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SH 82 Corridor Conditions Assessment
Final Report

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TABLE OF CONTENTS

S.0 EXECUTIVE SUMMARY S-1
1.0 INTRODUCTION 1-1
1.1 PURPOSE 1-1
1.2 PROJECT LIMITS 1-1
2.0 SUMMARY OF DATA COLLECTION EFFORTS 2-1
2.1 DAILY TRAFFIC COUNTS 2-1
2.1.1 Average Daily Traffic Data 2-4
2.1.2 Vehicle Classification Count Data 2-5
2.2 TURNING MOVEMENT COUNTS 2-5
2.3 TRAVEL TIMES 2-6
2.4 LICENSE PLATE SURVEY 2-6
2.5 CRASH DATA 2-6
3.0 DEVELOPMENT OF TRAFFIC ANALYSIS MODEL 3-1
3.1 MODEL CALIBRATION 3-1
4.0 SUMMARY OF EXISTING CONDITIONS ANALYSIS 4-1
4.1 INTERSECTION LEVEL OF SERVICE (EXISTING) 4-1
4.2 ARTERIAL LEVEL OF SERVICE (EXISTING) 4-2
4.3 TRAVEL TIMES (EXISTING) 4-6
4.4 VEHICLE EMISSIONS (EXISTING) 4-6
5.0 RESULTS OF LICENSE PLATE SURVEY 5-1
5.1 LICENSE PLATE SURVEY ANALYSIS PROCEDURE 5-1
5.2 WEEKDAY 5-5
5.3 WEEKEND 5-10
5.4 WEEKLY RESULTS 5-10
6.0 ANNUAL GROWTH RATE DEVELOPMENT 6-1
6.1 ANNUAL GROWTH RATE ANALYSIS 6-1
6.2 ANNUAL GROWTH RATE RECOMMENDATIONS 6-2
7.0 SUMMARY OF FUTURE CONDITIONS ANALYSIS 7-1
7.1 HORIZON YEAR GROWTH FACTORS 7-1
7.2 INTERSECTION LEVEL OF SERVICE (FUTURE) 7-2
7.3 ARTERIAL LEVEL OF SERVICE (FUTURE) 7-4
7.4 TRAVEL TIMES (FUTURE) 7-7
7.5 EMISSIONS (FUTURE) 7-10
7.6 HOURS OF EXPECTED CONGESTION 7-12
7.7 AVERAGE DAILY TRAFFIC/PASS THROUGH TRIPS (FUTURE) 7-15
8.0 DISCUSSION AND CONCLUSIONS 8-1
9.0 NEXT STEPS 9-1

LIST OF TABLES

Table 3-1 Comparison of Travel Times from Field and Model 3-1
Table 4-1 Signalized Intersection Level-of-Service Definition 4-1
Table 4-2 Arterial Level-of-Service Definition 4-2
Table 4-3 Arterial Level of Service Comparison 4-6
Table 4-4 Calculated Hourly Vehicle Emission Rates 4-7
Table 4-5 Daily, Weekly, Yearly Emissions 4-7
Table 6-1 CDOT 20-year Summary of Traffic Growth on SH 82 6-1
Table 6-2 CDOT Summary of Recent Traffic Growth on SH 82 6-1
Table 7-1 Growth Factors for Future Conditions Analysis 7-2
Table 7-2 Summary of Future Intersection LOS Analysis 7-3

LIST OF FIGURES

Figure 1-1 Study Limits 1-2
Figure 2-1 Summary of Weekday Hourly and Daily Traffic and Vehicle Classification Data ... 2-2
Figure 2-2 Summary of Weekend Hourly and Daily Traffic and Vehicle Classification Data ... 2-3
Figure 2-3 Summary of Crash Data 2-8
Figure 5-1 Pass Through Analysis Process 5-2
Figure 5-2 Sample of Travel Time Window Analysis 5-3
Figure 5-3 Weekday AM Hourly Flow Rates 5-6
Figure 5-4 Weekday NN Hourly Flow Rates 5-7
Figure 5-5 Weekday PM Hourly Flow Rates 5-8
Figure 5-6 Daily Weekday Flow Rates 5-9
Figure 5-7 Weekend AM Flow Rates 5-11
Figure 5-8 Weekend PM Flow Rates 5-12
Figure 5-9 Daily Weekend Flow Rates 5-13
Figure 7-1 Projected Weekday PM Period Northbound Arterial LOS 7-5
Figure 7-2 Projected Weekday Midday Period Northbound Arterial LOS 7-6
Figure 7-3 Projected Weekend Midday Period Northbound Arterial LOS 7-6
Figure 7-4 Projected Weekday AM Period Southbound Arterial LOS 7-7
Figure 7-5 Projected Weekday PM Period Northbound Travel Times 7-8
Figure 7-6 Projected Weekday Midday Period Northbound Travel Times 7-8
Figure 7-7 Projected Weekend Midday Period Northbound Travel Times 7-9
Figure 7-8 Projected Weekday AM Period Southbound Travel Times 7-9
Figure 7-9 Projected Daily CO Emissions 7-11
Figure 7-10 Projected Daily NO_x Emissions 7-11
Figure 7-11 Projected Daily VOC Emissions 7-12
Figure 7-12 Weekday Congestion for 1.5% Annual Growth 7-13
Figure 7-13 Weekday Congestion for 2.5% Annual Growth 7-14
Figure 7-14 Weekend Congestion for 2.5% Annual Growth 7-14
Figure 7-15 Weekday Entering Vehicles 7-16
Figure 7-16 Weekday Pass Through Vehicles 7-16
Figure 7-17 Weekend Entering Vehicles 7-17
Figure 7-18 Weekend Pass Through Vehicles 7-17

APPENDICES

Appendix A Average Daily Traffic Count Data
Appendix B Vehicle Classification Count Data
Appendix C Turning Movement Count Data
Appendix D Level-of-Service Data
Appendix E Future Intersection Level of Service
Appendix F Future Arterial Level of Service
Appendix G Future Travel Times
Appendix H Future Emissions
Appendix I Future Pass Through Trips

S.0 EXECUTIVE SUMMARY

This report presents the results of the corridor conditions assessment (CCA) for State Highway 82 (SH 82) within the City of Glenwood Springs. Information has been presented regarding the data collection efforts, existing conditions, results of a pass through trip analysis and results of the future conditions analysis.

Existing Conditions

In summary, the results of the existing condition analysis show that in general the corridor operates at acceptable levels-of-service (LOS 'C' or better) at most of the intersections for most of the peak periods. Most of the intersections along the SH 82 corridor operate at LOS 'C' or better for all time periods of the week, with the exception of Laurel during the weekday AM period, which is at LOS 'D', 27th Street during the weekday PM period, which is also at LOS 'D', and 8th Street during the weekday PM period, which operates at LOS 'E'. LOS is heavily influenced by the mainline operations, thus it is expected that the traffic on the side streets are currently experiencing worse LOS, and in many cases are already operating at LOS 'F'. The existing operations and traffic conditions on the SH 82 corridor are nearing levels that will result in congested conditions and unacceptable performance.

Future Conditions

A future conditions analysis was performed using a set of growth rates, to represent a range of possible future growth scenarios within the region. The study used an annual growth rate of 1% for the low growth scenario, 1.5% for the mean (medium) growth scenario, and 2.5% for the high growth scenario.

Analysis of the low growth rate scenario shows that the existing roadway network will continue to operate at levels that are deemed acceptable for the next 20 years. A few of the intersections along the corridor do begin to experience poorer performance, LOS 'D' or lower, during the peak periods, but as a whole the corridor will continue to operate acceptably.

In the medium growth scenario, 1.5% annually, the corridor will begin to experience unacceptable performance, 16 to 17 years in the future, during certain times of a typical day, primarily the weekday PM period. Key intersections such as 8th Street, Laurel, and Pine begin to operate at failing levels, LOS 'E' or 'F', for most of the peak periods of a typical week. In the future, congested conditions will exist for 1 to 2 hours of a typical weekday starting fifteen years in the future and the number of congested hours would increase to as many as 6 to 7 hours by the 20- year horizon.

In the high growth scenario, 2.5% annually, the corridor begins to experience unacceptable performance during the weekday midday and PM periods, and during the weekend midday period. The impacts of this growth rate will start to impact the corridor in approximately 10 years. Numerous intersections such as those at both the north and south ends of the corridor will begin to operate at failing levels, LOS 'E' or 'F', for most of the peak periods of a typical week. The poor performance of these key intersections results in the arterial LOS reaching unacceptable (LOS 'E' or 'F') levels and in the travel times more than doubling during some time periods. Congested conditions will be experienced for one to two hours of a weekday in ten years, 7 to 8 hours in fifteen years, and for as much as 12 to 13 hours twenty years in the future.

On the weekend, congested traffic conditions can be expected to occur during a 1 to 2 hour period of a day in fifteen years and for more than 8 hours of a day in twenty years.

Emissions

Depending on the rate of growth along the corridor and within the area, emissions from the vehicles that use the SH 82 corridor will increase and reach high levels over the next 20 years. The projected traffic levels show an increase between 22% and 64% over existing conditions in the next 20 years depending on the rate of growth. At the same time, emission levels are shown to increase between 50% and 466% (depending on growth rate) in the same time period. These levels of emissions may have significant impacts to the health of the environment, to the local residents, visitors to the area, people that work in the area, and on the drivers that use the corridors.

Pass Through Trips

Currently, there are approximately 10,500 vehicles a day making pass through trips in the area using the SH 82 corridor. On the average weekday, approximately 36 percent of all northbound vehicles and nearly 20 percent of all southbound vehicles are pass through trips. On the weekends, 45 percent of the northbound entering vehicles and 25 percent of southbound entering vehicles are pass through trips. Depending on the rate of growth in the area, the number of pass through trips in 20 years, for an average day, will range from just over 12,700 vpd to as many as 17,000 vpd.

1.0 INTRODUCTION

The City of Glenwood Springs and the Department of Transportation (CDOT) identified the need to perform a corridor conditions assessment (CCA) for State Highway 82 (SH 82) within the City of Glenwood Springs. This document summarizes the process that was used, the procedures that were followed, and the results of analyses that were performed to complete the SH 82 CCA. The information that will be presented in this document includes:

- Data collection efforts
- Existing conditions
- Pass through trip analysis
- Future conditions
- Summary and recommendations

1.1 PURPOSE

The purpose of this project is to evaluate the existing conditions and projected future operational status of the SH 82 corridor in order to identify the remaining service life of the existing roadway network. Existing traffic volumes on the SH 82 result in the corridor operating at or near congested levels, raising questions for CDOT and the City regarding when and what types of improvements will be necessary to maintain acceptable traffic operations in the future. This study looked at identifying the existing operational characteristics of the corridor through the analysis of collected data. Then, based on existing conditions, three different future growth scenarios were evaluated to identify future operations of SH 82 and, more specifically, when and to what extent limitations in roadway capacity may arise.

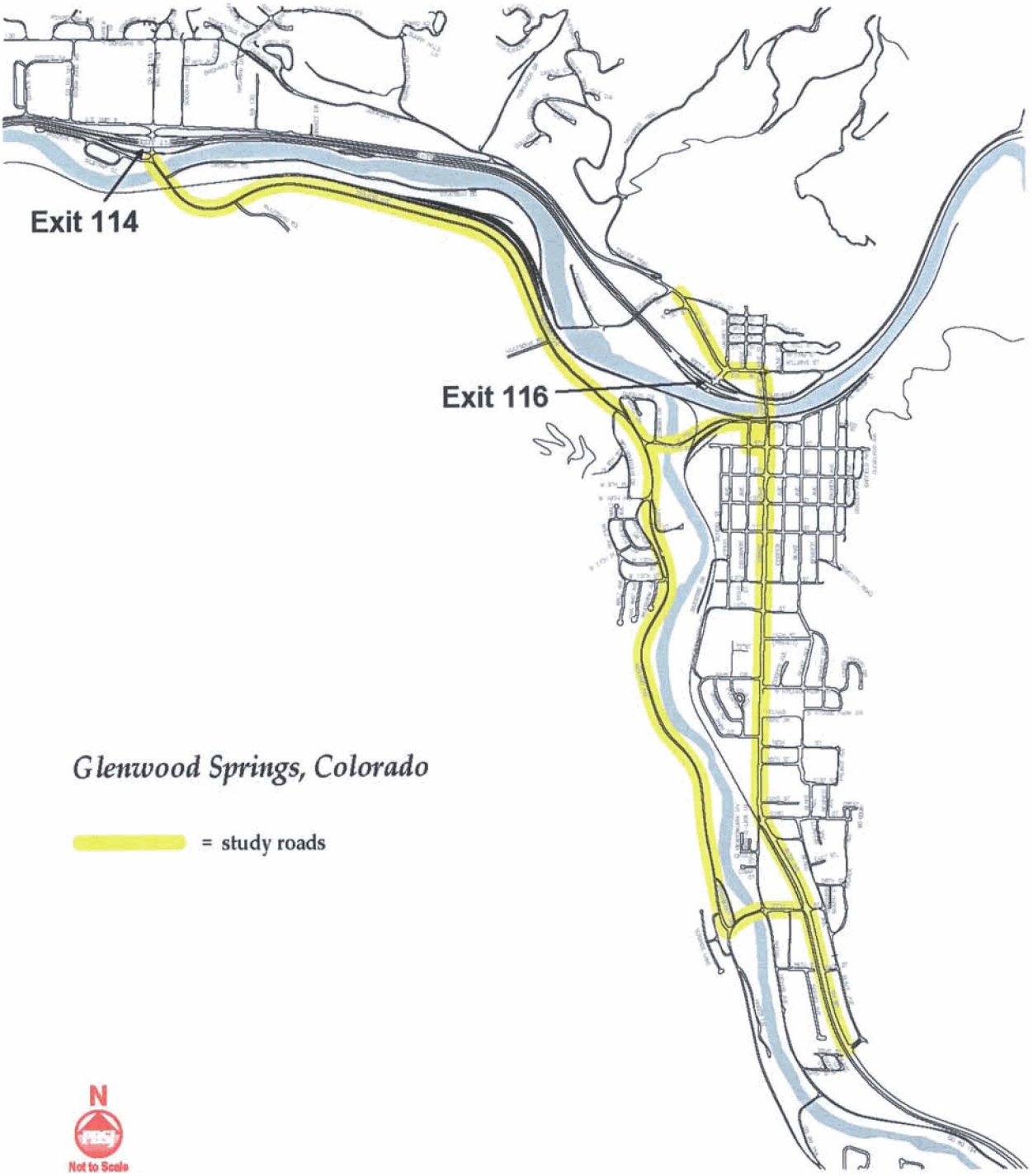
Finally, both CDOT and the City have an interest in identifying the number of vehicles that are currently using the SH 82 corridor to pass through the City of Glenwood without stopping. Whether these vehicles are commuting to work or passing through to other final destinations, quantifying pass through trips was identified by both CDOT and the City as an important analysis item. This study conducted a license plate survey from which pass-through trips were quantified and general travel patterns identified.

1.2 PROJECT LIMITS

The study limits for this study are shown in **Figure 1-1**. It should be noted that the study limits do not include the entire City Limits, but rather are specific to identified roadways. The limits are designed to focus on the different routes that traffic can use to move through the Glenwood Springs area. The routes and study limits include:

- SH 82 between the intersections of Laurel Street and 32nd Street
- Interstate 70 (I-70) ramp junctions at Exit 116
- United States Highway 6 (US 6) just west of Laurel
- 7th Street/8th Street between SH 82 and Midland Avenue
- Midland Avenue between Exit 114 (I-70) and SH 82 (27th Street)

Figure 1-1
Study Limits



2.0 SUMMARY OF DATA COLLECTION EFFORTS

The initial phase of this project involved the collection of several types of data. Data collection efforts were conducted during the week of July 20 – 25, 2004, as discussions with CDOT and City staff identified this week as being a week that was representative of a typical peak period for this corridor. Data that was collected and presented in this document includes average daily traffic counts, vehicle classification counts, travel time runs, and accident data.

In addition, a license plate survey was conducted as part of the data collection efforts. The data from the license plate survey was used to quantify peak period and daily pass through trips in the study area. Results of the license plate survey are covered in **Section 5.0** of the document.

2.1 DAILY TRAFFIC COUNTS

Bi-directional traffic counts were conducted at several locations throughout the City of Glenwood Springs. The results of the counts are presented in **Figure 2-1** (weekday) and **Figure 2-2** (weekend). The counts were conducted for five days (Tuesday through Saturday) at the following locations:

- US 6 west of Laurel(*)
- Midland Avenue south of I-70(*)
- SH 82 south of 11th Street(*)
- SH 82 south of 27th Street(*)
- 7th Street west of Pitkin
- I-70 Eastbound Exit Ramp at Exit 116
- I-70 Eastbound Entrance Ramp at Exit 116
- I-70 Westbound Exit Ramp at Exit 116
- I-70 Westbound Entrance Ramp at Exit 116.

(*) Denotes a location where vehicle classification data was also collected.

The purpose of the traffic counts is to quantify the number of vehicles that are in the network at a given location for each hour of a day, which can then be summed up to give Average Daily Traffic (ADT) data. In addition, to getting ADT data, the tubes provide a means to identify the peak hours for weekday and weekend time periods. The ADT data is presented in **Appendix A**. Based on the tube count data, the weekday peaks were identified as 7 – 8 a.m. (AM), 12 – 1 p.m. (NN), and 5 – 6 p.m. (PM). Weekend (WE) traffic gradually builds upward in volume from the early morning hour toward the middle of the day before peaking in the 12 – 1 p.m. period, and then the traffic volumes decline throughout the evening and over night hours.

In addition to collection ADT data, several locations also collected vehicle classification data. Vehicle classification counts are used to identify the various types of vehicles (passenger, bus, multiple axle, commercial, etc.) that make up the overall traffic volume at a particular location. The primary purpose of these counts is to determine the percentage of heavy vehicles in the network for use during the analysis and modeling phases of this study. For the purposes of this study, a heavy vehicle is classified as being any vehicle that has more than 2-axles. Vehicle classification data is presented in **Appendix B**.

Figure 2-1
Summary of Weekday Hourly and Daily Traffic and Vehicle Classification Data

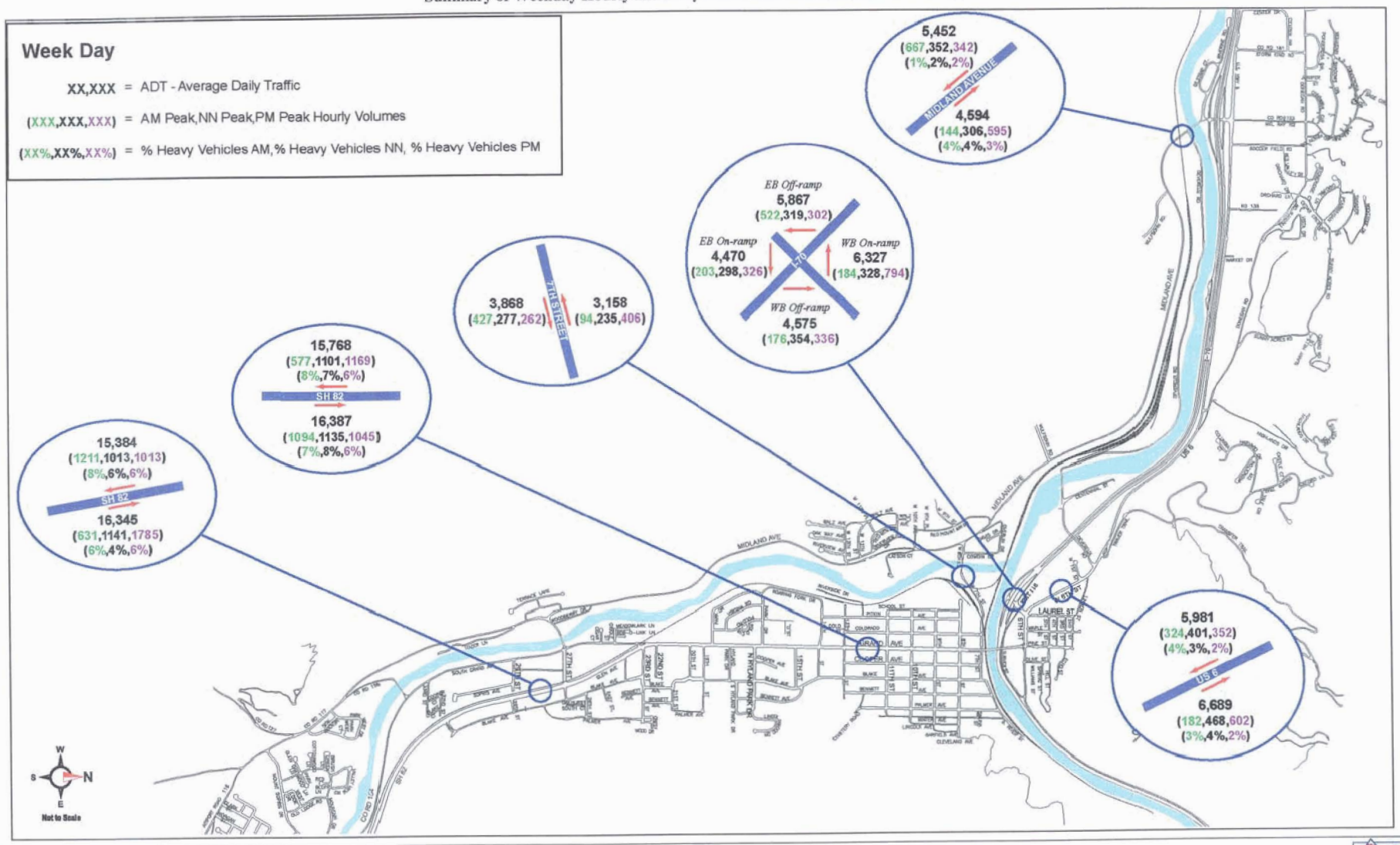
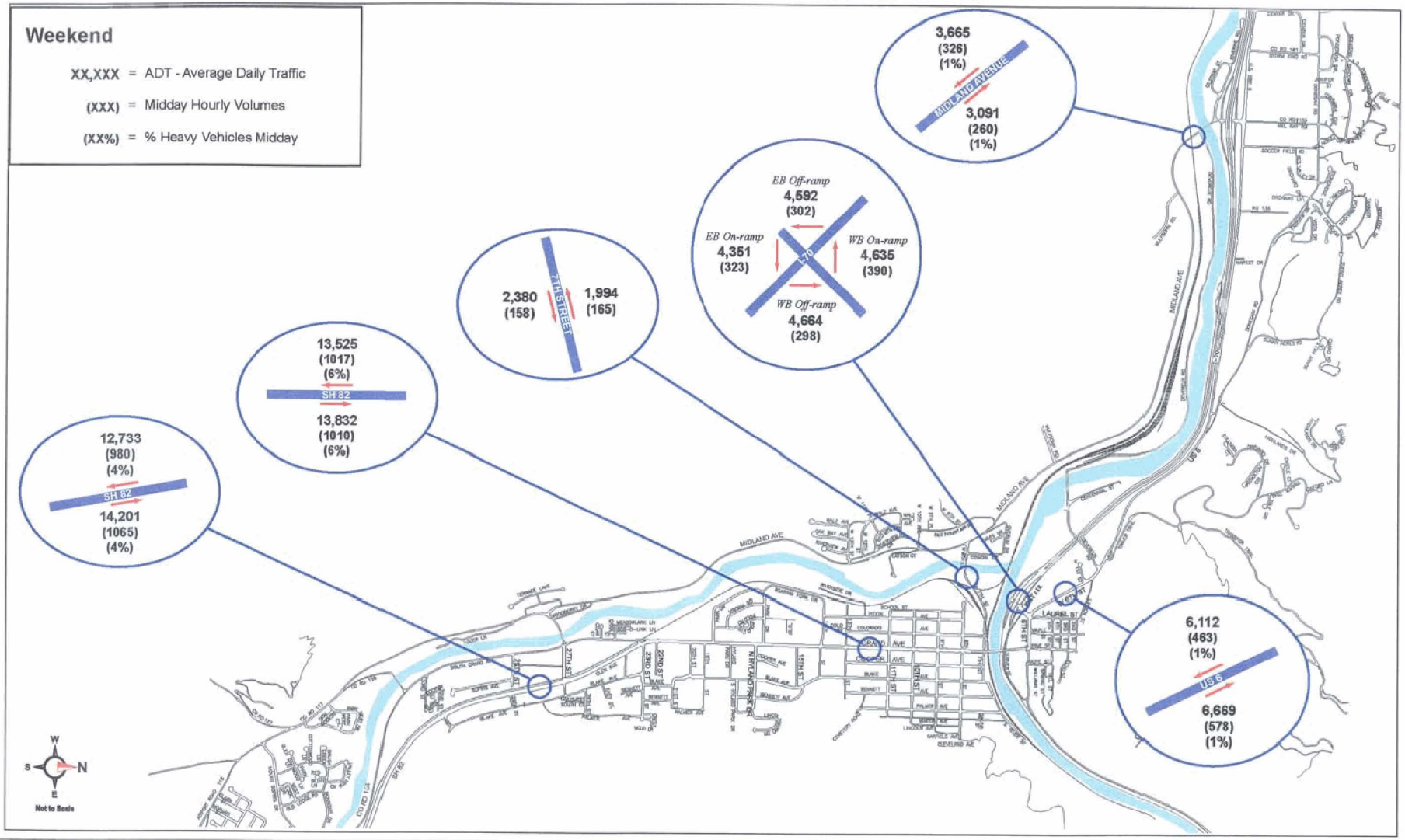


FIGURE 2-2
Summary of Weekend Hourly and Daily Traffic and Vehicle Classification Data



2.1.1 Average Daily Traffic Data

The following is a brief discussion on the ADT data presented in **Figures 2-1 and 2-2** and the traffic patterns that were observed at each location.

US 6 West of Laurel: This location has an ADT (combined westbound and eastbound traffic) of approximately 12,670 vehicles for a weekday and 12,780 vehicles on a weekend. On an average day, the westbound traffic volume is slightly higher for both weekdays and weekends. Traffic patterns at this location are very similar for both weekday and weekends, with traffic slightly favoring eastbound flow during the morning hours up to approximately 11:00 a.m., but traffic is heavier westbound for the remainder of the day.

Midland Avenue South of I-70: At this location, the weekday ADT is approximately 10,050 vehicles and 6,750 vehicles for the weekend. Traffic tended to be slightly higher southbound for both weekdays and weekends. The ADT data indicates that for a typical weekday, traffic is much heavier southbound in the AM, is slightly higher southbound during the midday hours, and then is heavier northbound during the PM period. Weekend traffic is typically higher southbound for the morning and afternoons hours and is then evenly split between the directions the remaining hours of the day.

SH 82 South of 11th Street: The weekday ADT at this location was approximately 32,150 vehicles with slightly more traffic (four percent) headed south. On the weekend, ADT was 27,350, with northbound traffic being less than two percent higher than southbound. Weekday traffic favored southbound during the AM and northbound during the PM periods, but traffic was fairly evenly distributed for the remainder of the weekday hours and on weekends.

***SH 82 South of 27th Street*:** The traffic patterns at this location are very similar to those along SH 82 just south of 11th Street. Weekday traffic is heavier southbound during the AM, northbound during the PM, and is fairly evenly split during the rest of the time, including weekends. Weekday ADT at this location is approximately 31,730 vehicles, with slightly more northbound. On the weekend the ADT was approximately 26,930 vehicles and is slightly heavier northbound.

7th Street West of Pitkin: The ADT for weekdays is approximately 7,025 vehicles and 4,375 vehicles per day on the weekend. For any typical day, the eastbound traffic is nearly 20% higher than the westbound traffic at this location. Traffic is typically higher eastbound for all times of the day, except during the PM periods when the westbound traffic is highest. This is true for both weekdays and weekends.

I-70 Junction at Exit 116: The westbound exit ramp had a weekday ADT of 4,575 and approximately 4,665 vehicles for the weekend. For all days of the week, traffic typically increases in volume starting in the early morning up though the mid-afternoon hours and then gradually begins to decline. On the westbound entrance ramp, there were approximately 6,325 vehicles during the average weekday and 4,635 vehicles on an average weekend. Weekday traffic starts to increase throughout the day and then has a definite peak during the PM before rapidly decreasing over-night. Weekend traffic builds throughout the day and then drops off rapidly during the evening hours. The eastbound exit ramp had an ADT during the weekday of

approximately 5,860 and 4,590 on the weekend. Weekday traffic peaks during the AM and then gradually decreases throughout the day, while weekend traffic goes through a gradual increase up to mid-afternoon and then decreases throughout the evening hours. Finally, ADT on the eastbound entrance ramp was approximately 4,470 on a weekday and 4,350 on the weekend. For both weekdays and weekends the traffic builds up throughout the morning and early afternoon hours before decreasing during the evening hours.

