0	
33	1	0	1	0	0	0	0	0	
34	1	1	0	0	0	0	0	0	
35	0	0	0	1	1	0	0	0	
36	0	0	0	0	0	0	0	0	
37	2	1	1	0	0	0	1	0	
38	0	0	0	0	0	0	0	0	
39	0	0	0	0	0	0	0	0	

	Total	%
Green Arrival	8	34.8%
Red Arrival	15	65.2%
Unknown	0	0.0%
All Vehicles	23	100.0%

Location ID: 27
Main Hwy/Road: US 12/Crescent St.
Cross Hwy/Road: WIS 25/Broadway St/4th Ave.
RT Studied: SB
Int. Type: Intersection
Single/Dual RT: Single
Population Group: < 25

Video Date: 4/28/2015
Start Time: 4:00 PM
End Time: 5:00 PM
County: Dunn
Region: NW
Municipality: Menomonie

Cycle Length Information

	Hour # 1		
	1	2	3
Cycle Start	4:00:03	4:21:04	4:40:34
Change to Red	4:00:36	4:21:37	4:41:07
Cycle End	4:01:33	4:22:34	4:42:04
Cycle Length	0:01:30	0:01:30	0:01:30
Green Time	0:00:33	0:00:33	0:00:33

Note maximum # of vehicles that can be seen in the right turn lane queue:

3

Cycle	Right Turning Vehicles			Volume of Conflicting Vehicles			Queue in Right Turn Lane*		Pedestrian Conflict? (G/R)
	Total	On Green (RTOG)	On Red (RTOR)	Total	Thru Movement	Left Turn Movement	At Start of Green	At End of Green	
1	0	0	0	1	1	0	0	0	
2	1	1	0	0	0	0	0	0	
3	0	0	0	0	0	0	0	0	
4	0	0	0	0	0	0	0	0	
5	1	1	0	0	0	0	0	0	
6	0	0	0	0	0	0	0	0	
7	1	0	1	0	0	0	0	0	
8	0	0	0	0	0	0	0	0	
9	0	0	0	0	0	0	0	0	
10	0	0	0	0	0	0	0	0	
11	2	1	1	0	0	0	0	0	
12	2	1	1	0	0	0	1	0	
13	0	0	0	0	0	0	0	0	
14	1	1	0	0	0	0	0	0	

Cycle	Right Turning Vehicles			Volume of Conflicting Vehicles			Queue in Right Turn Lane*		Pedestrian Conflict? (G/R)
	Total	On Green (RTOG)	On Red (RTOR)	Total	Thru Movement	Left Turn Movement	At Start of Green	At End of Green	
15	2	1	1	0	0	0	1	0	
16	1	0	1	0	0	0	0	0	
17	3	3	0	0	0	0	0	0	
18	0	0	0	0	0	0	0	0	
19	0	0	0	0	0	0	0	0	
20	1	0	1	0	0	0	0	0	
21	1	0	1	0	0	0	0	1	
22	1	1	0	2	1	1	0	0	
23	1	1	0	0	0	0	0	0	
24	1	1	0	0	0	0	0	0	
25	0	0	0	1	1	0	0	0	
26	1	0	1	0	0	0	0	0	
27	0	0	0	0	0	0	0	0	
28	1	0	1	0	0	0	0	0	
29	0	0	0	0	0	0	0	0	
30	0	0	0	0	0	0	0	0	
31	1	0	1	0	0	0	0	0	
32	0	0	0	0	0	0	0	0	
33	0	0	0	0	0	0	0	0	
34	1	0	1	0	0	0	0	0	
35	1	0	1	0	0	0	0	0	
36	1	0	1	0	0	0	0	0	R
37	1	0	1	0	0	0	0	1	
38	0	0	0	0	0	0	0	0	
39	0	0	0	0	0	0	0	0	

	Total	%
Green Arrival	12	46.2%
Red Arrival	14	53.8%
Unknown	0	0.0%
All Vehicles	26	100.0%

Location ID: 28
Main Hwy/Road: US 12
Cross Hwy/Road: WIS 25/County J/Pine
RT Studied: SB
Int. Type: Intersection
Single/Dual RT: Single
Population Group: < 25

Video Date: 4/28/2015
Start Time: 8:00 AM
End Time: 9:00 AM
County: Dunn
Region: NW
Municipality: Menomonie

Cycle Length Information

	Hour # 1		
	1	2	3
Cycle Start	8:00:19	8:19:58	8:41:02
Change to Red	8:01:23	8:20:53	8:41:53
Cycle End	8:02:03	8:21:38	8:42:27
Cycle Length	0:01:44	0:01:40	0:01:25
Green Time	0:01:04	0:00:55	0:00:51

Note maximum # of vehicles that can be seen in the right turn lane queue:

3

Cycle	Right Turning Vehicles			Volume of Conflicting Vehicles			Queue in Right Turn Lane		Pedestrian Conflict? (G/R)
	Total	On Green (RTOG)	On Red (RTOR)	Total	Thru Movement	Left Turn Movement	At Start of Green	At End of Green	
1	1	1	0	3	0	3	0	0	
2	3	1	2	6	1	5	0	0	
3	2	2	0	0	0	0	1	0	
4	4	3	1	3	0	3	0	0	
5	1	1	0	0	0	0	0	0	
6	0	0	0	0	0	0	0	0	
7	6	6	0	0	0	0	0	0	
8	1	0	1	3	0	3	0	0	
9	2	0	2	0	0	0	0	0	
10	3	1	2	0	0	0	0	0	
11	1	0	1	1	1	0	0	0	
12	2	0	2	2	0	2	0	0	
13	6	2	4	0	0	0	1	0	
14	1	0	1	3	2	1	0	0	

Cycle	Right Turning Vehicles			Volume of Conflicting Vehicles			Queue in Right Turn Lane		Pedestrian Conflict? (G/R)
	Total	On Green (RTOG)	On Red (RTOR)	Total	Thru Movement	Left Turn Movement	At Start of Green	At End of Green	
15	2	0	2	3	1	2	0	0	
16	3	2	1	0	0	0	0	1	
17	3	2	1	4	0	4	0	0	
18	2	2	0	3	0	3	0	0	
19	4	2	2	1	1	0	0	0	
20	1	1	0	0	0	0	0	0	
21	9	8	1	3	3	0	0	0	
22	1	1	0	4	0	4	0	0	
23	3	3	0	2	1	1	0	0	
24	0	0	0	4	4	0	0	0	
25	4	3	1	2	1	1	0	0	
26	1	0	1	1	1	0	0	0	
27	1	1	0	1	0	1	0	0	G
28	1	1	0	2	2	0	0	0	
29	3	2	1	0	0	0	0	0	
30	4	4	0	1	1	0	0	0	
31	3	3	0	1	1	0	0	0	
32	5	2	3	4	1	3	0	0	
33	2	2	0	4	2	2	2	0	
34	1	1	0	2	2	0	0	0	
35	4	4	0	0	0	0	0	0	
36	6	4	2	3	0	3	0	0	
37	0	0	0	2	0	2	0	0	
38	3	1	2	2	2	0	0	0	
39	2	2	0	0	0	0	0	0	

	Total	%
Green Arrival	65	64.4%
Red Arrival	36	35.6%
Unknown	0	0.0%
All Vehicles	101	100.0%

Location ID: 28
Main Hwy/Road: US 12
Cross Hwy/Road: WIS 25/County J/Pine
RT Studied: SB
Int. Type: Intersection
Single/Dual RT: Single
Population Group: < 25

Video Date: 4/28/2015
Start Time: 4:00 PM
End Time: 5:00 PM
County: Dunn
Region: NW
Municipality: Menomonie

Cycle Length Information

	Hour # 1		
	1	2	3
Cycle Start	4:00:40	4:19:49	4:41:14
Change to Red	4:01:16	4:20:46	4:41:47
Cycle End	4:01:41	4:21:38	4:42:41
Cycle Length	0:01:01	0:01:49	0:01:27
Green Time	0:00:36	0:00:57	0:00:33

Note maximum # of vehicles that can be seen in the right turn lane queue:

3

Cycle	Right Turning Vehicles			Volume of Conflicting Vehicles			Queue in Right Turn Lane*		Pedestrian Conflict? (G/R)
	Total	On Green (RTOG)	On Red (RTOR)	Total	Thru Movement	Left Turn Movement	At Start of Green	At End of Green	
1	1	1	0	0	0	0	0	0	
2	2	2	0	0	0	0	0	0	
3	0	0	0	6	2	4	0	0	
4	5	3	2	10	4	6	0	0	
5	3	1	2	9	3	6	1	1	
6	11	9	2	7	0	7	2	0	
7	4	1	3	3	0	3	0	0	
8	0	0	0	5	0	5	0	0	
9	2	2	0	9	3	6	0	0	
10	2	1	1	5	2	3	0	0	
11	2	0	2	1	0	1	0	0	
12	4	3	1	6	2	4	0	0	
13	3	2	1	0	0	0	1	0	
14	7	5	2	6	2	4	0	0	

Cycle	Right Turning Vehicles			Volume of Conflicting Vehicles			Queue in Right Turn Lane*		Pedestrian Conflict? (G/R)
	Total	On Green (RTOG)	On Red (RTOR)	Total	Thru Movement	Left Turn Movement	At Start of Green	At End of Green	
15	4	3	1	3	1	2	1	0	
16	5	4	1	3	1	2	1	0	
17	2	0	2	4	3	1	0	0	
18	5	3	2	7	2	5	0	1	
19	1	1	0	2	1	1	0	0	
20	3	2	1	4	2	2	0	0	
21	5	4	1	9	2	7	1	0	
22	3	1	2	10	4	6	0	0	
23	2	1	1	11	3	8	1	0	
24	5	1	4	9	1	8	0	0	
25	2	1	1	6	2	4	1	0	
26	3	2	1	8	1	7	0	0	
27	3	3	0	9	1	8	0	0	
28	5	2	3	8	2	6	0	1	
29	5	3	2	7	3	4	0	0	
30	7	6	1	5	0	5	2	1	
31	2	1	1	5	1	4	0	0	
32	4	3	1	12	3	9	0	0	
33	2	0	2	10	3	7	0	0	
34	11	7	4	16	4	12	1	0	
35	3	1	2	8	1	7	0	0	
36	4	2	2	4	1	3	0	2	
37	6	2	4	3	0	3	0	0	
38	0	0	0	0	0	0	0	0	
39	8	5	3	10	2	8	0	0	