2.1.2 Vehicle Classification Count Data

Vehicle classification data was collected at four locations within the study area. The following is a brief discussion on the results that are presented in **Figures 2-1 and 2-2**.

Weekday Heavy Vehicles: During a typical weekday, heavy truck percentages range anywhere from 1% of the traffic flows to a high of 8%. The highest values are observed to occur along SH 82 just south of 11th Street, where the percentages range between 6% and 8% in both directions. The heavy vehicle percentages on SH 82 south of 27th Street are slightly lower than the values observed south of 11th Street. The counts taken at the Midland Avenue location show southbound heavy vehicles are always less than 2%, but northbound percentages are slightly higher (up to 4%).

Weekend Heavy Vehicles: Heavy vehicle percentages on the weekend are typically lower than the levels observed during on a weekday. Both the Midland Avenue and US 6 locations have 1% heavy vehicles in both directions. The percentages on SH 82 are 6% in both directions just south of 11th Street and 4% in both directions south of 27th Street.

2.2 TURNING MOVEMENT COUNTS

To obtain specific intersection data for use in the analysis phase of this study, peak period turning movement counts were conducted at the following intersections:

- Midland Avenue at the Westbound I-70 Exit 114 ramp
- Midland Avenue at the Eastbound I-70 Exit 114 ramp
- Midland Avenue at 8th Street

These counts were conducted during four time periods: AM peak (7 – 9 a.m.), mid-day (12 – 2 p.m.), PM peak (4 – 6 p.m.), and during the mid-day (11 a.m. – 1 p.m.) on the weekend.

The purpose of the turning movement counts is to get overall traffic volumes and turning movement percentages to help determine traffic patterns. These volumes and patterns are then used to aid in calibrating the traffic analysis model. Turning movement counts at the remaining intersections were obtained from a previous (2002) traffic signal timing study. Comparison between the 2002 ADTs and the 2004 ADTs along with some growth rate data that was obtained from the CDOT website were used to determine an appropriate growth factor that was then applied to the 2002 turning movement counts to obtain 2004 volumes at each intersection. The volumes were then balanced along the mainline to obtain the final 2004 volumes that were used for the analysis portion of this project. Turning movement count data is presented in **Appendix C.**

2.3 TRAVEL TIMES

Travel times are used to measure the amount of time it takes to travel from one end of a corridor to the other. These times help to evaluate the current conditions of the corridor such as level of service and amount of emissions. Travel times were conducted along SH 82, both northbound and southbound, between the intersections of Laurel and 32nd Street. The travel times were collected during the AM peak, NN peak, PM peak, and on the weekend, during the same time periods that the other data collection efforts were undertaken. The travel time data will be used to calibrate the traffic analysis model to existing conditions, a process that will be discussed in subsequent sections of this report. The travel time results are further discussed in **Section 3**.

2.4 LICENSE PLATE SURVEY

A video license plate survey was also conducted as part of the data collection efforts. Data was collected for a total of 11 hours as follows: 7 to 9 a.m., 12 to 2 p.m., and 3 to 6 p.m. on a weekday, and 9 to 11 a.m. and 3 to 5 p.m. on a weekend. During each data collection period, cameras were located in the following locations:

- Two cameras were located at Midland Avenue just south of I-70 to capture southbound and northbound traffic
- Two cameras were located on US 6 west of Laurel Street to capture eastbound and westbound traffic
- One camera was placed on the I-70 westbound exit ramp at Exit 116
- One camera was placed on the I-70 eastbound exit ramp at Exit 116
- One camera was placed on the I-70 westbound entrance ramp at Exit 116
- One camera was placed on the I-70 eastbound entrance ramp at Exit 116
- Four cameras were located along SH 82 south of 11th Street to capture northbound and southbound traffic
- Four cameras were located along SH 82 south of 27th Street to capture northbound and southbound traffic

Each camera was set up to continuously record data, during each data collection time period, from an individual lane of traffic. The recorded license plates where then transferred to Excel and then into an Access database so that queries could be done to identify vehicles that were traveling into and out of the network. The database allows for an analysis of the data to determine the number of pass- through versus local trips. Because the focus of this study is on the operations and expected life span of the SH 82 corridor, the collection and analysis of license plate data also focused on the SH 82 corridor. A detailed discussion regarding the analysis of this data is presented in **Section 5.0** of this document.

2.5 CRASH DATA

Three years of crash data (January 2000 – December 2002) was provided by CDOT. This information summarized accidents along US 6 between Exit 114 and 116, I-70 from mile marker 114 to 116, and SH 82 between I-70 and mile marker 2.25 (approximately 32nd Street). For reporting purposes, the data for I-70 was left as a two-mile segment, the US 6 data was broken into one-mile increments, and data for SH 82 was broken into half-mile increments. For each of these segments, the information was categorized into type of crash (rear-end, broadside,

sideswipe, etc), severity of crash (property damage only (PDO), injury (INJ), or fatality (FAT)), as well as the number of crashes that occurred at intersections versus non-intersection locations.

Figure 2-3 shows the summary of the crash data. Of all the crashes that occurred within the three years of data analyzed, there were no fatalities. Although this study will not evaluate crash data or look into mitigating factors, the data is presented for informational purposes.

It can be seen from this figure that along I-70, there was a total of 51 crashes with the most common types of crashes being ones involving fixed objects and wild animals. Fixed object crashes account for over 30 percent of crashes and wild animal crashes make up another 20 percent. Of the 51 total crashes, 11 (or around 20 percent) of these crashes involved injuries.

Along US 6, there were a total of 99 crashes. Of these crashes nearly 40 percent of these crashes are at intersections and/or intersection related, and 25 percent involved injuries. The most common types of crashes were rear-end collisions (29 percent) and broadsides (23 percent).

The SH 82 corridor had a total of 527 crashes. Most of these crashes (169 or 32 percent) occurred from mile marker 114.0 to 114.5. Of the 527 crashes, the most common type of incident was the rear-end collision which accounted for 53 percent of the total. The number of crashes at intersections and/or intersection related crashes (291) made up 55 percent of crashes along SH 82. Of the total crashes nearly 17 percent involved injuries.

Another important piece of data that can be determined from the accident data is the Weight Hazard Index (WHI). The WHI is a statistic that is computed from many factors in order to determine if the average accident frequency/severity for the study section of roadway is higher than the statewide average for similar types of roads. The factors that are considered include:

- Accident frequency
- Accident severity
- Traffic volumes within the study section
- Length of the study section
- Comparison to accident history from similar highways

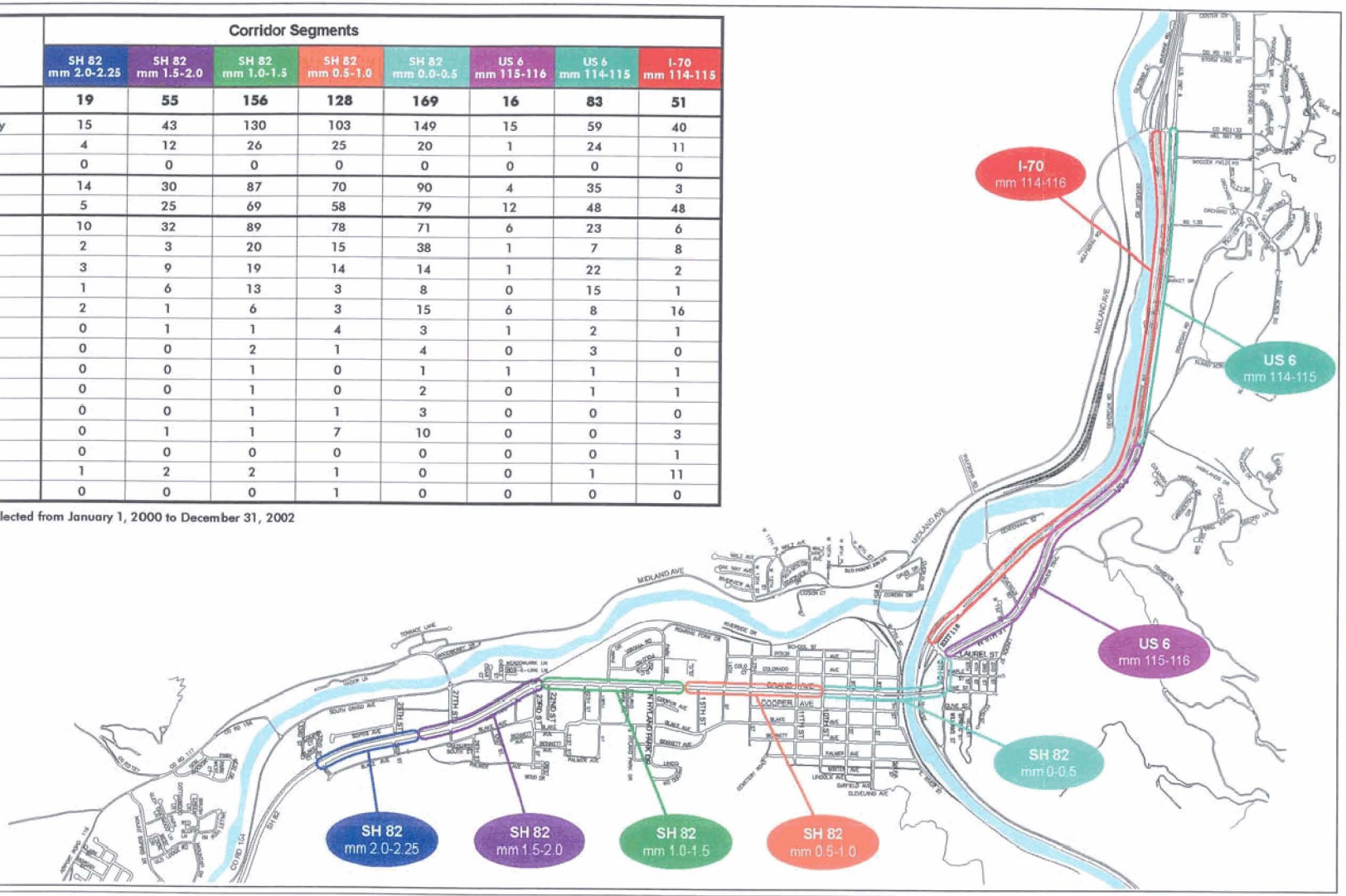
Once computed, a negative WHI indicates the study section of roadway has a lower than average accident frequency/history, while a positive WHI means the accident frequency/history for the study section is higher than average. Data collected for this study indicates that the WHI for both I-70 (between Exit 114 and Exit 116) and US 6 are both negative, which indicates these highways are below average. On the other hand, SH 82 between milepost 0 and 2.25 has a positive WHI (4.44) and thus this section of SH 82 does have a higher than average accident frequency/history than other similar highways within Colorado.

From Figure 2-3, the highest concentration of accidents on SH 82 is between I-70 and approximately 23rd Street, with the majority of the accidents being rear end or sideswipe events. This portion of the roadway is congested during the peak periods, has a high concentration of access points (resulted in slowing to turn), the narrow bridge just north of 8th Street, and curbside parking, all of which are consistent with the types of accidents that are occurring.

Figure 2-3
Summary of Crash Data

Accident Data	Corridor Segments							
	SH 82 mm 2.0-2.25	SH 82 mm 1.5-2.0	SH 82 mm 1.0-1.5	SH 82 mm 0.5-1.0	SH 82 mm 0.0-0.5	US 6 mm 115-116	US 6 mm 114-115	I-70 mm 114-115
Total Accidents	**19**	**55**	**156**	**128**	**169**	**16**	**83**	**51**
Property Damage Only	15	43	130	103	149	15	59	40
Injuries	4	12	26	25	20	1	24	11
Fatalities	0	0	0	0	0	0	0	0
Intersections	14	30	87	70	90	4	35	3
Non-Intersections	5	25	69	58	79	12	48	48
Rear-end	10	32	89	78	71	6	23	6
Sideswipe	2	3	20	15	38	1	7	8
Broadside	3	9	19	14	14	1	22	2
Approach Turn	1	6	13	3	8	0	15	1
Fixed Object	2	1	6	3	15	6	8	16
Pedestrian	0	1	1	4	3	1	2	1
Bicycle	0	0	2	1	4	0	3	0
Overturn	0	0	1	0	1	1	1	1
Head on	0	0	1	0	2	0	1	1
Overtaking Turn	0	0	1	1	3	0	0	0
Parked Vehicle	0	1	1	7	10	0	0	3
Motorized Bicycle	0	0	0	0	0	0	0	1
Wild Animal	1	2	2	1	0	0	1	11
Domestic Animal	0	0	0	1	0	0	0	0

Note: Accident data collected from January 1, 2000 to December 31, 2002



3.0 DEVELOPMENT OF TRAFFIC ANALYSIS MODEL

In order to conduct the existing conditions analysis, a traffic model of the SH 82 corridor was built using the traffic analysis software Synchro. This model was based upon the already developed Synchro model used in the SH 82 Signal Coordination project that was completed for CDOT Region 3 in June of 2002. Field visits were conducted to verify the information in the model and all necessary changes to the model were completed. These changes included the addition of US 6 between Exit 114 and 116, 7th/8th Street between Midland Avenue and SH 82, and Midland Avenue from Exit 114 to the intersection of 27th Street/SH 82. Intersections along these corridors with some type of traffic control were added to the model.

3.1 MODEL CALIBRATION

After the model was developed and updated to reflect current geometry and traffic control conditions, the model was then calibrated to accurately reflect existing conditions from the field. This was done through the use of travel times that were collected during the data collection phase of the study. As was previously mentioned, travel times were done during the weekday AM, mid-day, PM periods and on the weekend during the mid-day period.

Once the travel time runs were completed and the Synchro traffic model was built, the travel times from the field were compared with that from SimTraffic, a traffic simulation program contained within Synchro. CDOT and the City agreed that the travel times obtained from the simulation software should be within 15 percent of those observed in the field. A calibration method using engineering judgment was used in which minimal changes to ideal link saturation flow rates, turning movement speeds and saturation flow rates, link travel speeds, and lane width adjustments were made. Table 3-1 shows the results that were obtained from the field travel times and the calibrated models. All but one of the travel times, calculated by SimTraffic, were within 10 percent of the travel times obtained from the field studies. The southbound weekday AM travel time is slightly higher at 12 percent, but is still within the 15 percent range that was determined to be acceptable. **Table 3-1** shows that an average travel time for a vehicle is between five and eight minutes, with PM peak times slightly higher than the other time periods.

Table 3-1
Comparison of Travel Times from Field and Model

Travel Time Comparison					
Time Period	Route	Direction of Travel	Travel Times (Seconds)		
			Field	Model	%Diff
Weekday AM	SH 82 (32nd to Laurel)	NB	329	321	2%
		SB	289	323	12%
Weekday OP	SH 82 (32nd to Laurel)	NB	344	361	5%
		SB	382	378	1%
Weekday PM	SH 82 (32nd to Laurel)	NB	421	435	3%
		SB	360	387	8%
Weekend	SH 82 (32nd to Laurel)	NB	302	329	9%
		SB	308	310	1%

4.0 SUMMARY OF EXISTING CONDITIONS ANALYSIS

Upon completion of the calibration process, the traffic analysis models for each of the analysis periods were then used to determine network measures of effectiveness (MOE). CDOT and the City agreed prior to the study the MOEs that would be used to quantify existing conditions within the study area. The MOEs that were agreed to are:

- Intersection Level-of-Service (LOS)
- Arterial LOS
- Travel Times
- Emissions

The following is a discussion summarizing the results of the existing condition analysis that has been performed for the study area.

4.1 INTERSECTION LEVEL OF SERVICE (EXISTING)

For signalized intersections the Level of Service (LOS) is determined by converting the intersection control delay and to a letter grade. **Table 4-1** demonstrates how the delay is transferred to a letter based on criteria developed in the 2000 Highway Capacity Manual (2000 HCM). LOS range from 'A' to 'F'. LOS A describes intersections with low controller delay. This LOS occurs when progression is favorable and most vehicles arrive during the green phase and many vehicles do not stop at all. LOS F is associated with high delays and is considered unacceptable to most drivers. This most often occurs with over-saturation, high congestion, poor progression of traffic signals, and/or long cycle lengths. Results of the LOS analysis that was conducted for the existing conditions are presented in **Appendix D**.

Table 4-1
Signalized Intersection
Level-of-Service Definition

LOS	Control Delay Per Vehicle (s)
A	≤10
B	>10 and ≤20
C	>20 and ≤35
D	>35 and ≤55
E	>55 and ≤80
F	>80

It should be noted the intersection LOS is for the entire intersection. The LOS at many intersections may appear to be better than what is perceived by motorists that use the intersections on a daily basis. For the SH 82 corridor, the side street traffic at all intersections is a mere fraction of the volume of traffic on the mainline. Thus the traffic signal system is setup to facilitate the mainline traffic and move it through the area as best as possible. Thus side street delay may be much higher than the mainline delay, resulting in side street LOS that is much lower (D, E, or F) then the mainline.

The following is a brief summary of the results contained in **Appendix D**. During the weekday AM period, a few intersections, such as Laurel Street and 27th Street, are LOS 'C' or worse. Laurel has heavy side street traffic, a long cycle length of 165 seconds, and has numerous split phases, all of which contribute to high delay during the AM period. 27th Street has a high level of side street traffic and mainline left turning traffic, which reduces the amount of green time for the mainline traffic and increases the number of stops that occur at this intersection. All of the intersections are LOS 'C' or better during the weekday mid-day (NN) and weekend mid-day periods, which is generally considered an acceptable level of service. The weekday PM period has more intersections that experience LOS 'C', 'D', or 'E' than any other time period and include Laurel, Pine, 8th Street, 23rd Street, 27th Street, and Mel Rey Road/US 6. This is partially due to the fact that this time period has the highest traffic volumes and that the peak during this period occurs over a shorter time frame compared to the other study periods.

Since the focus of this study is on the SH 82 corridor, another means to quantify the operational characteristic of a roadway segment is to look at how the segment operates as a whole. This is achieved by looking at the arterial LOS.

4.2 ARTERIAL LEVEL OF SERVICE (EXISTING)

Arterial level of service is dependent on the average through-vehicle travel speed between signalized intersections or for the entire length of the roadway under consideration. Average travel speed is computed from the running times and the control delay of through movements at signalized intersections. Poor signal progression timing, long cycle lengths, and congested conditions are factors that lead to a lower LOS for an arterial.

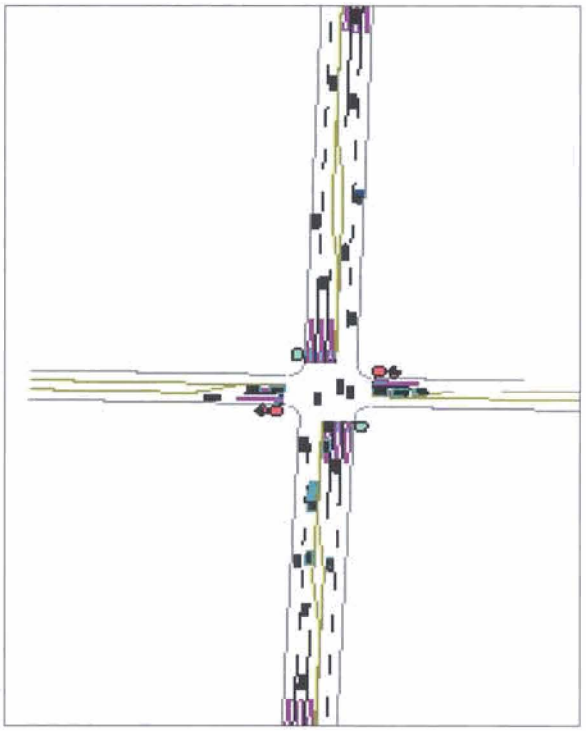
Urban roadways are classified into one of four categories based on the type of roadway, the setting, and the typical free flow speed along the corridor. Based on the definitions given in the 2000 HCM, SH 82 is a major arterial in an urban setting, traffic signal density is about 6 per mile, and it has a range of free flow speeds that is typically between 30 and 35 mph. This makes SH 82 a Class III urban street. **Table 4-2** demonstrates how the average speed is transferred to a letter based on criteria developed in the 2000 HCM for Class III urban streets.

Table 4-2
Arterial Level-of-Service Definition

LOS	Average Travel Speed (mi/hr)
A	>30
B	>24 - 30
C	>18 - 24
D	>14 - 18
E	>10 - 14
F	≤10

Instead of speed, density can be used to describe traffic conditions for the different degrees of arterial LOS. The figures shown below provide visual representations of the arterial LOS in

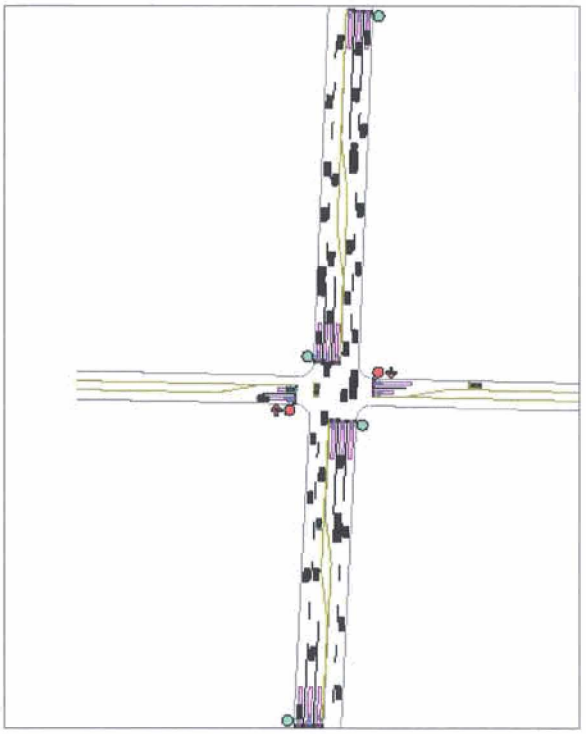
terms of density for each level of service. These figures are also accompanied by a description of each LOS as defined by the Highway Capacity Manual (HCM).



LOS A

Arterial Speed > 30 mph

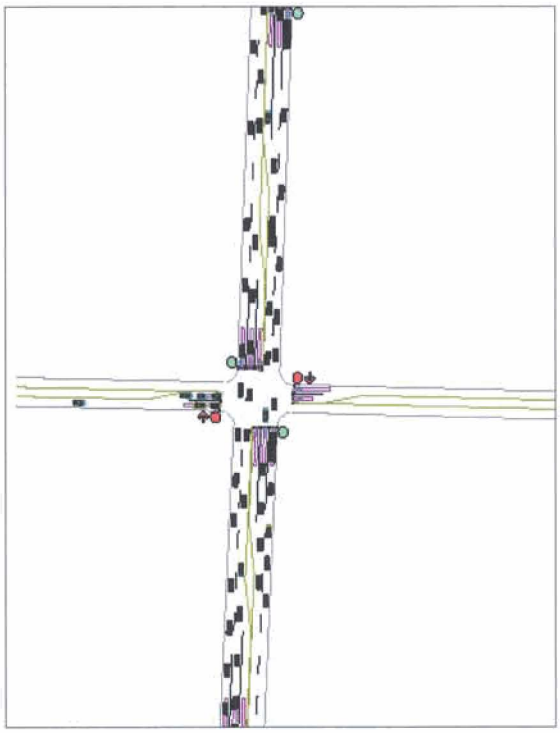
LOS A is described by the Highway Capacity Manual (HCM) as, "primarily free-flow operations at average travel speeds, usually about 90 percent of the free flow speed (FFS) for the given street class. Vehicles are completely unimpeded in their ability to maneuver within the traffic stream. Control delay at signalized intersections is minimal."



LOS B

24 mph < Arterial Speed < 30 mph

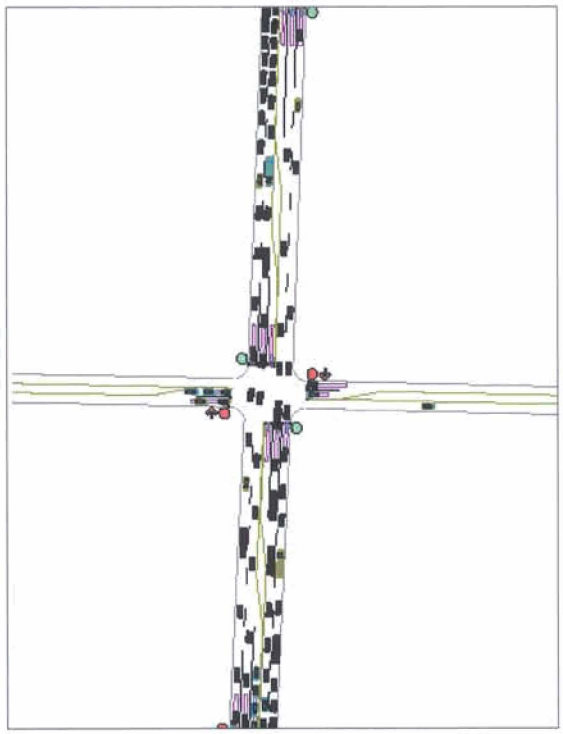
LOS B is described by the HCM as, "reasonably unimpeded operations at average travel speeds, usually about 70 percent of the FFS for the street class. The ability to maneuver within the traffic stream is only slightly restricted, and control delays at signalized intersections are not significant."



LOS C

18 mph < Arterial Speed < 24 mph

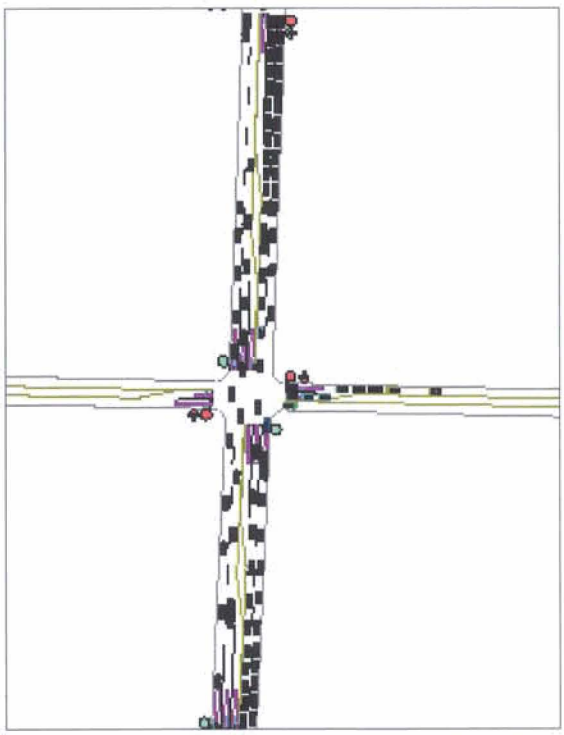
LOS C is described by the HCM as, "stable operations; however, ability to maneuver and change lanes in midblock locations may be more restricted than at LOS B, and longer queues, adverse signal coordination, or both may contribute to lower average travel speeds of about 50 percent of the FFS for the street class."



LOS D

14 mph < Arterial Speed < 18 mph

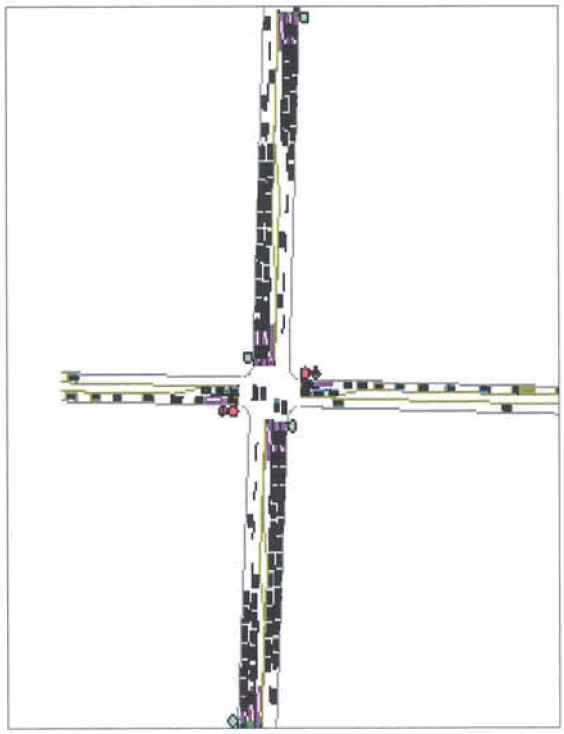
LOS D is described by the HCM as, "borders on a range in which small increases in flow may cause substantial increases in delay and decreases in travel speed. LOS D may be due to adverse signal progression, inappropriate signal timin, high volumes, or a combination of these factors. Average travel speeds are about 40 percent of FFS."



LOS E

10 mph < Arterial Speed < 14 mph

LOS E is described by the HCM as, "significant delays and average travel speeds of 33 percent or less of the FFS. Such operations are caused by a combination of adverse progression, high signal density, high volumes, extensive delays at critical intersections, and inappropriate signal timing."



LOS F

Arterial Speed < 10 mph

LOS F is described by the HCM as, "urban street flow at extremely slow speeds, typically one-third to one-fourth of the FFS. Intersection congestion is likely at critical signalized locations, with high delays, high volumes, and extensive queuing."

Arterial LOS was computed for the existing conditions based upon field travel times and the simulated traffic model. In order to obtain average travel speeds from the traffic models, each of the analysis periods was simulated using SimTraffic, a traffic simulation package that is contained within Synchro. Each of the calibrated traffic analysis models were simulated for a full hour to obtain average travel speeds for vehicles in each travel direction, along each link of SH 82, and for the entire length of the study corridor (Laurel to 32nd Street).

Table 4-3 displays the results of the simulation and field arterial levels of service. As shown in this table, all of the speeds from the calibrated model are within 15 percent of those determined from the field data. As can be seen, the corridor as a whole typically operates at LOS 'C' for the majority of the time, with the worst time period being the weekday PM period.

Table 4-3
Arterial Level of Service Comparison

Arterial Level of Service Comparison						
Time Period	Route	Direction of Travel	Average Speed (mph)		Level of Service	
			Field	Model	Field	Model
Weekday AM	SH 82 (32nd to Laurel)	NB	25	23	B	C
		SB	28	26	B	B
Weekday NN	SH 82 (32nd to Laurel)	NB	24	22	C	C
		SB	21	23	C	C
Weekday PM	SH 82 (32nd to Laurel)	NB	21	18	C	C
		SB	23	23	C	C
Weekend	SH 82 (32nd to Laurel)	NB	27	24	B	C
		SB	27	27	B	B

4.3 TRAVEL TIMES (EXISTING)

Travel times were identified as a MOE mainly for use in the future conditions analysis. Travel times will be used to evaluate how conditions along the corridor deteriorate in the future, by comparing future travel times to the travel times that currently exist. Significant changes to the travel times will be identified as the future condition analysis takes place.

The existing conditions travel times are presented in **Table 3-1** of this document. In general, vehicles require between 5 and 8 minutes to travel the length of the study area along SH 82 between Laurel and 32nd Street in either direction of travel. The existing travel times will be used as part of the analysis of the license plate survey data, which will be discussed in subsequent sections of this document.

4.4 VEHICLE EMISSIONS (EXISTING)

The vehicle emissions were taken from SimTraffic after running each of the peak period calibrated traffic analysis models for one hour. SimTraffic reports three types of vehicle emission: carbon monoxide (CO), nitrogen oxide (NO), and volatile oxygen compounds (VOC). The vehicle emissions are based on calculated fuel consumption, which in turn is based on a

series of factors including: travel time, number of stops, vehicle type, travel distance, and vehicle delay. **Table 4-4** shows the amount of emissions calculated for each time period.

Table 4-4
Calculated Hourly Vehicle Emission Rates

Peak Period	CO Emissions (lb)	NOx Emissions (lb)	VOC Emissions (lb)
AM	85.89	16.69	19.88
NN	108.14	21.03	25.07
PM	161.07	31.33	37.32
WE	100.90	19.62	23.39

By using the peak hour emissions data, daily, weekly, and yearly emissions can be computed. In order to calculate weekday and weekend daily emissions, each hour of the day was assigned emissions production rates based on the rates determined for the peak periods. For example, the rate of emission that was computed for the AM peak was also used for all hours of the day between 5 a.m. and 10 a.m., then the NN rates was used for the hours of the day between 10 a.m. and 2 p.m., and the PM peak rate was used for the hours between 2 p.m. and 10 p.m. For the remaining hours (10 p.m. – 5 a.m.), the NN rate was used but was factored down based on the lower traffic volumes that occur during the late night hours. For the weekend, the single WE rate was used for all hours. Once the daily emissions were calculated, the weekday emissions were multiplied by 5 and the weekend emissions by 2 and then the two were summed to determine the weekly emissions. Once the weekly emissions were computed, they were then multiplied by 52 to determine a yearly level. **Table 4-5** shows the results of daily, weekly and yearly emissions.

Table 4-5
Daily, Weekly, Yearly Emissions

	CO Emissions (lb)	NOx Emissions (lb)	VOC Emissions (lb)
Average WD	2,226	432	516
Average WE	2,421	471	562
Total Weekly	15,974	3,106	3,702
Total Yearly	830,657	162,527	192,525

It should be noted that these values are presented here only for informational purposes, as these values create the baseline against which all future condition analysis will be compared.

5.0 RESULTS OF LICENSE PLATE SURVEY

The purpose of conducting a license plate survey was to determine the number of pass through versus local trips that currently use the roadway network within the study limits. For the purposes of this study, a pass through trip was defined as a vehicle that entered the network at an entry point and then exited the network at an exit point within a defined time frame. It is possible that some local resident trips can be considered a pass through trip, as long as they entered the network at an entry point and exited the network at an exit point within the defined time frame. Conversely, any vehicle that enters the network at an entry point and either does not reach an exit point or does not reach an exit point within the defined travel time window would not be counted as a pass through trip.

5.1 LICENSE PLATE SURVEY ANALYSIS PROCEDURE

In order to determine the daily percentage and quantity of pass through trips that are occurring within the study area, an eight-step process was developed and followed. The process is illustrated in **Figure 5-1** and can be broken into 4 major phases: data collection, evaluation, analysis, and results.

Phase 1: Data Collection

This phase has two steps. The first step was to define the locations that would be considered as entry and exit points or the boundaries for the pass through analysis. For southbound trips, the entry and exit points were identified as follows:

- Entry points
  - Midland Avenue south of I-70
  - US 6 west of Laurel Street
  - I-70 Westbound Exit 116 ramp
  - I-70 Eastbound Exit 116 ramp
- Exit point
  - SH 82 south of 27th Street

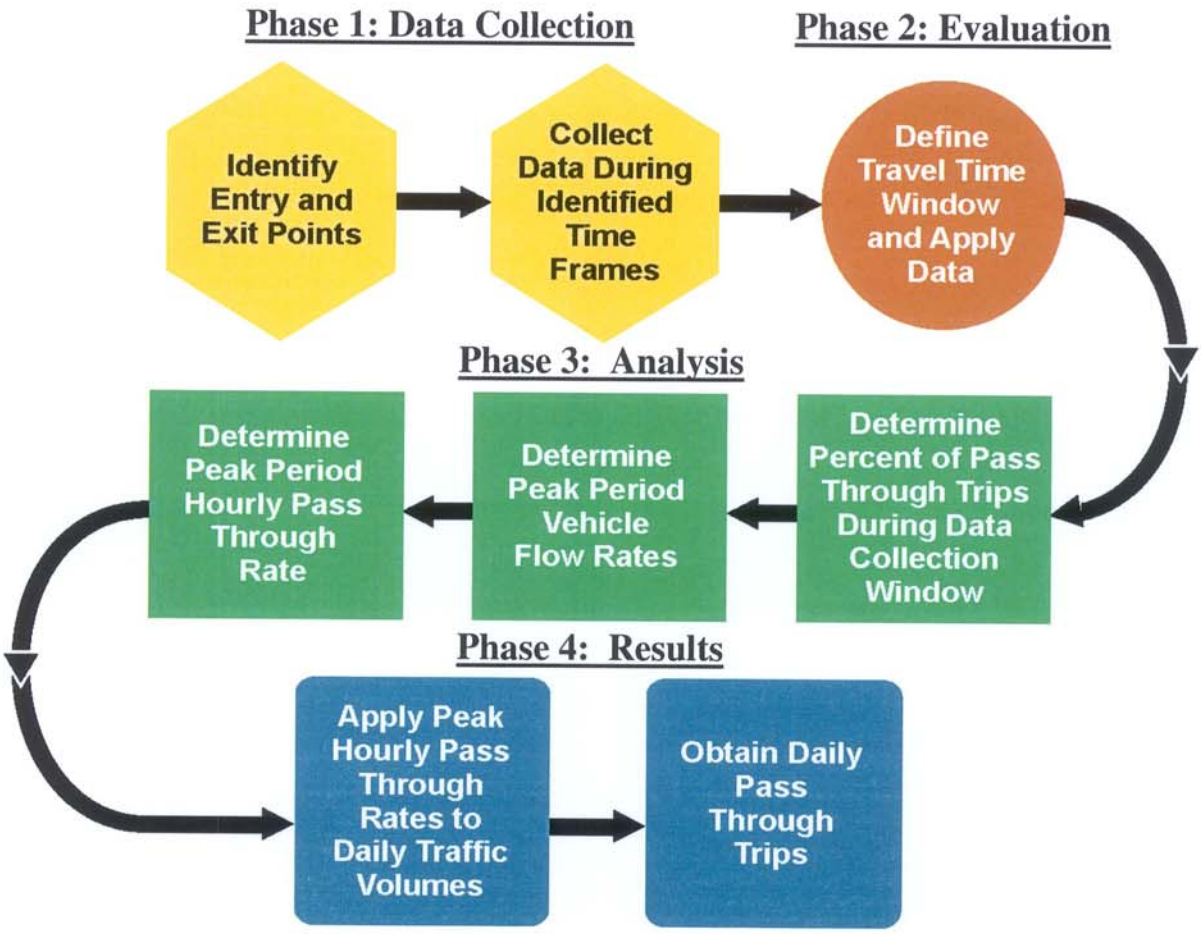
Likewise, the following entry and exit points were identified for northbound trips:

- Entry point
  - SH 82 south of 27th Street
- Exit points
  - I-70 Westbound entrance ramp at Exit 116
  - I-70 Eastbound entrance ramp at Exit 116
  - Midland Avenue south of I-70
  - US 6 west of Laurel Street

Simply put, a southbound vehicle can enter the network at any of the identified entry points, but can only exit at SH 82 just south of 27th Street in order for that vehicle to be called a pass through trip. For northbound vehicles there is only one entry point (SH 82 just south of 27th Street), but the vehicle must exit at any of the four identified exit points to be called a pass through trip.

The second step in this phase involved the actual collection of data. This included the use of video cameras to collect license plate data for a total of 11 hours (7 hours for a typical weekday and 4 hours on a weekend). The method of data collection was previously discussed in **Section 2.4** (pg. 2-6) of this document.

Figure 5-1
Pass Through Analysis Process



Phase 2: Evaluation

Next, in order to calculate the number of pass-through trips, an acceptable travel time window needed to be defined. The travel time window is the total time a vehicle is allowed to go from an entry point to an exit point and be counted as a pass through trip. Defining an acceptable travel time window was accomplished using two pieces of data.

First, an acceptable travel time window should be at least as long as the time that it would take a vehicle to normal travel between entry and exit points. Travel times were conducted during the peak periods and it was found that average trips along SH 82 typically took about 8 minutes to go from one of the entry points and arrive at one of the exit points. Trips along Midland Avenue generally take longer (upwards of 12 minutes from field data) due to the reduced speed limit that

exists along that corridor and the longer travel distance between entry and exit locations. It can be assumed that it will take some vehicles less than the average field travel time and some vehicles more than the average field travel time to pass through the system. Therefore, a minimum travel time window of 10 minutes should be used.

Next, an analysis of the collected data was performed to determine the percent of pass through trips that occur for different travel time windows, starting with 10-minutes and increasing in 10-minute intervals up to 100-minutes. The results for each 10-minute interval were then plotted, as shown in **Figure 5-2**.

Figure 5-2
Sample of Travel Time Window Analysis

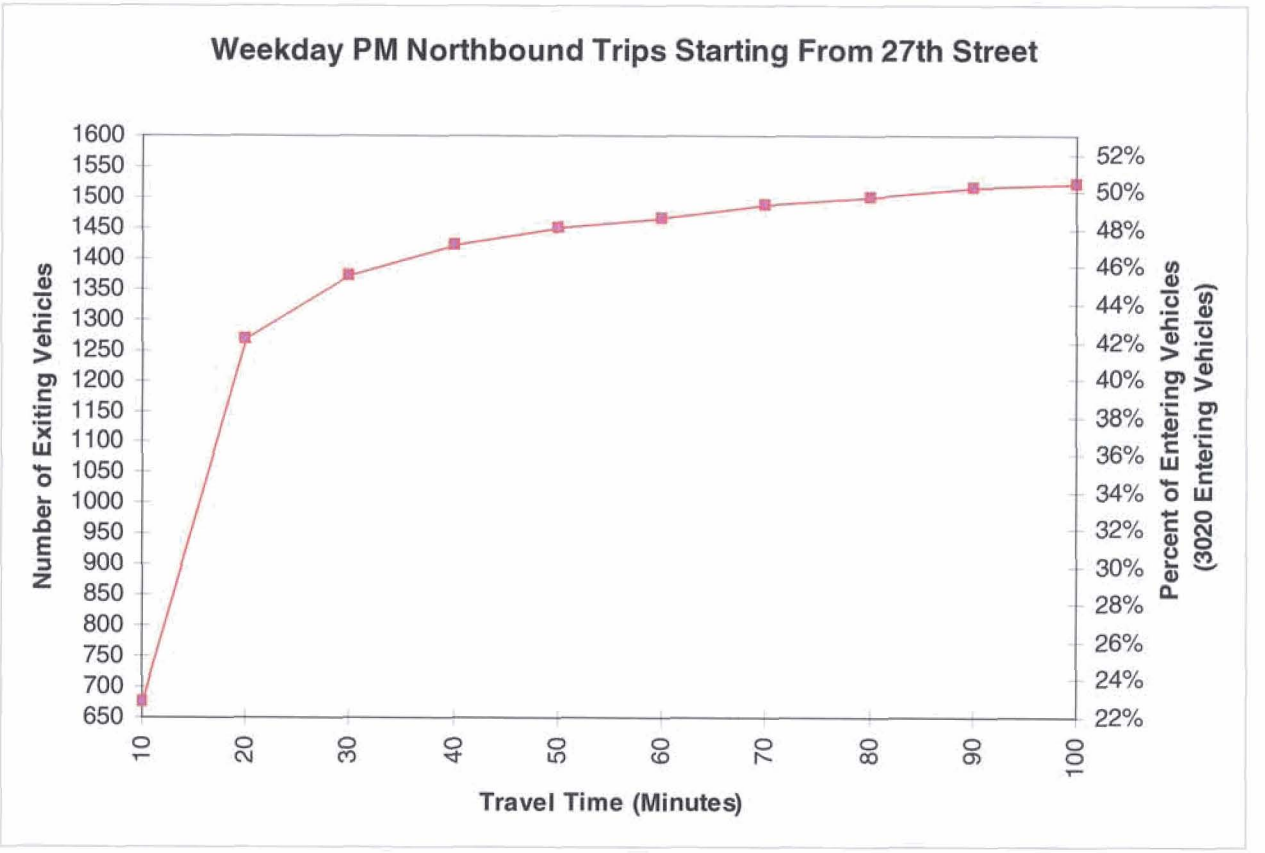


Figure 5-2 shows the results of the analysis for vehicles making northbound trips during the weekday PM period. The entry point for these vehicles is SH 82 south of 27th Street and each vehicle has four potential exit points, as outlined in the discussion of phase one on page 17. The figure shows the vast majority of vehicles exit the study area within 20-minutes of when they entered. At this particular location, more then 42% of all entering vehicles were seen exiting the network within 20-minutes. After 20-minutes the percentage of pass through trips does increase, but only slightly for each additional 10-minutes that is allowed. Similar plots were made for all of the possible trip routes and for all of the time periods, with very similar results. From these

plots it can be concluded that most pass through trips are being completed in less than 20 minutes. Therefore, a 20 minutes travel time window was identified as the travel time window that would be used for the remaining analysis phases.

Phase 3: Analysis

The analysis of the data involves three steps. First, the percent of pass through trips that occur during the data collection time periods was determined. The pass through percentage for the data collection period is obtained by dividing the number of vehicles making a pass through trip by the total number of entering vehicles. The total number entering vehicles is determined by taking the number of vehicles counted during the entire data collection period and then subtracting out the vehicles that were counted during the last 20 minutes. This was done because vehicles entering with less than 20-minutes remaining in the data collection period would not have a full 20-minute travel time window to make it to the exit points. Pass through vehicles are the sum of all vehicles enter at any time during the data collection period and exit within the allotted 20-minute travel window. Again, any vehicle that entered during the last 20-minutes is ignored. Finally, by dividing the number of pass through trips by the total number of entering vehicles, a pass through percentage for the particular data collection time period is obtained.

Second, an equivalent hourly flow rate was computed for each of the entry points during each of the 5 time periods that license plate data was collected. The entering flow rates are determined by averaging the hourly volumes collected with the daily tube counts at the entry point locations. For example, during the weekday midday period, the traffic volumes from the tube counts were summed between the hours of 11 a.m. and 1 p.m. and then divided by two to get an average hourly flow rate during this time period. A similar process was followed for each peak period and at each entry point location to develop equivalent peak hourly flow rates of traffic in the network.

The third step involves multiplying the equivalent peak hourly flow rates by the percentage of pass through trips to get peak hourly pass through rates. This is done by simply taking the results of step one and multiplying them by the results of step three. After doing this, 5-hourly pass through rates were obtained for each of the entry points, one for each time period that license plate data was obtained. These rates can then be applied to the daily traffic volumes that were collected by the tube counts to obtain daily pass through trips and percentages.

Phase 4: Results

After the peak-period percentages of pass-through trips were determined, the daily pass-through trips were calculated. In order to calculate the daily pass-through trips, the determined hourly pass through percentages were applied to the ADT data. First, the hours that make up each of the peak periods were identified and the appropriate percentage for that peak period was then applied to the traffic volumes for each hour of the period. All other hours of the day, not included in one of the peak periods (AM, NN, or PM), were assigned the pass-through percentages from the weekday midday peak. The traffic volumes for each hour were then multiplied by the assigned pass through percentage and then summed over the entire day (24 hours) to obtain a daily (weekday or weekend) number of pass through trips. The daily pass through trips were then divided by the total daily traffic (ADT) to obtain a daily (weekday or weekend) pass through

percentage. Results of the license plate survey are presented in **Figures 5-3 through 5-6**, and are discussed in the subsequent sections.

5.2 WEEKDAY

Figure 5-3 contains the peak-hour pass through volumes and percentages for the weekday AM peak period. As depicted in this figure, the total number of vehicles entering the system during this time period is 2,369. Of these vehicles, 19 percent (442) of vehicles pass through the network. Along SH 82 south of 11th Street there are 1,787 vehicles in the system, of these vehicles 342 or 19 percent complete pass-through trips.

Overall, of the 2,361 vehicles that enter the system during the NN peak hour, 575 trips are pass-through trips, an equivalent of 24 percent. Along SH 82 south of 11th Street there are 2,221 hourly vehicles and 535 (24 percent) are pass-through vehicles. The weekday NN peak information is displayed in **Figure 5-4**.

The results of the weekday PM peak are shown in **Figure 5-5**. The PM peak period had the highest occurrence of completed pass-through trips during an average weekday. There were a total of 2,731 vehicles entering the system during the PM peak hour, and of these vehicles, 34 percent (929) were pass through vehicles. Along SH 82 south of 11th Street there are 2,225 hourly vehicles and 815 vehicles (37 percent) completed pass through trips

As mentioned above, the daily flow rates were calculated by applying hourly pass-through percentages to the ADT data. On the average weekday, approximately 27 percent of all vehicles that enter the system are pass-through vehicles. In terms of raw volume, there are a total of more than 10,200 vehicles out of 38,220 daily vehicles that make pass through trips. Along SH 82 south of 11th Street, there are a total of 32,155 daily vehicles of which 8,849 vehicles (28 percent) complete pass through trips. The results of the weekday flow rates can be seen in **Figure 5-6**.