	Total	%
Green Arrival	82	56.2%
Red Arrival	64	43.8%
Unknown	0	0.0%
All Vehicles	146	100.0%

Location ID: 60
Main Hwy/Road: WIS 93
Cross Hwy/Road: Hamilton Ave
RT Studied: WB
Int. Type: Intersection
Single/Dual RT: Single
Population Group: 100 to 250

Video Date: 5/1/2014
Start Time: 4:30 PM
End Time: 5:30 PM
County: Eau Claire
Region: NW
Municipality: Eau Claire

Cycle Length Information

Hour # 1			
	1	2	3
Cycle Start	4:31:20	4:51:13	5:10:15
Change to Red	4:32:30	4:52:02	5:11:00
Cycle End	4:34:10	4:53:33	5:12:16
Cycle Length	0:02:50	0:02:20	0:02:01
Green Time	0:01:10	0:00:49	0:00:45

Note maximum # of vehicles that can be seen in the right turn lane queue:

2

Cycle	Right Turning Vehicles			Volume of Conflicting Vehicles			Queue in Right Turn Lane		Pedestrian Conflict? (G/R)
	Total	On Green (RTOG)	On Red (RTOR)	Total	Thru Movement	Left Turn Movement	At Start of Green	At End of Green	
1	22	14	8	24	18	6	2	0	
2	18	10	8	21	17	4	2	0	
3	23	16	7	41	41	0	1	1	
4	11	6	5	38	31	7	0	0	
5	13	7	6	42	31	11	1	0	
6	29	21	8	28	20	8	2	0	
7	12	9	3	29	22	7	1	0	
8	17	8	9	36	29	7	1	1	
9	13	7	6	43	40	3	1	0	
10	19	5	14	28	18	10	0	1	




Cycle	Right Turning Vehicles			Volume of Conflicting Vehicles			Queue in Right Turn Lane		Pedestrian Conflict? (G/R)
	Total	On Green (RTOG)	On Red (RTOR)	Total	Thru Movement	Left Turn Movement	At Start of Green	At End of Green	
11	12	5	7	28	26	2	0	1	
12	17	9	8	27	19	8	1	0	
13	13	4	9	30	25	5	1	1	
14	12	5	7	23	16	7	0	0	
15	29	21	8	33	27	6	2	1	
16	19	12	7	16	13	3	1	0	
17	15	9	6	16	9	7	2	1	
18	15	8	7	27	23	4	2	0	
19	18	9	9	23	16	7	0	0	
20	18	9	9	23	15	8	2	0	
21	14	8	6	26	24	2	0	1	
22	12	5	7	14	13	1	1	0	
23	12	5	7	16	14	2	0	0	
24	11	5	6	29	23	6	1	1	
25	11	3	8	27	20	7	1	0	

	Total	%
Green Arrival	124	30.6%
Red Arrival	199	49.1%
Unknown	82	20.2%
All Vehicles	405	100.0%


NW Region

Eau Claire
County

60

 Location ID
 WisDOT Regions
 Wisconsin Counties

0 25 50 100 Feet



Location 60:
WIS 93 & Hamilton Ave WB

Right Turn on Red
Data Collection



Intersection ID: 65
Main Hwy/Road: WIS 93
Cross Hwy/Road: Golf Road
RT Studied: EB
Int. Type: Intersection
Single/Dual RT: Single
Population Group: 100 to 250

Video Date: 5/1/2014
Start Time: 4:30 PM
End Time: 5:30 PM
County: Eau Claire
Region: NW
Municipality: Eau Claire

Cycle Length Information

	Hour # 1		
	1	2	3
Cycle Start	4:31:58	4:51:03	5:23:43
Change to Red	4:32:38	4:51:53	5:24:31
Cycle End	4:33:53	4:53:03	5:25:43
Cycle Length	0:01:55	0:02:00	0:02:00
Green Time	0:00:40	0:00:50	0:00:48

Note maximum # of vehicles that can be seen in the right turn lane queue:

0

Cycle	Right Turning Vehicles			Volume of Conflicting Vehicles			Queue in Right Turn Lane		Pedestrian Conflict? (G/R)
	Total	On Green (RTOG)	On Red (RTOR)	Total	Thru Movement	Left Turn Movement	At Start of Green	At End of Green	
1	8	4	4	22	13	9	-	-	
2	8	6	2	31	22	9	-	-	
3	12	7	5	30	23	7	-	-	
4	10	4	6	34	24	10	-	-	
5	12	6	6	16	12	4	-	-	
6	12	5	7	30	23	7	-	-	
7	22	16	6	34	25	9	-	-	
8	12	8	4	37	27	10	-	-	
9	13	11	2	26	13	13	-	-	
10	9	6	3	19	15	4	-	-	

Cycle	Right Turning Vehicles			Volume of Conflicting Vehicles			Queue in Right Turn Lane		Pedestrian Conflict? (G/R)
	Total	On Green (RTOG)	On Red (RTOR)	Total	Thru Movement	Left Turn Movement	At Start of Green	At End of Green	
11	7	3	4	33	29	4	-	-	
12	11	6	5	29	24	5	-	-	
13	11	6	5	28	23	5	-	-	
14	10	7	3	20	14	6	-	-	
15	12	6	6	23	20	3	-	-	
16	10	6	4	32	24	8	-	-	
17	6	3	3	27	21	6	-	-	
18	6	4	2	30	21	9	-	-	
19	13	11	2	40	29	11	-	-	
20	10	7	3	37	26	11	-	-	
21	17	8	9	7	2	5	-	-	
22	12	8	4	32	26	6	-	-	
23	8	3	5	34	28	6	-	-	
24	11	8	3	21	14	7	-	-	
25	13	9	4	27	19	8	-	-	
26	15	9	6	17	12	5	-	-	
27	11	5	6	29	24	5	-	-	
28	13	5	8	18	15	3	-	-	
29	7	6	1	25	15	10	-	-	
30	13	8	5	20	15	5	-	-	

NW Region

Eau Claire
County




★ Location ID

□ WisDOT Regions

□ Wisconsin Counties

0 25 50 100 Feet



Location 65:
WIS 93 & Golf Rd WB

Right Turn on Red
Data Collection



Location ID: 48
Main Hwy/Road: US 18/151
Cross Hwy/Road: County PD
RT Studied: NB
Int. Type: Intersection
Single/Dual RT: Single
Population Group: > 250

Video Date: 4/9/2015
Start Time: 7:00 AM
End Time: 8:00 AM
County: Dane
Region: SW
Municipality: Madison

Cycle Length Information

	Hour # 1		
	1	2	3
Cycle Start	8:01:45	8:20:39	8:41:40
Change to Red	8:02:55	8:21:47	8:42:41
Cycle End	8:04:33	8:24:13	8:43:56
Cycle Length	0:02:48	0:03:34	0:02:16
Green Time	0:01:10	0:01:08	0:01:01

Note maximum # of vehicles that can be seen in the right turn lane queue:

7

Cycle	Right Turning Vehicles			Volume of Conflicting Vehicles			Queue in Right Turn Lane		Pedestrian Conflict? (G/R)
	Total	On Green (RTOG)	On Red (RTOR)	Total	Thru Movement	Left Turn Movement	At Start of Green	At End of Green	
1	35	25	10	34	19	15	7	1	
2	17	9	8	44	35	9	7	0	
3	48	28	20	61	47	14	7	0	
4	27	17	10	37	24	13	2	2	
5	27	17	10	35	23	12	7	1	
6	17	11	6	17	11	6	2	0	
7	16	11	5	17	11	6	7	2	
8	29	16	13	47	33	14	7	0	
9	17	11	6	38	26	12	1	2	
10	23	16	7	27	19	8	7	0	
11	14	6	8	25	17	8	2	0	
12	18	8	10	26	21	5	2	2	
13	14	11	3	25	18	7	5	0	
14	15	8	7	30	21	9	2	0	

Cycle	Right Turning Vehicles			Volume of Conflicting Vehicles			Queue in Right Turn Lane		Pedestrian Conflict? (G/R)
	Total	On Green (RTOG)	On Red (RTOR)	Total	Thru Movement	Left Turn Movement	At Start of Green	At End of Green	
15	14	7	7	29	21	8	7	1	
16	14	11	3	26	20	6	4	0	
17	10	9	1	28	20	8	5	0	
18	16	11	5	23	23	0	7	0	
19	3	2	1	26	11	15	4	2	
20	13	9	4	29	22	7	6	0	
21	7	5	2	17	11	6	2	1	
22	11	10	1	20	16	4	4	0	
23	13	7	6	16	10	6	0	2	
24	9	6	3	21	12	9	4	0	

	Total	%
Green Arrival	97	22.7%
Red Arrival	241	56.4%
Unknown	89	20.8%
All Vehicles	427	100.0%

Location ID: 48
Main Hwy/Road: US 18/151
Cross Hwy/Road: County PD
RT Studied: NB
Int. Type: Intersection
Single/Dual RT: Single
Population Group: > 250

Video Date: 4/9/2015
Start Time: 4:00 PM
End Time: 5:00 PM
County: Dane
Region: SW
Municipality: Madison

Cycle Length Information

	Hour # 1		
	1	2	3
Cycle Start	4:00:24	4:19:15	4:41:38
Change to Red	4:01:23	4:20:28	4:42:38
Cycle End	4:03:04	4:22:09	4:44:24
Cycle Length	0:02:40	0:02:54	0:02:46
Green Time	0:00:59	0:01:13	0:01:00

Note maximum # of vehicles that can be seen in the right turn lane queue:

7

Cycle	Right Turning Vehicles			Volume of Conflicting Vehicles			Queue in Right Turn Lane*		Pedestrian Conflict? (G/R)
	Total	On Green (RTOG)	On Red (RTOR)	Total	Thru Movement	Left Turn Movement	At Start of Green	At End of Green	
1	15	9	6	25	15	10	4	0	
2	8	3	5	37	22	15	2	0	
3	14	12	2	31	16	15	3	0	
4	19	10	9	39	28	11	6	0	
5	9	5	4	37	26	11	3	0	
6	18	11	7	45	36	9	3	0	
7	29	19	10	20	8	12	7	0	
8	13	6	7	35	29	6	0	0	
9	18	11	7	23	15	8	4	0	
10	9	5	4	48	28	20	0	0	
11	9	3	6	28	20	8	3	2	
12	20	12	8	30	19	11	5	0	
13	9	5	4	35	18	17	2	1	
14	17	8	9	39	25	14	4	0	

Cycle	Right Turning Vehicles			Volume of Conflicting Vehicles			Queue in Right Turn Lane*		Pedestrian Conflict? (G/R)
	Total	On Green (RTOG)	On Red (RTOR)	Total	Thru Movement	Left Turn Movement	At Start of Green	At End of Green	
15	19	12	7	47	30	17	7	0	
16	20	9	11	32	20	12	5	0	
17	20	10	10	43	27	16	6	1	
18	21	15	6	46	34	12	7	2	
19	19	15	4	41	20	21	7	0	
20	20	13	7	44	28	16	7	0	
21	25	15	10	36	28	8	5	1	

	Total	%
Green Arrival	84	23.9%
Red Arrival	222	63.2%
Unknown	45	12.8%
All Vehicles	351	100.0%

Location ID: 50
Main Hwy/Road: Mineral Point Rd
Cross Hwy/Road: Gammon Rd
RT Studied: SB
Int. Type: Intersection
Single/Dual RT: Single
Population Group: > 250

Video Date: 3/31/2015
Start Time: 4:00 PM
End Time: 5:00 PM
County: Dane
Region: SW
Municipality: Madison

Cycle Length Information

	Hour # 1		
	1	2	3
Cycle Start	16:00:35	16:20:01	16:40:50
Change to Red	16:01:05	16:20:44	16:41:15
Cycle End	16:02:27	16:22:15	16:42:48
Cycle Length	0:01:52	0:02:14	0:01:58
Green Time	0:00:30	0:00:43	0:00:25

Note maximum # of vehicles that can be seen in the right turn lane queue:

8

Cycle	Right Turning Vehicles			Volume of Conflicting Vehicles			Queue in Right Turn Lane*		Pedestrian Conflict? (G/R)
	Total	On Green (RTOG)	On Red (RTOR)	Total	Thru Movement	Left Turn Movement	At Start of Green	At End of Green	
1	0	0	0	38	31	7	0	0	
2	5	1	4	41	32	9	1	1	
3	2	1	1	31	24	7	0	1	
4	3	2	1	33	26	7	2	0	
5	5	4	1	37	33	4	4	0	
6	4	2	2	34	27	7	0	0	
7	2	0	2	45	33	12	0	0	
8	6	4	2	39	33	6	2	0	
9	2	2	0	57	50	7	2	0	
10	8	8	0	19	19	0	7	0	
11	8	3	5	24	21	3	2	0	
12	3	2	1	36	26	10	2	0	
13	4	4	0	59	45	14	2	0	
14	4	2	2	44	39	5	2	0	
15	3	0	3	49	37	12	0	0	

Cycle	Right Turning Vehicles			Volume of Conflicting Vehicles			Queue in Right Turn Lane*		Pedestrian Conflict? (G/R)
	Total	On Green (RTOG)	On Red (RTOR)	Total	Thru Movement	Left Turn Movement	At Start of Green	At End of Green	
16	4	0	4	34	27	7	0	0	
17	5	4	1	34	28	6	0	0	
18	1	0	1	26	17	9	0	0	
19	2	2	0	48	35	13	2	0	
20	5	4	1	42	39	3	4	0	
21	3	0	3	14	12	2	0	0	
22	2	0	2	45	38	7	0	0	
23	6	2	4	41	32	9	2	0	
24	5	2	3	60	50	10	1	0	
25	4	4	0	53	40	13	2	0	
26	6	2	4	10	0	10	1	0	
27	1	0	1	47	47	0	0	0	
28	6	3	3	53	41	12	3	0	
29	0	0	0	69	55	14	0	0	
30	6	6	0	59	46	13	4	0	

	Total	%
Green Arrival	21	18.3%
Red Arrival	94	81.7%
Unknown	0	0.0%
All Vehicles	115	100.0%

Location ID: 53
Main Hwy/Road: USH 51
Cross Hwy/Road: Broadway
RT Studied: NB
Int. Type: Intersection
Single/Dual RT: Single
Population Group: > 250

Video Date: 4/1/2015
Start Time: 7:00 AM
End Time: 8:00 AM
County: Dane
Region: SW
Municipality: Madison

Cycle Length Information

	Hour # 1		
	1	2	3
Cycle Start	7:00:06	7:19:52	7:40:08
Change to Red	7:01:00	7:21:00	7:41:03
Cycle End	7:01:59	7:22:07	7:42:08
Cycle Length	0:01:53	0:02:15	0:02:00
Green Time	0:00:54	0:01:08	0:00:55

Note maximum # of vehicles that can be seen in the right turn lane queue:

4

Cycle	Right Turning Vehicles			Volume of Conflicting Vehicles			Queue in Right Turn Lane		Pedestrian Conflict? (G/R)
	Total	On Green (RTOG)	On Red (RTOR)	Total	Thru Movement	Left Turn Movement	At Start of Green	At End of Green	
1	19	16	3	2	1	1	4	3	
2	19	16	3	2	0	2	1	0	
3	13	13	0	6	3	3	1	0	
4	30	25	5	7	3	4	4	1	
5	14	11	3	5	3	2	1	0	
6	18	15	3	2	0	2	0	0	
7	31	15	16	5	3	2	0	1	
8	18	12	6	1	1	0	1	0	
9	19	15	4	7	5	2	1	0	

Cycle	Right Turning Vehicles			Volume of Conflicting Vehicles			Queue in Right Turn Lane		Pedestrian Conflict? (G/R)
	Total	On Green (RTOG)	On Red (RTOR)	Total	Thru Movement	Left Turn Movement	At Start of Green	At End of Green	
10	20	12	8	5	4	1	3	0	
11	28	18	10	4	2	2	0	0	
12	22	12	10	0	0	0	0	2	
13	19	13	6	5	2	3	0	2	
14	22	11	11	5	1	4	0	0	
15	33	17	16	4	1	3	3	2	
16	23	18	5	7	3	4	0	0	
17	23	20	3	6	5	1	0	1	
18	26	15	11	3	1	2	0	2	
19	25	18	7	4	2	2	0	1	
20	19	15	4	5	5	0	0	2	
21	20	11	9	7	3	4	1	0	
22	29	13	16	6	2	4	0	0	
23	27	19	8	4	2	2	3	1	
24	28	20	8	10	8	2	2	0	
25	22	20	2	9	4	5	1	0	
26	29	20	9	9	6	3	2	1	
27	28	19	9	9	6	3	3	3	
28	33	16	17	8	7	1	2	0	
29	36	25	11	7	5	2	3	0	
30	36	23	13	8	7	1	1	2	
31	38	21	17	9	7	2	2	3	

	Total	%
Green Arrival	465	60.6%
Red Arrival	261	34.0%
Unknown	41	5.3%
All Vehicles	767	100.0%

Location ID: 54
Main Hwy/Road: US 14
Cross Hwy/Road: Deming Way
RT Studied: EB
Int. Type: Intersection
Single/Dual RT: Single
Population Group: > 250

Video Date: 4/8/2015
Start Time: 8:00 AM
End Time: 9:00 AM
County: Dane
Region: SW
Municipality: Madison

Cycle Length Information

	Hour # 1		
	1	2	3
Cycle Start	8:00:08	8:20:35	8:40:15
Change to Red	8:00:58	8:21:25	8:40:55
Cycle End	8:01:45	8:22:13	8:42:22
Cycle Length	0:01:37	0:01:38	0:02:07
Green Time	0:00:50	0:00:50	0:00:40

Note maximum # of vehicles that can be seen in the right turn lane queue:

7

Cycle	Right Turning Vehicles			Volume of Conflicting Vehicles			Queue in Right Turn Lane		Pedestrian Conflict? (G/R)
	Total	On Green (RTOG)	On Red (RTOR)	Total	Thru Movement	Left Turn Movement	At Start of Green	At End of Green	
1	5	3	2	7	4	3	0	0	
2	1	0	1	3	3	0	0	0	
3	2	2	0	0	0	0	1	0	
4	7	1	6	8	3	5	0	0	
5	4	0	4	5	0	5	0	0	
6	0	0	0	4	1	3	0	0	
7	4	1	3	7	2	5	0	0	
8	2	1	1	5	2	3	1	0	
9	4	3	1	8	3	5	0	0	
10	1	0	1	7	1	6	0	0	
11	0	0	0	7	0	7	0	0	
12	4	3	1	6	0	6	2	0	
13	1	0	1	7	0	7	0	0	
14	3	0	3	4	3	1	0	1	

Cycle	Right Turning Vehicles			Volume of Conflicting Vehicles			Queue in Right Turn Lane		Pedestrian Conflict? (G/R)
	Total	On Green (RTOG)	On Red (RTOR)	Total	Thru Movement	Left Turn Movement	At Start of Green	At End of Green	
15	3	1	2	5	3	2	0	2	
16	1	0	1	4	3	1	0	0	
17	1	1	0	4	3	1	1	0	
18	3	1	2	8	5	3	0	0	
19	0	0	0	10	3	7	0	0	
20	0	0	0	3	3	0	0	0	
21	3	2	1	3	1	2	0	0	
22	1	1	0	0	0	0	1	0	
23	3	3	0	3	2	1	0	0	
24	1	0	1	3	2	1	0	0	
25	0	0	0	5	3	2	0	0	
26	4	4	0	6	3	3	1	0	
27	4	1	3	8	5	3	0	0	
28	0	0	0	3	3	0	0	0	
29	3	2	1	0	0	0	0	0	
30	1	1	0	3	2	1	0	0	
31	0	0	0	2	2	0	0	0	
32	0	0	0	9	4	5	0	0	
33	3	2	1	2	0	2	1	0	
34	0	0	0	1	1	0	0	0	
35	1	0	1	4	3	1	0	0	
36	0	0	0	3	0	3	0	0	

Cycle	Right Turning Vehicles			Volume of Conflicting Vehicles			Queue in Right Turn Lane		Pedestrian Conflict? (G/R)
	Total	On Green (RTOG)	On Red (RTOR)	Total	Thru Movement	Left Turn Movement	At Start of Green	At End of Green	
37	1	1	0	2	2	0	0	0	
38	1	1	0	3	2	1	0	0	
39	0	0	0	7	5	2	0	0	
40	1	1	0	5	4	1	1	0	
41	1	0	1	4	4	0	0	0	
42	3	0	3	9	2	7	0	0	
43	1	0	1	7	3	4	0	0	
44	2	1	1	2	0	2	1	0	

	Total	%
Green Arrival	30	37.5%
Red Arrival	50	62.5%
Unknown	0	0.0%
All Vehicles	80	100.0%