Figure 5-3
Weekday AM Hourly Flow Rates

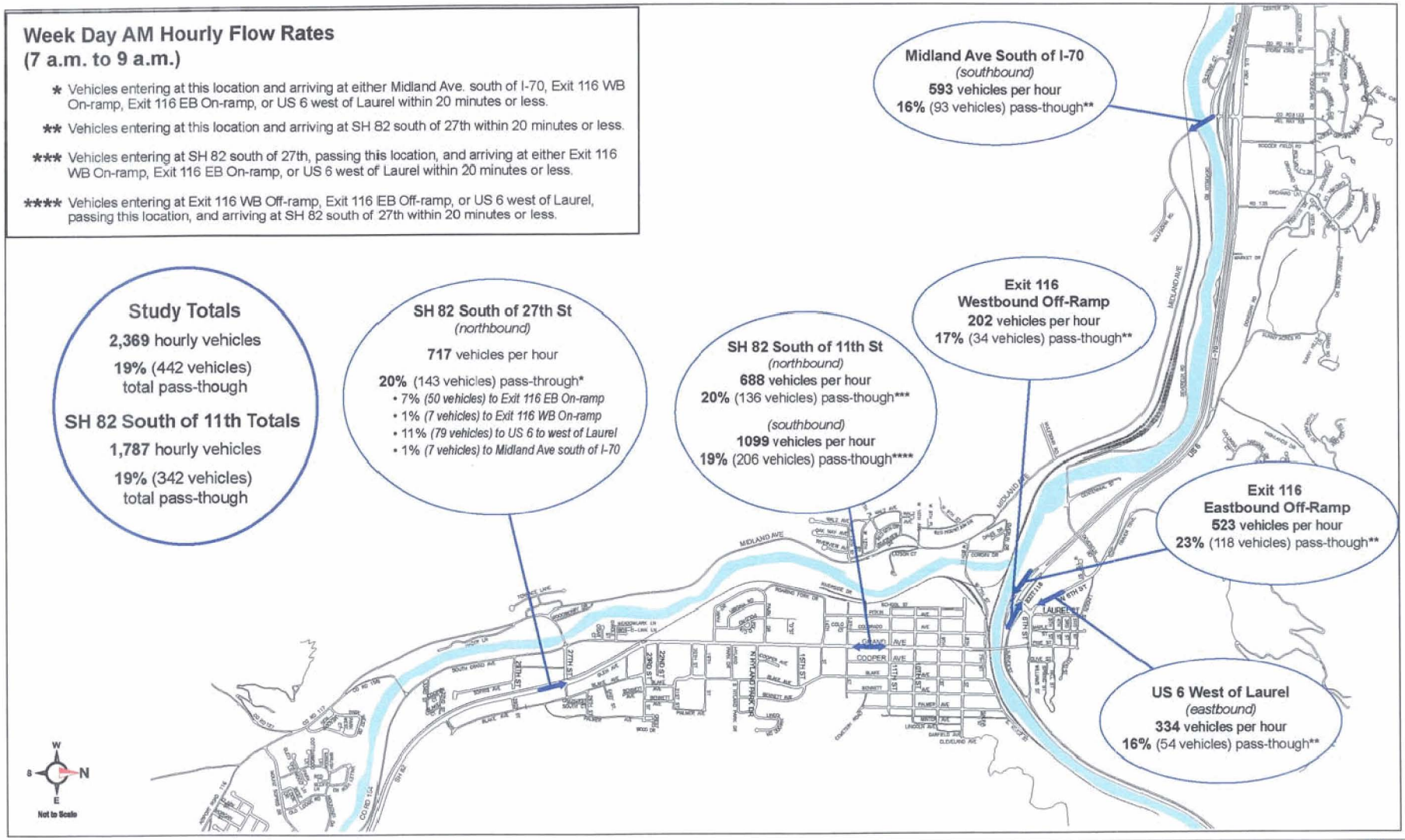


Figure 5-4
Weekday NN Hourly Flow Rates

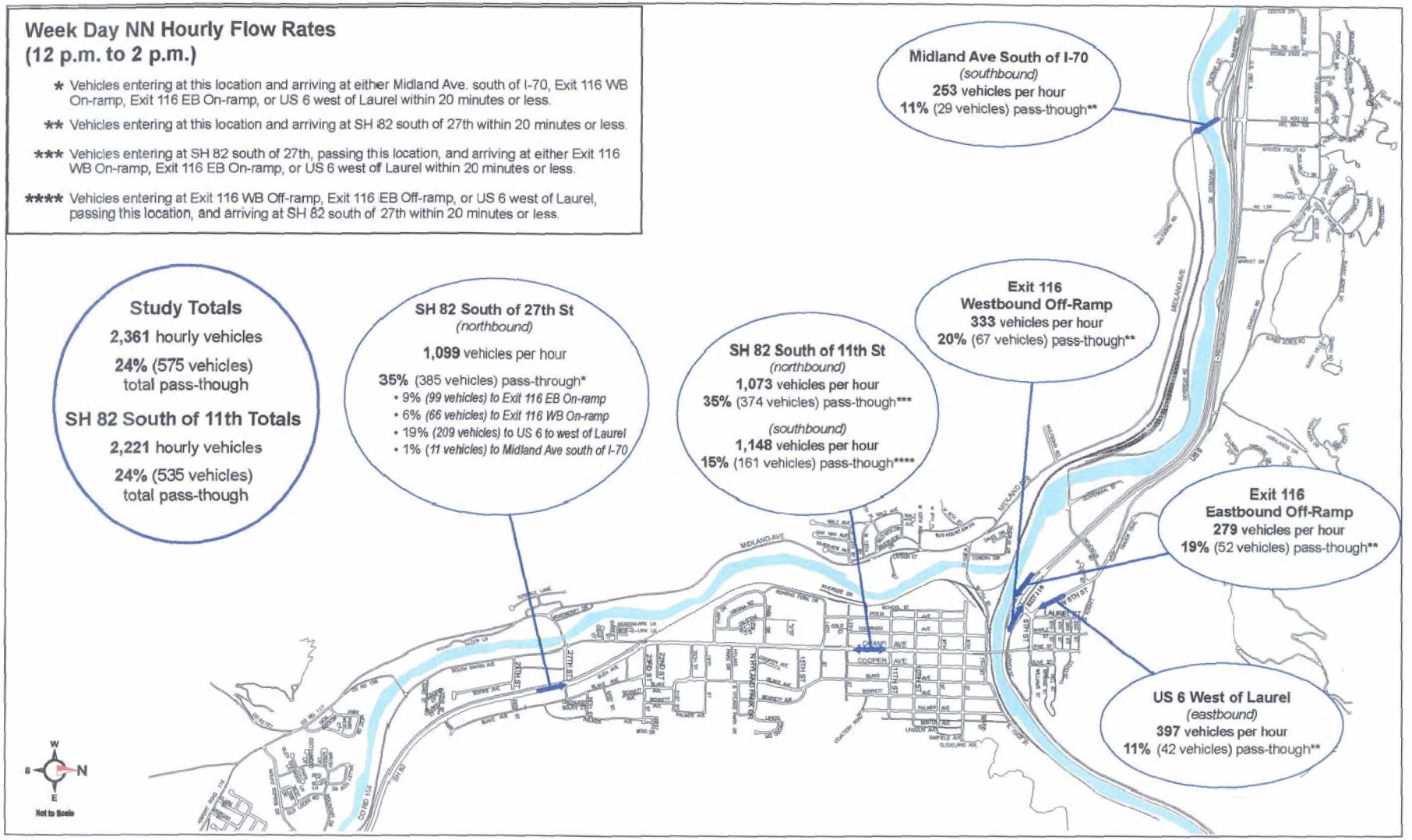


Figure 5-5
Weekday PM Hourly Flow Rates

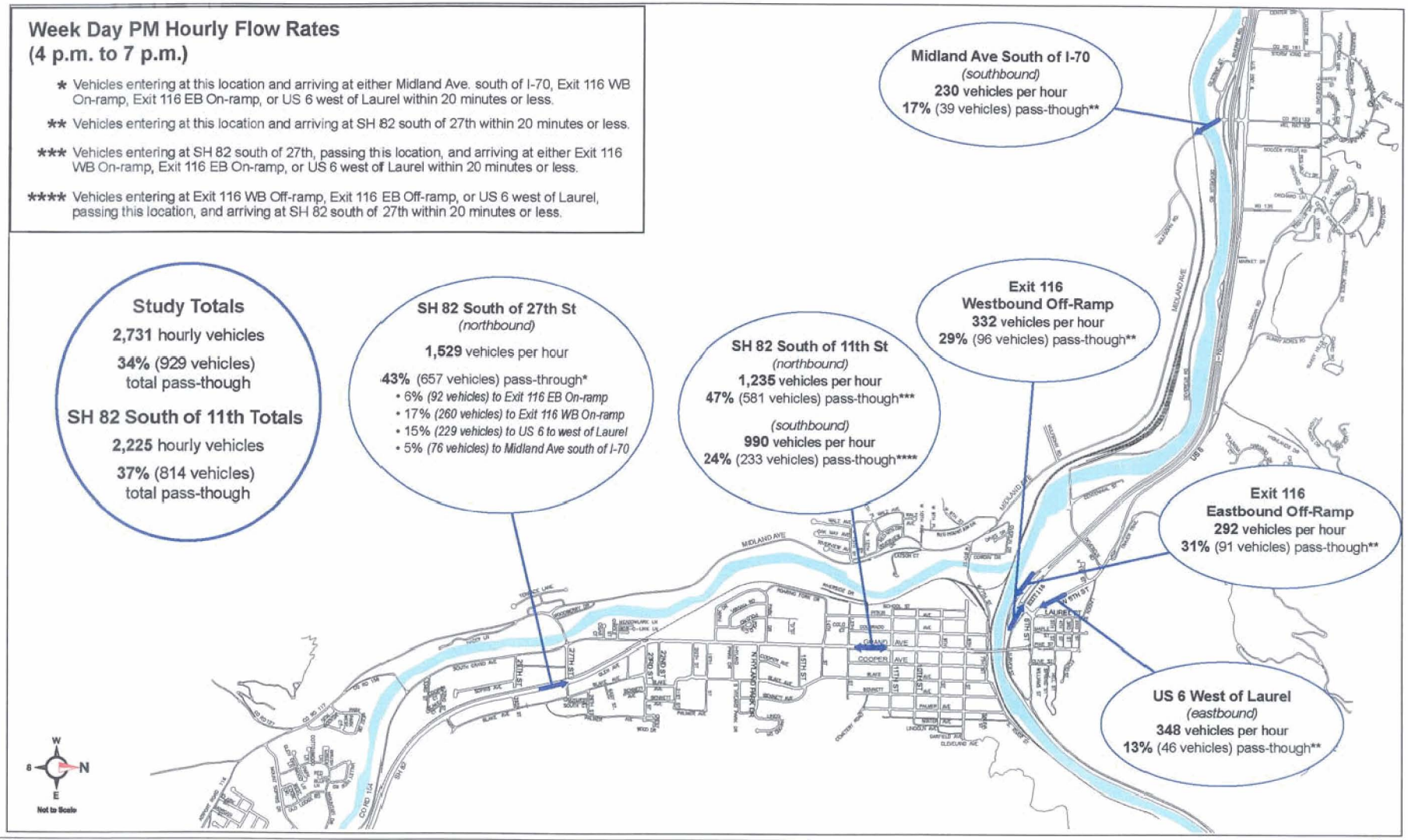
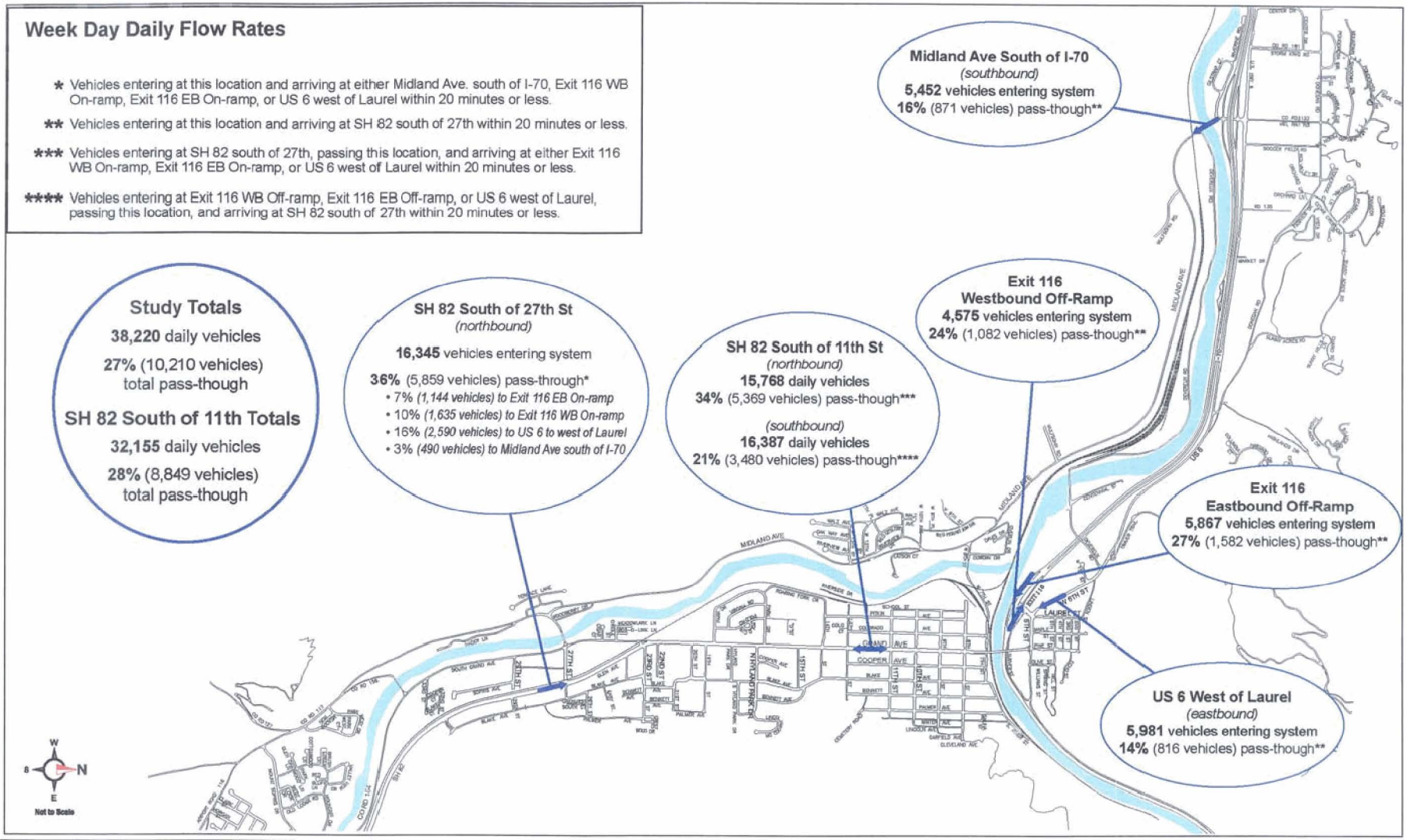


Figure 5-6
Daily Weekday Flow Rates



5.3 WEEKEND

The weekend AM information is displayed in **Figure 5-7**. During this period, there were a total of 2,119 hourly vehicles entering the system. Of the vehicles entering the network, 633 vehicles (30 percent) complete pass through trips. Along SH 82 south of 11th Street, there are a total of 1,729 hourly vehicles, and of these vehicles, 559 vehicles or 32 percent are pass through vehicles

Figure 5-8 displays the information from the weekend PM peak. During this peak period, the total number of vehicles entering the system (2,739) was made up of 32 percent (869) pass through vehicles. Along SH 82 there are a total of 1,968 hourly vehicles that is comprised of 37 percent or 733 pass through vehicles.

The results of the weekend pass-through trips are shown in **Figure 5-9**. On an average weekend day there are a total of 33,234 vehicles entering the network. Of these vehicles, 11,192 vehicles (34 percent) complete pass through trips. In terms of pass through trips on SH 82 south of 11th Street, there are a total of 27,357 daily vehicles of which 37 percent (10,010 vehicles) are pass through trips.

5.4 WEEKLY RESULTS

Looking at the average weekday and weekend results, on average there are approximately 10,500 vehicles a day making pass through trips through the network. The numbers of vehicles making pass through trips along SH 82 south of 11th Street averages nearly 9,500 pass-through vehicles. Time periods that have the highest percentage of pass through trips are the weekday PM period and the weekends.

Figure 5-7
Weekend AM Flow Rates

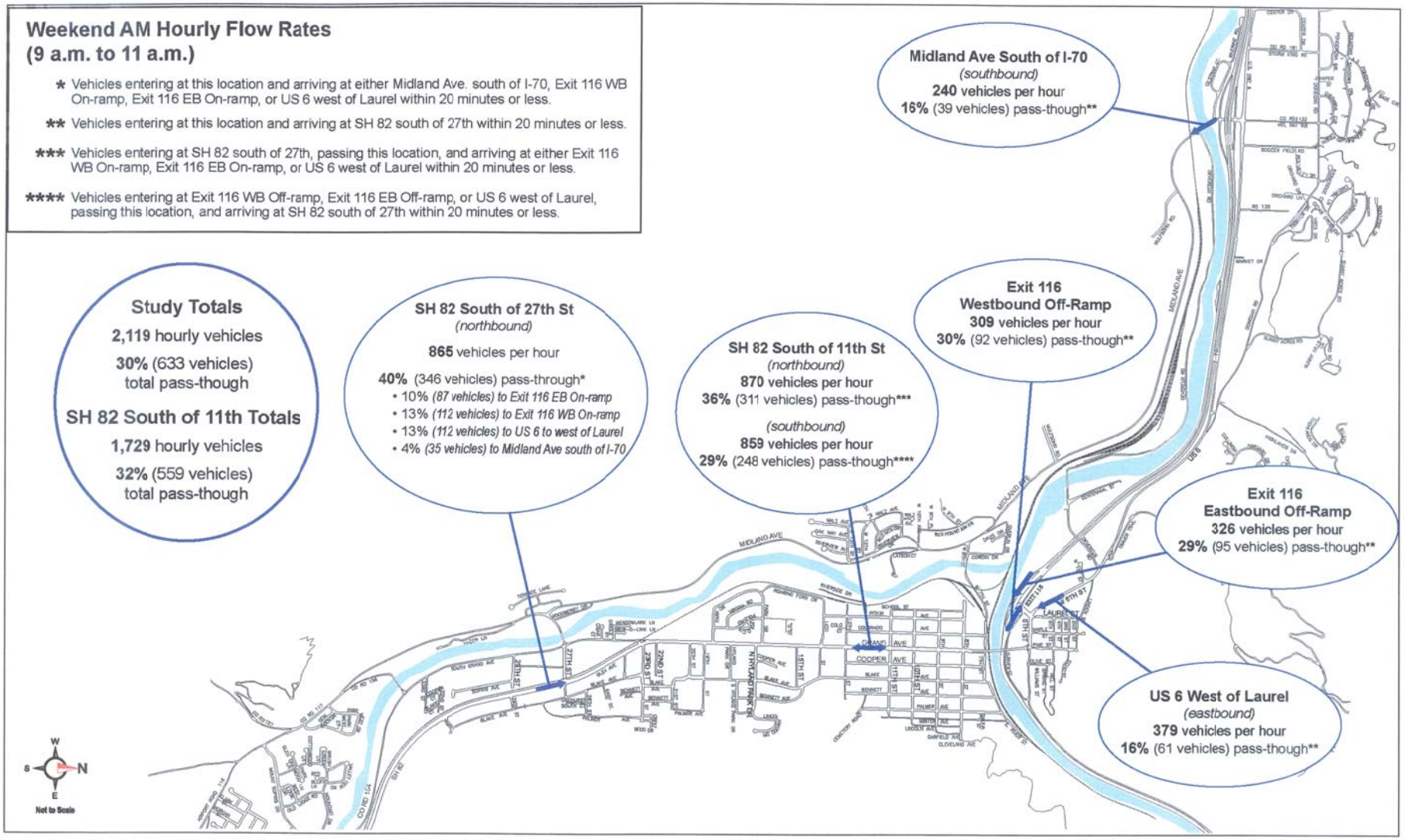


Figure 5-8
Weekend PM Flow Rates

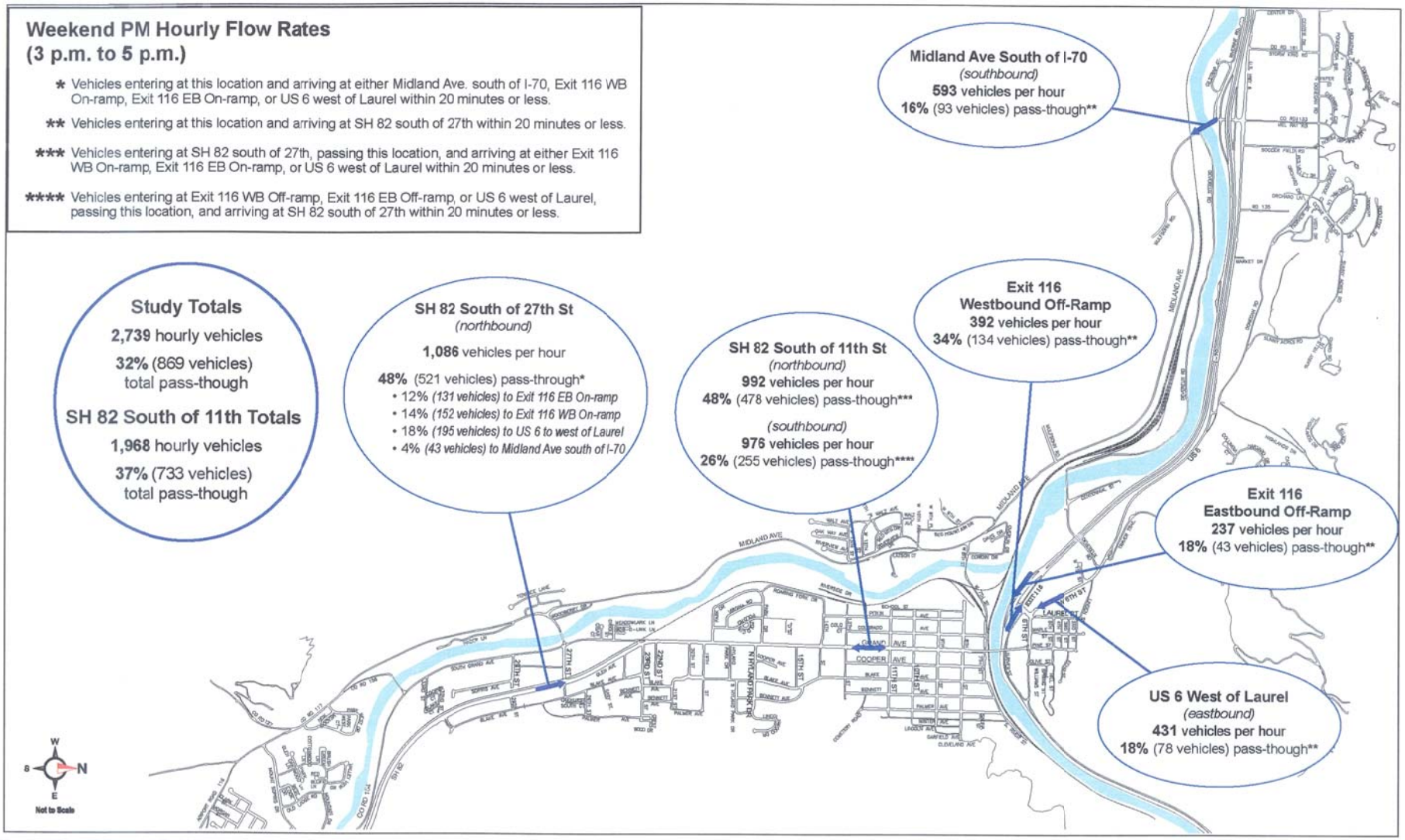
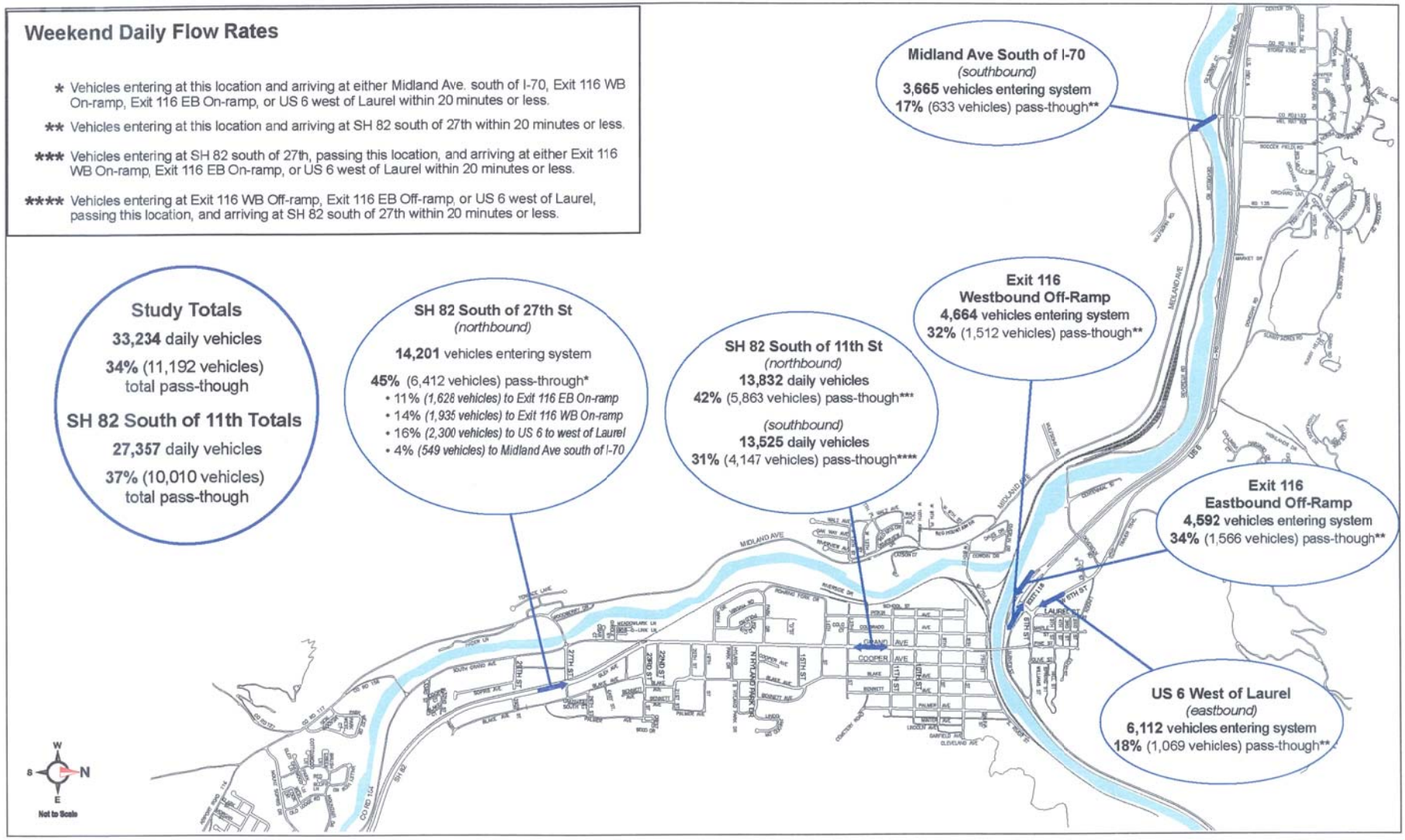


Figure 5-9
Daily Weekend Flow Rates



6.0 ANNUAL GROWTH RATE DEVELOPMENT

Now that the existing conditions for the corridor have been identified and evaluated, the study will evaluate the conditions along the SH 82 corridor that are expected to exist in the future. The first step in doing this is to develop a growth rate that can be used to grow the existing traffic volumes to future levels. Discussion with CDOT and City staff concluded that a series of growth rates, not a single rate, would be used for the future conditions analysis to provide a range of results that represent several different growth scenarios: low, medium, and high growth.

6.1 ANNUAL GROWTH RATE ANALYSIS

Data was collected from CDOT and the City for the development of an appropriate series of growth rates. CDOT staff provided 2003 data regarding the historical growth rate along the SH 82 corridor that included a 20-year growth factor. In addition, CDOT provided a more refined set of data that focused on the traffic levels for a 6 year time period between 1998 and 2003. The refined data was used to identify recent trends in traffic levels that may have been overlooked by the 20-year growth factor. The data that was provided by CDOT is summarized **Tables 6-1** and **6-2**:

Table 6-1
CDOT 20-year Summary of Traffic Growth on SH 82

Route	Begin	End	Segment Description	Annual Growth Rate	20-Year Factor
082A	0	0.176	I-70 Interchange to 6th Street	1.40%	1.32
082A	0.176	1.401	6th Street to 23rd Street	1.47%	1.34
082A	1.401	2.194	23rd Street to Blake Street	1.70%	1.40
082A	2.194	7.824	South of Blake Street	1.94%	1.47

Table 6-2
CDOT Summary of Recent Traffic Growth on SH 82

Begin	End	ADT						Annual Rate	20-Year Factor
		1998	1999	2000	2001	2002	2003		
0	0.176	25626	25666	25574	25572	25881	25790	0.13%	1.03
0.176	1.401	22458	23105	24350	27350	27715	25091	2.24%	1.56
1.401	2.194	24789	24420	24678	28388	23767	24044	-0.61%	0.89
2.194	7.824	18454	18269	18270	22737	22083	21788	3.38%	1.94

Tables 6-1 and **6-2** show the SH 82 corridor has experienced an annual growth rate that is between 1.40% and 1.94% based on the 20-year data. However, data from the past 5 years indicates that the annual growth along the corridor has decreased at some locations (-0.61%), slowed to a halt at others (0.13%), and increased significantly at other locations (3.38%).

Population data was provided by the City and indicates the growth rate has been gradually declining from a high of just over 2% annually over the past 10 years to future projected rates that are around 1.55%. These population growth values tend to support the CDOT data, especially the data from the past 6 years in which traffic has shown some decreases in the rate of

growth. However, traffic volumes will typically grow at a rate that is equal to or slightly greater than the population growth; thus it is expected that traffic will see a growth in the future that is at a rate of at least 1.55% annually if the population forecast occurs.

Based on discussions with CDOT and City staff, it was agreed that a total of three (3) growth rates would be used to represent three different growth scenarios: low, medium, and high growth. The intent is to have the medium growth rate represent what is most likely to occur and then a lower rate to reflect a low or no growth scenario, and finally, a high rate that would reflect a higher than anticipated growth scenario.

6.2 ANNUAL GROWTH RATE RECOMMENDATIONS

Based on the data that was provided, this study will use an annual growth rate of 1% for the low growth analysis, 1.5% for the mean (medium) growth analysis, and 2.5% for the high growth scenario. These annual growth rates can now be used to grow the existing traffic volumes contained within the calibrated existing conditions traffic models to obtain future traffic volumes that will be used in the future conditions analysis.

7.0 SUMMARY OF FUTURE CONDITIONS ANALYSIS

Using the established growth rates, the calibrated existing conditions model was used to create future conditions models on the SH 82 corridor. These models were created in order to evaluate the network MOE and to identify the expected life span of the roadway. For purposes of the analysis, a total of four horizon years were used: 5 (2010), 10 (2015), 15 (2020), and 20 (2025).

The analysis was performed for each horizon year by taking the four existing calibrated models (weekday AM, weekday midday, weekday PM, and weekend midday) and applying the growth rates to each one. This resulted in the evaluation of 48 total traffic models for the SH 82 corridor. The following is a discussion of the results of the future conditions analysis.

7.1 HORIZON YEAR GROWTH FACTORS

The first step in the analysis was to take each of the annual growth rates and develop the appropriate horizon year growth factors that could be applied to the models to generate the future projected traffic volumes. To do this, **Equation 1.0** was used.

$$GF = (1 + r)^n \qquad \textbf{(Equation 1.0)}$$

where: GF is the computed growth factor
r is the annual growth rate (1%, 1.5%, and 2.5%)
n is the horizon year (5, 10, 15, and 20)

This equation produces a growth factor for a given annual growth rate and horizon year. This growth factor can now be applied directly to the existing traffic volumes to generate future levels. However, discussions with CDOT and City staff during the course of the study identified the need to account for a potential shift in the future mode of transportation within the study area. The City did provide data regarding projected future transit use within the study area. Although the data provided by the City does not identify exact impacts of transit on the traffic volumes along SH 82, it does provide some information regarding the potential reduction to future traffic volumes for a wide range of possible mode shift scenarios. For the purposes of this study, it was assumed that future traffic volumes could be reduced by 3% to conservatively account for the most likely future mode shift impacts.

Table 7-1 displays the horizon year growth factors calculated using **Equation 1.0** with the appropriate annual growth rates and horizon year. This growth factor does not account for the mode shift traffic volume reduction. To adjust for the mode shift, the 3% reduction factor was applied to the projected new growth creating an adjusted growth factor (AGF). The AGF is calculated using **Equation 2.0**.

$$AGF = \frac{(1 + r)^n + 0.03}{1.03} \qquad \textbf{(Equation 2.0)}$$

where: AGF is the computed adjusted growth factor
r is the annual growth rate (1%, 1.5%, and 2.5%)
n is the horizon year (5, 10, 15, and 20)

Once the adjusted growth factor was calculated, it was applied to the existing traffic volumes in the calibrated models, using **Equation 3.0,** to develop the future traffic levels. This method was applied uniformly to all traffic movements along the SH 82 corridor, including all side street traffic movements. **Table 7-1** shows that the impact of a mode shift on the future growth factors is negligible. Unless a significant mode shift occurs, the expected impacts to future traffic on the SH 82 corridor will be minimal.

$$V_{future} = V_{existing} * AGF \qquad \textbf{(Equation 3.0)}$$

where: V_{future} is the future traffic volume
$V_{existing}$ is the existing traffic volume
AGF is the growth factor adjusted for transit impacts

Table 7-1
Growth Factors for Future Conditions Analysis

Horizon Year Growth Factors			
Horizon Year	Annual Growth Rate	Horizon Year Growth Factor (Equation 1.0)	Horizon Year Growth Factor Adjusted for Transit Impact (Equation 2.0)
5	0.010	1.05	1.05
	0.015	1.08	1.08
	0.025	1.13	1.13
10	0.010	1.11	1.10
	0.015	1.16	1.16
	0.025	1.28	1.27
15	0.010	1.16	1.16
	0.015	1.25	1.24
	0.025	1.45	1.44
20	0.010	1.22	1.21
	0.015	1.35	1.34
	0.025	1.64	1.62

Once the adjusted growth factors were applied and the future conditions models were developed, each model was evaluated and simulated to obtain future MOE values and to complete the future conditions analysis. The results of the future conditions analysis are discussed in the following sections.

7.2 INTERSECTION LEVEL OF SERVICE (FUTURE)

The concept of LOS was previously discussed and presented in **Section 4.1** of this document, along with **Table 4-1,** which presents the definitions of intersection LOS. A similar approach was used to determine the future intersection LOS for each horizon year and for each of the annual growth rates. The results of the future conditions LOS analysis are presented in

Appendix E and summarized in the following paragraphs. Again, it is important to note that the LOS values being report and discussed are an overall intersection LOS, which is heavily influenced by the mainline traffic conditions and characteristics. It should be assumed that side street LOS would be worse and in some cases much worse than the overall intersections LOS. For the purposes of this study, CDOT and City staff has identified LOS 'D' as being the upper limit for what is to be considered acceptable.

Instead of presenting all of the LOS results here, this section will focus on summarizing the results and primarily identifying the specific locations where LOS 'E' or worse occur. It is these locations that are expected to have the most significant impact to traffic operations and result in congested conditions. For existing conditions, there is only one location where LOS 'E' or worse occurs and that is at 8th Street during the weekday PM period. However, if no improvements are made in the future to the roadway network, other locations will experience poor operations (LOS 'E' or worse). The locations where poor performance is expected to occur are summarized in **Table 7-2**, with the worst LOS locations shaded.

Table 7-2
Summary of Future Intersection LOS Analysis

Intersection	Future Level-of-Service															
	5 Year				10 Year				15 Year				20 Year			
	AM	NN	PM	WE	AM	NN	PM	WE	AM	NN	PM	WE	AM	NN	PM	WE
1% Annual Growth Rate																
SH 82 & Laurel	D	C	D	C	D	C	D	D	D	C	D	D	D	D	D	E
SH 82 & Pine	B	B	C	B	B	B	D	B	B	B	D	B	B	C	E	B
SH 82 & 8th Street	B	C	E	B	B	C	F	B	B	C	F	B	B	C	F	B
SH 82 & 27th Street	C	B	D	A	C	B	E	A	C	B	E	A	C	B	F	A
SH 82 & 32nd Street	A	B	C	B	A	B	C	B	A	B	C	C	A	B	C	C
1.5% Annual Growth Rate																
SH 82 & Laurel	D	C	D	C	D	C	D	D	E	D	D	E	E	E	D	F
SH 82 & Pine	B	B	C	B	B	B	D	B	C	C	E	B	E	C	F	B
SH 82 & 8th Street	B	C	F	B	B	C	F	B	B	C	F	B	C	D	F	C
SH 82 & 27th Street	C	B	E	A	C	B	E	A	C	B	F	A	C	B	F	B
SH 82 & 32nd Street	A	B	C	B	A	B	C	C	A	B	C	C	A	C	D	C
2.5% Annual Growth Rate																
SH 82 & Laurel	D	C	D	D	E	D	D	E	F	E	E	F	F	F	F	F
SH 82 & Pine	B	B	D	B	C	C	E	B	E	E	F	E	F	F	F	F
SH 82 & 8th Street	B	C	F	B	C	C	F	C	C	D	F	C	E	F	F	E
SH 82 & 27th Street	C	B	E	A	C	B	F	A	D	C	F	B	E	D	F	B
SH 82 & 32nd Street	A	B	C	C	A	B	D	C	A	C	E	D	B	C	F	E

*AM – weekday AM period, NN – weekday midday period, PM – weekday PM period, WE – weekend midday period

Based on the results of the analysis, the SH 82 corridor has two primary areas where traffic operations will experience congested conditions or poor operations. The first area is at the north end between the intersections of 9th Street and Laurel, and the second area is at the south end from 23rd Street to 32nd Street. Both of these areas begin to experience LOS 'E' or worse in the 15-year horizon period and are almost all LOS 'F' in the 20-year horizon period. The intersections at the north end of the corridor are worse than those at the south end and clearly indicate that significant congestion and operational issues will exist on this portion of the corridor if no improvements or changes are made to the existing roadway network.