Location ID: 54
Main Hwy/Road: US 14
Cross Hwy/Road: Deming Way
RT Studied: EB
Int. Type: Intersection
Single/Dual RT: Single
Population Group: > 250

Video Date: 4/8/2015
Start Time: 5:00 PM
End Time: 6:00 PM
County: Dane
Region: SW
Municipality: Madison

Cycle Length Information

	Hour # 1		
	1	2	3
Cycle Start	17:00:43	17:20:27	17:40:32
Change to Red	17:01:34	17:21:31	17:41:16
Cycle End	17:02:58	17:22:27	17:42:09
Cycle Length	0:02:15	0:02:00	0:01:37
Green Time	0:00:51	0:01:04	0:00:44

Note maximum # of vehicles that can be seen in the right turn lane queue:

7

Cycle	Right Turning Vehicles			Volume of Conflicting Vehicles			Queue in Right Turn Lane*		Pedestrian Conflict? (G/R)
	Total	On Green (RTOG)	On Red (RTOR)	Total	Thru Movement	Left Turn Movement	At Start of Green	At End of Green	
1	4	3	1	14	8	6	0	0	
2	4	0	4	15	7	8	0	0	
3	5	1	4	12	12	0	0	0	
4	3	2	1	12	9	3	1	0	
5	5	1	4	12	10	2	0	0	
6	0	0	0	12	12	0	0	0	
7	4	1	3	13	10	3	1	0	
8	3	0	3	13	10	3	0	0	
9	5	2	3	10	7	3	2	0	
10	2	2	0	3	3	0	0	0	
11	1	1	0	6	6	0	0	0	
12	0	0	0	7	7	0	0	0	
13	3	1	2	4	2	2	0	0	
14	2	0	2	4	4	0	0	0	

Cycle	Right Turning Vehicles			Volume of Conflicting Vehicles			Queue in Right Turn Lane*		Pedestrian Conflict? (G/R)
	Total	On Green (RTOG)	On Red (RTOR)	Total	Thru Movement	Left Turn Movement	At Start of Green	At End of Green	
15	2	0	2	9	7	2	0	0	
16	3	3	0	10	9	1	1	0	
17	0	0	0	3	3	0	0	0	
18	2	1	1	6	6	0	1	0	
19	1	0	1	5	5	0	0	0	
20	0	0	0	8	6	2	0	0	
21	1	0	1	8	8	0	0	0	
22	1	0	1	1	1	0	0	0	
23	0	0	0	6	5	1	0	0	
24	2	1	1	5	3	2	0	0	
25	1	0	1	1	0	1	0	0	
26	1	0	1	1	1	0	0	0	
27	3	1	2	4	4	0	1	0	
28	2	1	1	2	2	0	0	0	
29	1	0	1	3	2	1	0	0	
30	1	0	1	11	7	4	0	0	
31	0	0	0	3	3	0	0	0	
32	1	0	1	7	3	4	0	0	
33	1	0	1	1	1	0	0	0	
34	0	0	0	3	3	0	0	0	
35	1	1	0	9	7	2	1	0	

	Total	%
Green Arrival	14	21.5%
Red Arrival	51	78.5%
Unknown	0	0.0%
All Vehicles	65	100.0%

Location ID: 62
Main Hwy/Road: US 12/WI Dells Pkwy.
Cross Hwy/Road: Miller Dr/Adams St
RT Studied: NWB
Int. Type: Intersection
Single/Dual RT: Single
Population Group: < 25

Video Date: 9/9/2015
Start Time: 7:00 AM
End Time: 8:00 AM
County: Sauk
Region: SW
Municipality: Baraboo

Cycle Length Information

	Hour # 1		
	1	2	3
Cycle Start	7:04:12	7:20:43	7:38:14
Change to Red	7:04:27	7:22:37	7:39:27
Cycle End	7:04:45	7:22:52	7:39:43
Cycle Length	0:00:33	0:02:09	0:01:29
Green Time	0:00:15	0:01:54	0:01:13

Note maximum # of vehicles that can be seen in the right turn lane queue:

4

Cycle	Right Turning Vehicles			Volume of Conflicting Vehicles			Queue in Right Turn Lane		Pedestrian Conflict? (G/R)
	Total	On Green (RTOG)	On Red (RTOR)	Total	Thru Movement	Left Turn Movement	At Start of Green	At End of Green	
1	1	0	1	0	0	0	0	0	
2	2	2	0	0	0	0	1	0	
3	4	4	0	0	0	0	0	0	
4	1	1	0	0	0	0	1	0	
5	1	0	1	0	0	0	0	0	
6	0	0	0	0	0	0	0	0	
7	0	0	0	0	0	0	0	0	
8	1	1	0	0	0	0	0	0	
9	1	1	0	0	0	0	0	0	
10	3	3	0	0	0	0	0	0	
11	0	0	0	0	0	0	0	0	
12	1	0	1	0	0	0	0	0	
13	1	1	0	0	0	0	0	0	
14	3	3	0	0	0	0	0	0	

Cycle	Right Turning Vehicles			Volume of Conflicting Vehicles			Queue in Right Turn Lane		Pedestrian Conflict? (G/R)
	Total	On Green (RTOG)	On Red (RTOR)	Total	Thru Movement	Left Turn Movement	At Start of Green	At End of Green	
15	4	4	0	0	0	0	0	0	
16	0	0	0	0	0	0	0	0	
17	0	0	0	0	0	0	0	0	
18	0	0	0	0	0	0	0	0	
19	1	1	0	0	0	0	0	0	
20	0	0	0	0	0	0	0	0	
21	0	0	0	0	0	0	0	0	
22	0	0	0	0	0	0	0	0	
23	1	1	0	0	0	0	0	0	
24	1	1	0	0	0	0	0	0	
25	0	0	0	0	0	0	0	0	
26	1	1	0	0	0	0	1	0	
27	0	0	0	0	0	0	0	0	
28	1	1	0	0	0	0	0	0	
29	0	0	0	1	1	0	0	0	
30	2	2	0	0	0	0	0	0	
31	0	0	0	0	0	0	0	0	
32	1	1	0	0	0	0	0	0	
33	1	1	0	0	0	0	0	0	
34	2	2	0	1	1	0	0	0	
35	0	0	0	1	0	1	0	0	
36	1	1	0	0	0	0	0	0	
37	0	0	0	0	0	0	0	0	
38	3	3	0	0	0	0	0	0	

Cycle	Right Turning Vehicles			Volume of Conflicting Vehicles			Queue in Right Turn Lane		Pedestrian Conflict? (G/R)
	Total	On Green (RTOG)	On Red (RTOR)	Total	Thru Movement	Left Turn Movement	At Start of Green	At End of Green	
39	0	0	0	0	0	0	0	0	
40	2	2	0	0	0	0	0	0	
41	0	0	0	0	0	0	0	0	
42	0	0	0	0	0	0	0	0	
43	1	0	1	0	0	0	0	1	
44	1	1	0	0	0	0	0	0	
45	1	1	0	0	0	0	1	0	
46	1	0	1	0	0	0	0	0	
47	5	3	2	0	0	0	2	0	
48	4	3	1	0	0	0	1	0	
49	1	0	1	0	0	0	0	1	
50	0	0	0	0	0	0	0	0	

	Total	%
Green Arrival	40	74.1%
Red Arrival	14	25.9%
Unknown	0	0.0%
All Vehicles	54	100.0%

Location ID: 62
Main Hwy/Road: US 12/WI Dells Pkwy.
Cross Hwy/Road: Miller Dr/Adams St
RT Studied: NWB
Int. Type: Intersection
Single/Dual RT: Single
Population Group: < 25

Video Date: 9/9/2015
Start Time: 4:00 PM
End Time: 5:00 PM
County: Sauk
Region: SW
Municipality: Baraboo

Cycle Length Information

	Hour # 1		
	1	2	3
Cycle Start	4:00:37	4:19:54	4:41:31
Change to Red	4:00:57	4:20:29	4:41:49
Cycle End	4:01:14	4:20:58	4:42:23
Cycle Length	0:00:37	0:01:04	0:00:52
Green Time	0:00:20	0:00:35	0:00:18

Note maximum # of vehicles that can be seen in the right turn lane queue:

4

Cycle	Right Turning Vehicles			Volume of Conflicting Vehicles			Queue in Right Turn Lane*		Pedestrian Conflict? (G/R)
	Total	On Green (RTOG)	On Red (RTOR)	Total	Thru Movement	Left Turn Movement	At Start of Green	At End of Green	
1	3	2	1	0	0	0	0	0	
2	0	0	0	1	0	1	0	0	
3	2	1	1	0	0	0	0	0	
4	3	2	1	0	0	0	1	1	
5	2	2	0	0	0	0	0	0	
6	0	0	0	0	0	0	0	0	
7	0	0	0	1	1	0	0	0	
8	0	0	0	0	0	0	0	0	
9	0	0	0	0	0	0	0	0	
10	0	0	0	0	0	0	0	0	
11	0	0	0	0	0	0	0	0	
12	1	1	0	0	0	0	0	0	
13	1	0	1	0	0	0	0	0	
14	0	0	0	0	0	0	0	0	

Cycle	Right Turning Vehicles			Volume of Conflicting Vehicles			Queue in Right Turn Lane*		Pedestrian Conflict? (G/R)
	Total	On Green (RTOG)	On Red (RTOR)	Total	Thru Movement	Left Turn Movement	At Start of Green	At End of Green	
15	0	0	0	0	0	0	0	0	
16	4	3	1	0	0	0	0	0	
17	3	2	1	1	1	0	0	1	
18	0	0	0	0	0	0	0	0	
19	2	1	1	0	0	0	0	0	
20	2	0	2	0	0	0	0	0	
21	3	3	0	2	2	0	0	0	
22	1	1	0	1	0	1	0	0	
23	2	1	1	0	0	0	0	0	
24	0	0	0	0	0	0	0	0	
25	1	1	0	0	0	0	0	0	
26	1	1	0	0	0	0	0	0	
27	0	0	0	0	0	0	0	0	
28	2	2	0	0	0	0	0	0	
29	0	0	0	0	0	0	0	0	
30	0	0	0	0	0	0	0	0	
31	1	1	0	0	0	0	0	0	
32	0	0	0	0	0	0	0	0	
33	2	0	2	1	0	1	0	0	
34	0	0	0	0	0	0	0	0	
35	0	0	0	0	0	0	0	0	
36	1	1	0	1	0	1	0	0	
37	0	0	0	0	0	0	0	0	
38	0	0	0	1	1	0	0	0	
39	1	1	0	0	0	0	0	0	
40	2	2	0	1	0	1	1	0	
41	0	0	0	0	0	0	0	0	
42	0	0	0	0	0	0	0	0	
43	1	1	0	0	0	0	0	0	
44	0	0	0	0	0	0	0	0	
45	2	2	0	0	0	0	1	0	

Cycle	Right Turning Vehicles			Volume of Conflicting Vehicles			Queue in Right Turn Lane*		Pedestrian Conflict? (G/R)
	Total	On Green (RTOG)	On Red (RTOR)	Total	Thru Movement	Left Turn Movement	At Start of Green	At End of Green	
46	0	0	0	0	0	0	0	0	
47	0	0	0	0	0	0	0	0	
48	1	1	0	0	0	0	0	0	
49	0	0	0	0	0	0	0	0	
50	1	0	1	1	0	1	0	0	
51	2	1	1	0	0	0	0	0	
52	1	1	0	0	0	0	1	0	
53	0	0	0	0	0	0	0	0	
54	1	0	1	1	0	1	0	0	
55	1	1	0	0	0	0	0	0	
56	2	2	0	0	0	0	0	0	
57	1	1	0	0	0	0	0	0	
58	1	1	0	0	0	0	0	0	

	Total	%
Green Arrival	37	68.5%
Red Arrival	17	31.5%
Unknown	0	0.0%
All Vehicles	54	100.0%

SW Region

Sauk
County

62

★ Location ID

□ WisDOT Regions

□ Wisconsin Counties

0 25 50 100
Feet



Location 62:
US 12/WI Dells Pkwy & Miller Dr/Adams St NWB

Right Turn on Red
Data Collection

TranSmart
TECHNOLOGIES

© 2015 Microsoft Corporation

Location ID: 64
Main Hwy/Road: US 12/WI Dells Pkwy.
Cross Hwy/Road: Progressive Dr/Hillman Rd
RT Studied: NB
Int. Type: Intersection
Single/Dual RT: Single
Population Group: < 25

Video Date: 9/9/2015
Start Time: 8:00 AM
End Time: 9:00 AM
County: Sauk
Region: SW
Municipality: Lake Delton

Cycle Length Information

	Hour # 1		
	1	2	3
Cycle Start	8:00:18	8:20:11	8:39:45
Change to Red	8:00:58	8:20:45	8:40:12
Cycle End	8:01:14	8:21:02	8:40:48
Cycle Length	0:00:56	0:00:51	0:01:03
Green Time	0:00:40	0:00:34	0:00:27

Note maximum # of vehicles that can be seen in the right turn lane queue:

4

Cycle	Right Turning Vehicles			Volume of Conflicting Vehicles			Queue in Right Turn Lane		Pedestrian Conflict? (G/R)
	Total	On Green (RTOG)	On Red (RTOR)	Total	Thru Movement	Left Turn Movement	At Start of Green	At End of Green	
1	2	1	1	1	1	0	0	0	
2	0	0	0	0	0	0	0	0	
3	1	1	0	0	0	0	0	0	G
4	0	0	0	1	1	0	0	0	
5	1	0	1	0	0	0	0	0	
6	2	2	0	1	0	1	0	0	
7	1	1	0	1	0	1	1	0	
8	2	2	0	1	1	0	0	0	
9	0	0	0	1	1	0	0	0	
10	0	0	0	0	0	0	0	0	
11	0	0	0	0	0	0	0	0	
12	0	0	0	0	0	0	0	0	
13	0	0	0	1	0	1	0	0	
14	0	0	0	0	0	0	0	0	

Cycle	Right Turning Vehicles			Volume of Conflicting Vehicles			Queue in Right Turn Lane		Pedestrian Conflict? (G/R)
	Total	On Green (RTOG)	On Red (RTOR)	Total	Thru Movement	Left Turn Movement	At Start of Green	At End of Green	
15	0	0	0	0	0	0	0	0	
16	2	2	0	2	1	1	0	0	
17	1	1	0	0	0	0	0	0	
18	3	3	0	2	0	2	1	0	
19	0	0	0	0	0	0	0	0	
20	3	2	1	0	0	0	1	0	
21	0	0	0	0	0	0	0	0	
22	3	3	0	2	0	2	0	0	
23	0	0	0	0	0	0	0	0	
24	0	0	0	0	0	0	0	0	
25	0	0	0	0	0	0	0	0	
26	1	1	0	0	0	0	0	0	
27	1	1	0	0	0	0	0	0	
28	0	0	0	0	0	0	0	0	R
29	3	3	0	0	0	0	1	0	
30	1	1	0	0	0	0	0	0	
31	1	1	0	0	0	0	0	0	
32	0	0	0	0	0	0	0	0	
33	0	0	0	0	0	0	0	0	
34	1	1	0	0	0	0	1	0	
35	1	1	0	0	0	0	0	0	
36	0	0	0	1	1	0	0	0	
37	0	0	0	0	0	0	0	0	
38	1	0	1	3	0	3	0	0	
39	1	1	0	1	1	0	1	0	
40	0	0	0	0	0	0	0	0	

Cycle	Right Turning Vehicles			Volume of Conflicting Vehicles			Queue in Right Turn Lane		Pedestrian Conflict? (G/R)
	Total	On Green (RTOG)	On Red (RTOR)	Total	Thru Movement	Left Turn Movement	At Start of Green	At End of Green	
41	0	0	0	0	0	0	0	0	
42	0	0	0	0	0	0	0	0	
43	3	2	1	0	0	0	0	0	
44	2	2	0	0	0	0	0	0	
45	2	2	0	0	0	0	1	0	
46	0	0	0	0	0	0	0	0	
47	0	0	0	0	0	0	0	0	
48	0	0	0	0	0	0	0	0	
49	0	0	0	0	0	0	0	0	
50	1	1	0	0	0	0	0	0	
51	0	0	0	0	0	0	0	0	
52	1	0	1	0	0	0	0	1	
53	2	2	0	0	0	0	0	0	
54	0	0	0	0	0	0	0	0	
55	2	2	0	0	0	0	0	0	
56	0	0	0	0	0	0	0	0	
57	0	0	0	0	0	0	0	0	

	Total	%
Green Arrival	33	73.3%
Red Arrival	12	26.7%
Unknown	0	0.0%
All Vehicles	45	100.0%

Location ID: 64
Main Hwy/Road: US 12/WI Dells Pkwy.
Cross Hwy/Road: Progressive Dr/Hillman Rd
RT Studied: NB
Int. Type: Intersection
Single/Dual RT: Single
Population Group: < 25

Video Date: 9/9/2015
Start Time: 4:00 PM
End Time: 5:00 PM
County: Sauk
Region: SW
Municipality: Lake Delton

Cycle Length Information

	Hour # 1		
	1	2	3
Cycle Start	4:00:24	4:20:24	4:40:46
Change to Red	4:00:44	4:20:41	4:41:18
Cycle End	4:01:02	4:20:58	4:42:07
Cycle Length	0:00:38	0:00:34	0:01:21
Green Time	0:00:20	0:00:17	0:00:32

Note maximum # of vehicles that can be seen in the right turn lane queue:

4

Cycle	Right Turning Vehicles			Volume of Conflicting Vehicles			Queue in Right Turn Lane*		Pedestrian Conflict? (G/R)
	Total	On Green (RTOG)	On Red (RTOR)	Total	Thru Movement	Left Turn Movement	At Start of Green	At End of Green	
1	3	3	0	1	1	0	1	0	
2	2	2	0	2	0	2	0	0	
3	1	1	0	0	0	0	1	0	
4	0	0	0	0	0	0	0	0	
5	2	2	0	0	0	0	1	0	
6	3	1	2	2	1	1	1	0	G
7	2	2	0	1	0	1	0	0	
8	0	0	0	0	0	0	0	0	
9	1	1	0	0	0	0	0	0	
10	0	0	0	1	1	0	0	0	
11	0	0	0	3	0	3	0	0	
12	0	0	0	1	0	1	0	0	
13	0	0	0	2	2	0	0	0	
14	0	0	0	0	0	0	0	0	

Cycle	Right Turning Vehicles			Volume of Conflicting Vehicles			Queue in Right Turn Lane*		Pedestrian Conflict? (G/R)
	Total	On Green (RTOG)	On Red (RTOR)	Total	Thru Movement	Left Turn Movement	At Start of Green	At End of Green	
15	0	0	0	1	0	1	0	0	
16	6	5	1	0	0	0	2	1	
17	0	0	0	1	1	0	0	0	
18	1	1	0	1	1	0	0	0	
19	0	0	0	2	0	2	0	0	
20	1	1	0	0	0	0	0	0	
21	1	1	0	1	0	1	0	0	
22	0	0	0	0	0	0	0	0	
23	0	0	0	1	1	0	0	0	
24	2	0	2	3	1	2	0	0	
25	0	0	0	1	0	1	0	0	
26	0	0	0	0	0	0	0	0	
27	0	0	0	1	1	0	0	0	
28	2	0	2	2	2	0	0	0	
29	0	0	0	0	0	0	0	0	
30	0	0	0	3	2	1	0	0	
31	1	1	0	0	0	0	1	0	
32	2	0	2	0	0	0	0	0	
33	0	0	0	0	0	0	0	0	
34	0	0	0	0	0	0	0	0	
35	1	1	0	1	1	0	1	0	G
36	1	1	0	2	0	2	0	0	
37	0	0	0	0	0	0	0	0	
38	0	0	0	1	1	0	0	0	
39	0	0	0	0	0	0	0	0	
40	2	2	0	0	0	0	0	0	
41	2	0	2	1	0	1	0	0	
42	1	1	0	2	2	0	1	0	
43	0	0	0	0	0	0	0	0	
44	0	0	0	1	1	0	0	0	
45	4	4	0	0	0	0	1	0	
46	0	0	0	1	0	1	0	0	
47	0	0	0	2	0	2	0	0	