The intersections that are not shown in the table generally do not reach LOS 'E' or worse. These intersections are located in the middle portion of the corridor, or between 9th Street and 23rd Street. If no changes or improvements are made to the roadway network, driver's will experience significant delays at either end of the corridor, but will experience acceptable operations and traffic flow conditions in the middle section of the corridor.

As the number of intersections experiencing poor operations increase, the corridor as a whole suffers. This will result in more delay, more stops, and slower travel speeds along the corridor. Driver perception of the overall performance of the corridor will also move in a negative direction. Analyzing the arterial LOS is the best method to represent the impacts of future growth on the arterial or corridor as a whole.

7.3 ARTERIAL LEVEL OF SERVICE (FUTURE)

Arterial LOS was discussed in **Section 4.2**, along with the break down of the speed ranges for the different LOS levels provided in **Table 4-2** of this report. All future conditions scenarios were analyzed to determine future arterial LOS. The results of the arterial LOS analysis are presented in **Appendix F**, with a summary and discussion to follow in this section of the report. For arterial LOS, CDOT and City staff identified LOS 'D' as being the upper limit of the acceptable performance range.

Based on the information presented in the appendix for the low growth scenario (1% annual rate), the arterial LOS remains at 'D' or better for all time periods, for all directions of travel, and for all horizon years that are being studied. Although many of the times periods begin to approach LOS 'E' (speeds below 14 mph), if growth along the corridors slows to a level around 1%, the existing roadway network will continue to perform at acceptable levels for the next 20 years.

If growth along the corridor follows the medium growth rate projections, the corridor will perform at acceptable LOS for all times periods, for all travel directions, and for all future horizon years, except for the weekday PM period. Northbound traffic in the weekday PM period begins to perform at LOS 'E' approximately 17 years in the future, with travel speeds approaching 12 mph in the 20 year horizon study period (**Figure 7-1**).

In the high growth scenario there are a few time periods that begin to experience LOS 'E' or worse, including: weekday northbound traffic in the midday approximately 17 years in the future (**Figure 7-2**), the weekday northbound PM traffic approximately 10 years in the future (**Figure**

7-1), and the weekend midday northbound traffic approximately 18 years in the future (**Figure 7-3**).

It should be noted that according to the analysis, traffic during the weekday AM period always performs within the acceptable range, LOS 'D' or better (**Figure 7-4**).

Figures 7-1, 7-2, 7-3, and **7-4** show the general trend lines for the projected travel speeds along the SH 82 corridor for the respective time periods, travel directions, and horizon years. The LOS categories are shown down the right side of the figures and are color coded for ease of reading. As the trend lines pass from one LOS region to the next, the approximate future year that this transition occurs can be identified along the bottom of the chart. Again, these figures represent projected conditions assuming no changes or improvements are made to the existing roadway network.

In **Figure 7-1**, the weekday PM northbound traffic begins to perform at an unacceptable level (LOS 'D' or worse) and eventually drops down to the worst LOS of all, in the 'F' range. Speeds during this time period drop into the single digits (7 mph), which is more than a 2/3^{rds} reduction from the existing speed of 21 mph. Based on the analysis, the SH 82 corridor could begin to operate at LOS 'E' as early as 10 years from today, assuming a 2.5% annual growth rate. Along with the slower travel speeds for vehicles along the SH 82 corridor comes an increase in the average travel time for vehicles attempting to traverse through the area.

Figure 7-1
Projected Weekday PM Period Northbound Arterial LOS

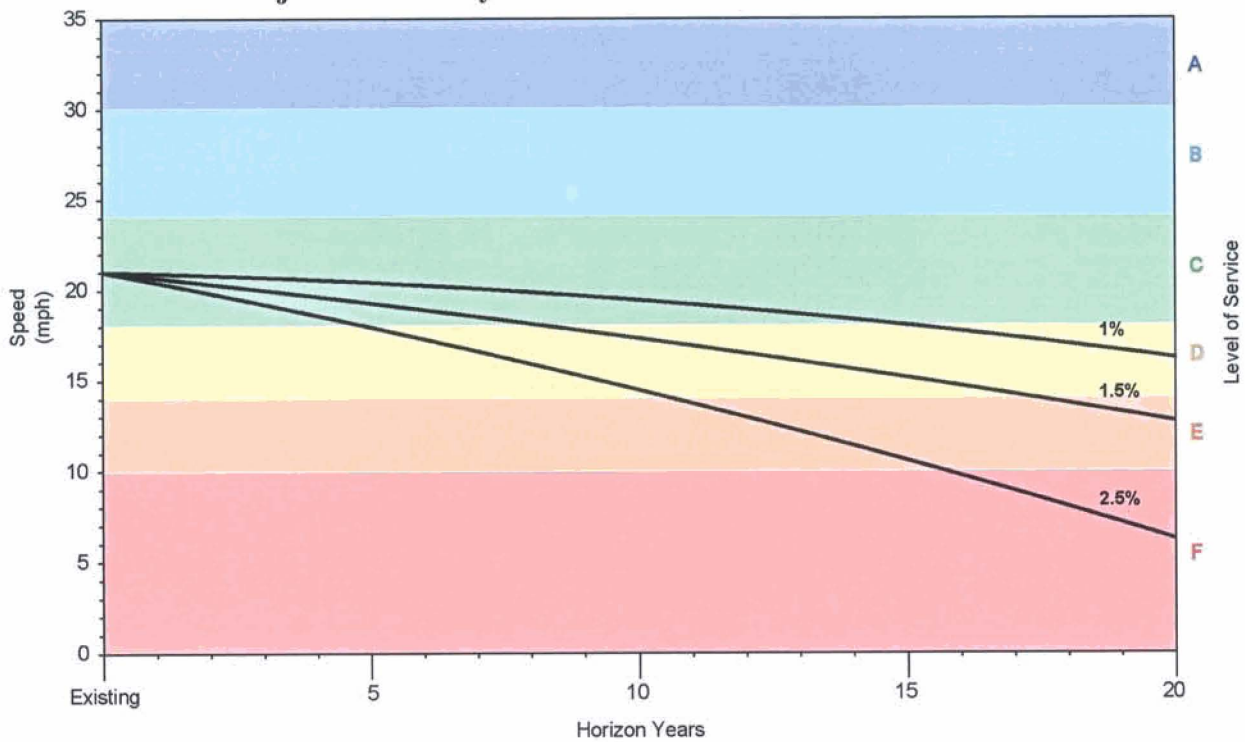


Figure 7-2
Projected Weekday Midday Period Northbound Arterial LOS

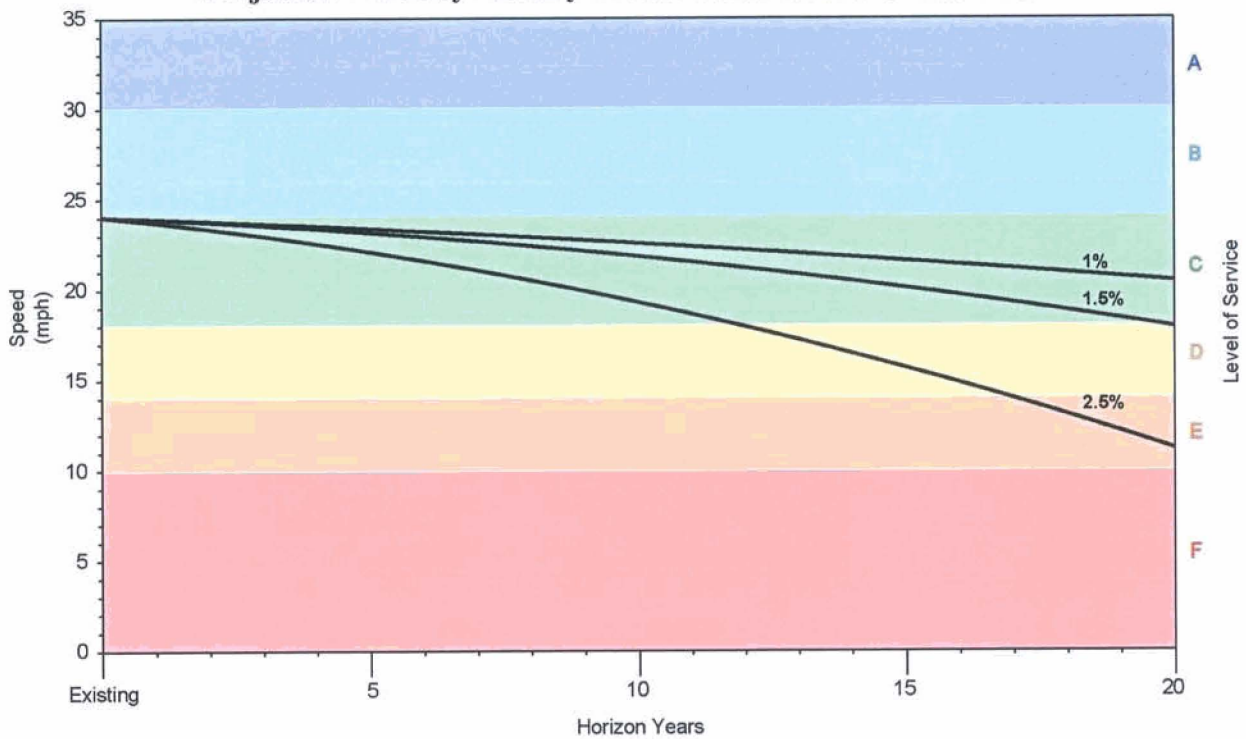


Figure 7-3
Projected Weekend Midday Period Northbound Arterial LOS

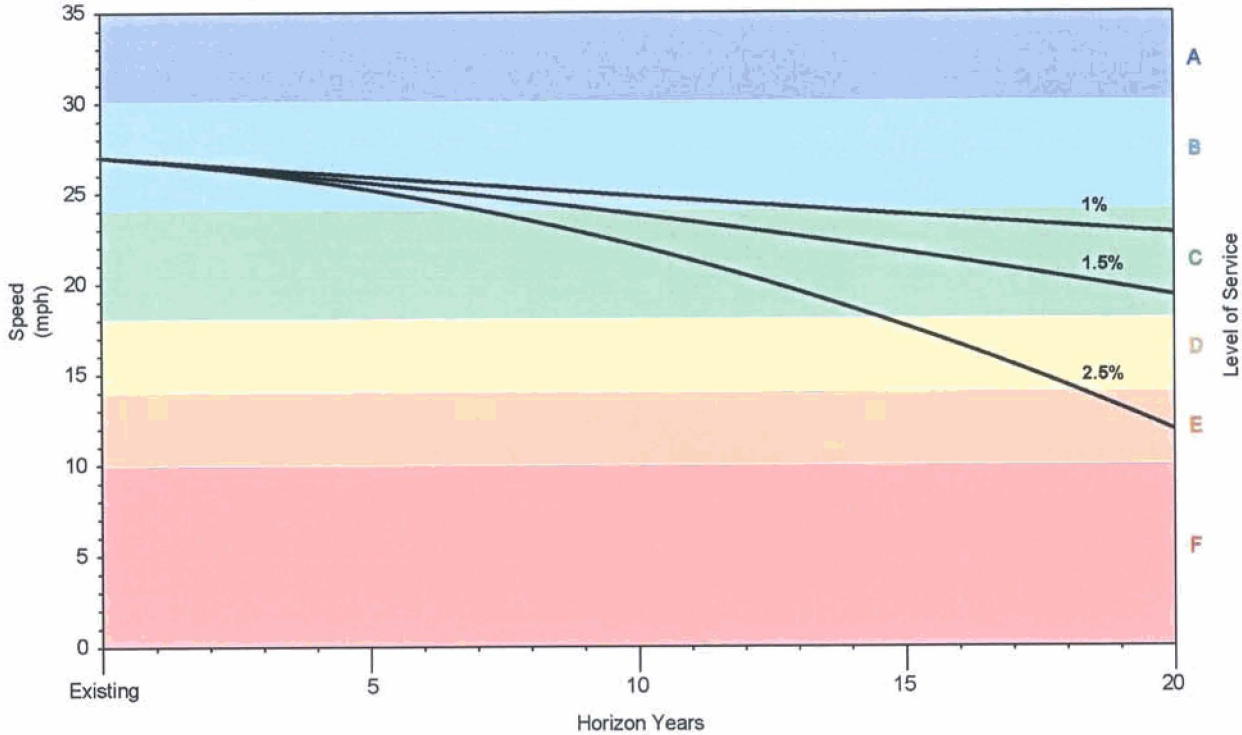
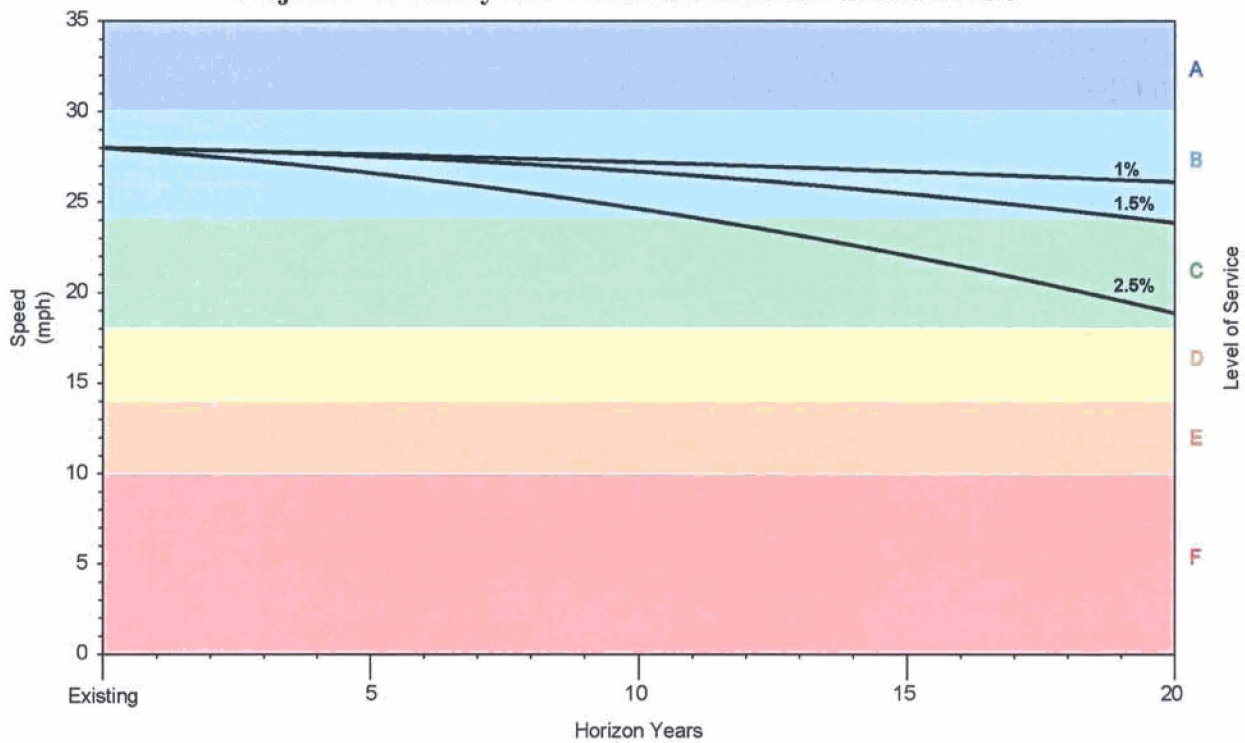


Figure 7-4
Projected Weekday AM Period Southbound Arterial LOS



7.4 TRAVEL TIMES (FUTURE)

Another MOE that can be used to describe the overall performance of the SH 82 corridor is travel time. Each of the future conditions model was simulated for a full hour and travel time data was then extracted from the output. This information can be combined with the results of the arterial LOS to get a better picture of how the corridor will operate in the future and in particular, the expected travel times for the future horizon years. The results of the future conditions travel time analysis are presented in **Appendix G**.

For discussion purposes, only those time periods that were discussed in the previous section of this report will be addressed at this time. The travel times for these time periods are presented in **Figures 7-5, 7-6, 7-7,** and **7-8**. These times are based on the existing roadway network and assume no changes or improvements will occur during the next 20 years, including modifications to the existing traffic signal timing.

Figure 7-5
Projected Weekday PM Period Northbound Travel Times

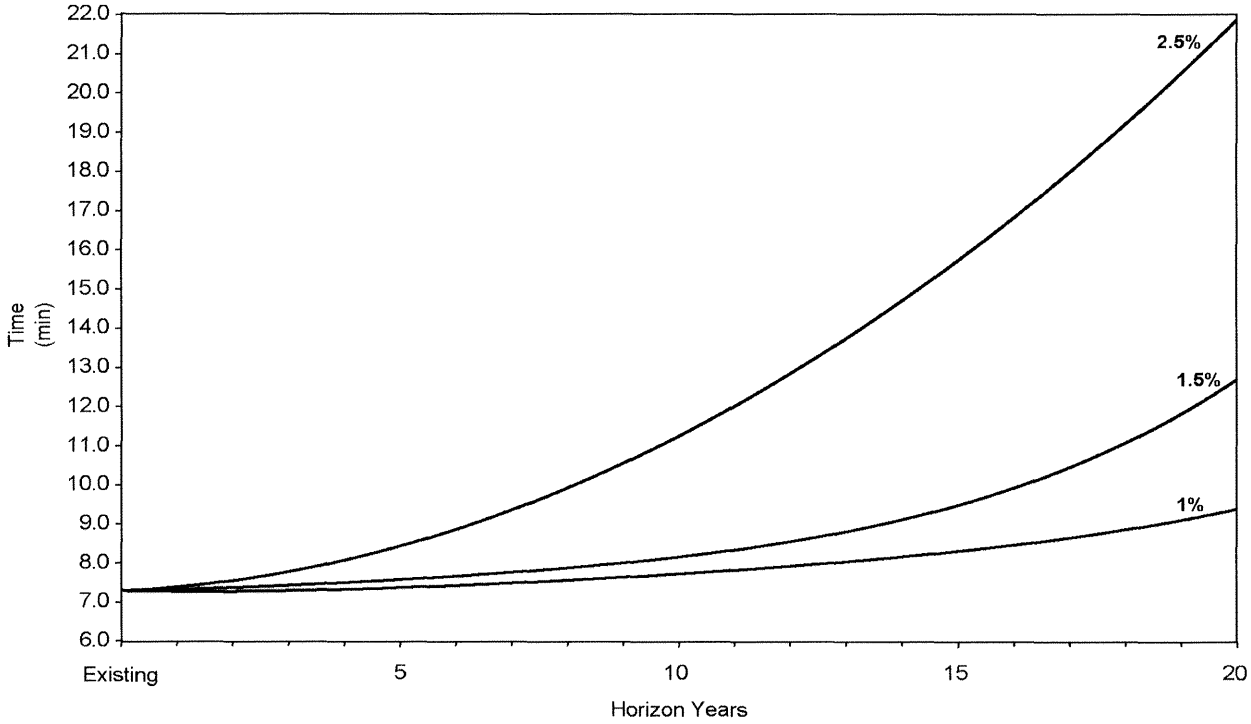


Figure 7-6
Projected Weekday Midday Period Northbound Travel Times

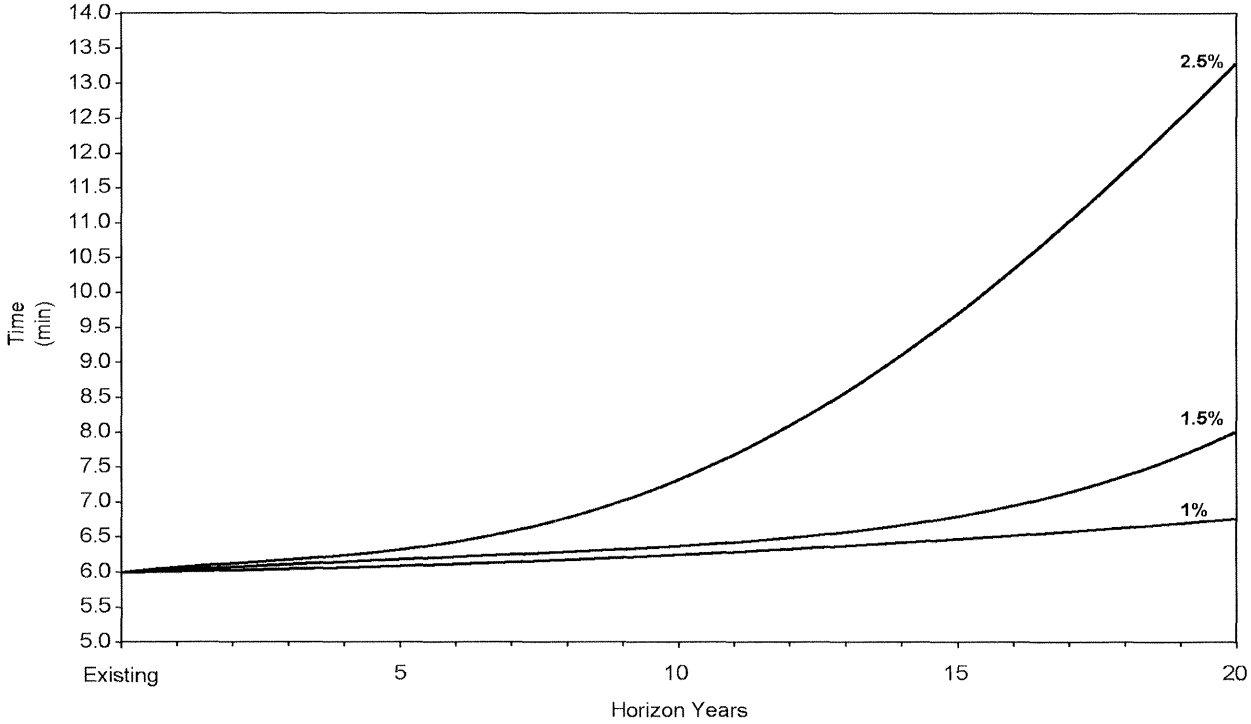


Figure 7-7
Projected Weekend Midday Period Northbound Travel Times

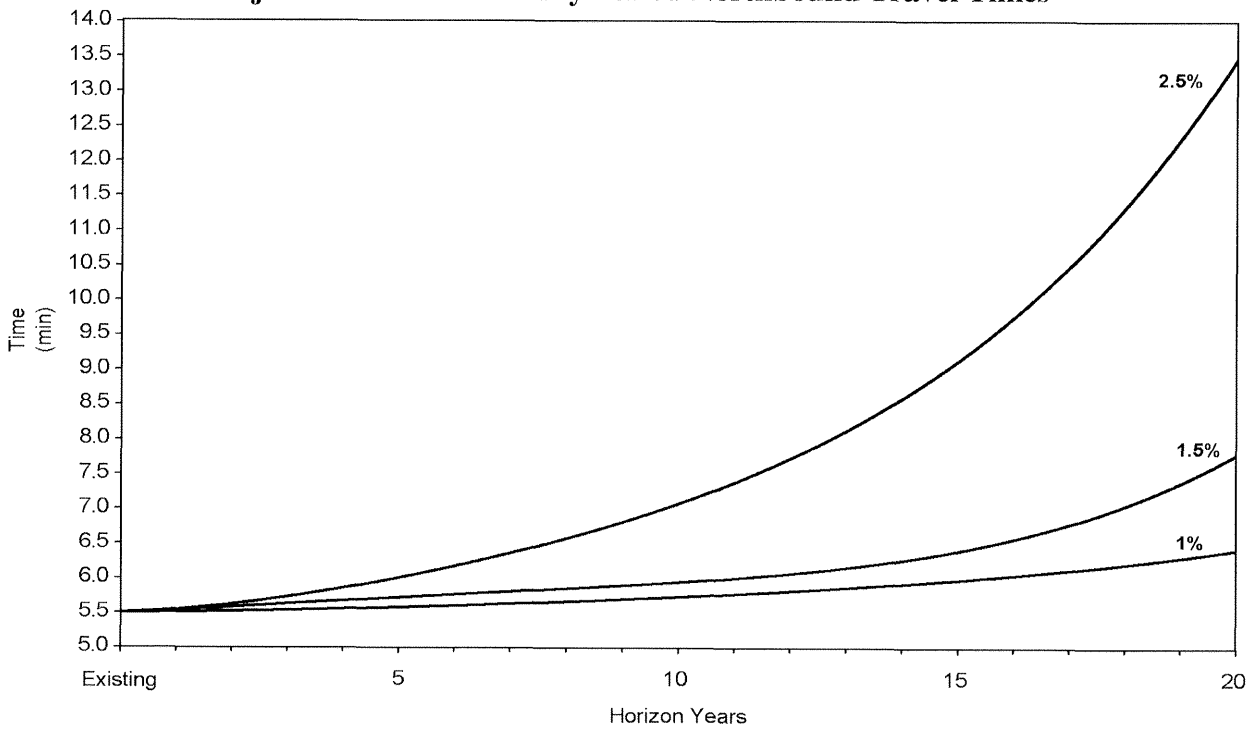
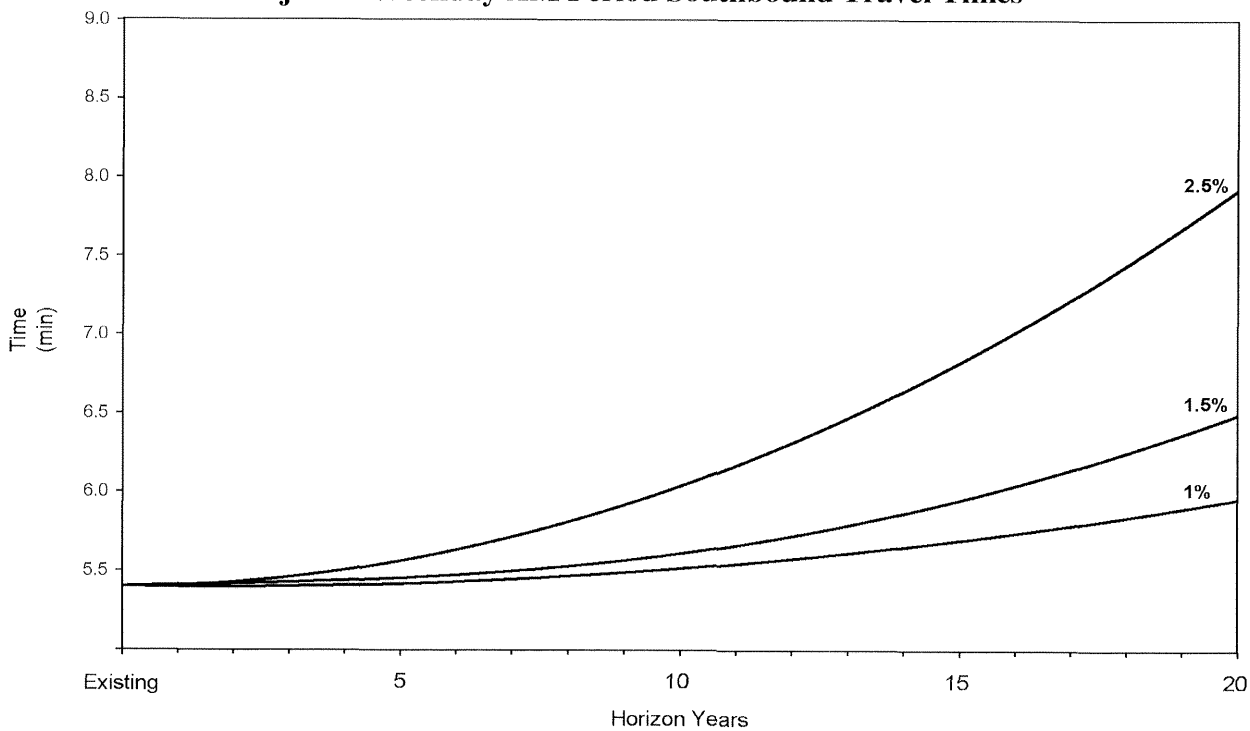


Figure 7-8
Projected Weekday AM Period Southbound Travel Times



From the figures, it can be seen that travel times can be expected to more than double in the next 20 years during some time periods. In particular, the travel time for weekday PM northbound traffic is approximately 7.5 minutes for existing conditions (**Figure 7-5**) and is projected to grow to almost 22 minutes, under the high growth scenario. Travel times during the weekday and weekend midday periods (**Figures 7-6** and **7-7**) could also increase to more than twice the existing times. Meanwhile, travel times during the weekday AM period (**Figure 7-8**) show only an increase of approximately 50% under the worst case growth scenario. Poor operations (lower LOS levels), more delay (slower average travel speeds), and more stops (longer travel times) all contribute to creating congested conditions along the corridor, which also results in more emissions from the vehicles using the corridor.