Cycle	Right Turning Vehicles			Volume of Conflicting Vehicles			Queue in Right Turn Lane*		Pedestrian Conflict? (G/R)
	Total	On Green (RTOG)	On Red (RTOR)	Total	Thru Movement	Left Turn Movement	At Start of Green	At End of Green	
48	1	1	0	4	2	2	0	0	
49	2	0	2	1	0	1	0	0	
50	0	0	0	1	0	1	0	0	
51	1	1	0	0	0	0	0	0	
52	0	0	0	2	0	2	0	0	
53	3	3	0	1	1	0	1	0	
54	1	0	1	0	0	0	0	1	
55	1	1	0	2	2	0	1	0	
56	2	2	0	2	0	2	0	0	
57	1	1	0	0	0	0	1	0	
58	1	1	0	2	0	2	1	0	
59	3	3	0	6	2	4	1	0	G
60	1	1	0	3	1	2	0	0	
61	3	1	2	1	1	0	0	0	

	Total	%
Green Arrival	32	52.5%
Red Arrival	28	45.9%
Unknown	1	1.6%
All Vehicles	61	100.0%



SW Region

Sauk
County


64
★

★ Location ID

▭ WisDOT Regions

▭ Wisconsin Counties

0 25 50 100 Feet



Location 64:
US 12/Wis Dells Pkwy & Progressive Dr/Hillman Rd NB

Right Turn on Red
Data Collection



Location ID: 63
Main Hwy/Road: US 12/WI Dells Pkwy
Cross Hwy/Road: Gasser Rd/Meadowview Dr
RT Studied: SB
Int. Type: Intersection
Single/Dual RT: Single
Population Group: < 25

Video Date: 9/8/2015
Start Time: 8:00 AM
End Time: 9:00 AM
County: Sauk
Region: SW
Municipality: Lake Delton

Cycle Length Information

	Hour # 1		
	1	2	3
Cycle Start	8:00:52	8:20:00	8:40:00
Change to Red	8:01:16	8:20:17	8:41:00
Cycle End	8:01:57	8:20:32	8:41:32
Cycle Length	0:01:05	0:00:32	0:01:32
Green Time	0:00:24	0:00:17	0:01:00

Note maximum # of vehicles that can be seen in the right turn lane queue:

4

Cycle	Right Turning Vehicles			Volume of Conflicting Vehicles			Queue in Right Turn Lane		Pedestrian Conflict? (G/R)
	Total	On Green (RTOG)	On Red (RTOR)	Total	Thru Movement	Left Turn Movement	At Start of Green	At End of Green	
1	2	1	1	1	0	1	0	0	
2	1	1	0	0	0	0	0	0	
3	3	1	2	6	2	4	1	0	
4	0	0	0	3	0	3	0	0	
5	1	0	1	4	0	4	0	0	
6	3	2	1	3	0	3	2	1	
7	0	0	0	2	0	2	0	0	
8	1	1	0	9	3	6	0	0	
9	1	0	1	2	0	2	0	0	
10	0	0	0	5	2	3	0	0	
11	1	1	0	4	0	4	0	0	
12	1	1	0	4	1	3	0	0	
13	0	0	0	2	0	2	0	0	
14	0	0	0	0	0	0	0	0	

Cycle	Right Turning Vehicles			Volume of Conflicting Vehicles			Queue in Right Turn Lane		Pedestrian Conflict? (G/R)
	Total	On Green (RTOG)	On Red (RTOR)	Total	Thru Movement	Left Turn Movement	At Start of Green	At End of Green	
15	1	0	1	5	1	4	0	0	
16	0	0	0	0	0	0	0	0	
17	1	0	1	4	0	4	0	0	
18	1	0	1	3	0	3	0	0	
19	3	2	1	3	0	3	1	0	
20	1	1	0	3	0	3	0	0	
21	0	0	0	0	0	0	0	0	
22	2	0	2	5	2	3	0	0	
23	0	0	0	6	1	5	0	0	
24	2	1	1	0	0	0	1	0	
25	1	1	0	3	0	3	0	0	
26	0	0	0	6	0	6	0	0	
27	0	0	0	5	2	3	0	0	
28	0	0	0	2	0	2	0	0	
29	1	0	1	2	0	2	0	0	
30	1	0	1	0	0	0	0	1	
31	1	1	0	0	0	0	0	0	
32	0	0	0	2	0	2	0	0	
33	1	0	1	4	0	4	0	0	
34	0	0	0	8	1	7	0	0	
35	2	2	0	2	0	2	2	0	
36	0	0	0	2	0	2	0	0	
37	0	0	0	4	1	3	0	0	
38	0	0	0	3	0	3	0	0	
39	1	1	0	0	0	0	1	0	
40	0	0	0	3	0	3	0	0	
41	1	0	1	3	0	3	0	0	
42	1	0	1	6	2	4	0	1	
43	2	0	2	9	1	8	0	0	
44	3	2	1	3	0	3	1	0	
45	1	0	1	5	2	3	0	0	
46	3	0	3	3	0	3	0	0	
47	1	1	0	5	1	4	0	0	

Cycle	Right Turning Vehicles			Volume of Conflicting Vehicles			Queue in Right Turn Lane		Pedestrian Conflict? (G/R)
	Total	On Green (RTOG)	On Red (RTOR)	Total	Thru Movement	Left Turn Movement	At Start of Green	At End of Green	
48	1	1	0	2	0	2	0	0	
49	1	1	0	4	0	4	0	0	
50	1	1	0	0	0	0	1	0	
51	0	0	0	1	0	1	0	0	
52	0	0	0	4	0	4	0	0	
53	1	1	0	3	1	2	0	0	
54	0	0	0	4	0	4	0	0	
55	2	0	2	3	0	3	0	0	
56	3	2	1	5	0	5	1	0	
57	1	0	1	5	1	4	0	0	
58	1	0	1	5	0	5	0	0	
59	0	0	0	3	0	3	0	0	
60	0	0	0	4	0	4	0	0	
61	0	0	0	3	0	3	0	0	
62	2	0	2	2	0	2	0	0	
63	2	1	1	4	1	3	1	0	

	Total	%
Green Arrival	18	30.0%
Red Arrival	42	70.0%
Unknown	0	0.0%
All Vehicles	60	100.0%

Location ID: 63
Main Hwy/Road: US 12/WI Dells Pkwy
Cross Hwy/Road: Gasser Rd/Meadowview Dr
RT Studied: SB
Int. Type: Intersection
Single/Dual RT: Single
Population Group: < 25

Video Date: 9/8/2015
Start Time: 4:00 PM
End Time: 5:00 PM
County: Sauk
Region: SW
Municipality: Lake Delton

Cycle Length Information

	Hour # 1		
	1	2	3
Cycle Start	4:00:42	4:19:33	4:39:51
Change to Red	4:01:01	4:20:21	4:40:08
Cycle End	4:01:32	4:21:21	4:41:07
Cycle Length	0:00:50	0:01:48	0:01:16
Green Time	0:00:19	0:00:48	0:00:17

Note maximum # of vehicles that can be seen in the right turn lane queue:

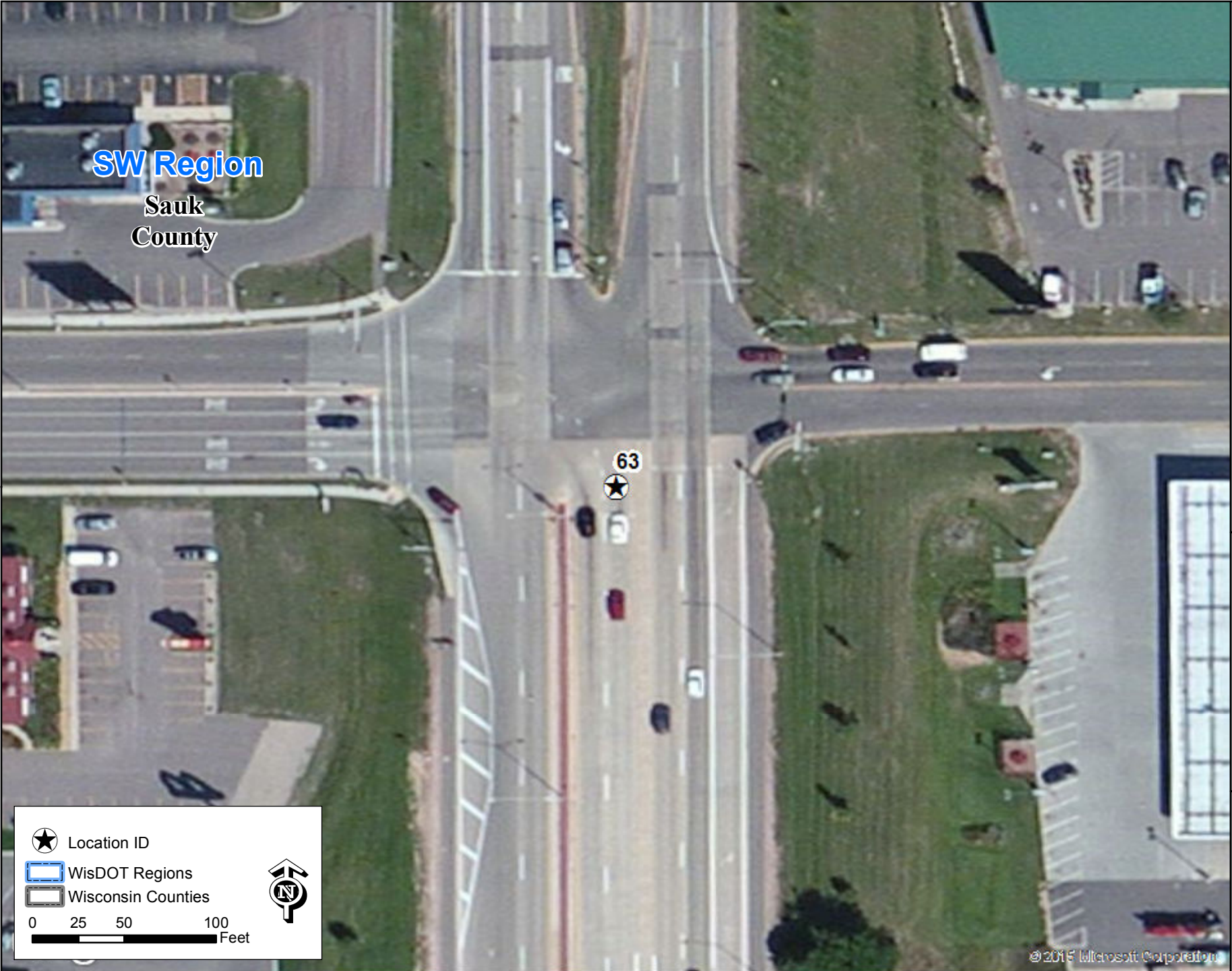
4

Cycle	Right Turning Vehicles			Volume of Conflicting Vehicles			Queue in Right Turn Lane*		Pedestrian Conflict? (G/R)
	Total	On Green (RTOG)	On Red (RTOR)	Total	Thru Movement	Left Turn Movement	At Start of Green	At End of Green	
1	3	2	1	3	0	3	1	0	
2	2	1	1	0	0	0	0	0	
3	1	0	1	5	0	5	0	0	
4	3	3	0	2	0	2	1	0	
5	1	0	1	4	0	4	0	0	
6	0	0	0	5	1	4	0	0	
7	5	4	1	3	2	1	2	0	
8	2	0	2	3	1	2	0	0	
9	2	1	1	8	2	6	1	0	
10	6	5	1	4	0	4	4	0	
11	4	1	3	7	0	7	0	0	
12	0	0	0	8	2	6	0	0	
13	1	0	1	2	0	2	0	0	
14	0	0	0	2	0	2	0	0	

Cycle	Right Turning Vehicles			Volume of Conflicting Vehicles			Queue in Right Turn Lane*		Pedestrian Conflict? (G/R)
	Total	On Green (RTOG)	On Red (RTOR)	Total	Thru Movement	Left Turn Movement	At Start of Green	At End of Green	
15	1	0	1	8	1	7	0	0	
16	4	2	2	9	3	6	0	0	
17	0	0	0	4	2	2	0	0	
18	2	1	1	0	0	0	0	0	
19	1	0	1	4	0	4	0	1	
20	0	0	0	3	3	0	0	0	
21	0	0	0	3	1	2	0	0	
22	2	0	2	4	1	3	0	0	
23	0	0	0	6	4	2	0	0	
24	2	2	0	4	0	4	0	0	
25	1	1	0	3	0	3	1	0	
26	1	1	0	4	2	2	1	0	
27	2	1	1	1	1	0	1	0	
28	1	1	0	7	0	7	0	0	
29	1	0	1	4	2	2	0	0	
30	0	0	0	0	0	0	0	0	




Cycle	Right Turning Vehicles			Volume of Conflicting Vehicles			Queue in Right Turn Lane*		Pedestrian Conflict? (G/R)
	Total	On Green (RTOG)	On Red (RTOR)	Total	Thru Movement	Left Turn Movement	At Start of Green	At End of Green	
31	0	0	0	2	1	1	0	0	
32	3	2	1	4	1	3	1	0	
33	1	0	1	6	1	5	0	0	
34	2	1	1	5	3	2	0	0	
35	4	1	3	4	0	4	1	0	
36	1	0	1	3	0	3	0	0	
37	2	0	2	2	0	2	0	0	
38	1	0	1	3	0	3	0	0	
39	1	0	1	1	0	1	0	0	
40	1	0	1	2	0	2	0	0	
41	2	0	2	3	1	2	0	0	
42	2	0	2	0	0	0	0	0	
43	1	0	1	3	1	2	0	0	
44	1	0	1	7	0	7	0	0	
45	3	1	2	3	2	1	1	1	
46	3	1	2	3	0	3	1	0	
47	2	1	1	3	1	2	0	0	R
48	5	4	1	7	2	5	3	0	

	Total	%
Green Arrival	19	22.9%
Red Arrival	62	74.7%
Unknown	2	2.4%
All Vehicles	83	100.0%




SW Region

Sauk
County

 Location ID
 WisDOT Regions
 Wisconsin Counties

0 25 50 100 Feet



Right Turn on Red
Data Collection

Location 63:
US 12/WI Dells Pkwy & Gasser Rd/Meadowview Dr SB



© 2015 Microsoft Corporation

Appendix F: Normality and Outlier Test Results

Shapiro-Wilk Normality Test

Significance level (%): 5

Summary statistics (Data):

Variable	Observations	Obs. with missing data	Obs. without missing data	Minimum	Maximum	Mean	Std. deviation
Average Saturation Flow Rate (55	0	55	1525.000	2012.000	1823.200	109.918

W	0.956
p-value (Two-tailed)	0.041
alpha	0.05

Test interpretation:

H0: The variable from which the sample was extracted follows a Normal distribution.

Ha: The variable from which the sample was extracted does not follow a Normal distribution.

As the computed p-value is lower than the significance level $\alpha=0.05$, one should reject the null hypothesis H0, and accept the alternative hypothesis Ha.

The risk to reject the null hypothesis H0 while it is true is lower than 4.11%.

Anderson-Darling Normality Test

A ²	0.647
p-value (Two-tailed)	0.087
alpha	0.05

Test interpretation:

H₀: The variable from which the sample was extracted follows a Normal distribution.

H_a: The variable from which the sample was extracted does not follow a Normal distribution.

As the computed p-value is greater than the significance level $\alpha=0.05$, one cannot reject the null hypothesis H₀.

The risk to reject the null hypothesis H₀ while it is true is 8.69%.

Lilliefors Normality Test

D	0.094
D (standardized)	0.696
p-value (Two-tailed)	0.264
alpha	0.05

Test interpretation:

H₀: The variable from which the sample was extracted follows a Normal distribution.

H_a: The variable from which the sample was extracted does not follow a Normal distribution.

As the computed p-value is greater than the significance level $\alpha=0.05$, one cannot reject the null hypothesis H₀.

The risk to reject the null hypothesis H₀ while it is true is 26.44%.

Jarque-Bera Normality Test

JB (Observed value)	5.168
JB (Critical value)	5.991
DF	2
p-value (Two-tailed)	0.075
alpha	0.05

Test interpretation:

H0: The variable from which the sample was extracted follows a Normal distribution.

Ha: The variable from which the sample was extracted does not follow a Normal distribution.

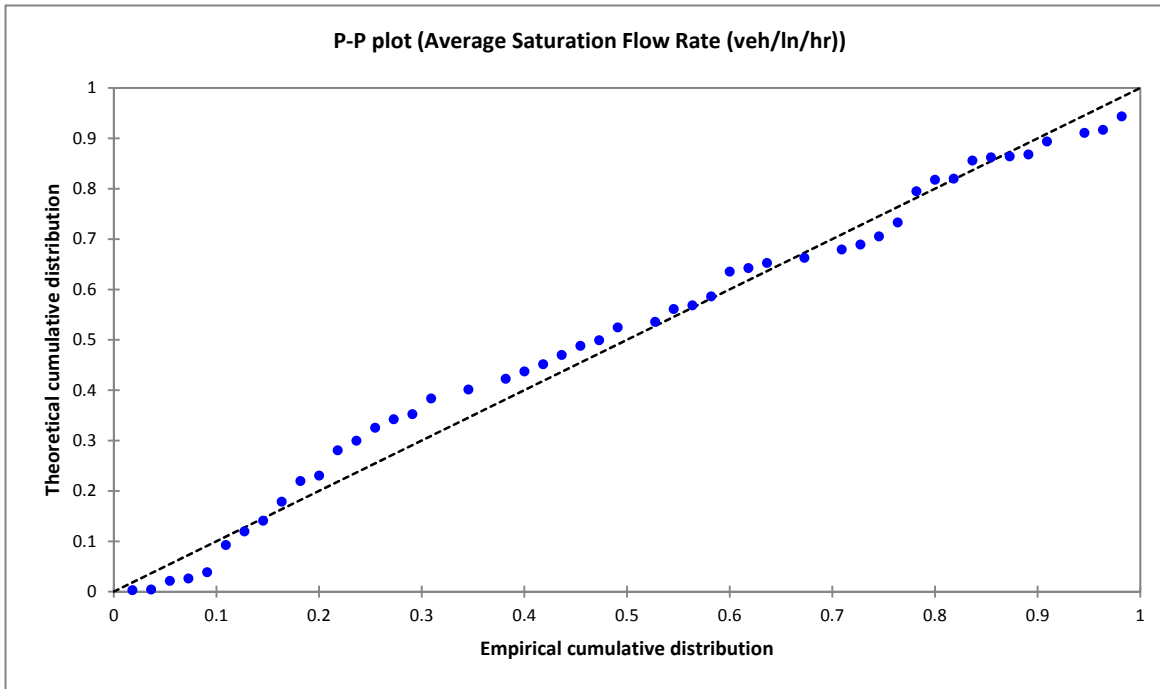
As the computed p-value is greater than the significance level $\alpha=0.05$, one cannot reject the null hypothesis H0.

The risk to reject the null hypothesis H0 while it is true is 7.55%.

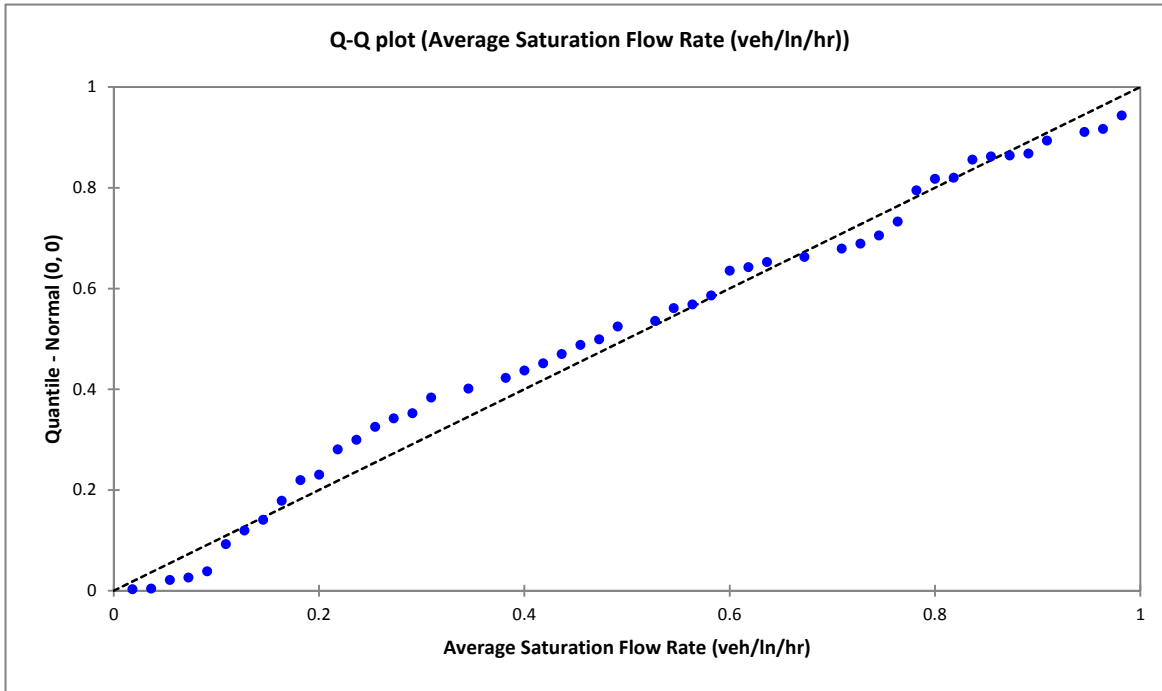
Normality Test Summary:

Variable\Test	Shapiro-Wilk	Anderson-Darling	Lilliefors	Jarque-Bera
Average Saturation Flow Rate (0.041	0.087	0.264	0.075

Normal P-P plots:



Normal Q-Q plots:



Grubbs Test for Outliers

Alternative hypothesis: Two-sided

Significance level (%): 5

Iterations: Maximum: 1

Summary statistics:

Variable	Observations	Obs. with missing data	Obs. without missing data	Minimum	Maximum	Mean	Std. deviation
Average Saturation Flow Rate (veh/ln/hr)	55	0	55	1525.000	2012.000	1823.200	109.918

Grubbs test for outliers / Two-tailed test:

G (Observed value)	2.713
G (Critical value)	3.166
p-value (Two-tailed)	0.280
alpha	0.05

99% confidence interval on the p-value:

] 0.279, 0.281 [

Test interpretation:

H0: There is no outlier in the data

Ha: The minimum or maximum value is an outlier

As the computed p-value is greater than the significance level $\alpha=0.05$, one cannot reject the null hypothesis H0.