7.5 EMISSIONS (FUTURE)

Emissions are an important issue due to their potential impacts to the environment and to the health of the pedestrians and local residents that are exposed to them. The same procedures that were discussed and presented in **Section 4.4** were used to compute emissions for the future horizon years. Again, data was collected from the model simulations, which reports three types of vehicle emission: carbon monoxide (CO), nitrogen oxide (NO_x), and volatile oxygen compounds (VOC). The vehicle emissions are based on calculated fuel consumption, which in turn is based on a series of factors including: travel time, number of stops, vehicle type, travel distance, and vehicle delay.

The projected emissions data for the future conditions is presented in **Appendix H**, along with the charts showing the weekly and yearly totals. The projected future daily emission results are presented here for illustrative and discussion purposes. **Figure 7-9** shows the projected daily CO emissions. For the existing conditions, there are approximately 3,000 lbs of CO emissions being produced on a daily basis along the SH 82 corridor. Projecting into the future shows the CO emissions could increase to anywhere between 4,500 to 17,000 lbs a day depending on the rate of growth along the corridor. The daily CO emissions correlate to yearly CO emissions that are currently more than 1,000,000 lbs and could increase to more than 6,100,000 lbs a year under the high growth scenario.

The projected daily NO_x emissions are shown in **Figure 7-10**. For the existing conditions, there are approximately 600 lbs of NO_x emissions being produced on a daily basis along the SH 82 corridor. Under a low growth scenario (1%), the NO_x emissions are projected to increase to approximately 900 lbs a day. The high growth scenario (2.5%) projects more than 3,300 lbs of NO_x emissions a day in 20 years. The yearly NO_x emissions, which are approximately 200,000 pounds a year under the existing conditions, could increase to more than 1,100,000 lbs a year under the high growth scenario.

Figure 7-11 shows the projected daily VOC emissions. For the existing conditions, there are approximately 700 lbs of VOC emissions being produced on a daily basis along the SH 82 corridor. Under a low growth scenario (1%), the VOC emissions are projected to increase to approximately 1,100 lbs a day. The high growth scenario (2.5%) projects more than 3,900 lbs of VOC emissions a day in 20 years. The daily VOC emissions correlate to more than 250,000 lbs a year for existing conditions and could increase to more than 1,400,000 lbs a year under the high growth scenario.

Figure 7-9
Projected Daily CO Emissions

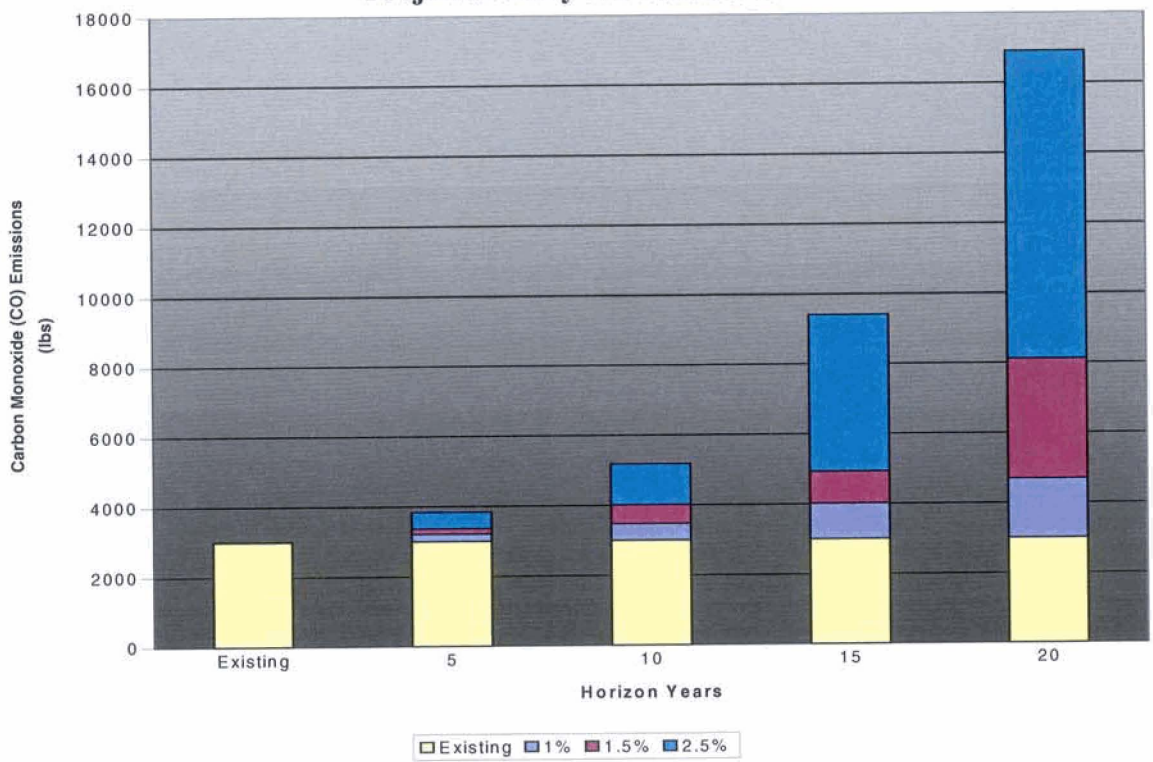


Figure 7-10
Projected Daily NO_x Emissions

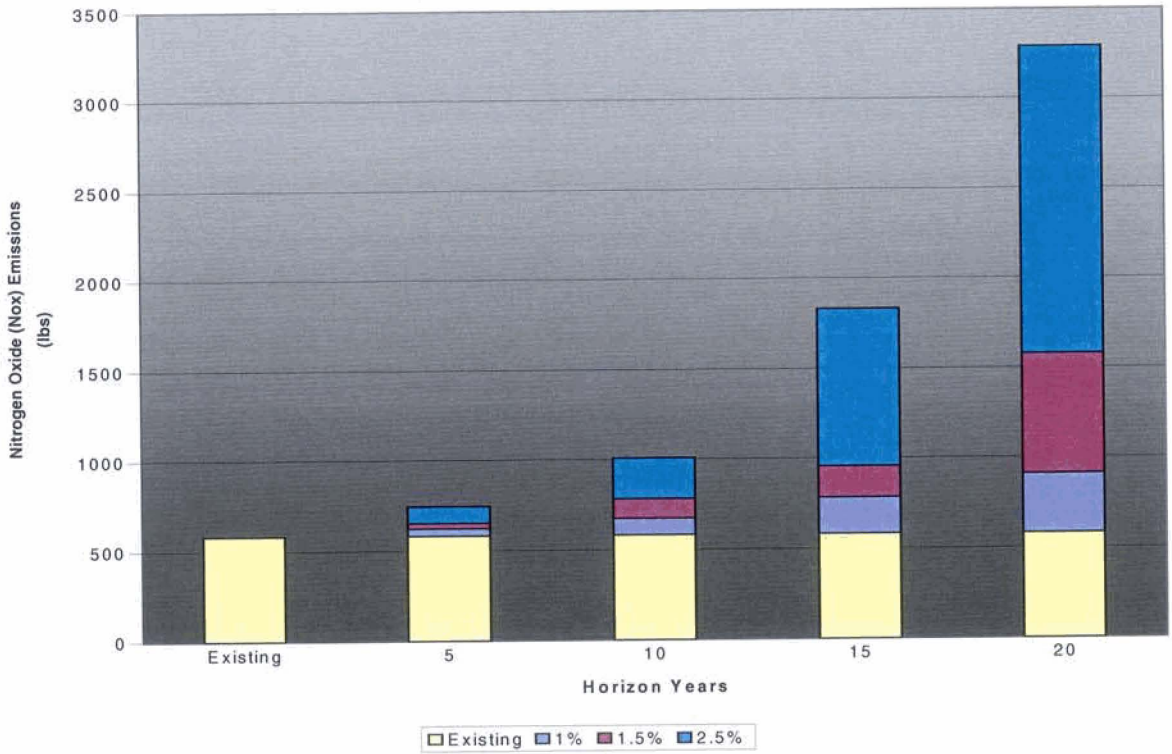
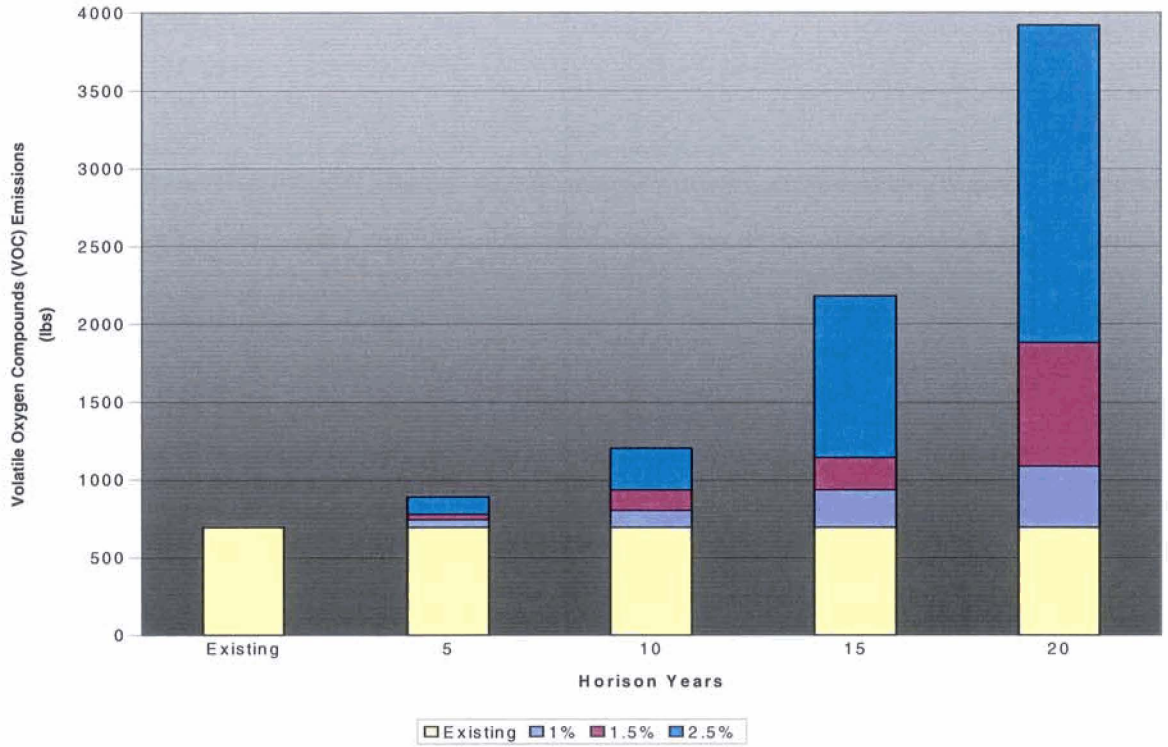


Figure 7-11
Projected Daily VOC Emissions



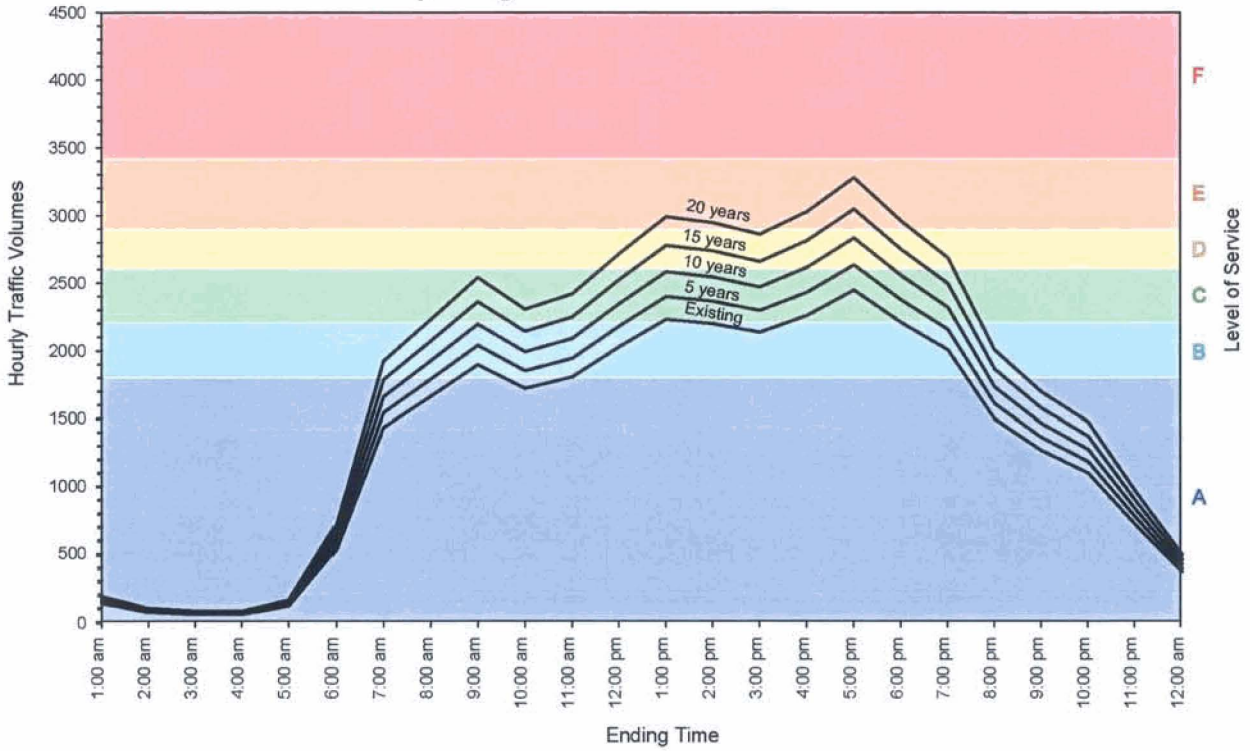
It should be noted that the rate of increase for emissions is much higher than the rate of increase of traffic. The projected future traffic volumes in the low growth scenario (1%) increase approximately 22% in the next 20 years compared to existing levels, but emissions experience approximately a 50% increase during the same time frame. In the high growth scenario (2.5%), traffic volumes will experience a 64% increase in the next 20 years, but emissions will increase 466%. This is because emissions increase during congested times due to the slow speed at which vehicles are traveling and the increased number of stops that vehicles must make. Thus, as traffic on the SH 82 corridor continues to increase so will the number of hours of the day in which congested traffic conditions are experienced. The next section of the report will discuss the number of hours of a typical day that the SH 82 corridor may experience congested conditions in the future.

7.6 HOURS OF EXPECTED CONGESTION

As was previously mentioned, as traffic continues to grow in the future, the operations of the corridor will begin to deteriorate toward congested conditions if changes or improvements are not made to the roadway network. It was decided that for the purpose of this report congested conditions would be defined as those times of the day when an arterial LOS 'E' or worse occurs. The number of hours during a typical weekday and weekend day that will result in congested conditions along the corridor can be estimated based upon the arterial LOS and travel time data that was previously presented.

If growth along the corridor slows to a low rate (1%), congested conditions (LOS 'E' or worse) are not expected to occur during the next 20 years as arterial level of service and travel times will remain in the acceptable ranges. However, if growth occurs at a medium rate of 1.5% annually, the corridor is expected to experience congested conditions during some hours of a typical weekday. **Figure 7-12** shows the hourly traffic volumes on SH 82 for a typical weekday for the existing conditions and for each of the projected horizon years using a 1.5% annual growth rate. It can be expected that congested conditions will exist for 1 to 2 hours of a typical weekday starting fifteen years in the future and that the number of congested hours would increase to 6 to 7 hours a day by 2024. Traffic on the weekends would not result in congested conditions existing over the next twenty years under the 1.5% growth rate scenario.

Figure 7-12
Weekday Congestion for 1.5% Annual Growth



Next, if growth occurs at the high rate of 2.5% annually, the corridor is expected to experience congested conditions for both a typical weekday and on the weekend. **Figures 7-13 and 7-14** show the hourly traffic volumes on SH 82 for a typical weekday and weekend, respectively, for the existing conditions and for each of the projected horizon years using a 2.5% annual growth rate. For the weekdays, congested conditions will exist for 1 to 2 hours in ten years, 7 to 8 hours in fifteen years, and for as much as 12 to 13 hours twenty years in the future. On the weekend, congested traffic conditions can be expected to occur during a 1-2-hour period of time in fifteen years and for more than 8 hours of the day in twenty years.

Figure 7-13
Weekday Congestion for 2.5% Annual Growth

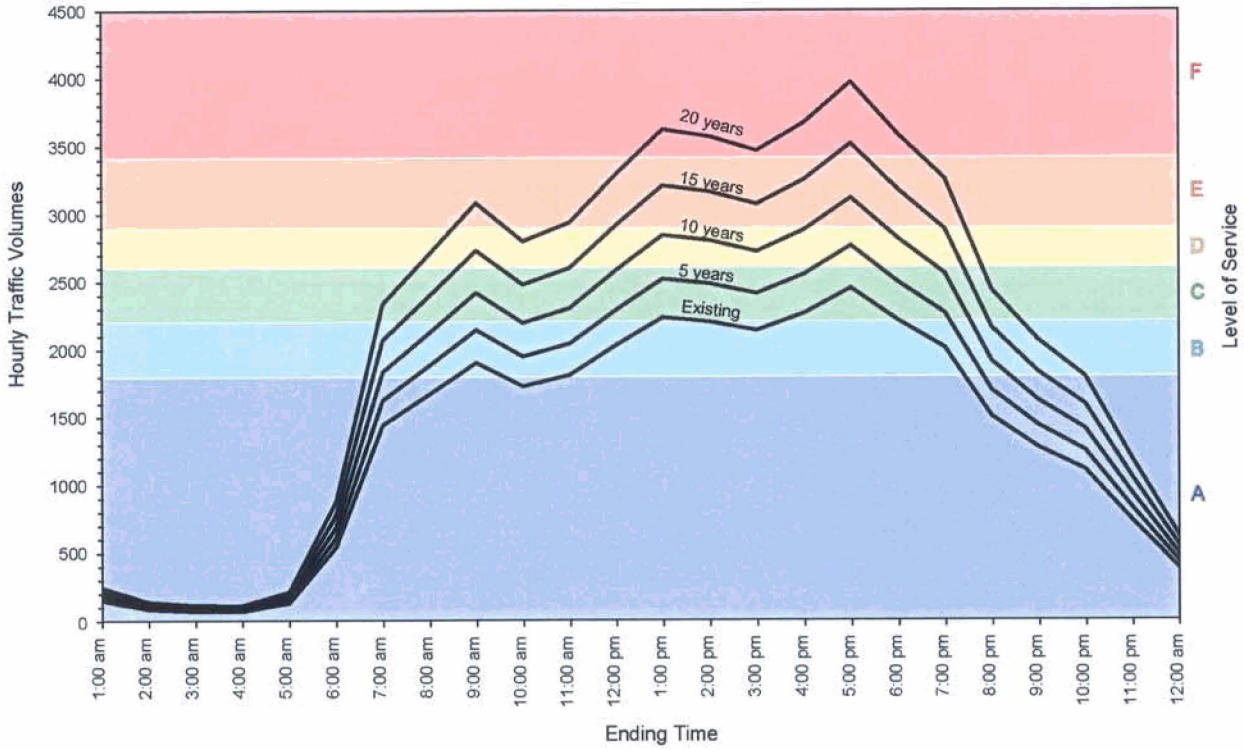
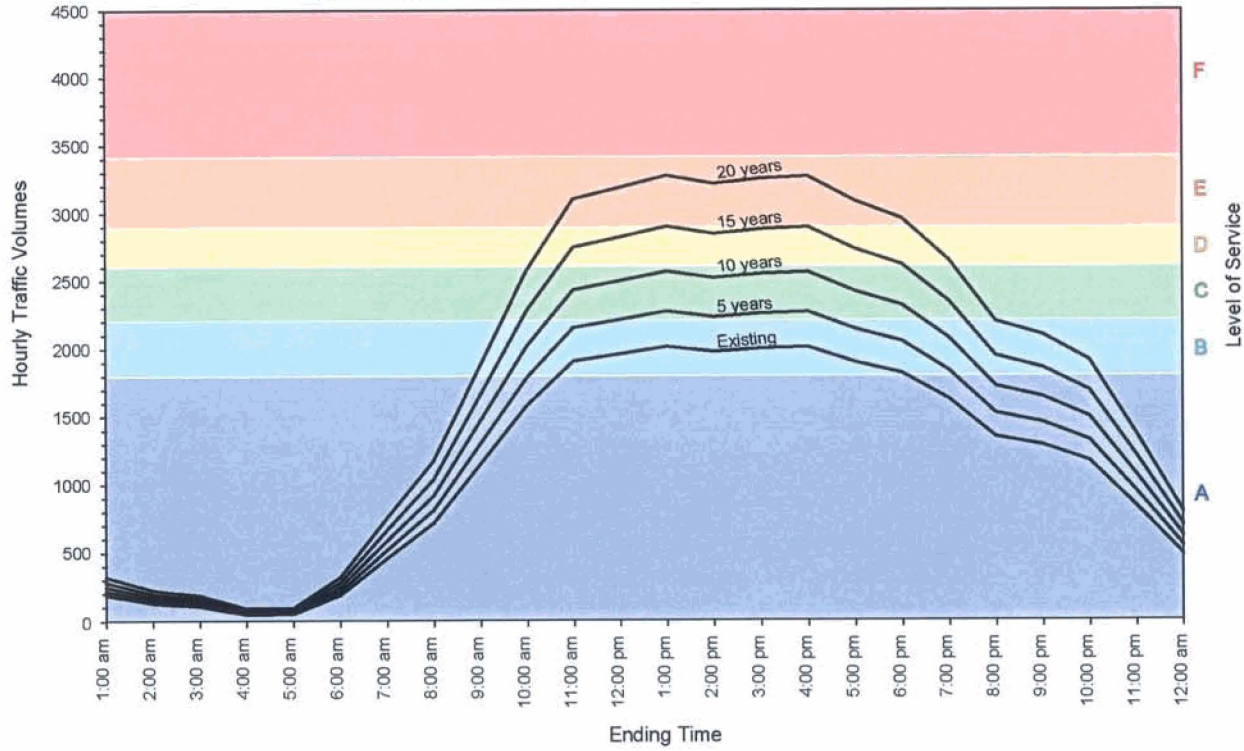


Figure 7-14
Weekend Congestion for 2.5% Annual Growth



Another way to look at congestion is to compare the perceived congestion that occurs during the existing weekday PM peak to the conditions that will exist in the future. Many uses of the existing users of the roadway and those that live in the area perceive the existing PM traffic conditions, 2 hours at LOS 'C', to reflect congested conditions. If this is the case, then Figure 7-13 shows that in just 5 years this same level of congestion will existing for 7 hours of a day, in 10 years it will be 10 hours, in 15-years congestion will occur for 12 hours of the day, and in 20 years the same congestion will be felt for more than 13 hours of a typical day. Without any changes to the roadway, the perceived congestion problem will continue to be a major factor for those that live in the area or use the roadway.

From the figures it can be seen that the congested conditions (LOS E or worse) will primarily occur during the weekday midday to evening hours and then during the midday hours for a typical weekend day. To prevent traffic congestion from becoming the norm along the SH 82 corridor, changes or improvements will need to be made. One way to prevent congestion is to add capacity to the network, which can act to extend the life span of the roadway network.

7.7 AVERAGE DAILY TRAFFIC/PASS THROUGH TRIPS (FUTURE)

The final part of the analysis deals with the quantity of pass through trips that will be using the roadway network in the future. To compute the number of pass through trips in the future, the total number of vehicles entering the network at the entry points, as discussed in **Section 5.0**, were projected into the future years using the determined growth rates. Then, the percentages of pass through trips that were computed for the existing conditions were applied to the future volumes to determine the overall number of pass through trips that will be using the network for a given future horizon year and growth rate scenario. For the purposes of this study, the percent of pass through trips was held constant, although discussion with the City and CDOT indicated the city is nearly built out and development continues to occur further south along SH 82 indicated the likeliness that the percent of vehicles passing through the City on SH 82 may increase in the future. The results are presented **Appendix I** and a summary of the results is shown in **Figures 7-15, 16, 17,** and **18**.

Figure 7-15 shows that for a typical weekday, the number of entering vehicles will increase from the 38,220 vehicles-per-day (vpd) for existing conditions to upwards of 62,000 vpd for the high growth rate and 20-year horizon period. In **Figure 7-16**, the number of pass through trips is shown to increase to as high as 16,650 vpd by the end of the 20-year study period, with a 2.5% growth rate. **Figures 7-17** and **7-18** show the weekend results. For the weekend, the ultimate number of entering vehicles approaches 54,000 vpd and the pass through trips near 18,100 vpd. Based on these values, the future pass through trips for an average day will range from just over 12,700 vpd to as many as 17,000 vpd.