The risk to reject the null hypothesis H0 while it is true is 27.99%.

Dixon Test for Outliers

Alternative hypothesis: Two-sided

Significance level (%): 5

Iterations: Maximum: 1

Number of simulations: 1000000

Summary statistics:

Variable	Observations	Obs. with missing data	Obs. without missing data	Minimum	Maximum	Mean	Std. deviation
Average Saturation Flow Rate (veh/ln/hr)	55	0	55	1525.000	2012.000	1823.200	109.918

Dixon test for outliers / Two-tailed test:

R10 (Observed value)	0.033
R10 (Critical value)	0.249
p-value (Two-tailed)	0.567
alpha	0.05

The p-value has been computed using 1000000 Monte Carlo simulations.

99% confidence interval on the p-value:

] 0.566, 0.569 [

Test interpretation:

H0: There is no outlier in the data

Ha: The minimum or maximum value is an outlier

As the computed p-value is greater than the significance level $\alpha=0.05$, one cannot reject the null hypothesis H0.

The risk to reject the null hypothesis H0 while it is true is 56.74%.

Appendix G: Regression Analysis

Saturation Flow Regression Analysis

Stop conditions: Iterations = 1000 / Convergence = 0.00001

Function: $Y = pr1 * (1 / (X1^{pr2})) * (1 / (1 + pr3 * (X2 - 40))) * (1 / (1 + (1 / X3) * (pr4 - 1)))$

Summary statistics:

Variable	Observations	Obs. with missing data	Obs. without missing data	Minimum	Maximum	Mean	Std. deviation
Adjusted Median Saturation Flow Rate	55	0	55	1557.504	2044.344	1850.845	108.561
Urbanized Area Population	55	0	55	0.003	1.365	0.432	0.539
Speed Limit (mph)	55	0	55	25.000	55.000	37.909	6.918
Overall Approach Lanes	55	0	55	2.000	7.000	4.000	1.072

Correlation matrix:

Variables	Urbanized Area Population	Speed Limit (mph)	Overall Approach Lanes	Adjusted Median Saturation Flow Rate (for HV & RT vehicles)
Urbanized Area Population	1.000	0.102	0.225	0.446
Speed Limit (mph)	0.102	1.000	0.487	0.630
Overall Approach Lanes	0.225	0.487	1.000	0.448
Adjusted Median Saturation Flow Rate	0.446	0.630	0.448	1.000

Nonlinear regression of variable Adjusted Median Saturation Flow Rate (for HV & RT vehicles):

Goodness of fit statistics:

Observations	55.000
DF	51.000
R ²	0.616
SSE	244574.730
MSE	4795.583
RMSE	69.250
Iterations	8.000

Model parameters:

Parameter	Value
pr1	1986.310
pr2	-0.014
pr3	-0.004
pr4	1.134

Equation of the model:

Adjusted Median Saturation Flow Rate (for HV & RT vehicles) = $1986.30971308676 * (1 / (\text{Urbanized Area Population}^{-1.43088412118824E-02})) * (1 / (1 + 4.18566207559426E-03 * (\text{Speed Limit (mph)} - 40))) * (1 / (1 + (1 / \text{Overall Approach Lanes}) * (1.13374565485035 - 1)))$

Example Application of Saturation Flow Regression Model Using Adjustment Factor Tables

The intersection of WIS 13 & WIS 54 in Wisconsin Rapids, Wood County (NC region) has been selected to demonstrate the adjustment factors recommended for use in this report. The urbanized population, number of approach lanes, and posted speed limit need to be obtained in order to use the adjustment factors. Adjustment factor tables from the report have been included for ease of reference.

Urbanized Population – Using information from Appendix A locate the population of Wisconsin Rapids in the *Urban Cluster* table: 29,169. This corresponds to an adjustment factor of 0.95 in the table below.

Approach Lanes – The EB approach to the intersection has five total approach lanes (one left turn lane, two through lanes and two right turn lanes). This corresponds to an adjustment factor of 0.97.

Posted Speed Limit of Approach – The EB approach was studied. This approach has a posted speed limit of 40, which corresponds to an adjustment factor of 1.00.

Urbanized Area / Cluster Population	Adjustment Factor	Total Approach Lanes	Adjustment Factor	Posted Speed Limit Of Approach	Adjustment Factor
< 2,000	0.91	1	0.88	25	0.94
2,000 - 4,499	0.92	2	0.94	30	0.96
4,500 - 8,999	0.93	3	0.96	35	0.98
9,000 - 18,999	0.94	4	0.97	40	1.00
19,000 - 39,999	0.95	5	0.97	45	1.02
40,000 - 82,999	0.96	6	0.98	50	1.04
83,000 - 170,499	0.97	7	0.98	55	1.07
170,500 - 347,499	0.98				
347,500 - 704,499	0.99				
> 704,500	1.00				

The modified version of the HCM equation that includes factors for the population group, approach lanes, and speed limit is:

$$S = S_0 f_w f_{HV} f_g f_p f_{bb} f_a f_{LU} f_{LT} f_{RT} f_{Lpb} f_{Rpb} f_{Pop} f_{N} f_{SL}$$

This intersection did not have any right turning traffic or heavy vehicle traffic included in the study, so the adjustment factor for each is 1.00 for this example. The other factors are also 1.00 for this example. Using a rounded base rate of 1980 pcphpl from the regression model and the adjustment factors from above, the estimated saturation flow rate for the intersection of WIS 13 & WIS 54 is:

$$S = 1980 * (0.95) * (0.97) * (1.00) = \mathbf{1825 \text{ vphpl}}$$

RTOR Regression Analysis

Constraints: an=0

Confidence interval (%): 95

Tolerance: 0.0001

Model selection: Best model / Adjusted R²

Min variables: 2 / Max variables: 2

Use least squares means: Yes

Summary statistics:

Variable	Observations	Obs. with missing data	Obs. without missing data	Minimum	Maximum	Mean	Std. deviation
RTOR	63	0	63	4.000	309.000	65.016	60.564
Urbanized Area Population	63	0	63	2055.000	1364760.000	458004.476	567484.875
RT	63	0	63	23.000	867.000	159.413	161.721

Variable	Categories	Frequencies	%
WisDOT Region (N/S)	1	31	49.206
	2	32	50.794

Correlation matrix:

Variables	Urbanized Area Population	RT	WisDOT Region (N/S)-1	WisDOT Region (N/S)-2	RTOR
Urbanized Area Population	1.000	0.383	-0.634	0.634	0.382
RT	0.383	1.000	-0.270	0.270	0.960
WisDOT Region (N/S)-1	-0.634	-0.270	1.000	-1.000	-0.244
WisDOT Region (N/S)-2	0.634	0.270	-1.000	1.000	0.244
RTOR	0.382	0.960	-0.244	0.244	1.000

Multicollinearity statistics:

Statistic	Urbanized Area	RT	WisDOT Region (N/S)-1	WisDOT Region
Tolerance	0.550	0.852	0.597	0.597
VIF	1.819	1.174	1.674	1.674

Regression of variable RTOR:

Summary of the variables selection:

Nbr. of variables	Variables	MSE	R ²	Adjusted R ²	Mallows' Cp	Akaike's AIC	Schwarz's SBC	Amemiya's PC
2	WisDOT Region	298.084	0.921	0.917	3.269	361.861	368.290	0.085

The best model for the selected selection criterion is displayed in blue

Goodness of fit statistics:

Observations	63.000
Sum of weights	63.000
DF	60.000
R ²	0.921
Adjusted R ²	
MSE	298.084
RMSE	17.265
MAPE	44.343
DW	2.084
Cp	3.269
AIC	361.861
SBC	368.290
PC	

As the intercept of the model is fixed, the R² displayed above is calculated as the coefficient of determination between the observed and predicted Ys

Analysis of variance:

Source	DF	Sum of squares	Mean squares	F	Pr > F
Model	3	475832.988	158610.996	532.103	< 0.0001
Error	60	17885.012	298.084		
Corrected Total	63	493718.000			

Computed against model Y=0

Model parameters:

Source	Value	Standard error	t	Pr > t	Lower bound (95%)	Upper bound (95%)
Intercept	0.000					
Urbanized Area Population	0.000	0.000				
RT	0.361	0.014	25.639	< 0.0001	0.333	0.389
WisDOT Region (N/S)-1	8.428	3.501	2.407	0.019	1.425	15.431
WisDOT Region (N/S)-2	0.000	0.000				

Equation of the model:

$$RTOR = 0.361017270490568 * RT + 8.4283937478951 * WisDOT\ Region\ (N/S)\ -1$$

Standardized coefficients:

Source	Value	Standard error	t	Pr > t	Lower bound (95%)	Upper bound (95%)
Urbanized Area Population	0.000	0.000				
RT	0.964	0.038	25.639	< 0.0001	0.889	1.039
WisDOT Region (N/S)-1	0.070	0.029	2.407	0.019	0.012	0.128
WisDOT Region (N/S)-2	0.000	0.000				