Figure 7-15
Weekday Entering Vehicles

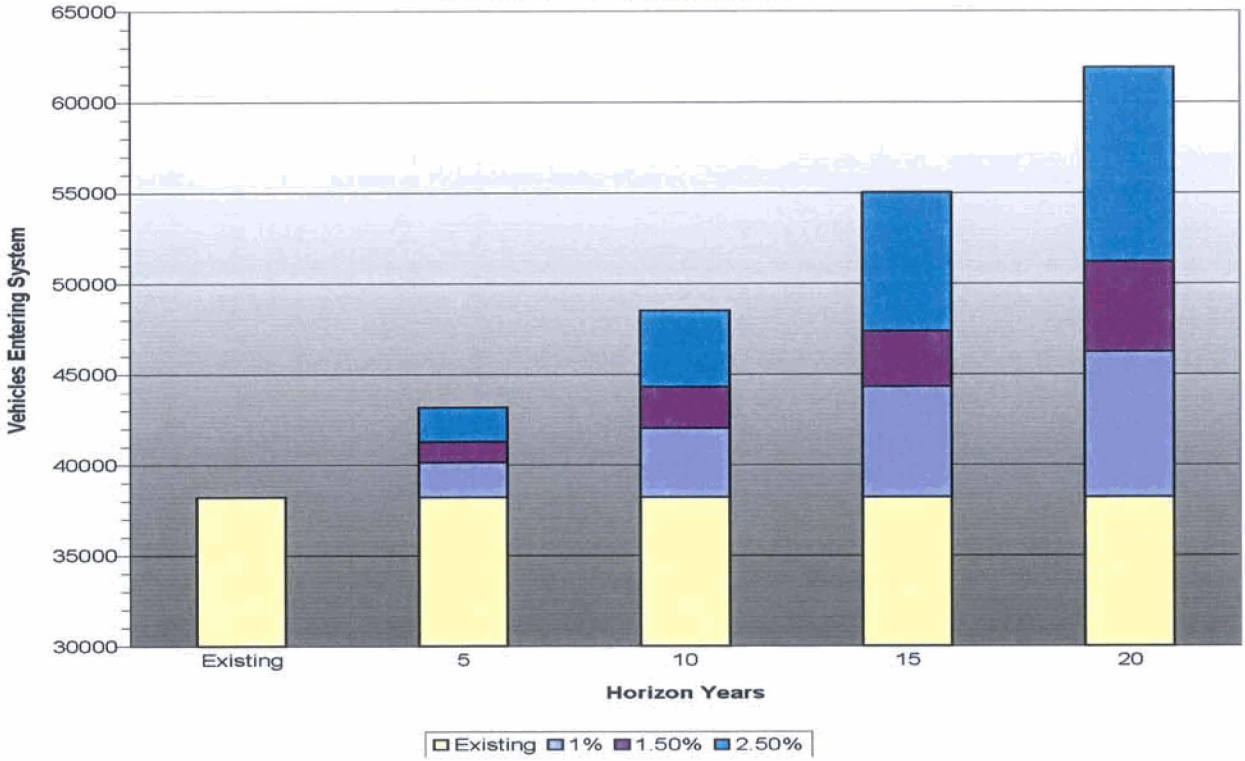


Figure 7-16
Weekday Pass Through Vehicles

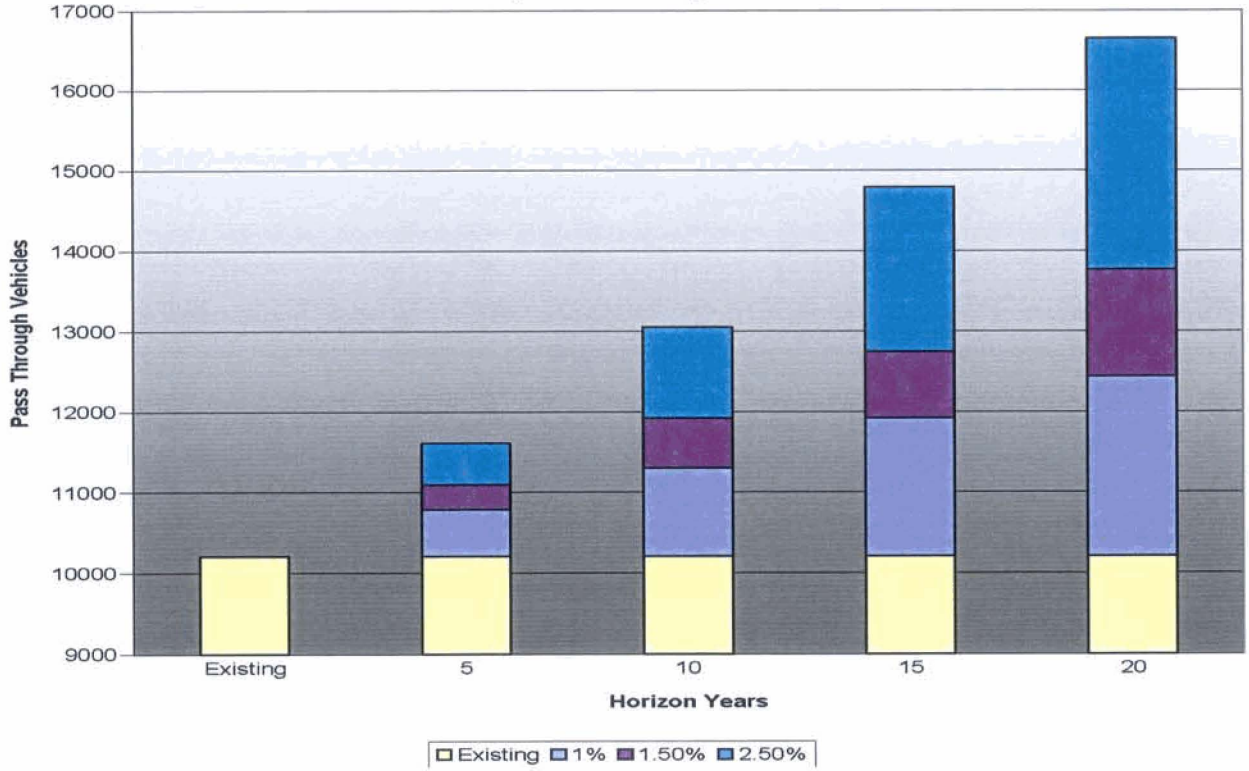


Figure 7-17
Weekend Entering Vehicles

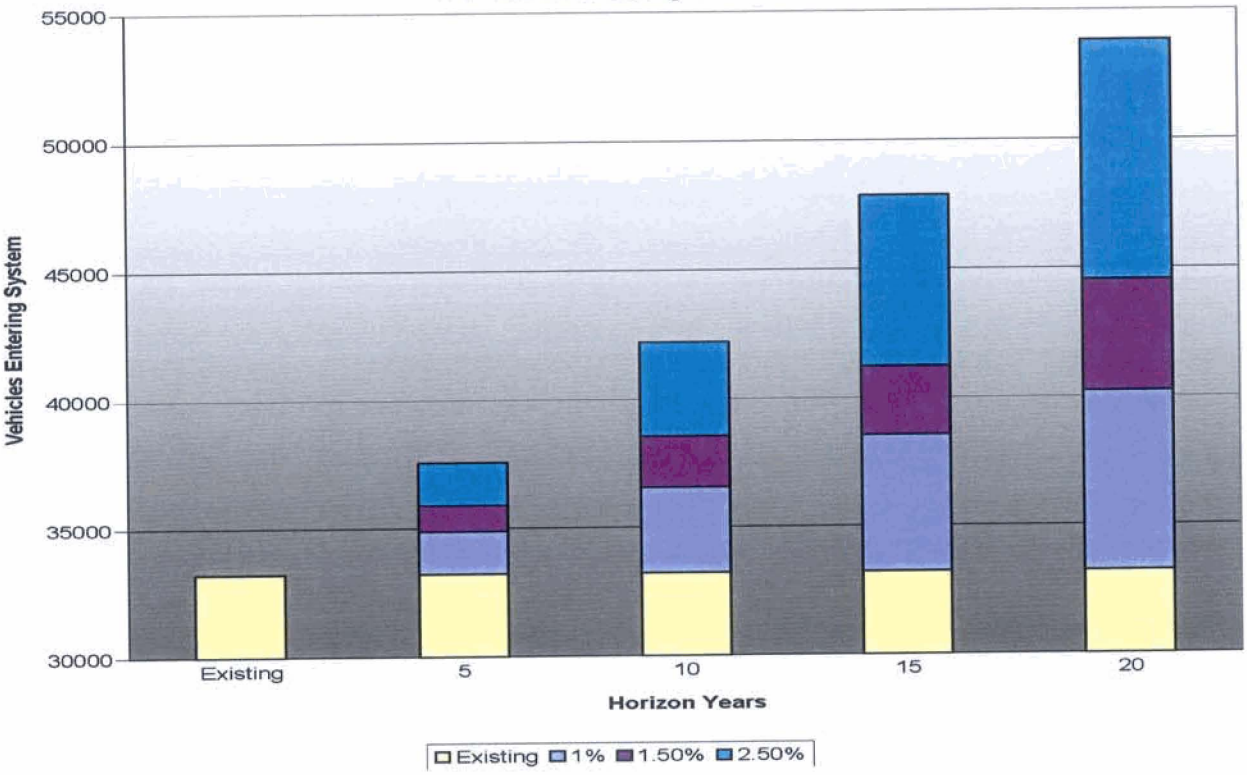
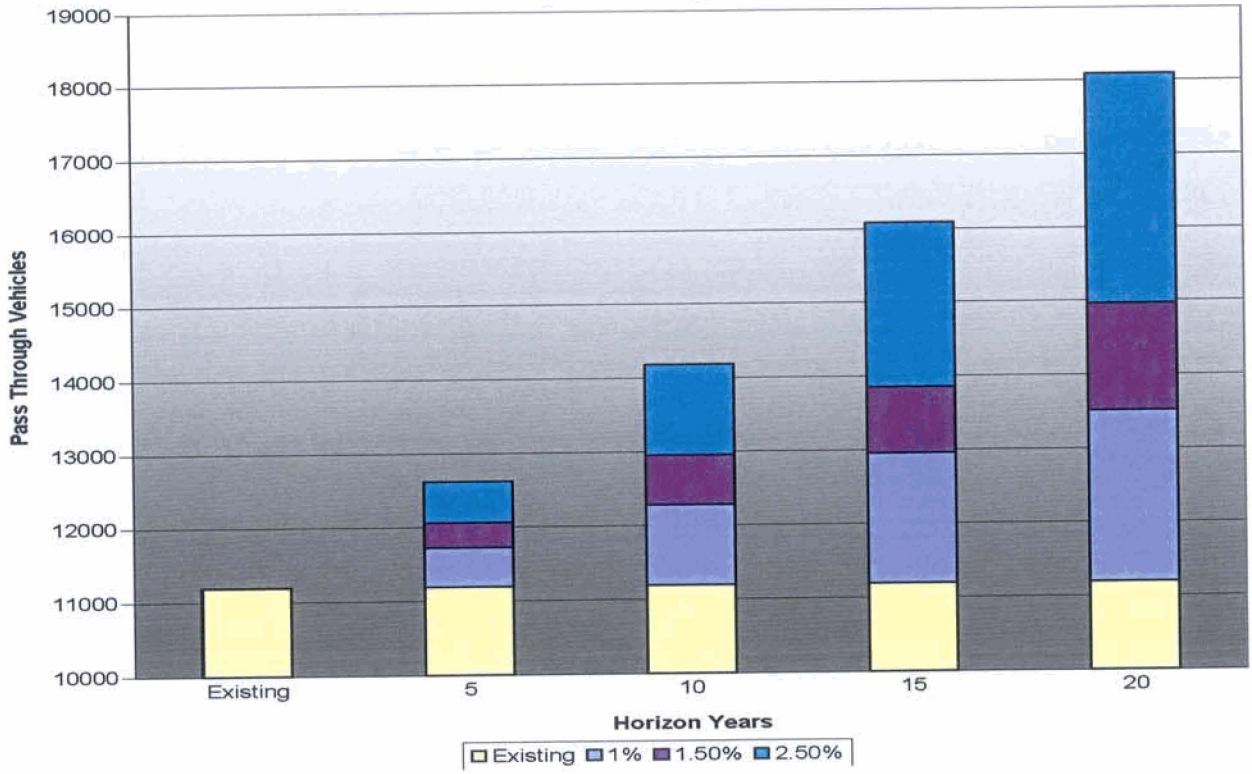


Figure 7-18
Weekend Pass Through Vehicles



8.0 DISCUSSION AND CONCLUSIONS

This report presents the results of the corridor conditions assessment (CCA) for State Highway 82 (SH 82) within the City of Glenwood Springs. Information has been presented regarding the data collection efforts, existing conditions, results of a pass through trip analysis and results of the future conditions analysis.

Data Collection

Several types of data were collected during the initial phase of this project. Data collection efforts were conducted during the week of July 20 through July 25, 2004, as this week identified as being representative of an average peak period for this corridor. Data collection efforts included:

- Average daily traffic counts (5-days of data) at 14 locations
- Vehicle classification counts (5-days of data) at 8 locatoins
- Peak period travel time runs
- Three years of accident data for the major corridors within the study limits
- A license plate survey (7 hours of data for a weekday, 4 hours of data for a weekend)
- Peak hour turning movements counts at 3 intersections

Existing Conditions

In summary, the results of the existing condition analysis show that in general the corridor operates at acceptable levels-of-service (LOS 'C' or better) at most of the intersections for most of the peak periods. Field measurements showed that as an overall arterial, SH 82 general operates at LOS 'C' based on average travel speeds during the peak periods. Analysis also found that most of the intersections along the SH 82 corridor operate at LOS 'C' or better for all time periods of the week, with the exception of Laurel during the weekday AM period, which is at LOS 'D', 27th Street during the weekday PM period, which is also at LOS 'D', and 8th Street during the weekday PM period, which operates at LOS 'E'. Many of the intersections operate at LOS 'A' or 'B'. It should be noted the LOS being discussed is an overall intersection LOS, which is heavily influenced by the mainline operations. Traffic on the side streets are expected to experience worse LOS, and in many cases are already operating at LOS 'F'. The existing operations and traffic conditions on the SH 82 corridor are nearing the levels that will result in congested conditions and unacceptable performance.

Future Conditions

A future conditions analysis was performed using a set of growth rates, to represent a range of possible future growth scenarios within the region. The study used an annual growth rate of 1% for the low growth scenario, 1.5% for the mean (medium) growth scenario, and 2.5% for the high growth scenario.

Analysis of the low growth rate scenario, 1% annually, shows that the existing roadway network will continue to operate at levels that are deemed acceptable for the next 20 years. Acceptable operations include an arterial LOS 'D' or better and travel times that do not increase significantly over the existing values. In the low growth scenario, arterial LOS remains at LOS 'D' or better and the travel times along the corridor do not significantly increase. A few of the intersections

along the corridor do begin to experience poorer performance, LOS 'D' or lower, during the peak periods, but as a whole the corridor will continue to operate acceptably.

In the medium growth scenario, 1.5% annually, the corridor begins to experience unacceptable performance during certain times of a typical day, primarily the weekday PM period. The impacts of this growth rate will start to impact the corridor in approximately 16 to 17 years. Key intersections such as 8th Street, Laurel, and Pine begin to operate at failing levels, LOS 'E' or 'F', for most of the peak periods of a typical week. The poor performance of these key intersections results in the arterial LOS also reaching unacceptable (LOS 'E' or 'F') levels. In addition, changes or improvements to the roadway network will be necessary in the future to extend the life span of the corridor. For this growth scenario, it can be expected that congested conditions will exist for 1 to 2 hours of a typical weekday starting fifteen years in the future and that the number of congested hours would increase to 6 to 7 hours by the 20-year horizon.

In the high growth scenario, 2.5% annually, the corridor begins to experience unacceptable performance during the weekday midday and PM periods, and during the weekend midday period. The impacts of this growth rate will start to impact the corridor in approximately 10 years. Numerous intersections such as those at both the north and south ends of the corridor will begin to operate at failing levels, LOS 'E' or 'F', for most of the peak periods of a typical week. The poor performance of these key intersections results in the arterial LOS reaching unacceptable (LOS 'E' or 'F') levels and in the travel times more than doubling during some time periods. Changes or improvements to the roadway network will be necessary in the future to extend the life span of the corridor. Under a high growth rate, a typical weekday will experience congested conditions 1 to 2 hours in ten years, 7 to 8 hours in fifteen years, and for as much as 12 to 13 hours twenty years in the future. On the weekend, congested traffic conditions can be expected to occur during a 1 to 2 hour period of a day in fifteen years and for more than 8 hours of a day in twenty years.

Emissions

As part of the analysis, the emission production rates for the existing and future conditions were examined. As is expected, depending on the rate of growth along the corridor and within the area, emissions from the vehicles that use the SH 82 corridor will increase significantly over the next 20 years. The projected traffic levels show an increase between 22% and 64% over existing conditions in the next 20 years depending on the rate of growth. At the same time, emission levels are shown to increase between 50% and 466% (depending on growth rate) in the same time period. These levels of emissions may have impacts to the health of the environment, to the local residents, visitors to the area, people that work in the area, and on the drivers that use the corridors.

Pass Through Trips

A license plate survey was undertaken as part of the data collection efforts for this project. For the existing conditions, there are approximately 10,500 vehicles a day making pass through trips in the area, with the weekday PM period and the weekends having the highest pass through percentages. On the average weekday, approximately 36 percent of all northbound vehicles and nearly 20 percent of all southbound vehicles are pass through trips. On the weekends, 45 percent of the northbound entering vehicles and 25 percent of southbound entering vehicles are pass

through trips. Along with the continued growth in the area, regardless of the rate of growth, the number of vehicles that pass through the area using the SH 82 corridor will continue to increase over the next 20 years. Depending on the rate of growth in the area, the number of pass through trips in 20 years, for an average day, will range from just over 12,700 vpd to as many as 17,000 vpd.

9.0 NEXT STEPS

To ensure the SH 82 corridor continues to function satisfactorily, both the City of Glenwood Springs and CDOT should consider the results of this study and the following next steps.

1. Efforts should be made to ensure the traffic volumes along the SH 82 corridor are closely monitored in the immediate upcoming years to gain a better understanding and more definitive picture of the growth rate that is actually occurring in the area. The future analysis portion of this report was hinged on a range of potential growth rates from a low of 1% to a high of 2.5% annually. Depending on the amount of growth seen by the SH 82 corridor through Glenwood Springs, the results of this study indicate that if no improvements are made to the network, the system conditions could range from an acceptable level of service conditions (1% growth annually) with no network failures (LOS E or worse) in the next 20 years, or the system could fail in the weekday PM period in as soon as 7 years under high growth (2.5% annually). Close monitoring of the corridor and the traffic volumes will assist in the decision making process regarding the need for improvements along SH 82.

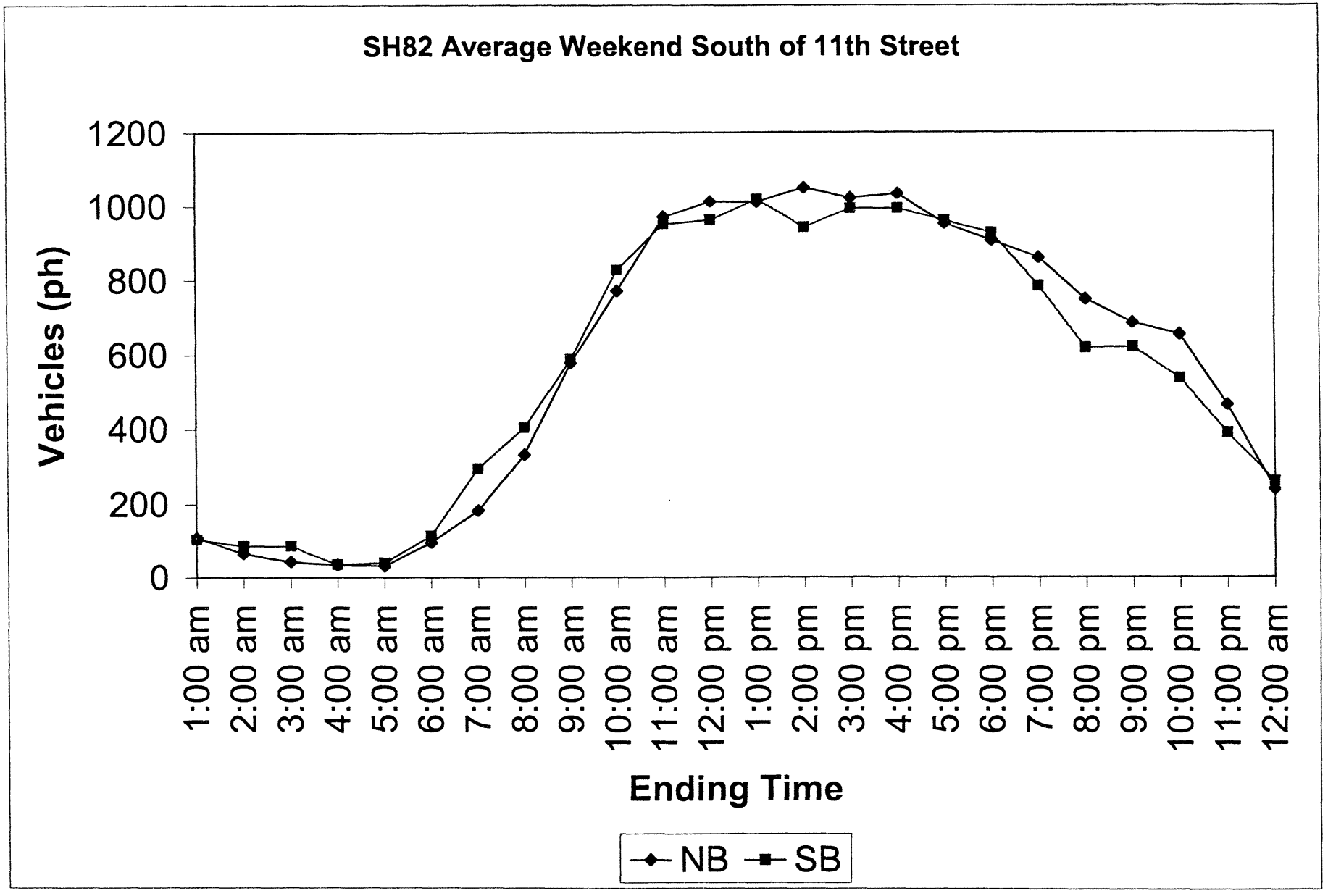
2. CDOT should investigate the key intersections on the SH 82 corridor that are at or near failure levels for the existing conditions, or those intersections that will fail in the near future regardless of growth rate, and identify possible interim measures to alleviate traffic problems at these locations. The key intersections include Laurel, Pine, 8th, 9th, 10th, 11th, 23rd, and 27th Streets. By taking interim measures, CDOT may be able to extend the service life of the existing roadway network and delay the need for additional capacity needs further into the future.

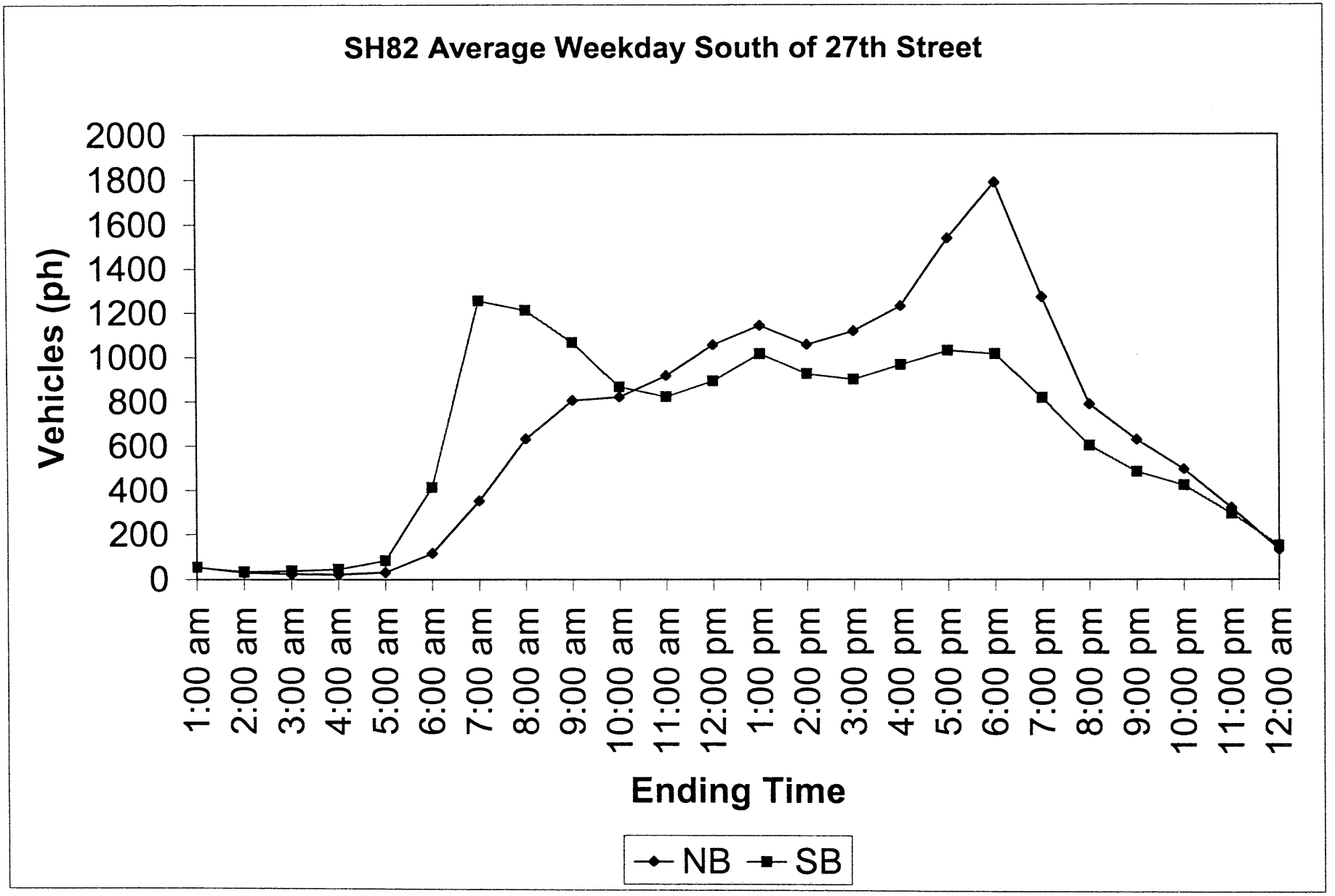
3. A continuous effort should be made to explore opportunities for future improvements along the SH 82 that may increase the existing capacity of the roadway network. This can be accomplished through continued dialogue between CDOT, the City, and other stakeholders in the region. An open dialogue between the stakeholders will provide a means through which a schedule can be developed and maintained to ensure appropriate action is taken at the appropriate time to address the future capacity needs of the corridor.

4. Finally, the findings of this report should be shared between, presented to, and discussed with the key decision makers at the City of Glenwood Springs and to CDOT. By getting the information out in front of all parties, the process of developing a consensus approach to resolving issues on SH 82 will already be underway.

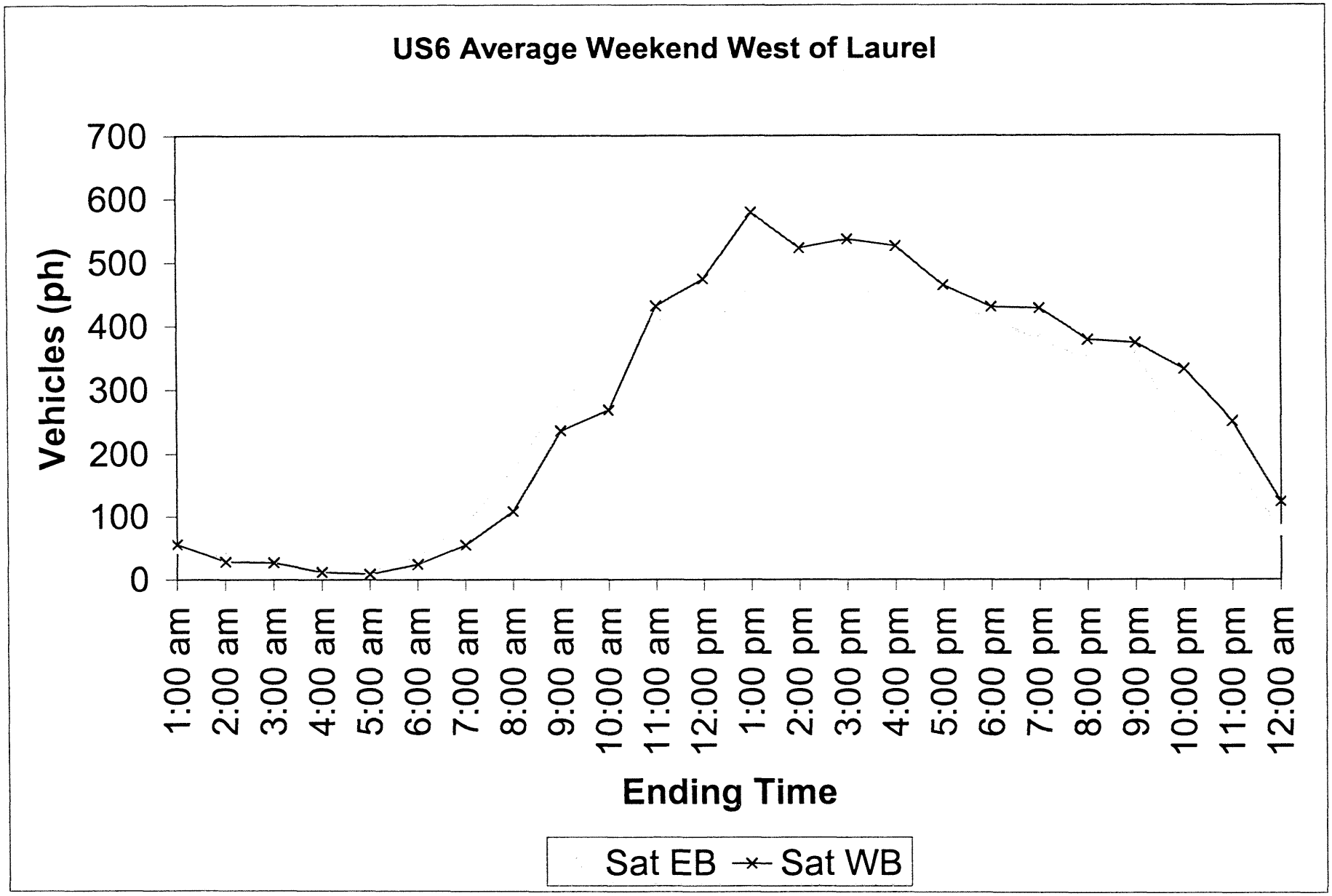
Appendix A:
Average Daily Traffic Count Data

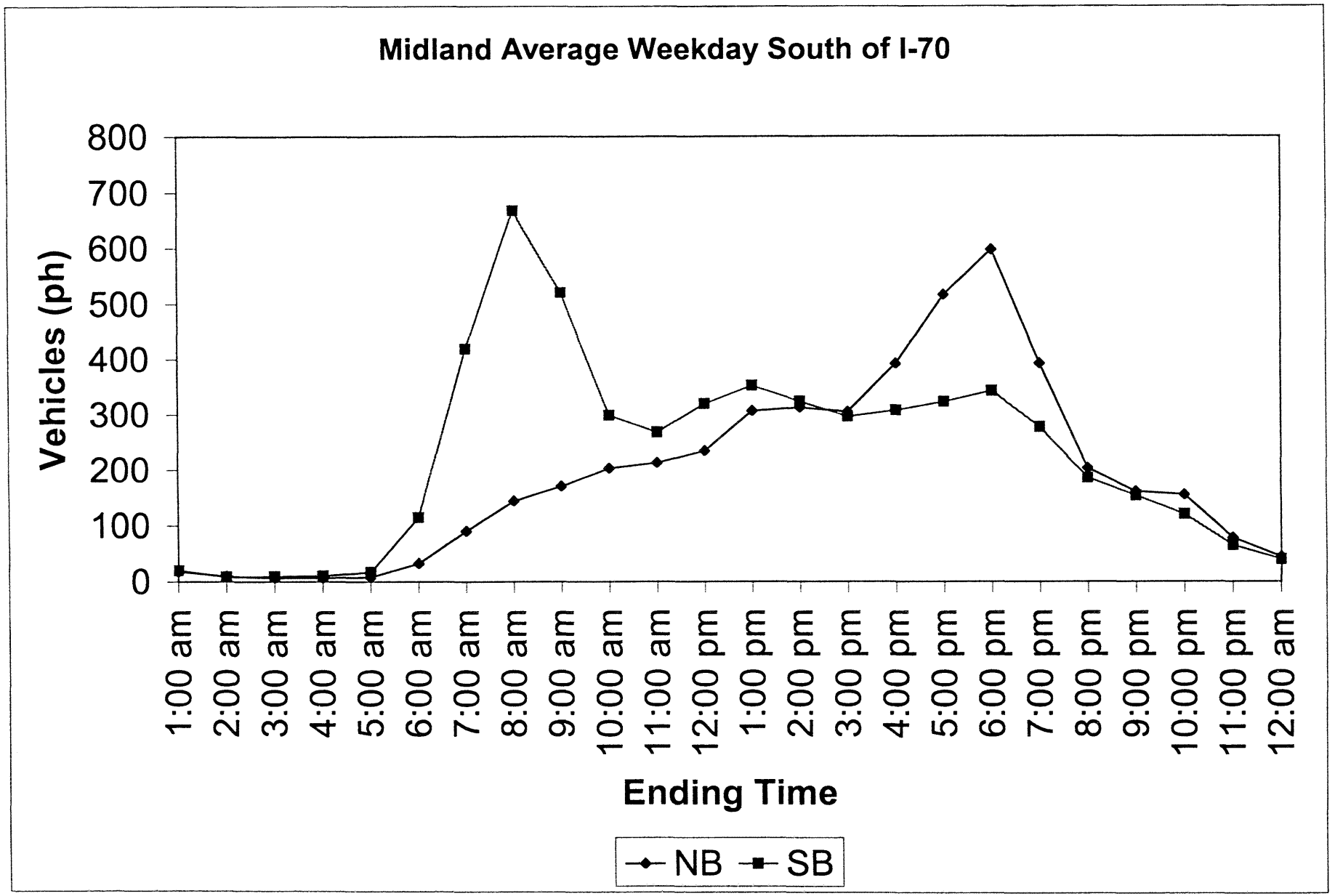
SH82 South of 11th Street															
Ending Time	7/20/2004 Tuesday		7/21/2004 Wednesday		7/22/2004 Thursday		7/23/2004 Friday		7/24/2004 Saturday		Ending Time	NB Average		SB Average	
	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB		Weekday	Weekend	Weekday	Weekend
1:00 am	76	74	56	62	64	96	78	98	108	103	1:00 am	69	108	83	103
2:00 am	28	41	44	42	38	51	44	53	65	86	2:00 am	39	65	47	86
3:00 am	23	41	20	44	32	46	34	42	42	85	3:00 am	27	42	43	85
4:00 am	15	48	22	40	21	37	32	64	34	35	4:00 am	23	34	47	35
5:00 am	38	112	25	89	40	98	32	90	31	40	5:00 am	34	31	97	40
6:00 am	126	468	106	439	120	381	132	397	95	114	6:00 am	121	95	421	114
7:00 am	361	1148	364	1120	332	1106	358	982	182	295	7:00 am	354	182	1089	295
8:00 am	574	1187	572	1097	612	1092	548	1000	332	404	8:00 am	577	332	1094	404
9:00 am	769	1110	814	1052	818	1151	796	1099	578	588	9:00 am	799	578	1103	588
10:00 am	790	908	810	902	870	943	844	844	770	827	10:00 am	829	770	899	827
11:00 am	915	895	856	950	923	906	908	894	970	951	11:00 am	901	970	911	951
12:00 pm	1058	984	966	1022	1064	961	1076	998	1011	962	12:00 pm	1041	1011	991	962
1:00 pm	1090	1094	1120	1140	1100	1065	1230	1103	1010	1017	1:00 pm	1135	1010	1101	1017
2:00 pm	1084	1064	1170	980	1152	1050	1232	1082	1048	942	2:00 pm	1160	1048	1044	942
3:00 pm	1078	974	1148	932	1121	980	1271	1054	1021	992	3:00 pm	1155	1021	985	992
4:00 pm	1204	987	1198	1080	1180	954	1356	1100	1032	992	4:00 pm	1235	1032	1030	992
5:00 pm	1402	1023	1384	1036	1408	1078	1382	1092	952	960	5:00 pm	1394	952	1057	960
6:00 pm	992	1022	1239	1103	1104	1000	1339	1056	906	926	6:00 pm	1169	906	1045	926
7:00 pm	1144	864	1184	839	1169	837	1076	930	859	783	7:00 pm	1143	859	868	783
8:00 pm	760	658	901	680	800	668	804	746	747	618	8:00 pm	816	747	688	618
9:00 pm	638	593	668	614	678	599	656	650	684	620	9:00 pm	660	684	614	620
10:00 pm	477	484	576	603	528	555	632	580	653	536	10:00 pm	553	653	556	536
11:00 pm	314	293	380	435	337	358	424	385	464	389	11:00 pm	364	464	368	389
12:00 am	136	181	162	185	168	183	230	274	238	260	12:00 am	174	238	206	260
Total	15092	16253	15785	16486	15679	16195	16514	16613	13832	13525	Totals	15768	13832	16387	13525


SH82 Average Weekend South of 11th Street
Vehicles (ph)
1200
1000
800
600
400
200
0
1:00 am
2:00 am
3:00 am
4:00 am
5:00 am
6:00 am
7:00 am
8:00 am
9:00 am
10:00 am
11:00 am
12:00 pm
1:00 pm
2:00 pm
3:00 pm
4:00 pm
5:00 pm
6:00 pm
7:00 pm
8:00 pm
9:00 pm
10:00 pm
11:00 pm
12:00 am
Ending Time
NB
SB

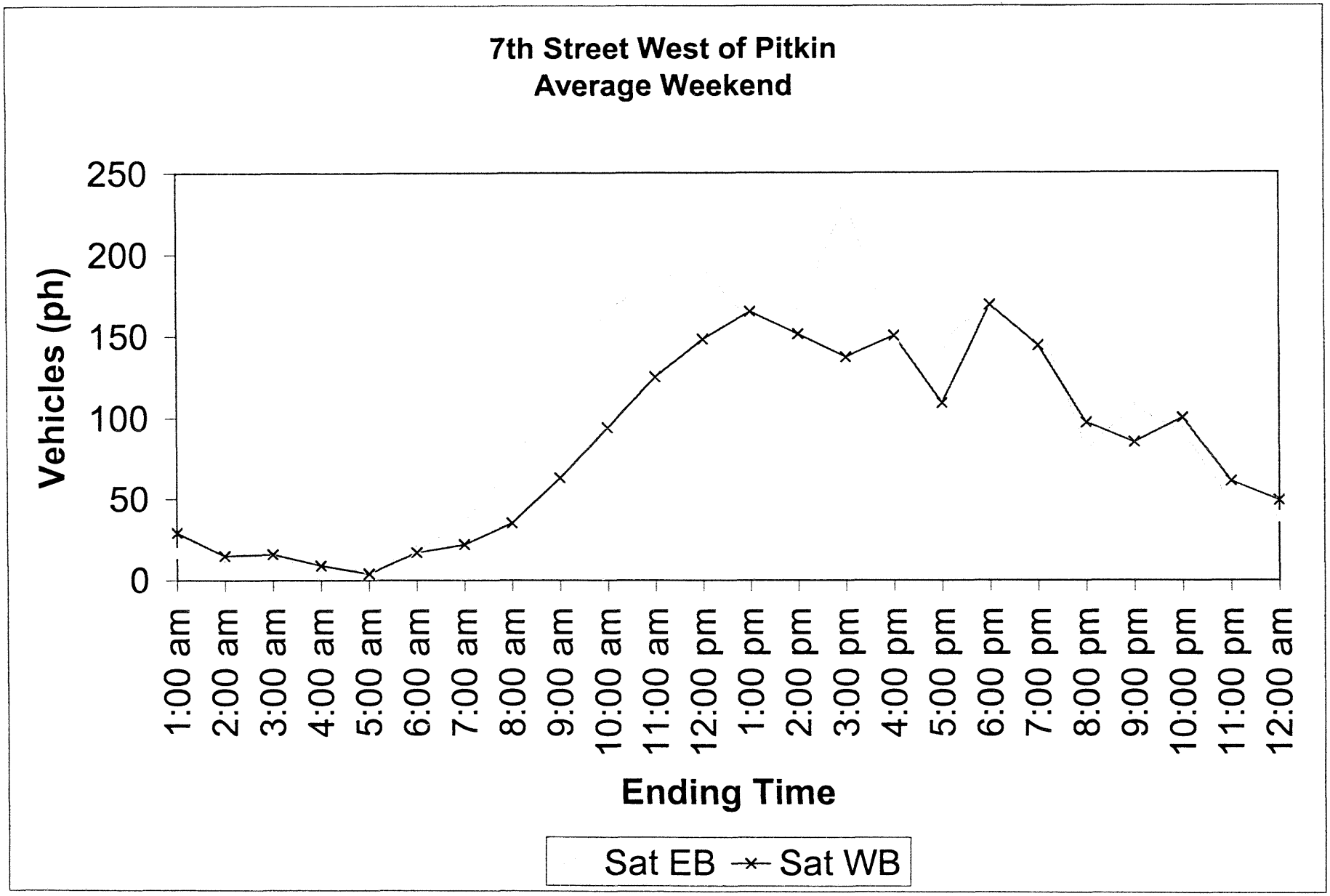

SH82 Average Weekday South of 27th Street
Vehicles (ph)
2000
1800
1600
1400
1200
1000
800
600
400
200
0
1:00 am
2:00 am
3:00 am
4:00 am
5:00 am
6:00 am
7:00 am
8:00 am
9:00 am
10:00 am
11:00 am
12:00 pm
1:00 pm
2:00 pm
3:00 pm
4:00 pm
5:00 pm
6:00 pm
7:00 pm
8:00 pm
9:00 pm
10:00 pm
11:00 pm
12:00 am
Ending Time
NB
SB

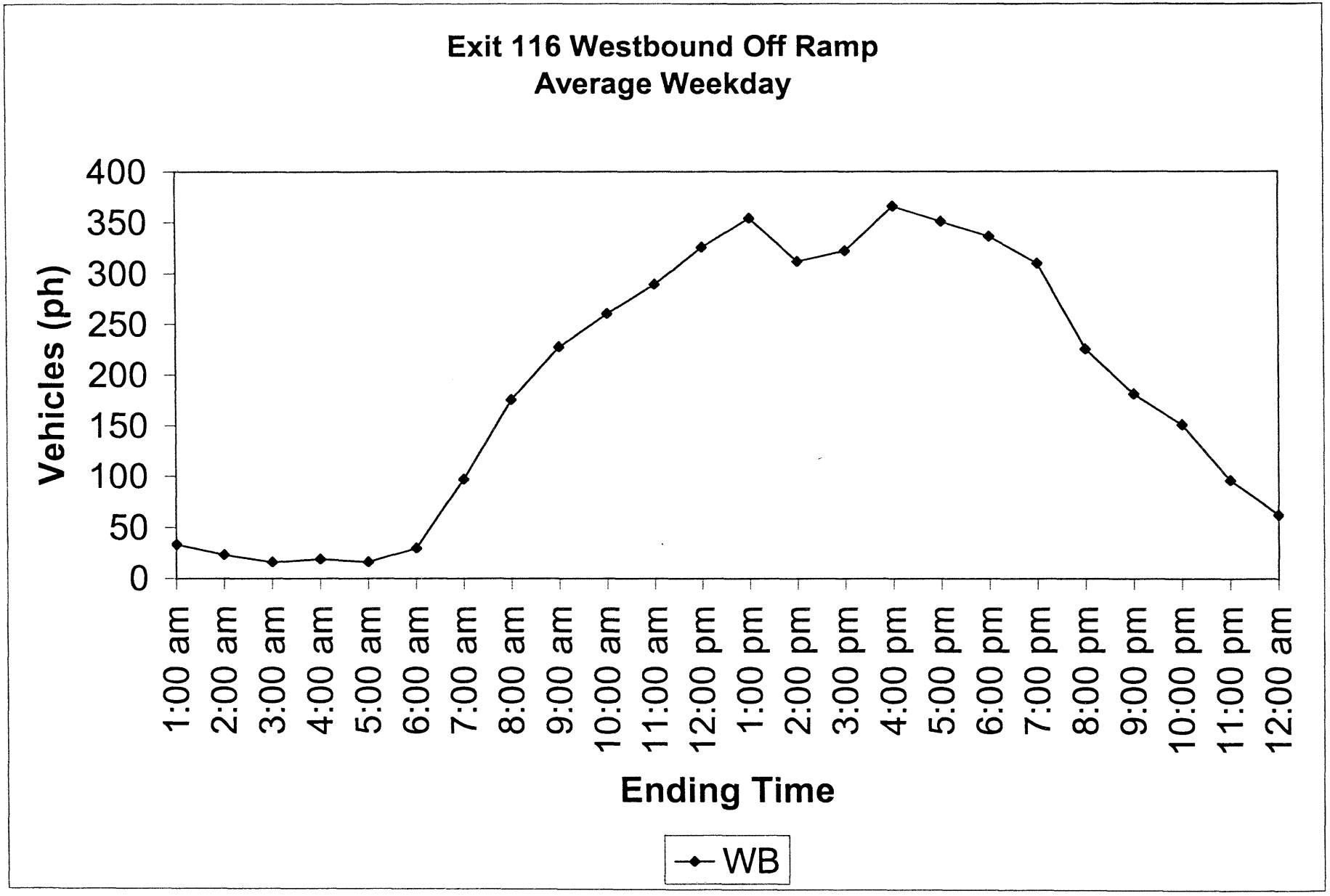
US6 W of Laurel															
Ending Time	7/20/2004 Tuesday		7/21/2004 Wednesday		7/22/2004 Thursday		7/23/2004 Friday		7/24/2004 Saturday		Ending Time	EB Average		WB Average	
	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB		Weekday	Weekend	Weekday	Weekend
1:00 am	40	28	33	28	34	26	38	36	50	56	1:00 am	36	50	30	56
2:00 am	6	14	18	13	31	21	16	14	34	28	2:00 am	18	34	16	28
3:00 am	8	8	12	5	14	15	16	16	24	27	3:00 am	13	24	11	27
4:00 am	16	10	14	7	14	9	18	8	12	12	4:00 am	16	12	9	12
5:00 am	12	4	16	11	13	12	20	6	13	9	5:00 am	15	13	8	9
6:00 am	115	30	96	26	95	20	96	30	36	24	6:00 am	101	36	27	24
7:00 am	262	74	252	72	278	80	268	82	88	55	7:00 am	265	88	77	55
8:00 am	348	170	334	180	332	186	280	190	173	108	8:00 am	324	173	182	108
9:00 am	332	266	330	245	358	260	351	253	282	236	9:00 am	343	282	256	236
10:00 am	308	281	310	266	293	306	346	322	340	268	10:00 am	314	340	294	268
11:00 am	328	378	322	330	324	344	339	361	418	432	11:00 am	328	418	353	432
12:00 pm	350	460	402	418	363	412	398	440	388	474	12:00 pm	378	388	433	474
1:00 pm	424	430	366	451	392	494	421	498	463	578	1:00 pm	401	463	468	578
2:00 pm	421	492	350	454	420	530	382	498	466	522	2:00 pm	393	466	494	522
3:00 pm	378	454	369	424	390	450	414	508	476	536	3:00 pm	388	476	459	536
4:00 pm	351	480	380	510	378	486	370	559	424	525	4:00 pm	370	424	509	525
5:00 pm	364	570	362	560	316	524	354	596	438	464	5:00 pm	349	438	563	464
6:00 pm	346	552	355	646	377	590	330	619	410	430	6:00 pm	352	410	602	430
7:00 pm	326	501	345	634	349	583	348	494	377	428	7:00 pm	342	377	553	428
8:00 pm	310	398	336	549	345	408	332	420	346	378	8:00 pm	331	346	444	378
9:00 pm	310	291	364	405	362	347	346	328	352	373	9:00 pm	346	352	343	373
10:00 pm	204	230	426	287	302	275	278	305	242	332	10:00 pm	303	242	274	332
11:00 pm	112	160	264	197	151	164	168	230	182	251	11:00 pm	174	182	188	251
12:00 am	74	94	84	74	84	94	94	140	78	123	12:00 am	84	78	101	123
Total	5745	6375	6140	6792	6015	6636	6023	6953	6112	6669	Totals	5981	6112	6689	6669


US6 Average Weekend West of Laurel
Vehicles (ph)
700
600
500
400
300
200
100
0
1:00 am
2:00 am
3:00 am
4:00 am
5:00 am
6:00 am
7:00 am
8:00 am
9:00 am
10:00 am
11:00 am
12:00 pm
1:00 pm
2:00 pm
3:00 pm
4:00 pm
5:00 pm
6:00 pm
7:00 pm
8:00 pm
9:00 pm
10:00 pm
11:00 pm
12:00 am
Ending Time
Sat EB
Sat WB

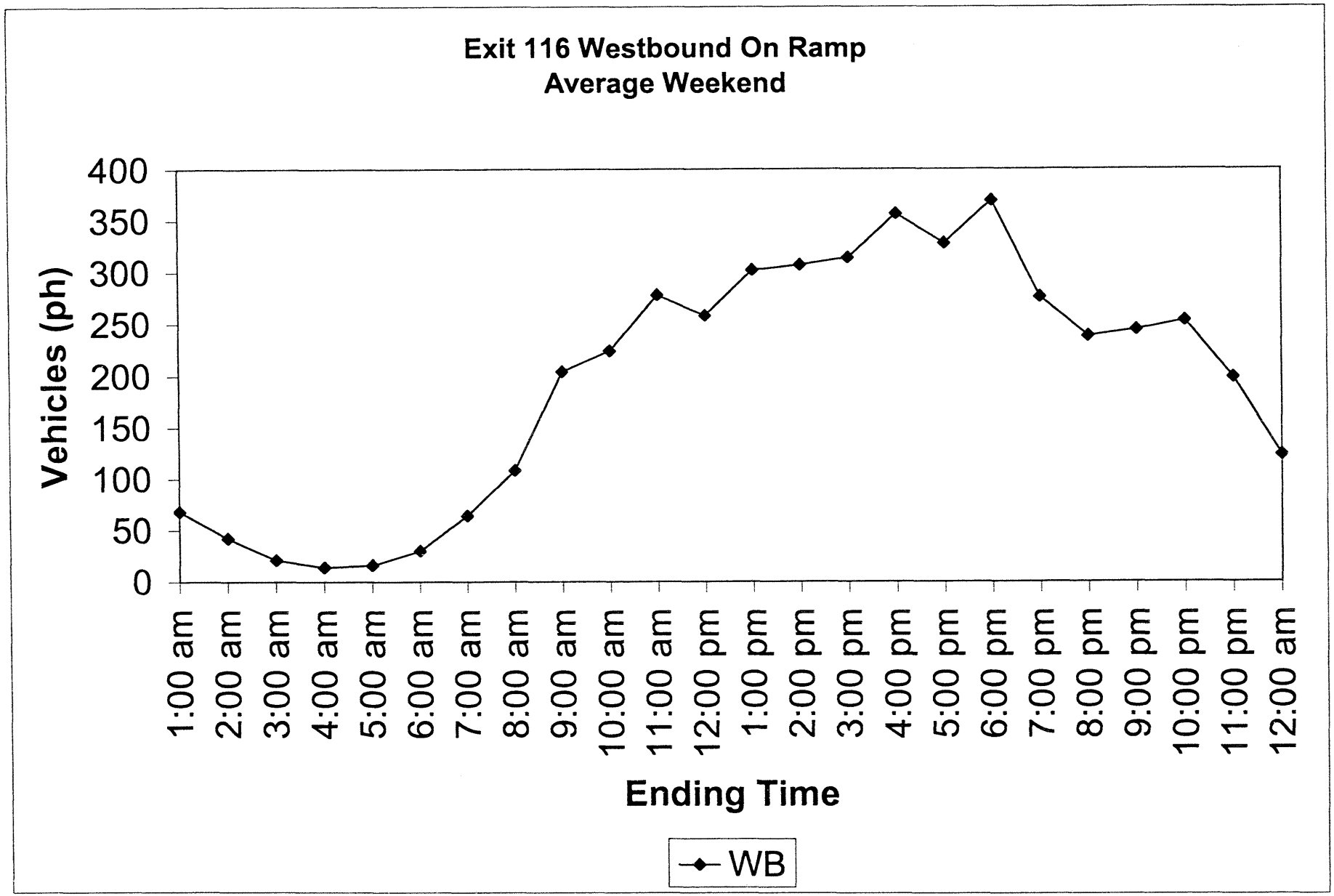

Midland Average Weekday South of I-70
Vehicles (ph)
800
700
600
500
400
300
200
100
0
1:00 am
2:00 am
3:00 am
4:00 am
5:00 am
6:00 am
7:00 am
8:00 am
9:00 am
10:00 am
11:00 am
12:00 pm
1:00 pm
2:00 pm
3:00 pm
4:00 pm
5:00 pm
6:00 pm
7:00 pm
8:00 pm
9:00 pm
10:00 pm
11:00 pm
12:00 am
Ending Time
NB
SB

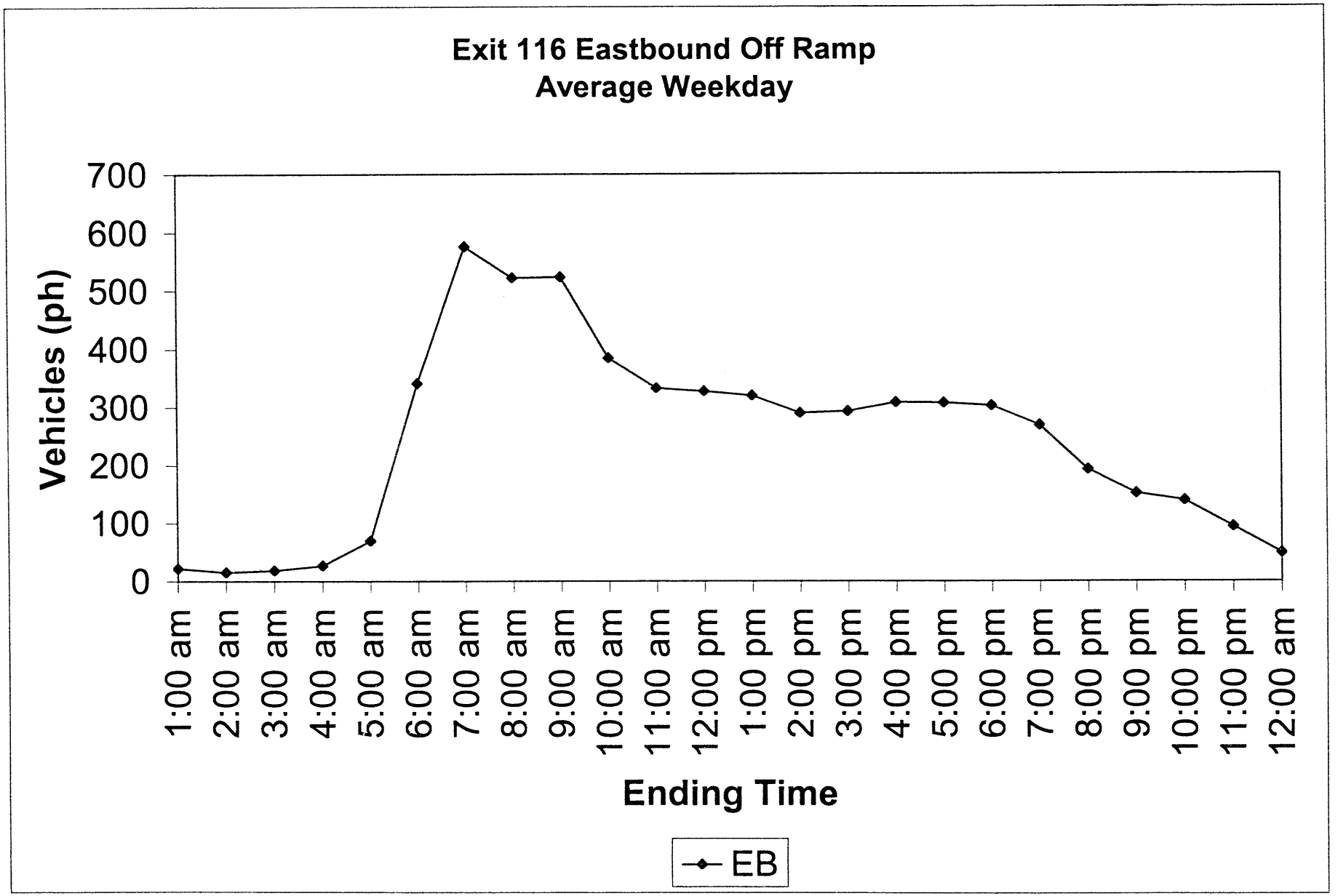
7th Street West of Pitkin															
Ending Time	7/20/2004 Tuesday		7/21/2004 Wednesday		7/22/2004 Thursday		7/23/2004 Friday		7/24/2004 Saturday		Ending Time	EB Average		WB Average	
	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB		Weekday	Weekend	Weekday	Weekend
1:00 am	11	20	9	18	24	18	15	15	17	29	1:00 am	15	17	18	29
2:00 am	2	7	3	8	5	5	4	14	9	15	2:00 am	4	9	9	15
3:00 am	1	1	4	4	2	1	8	2	15	16	3:00 am	4	15	2	16
4:00 am	5	5	2	4	2	4	3	1	4	9	4:00 am	3	4	4	9
5:00 am	8	2	7	1	12	4	15	2	8	4	5:00 am	11	8	2	4
6:00 am	62	19	58	23	61	21	61	21	18	17	6:00 am	61	18	21	17
7:00 am	158	52	167	55	148	45	158	47	35	22	7:00 am	158	35	50	22
8:00 am	421	101	433	94	432	99	420	81	71	35	8:00 am	427	71	94	35
9:00 am	324	124	351	133	335	120	362	124	120	63	9:00 am	343	120	125	63
10:00 am	232	132	219	150	241	128	241	148	165	94	10:00 am	233	165	140	94
11:00 am	218	157	257	156	224	164	226	147	185	125	11:00 am	231	185	156	125
12:00 pm	241	179	234	194	251	186	277	186	192	148	12:00 pm	251	192	186	148
1:00 pm	282	229	261	234	289	241	276	237	158	165	1:00 pm	277	158	235	165
2:00 pm	247	220	256	233	251	224	274	246	164	151	2:00 pm	257	164	231	151
3:00 pm	210	225	246	210	220	235	231	204	231	137	3:00 pm	227	231	219	137
4:00 pm	236	230	243	214	245	241	225	250	148	150	4:00 pm	237	148	234	150
5:00 pm	242	275	218	282	256	301	219	258	146	109	5:00 pm	234	146	279	109
6:00 pm	275	469	257	387	284	475	231	292	170	169	6:00 pm	262	170	406	169
7:00 pm	209	263	203	283	210	274	187	195	160	144	7:00 pm	202	160	254	144
8:00 pm	129	157	145	190	135	162	117	119	81	97	8:00 pm	132	81	157	97
9:00 pm	128	122	122	135	124	128	106	115	106	85	9:00 pm	120	106	125	85
10:00 pm	84	92	123	117	81	95	81	108	91	100	10:00 pm	92	91	103	100
11:00 pm	39	69	79	67	42	72	48	67	47	61	11:00 pm	52	47	69	61
12:00 am	22	30	66	51	23	24	42	62	39	49	12:00 am	38	39	42	49
Total	3786	3180	3963	3243	3897	3267	3827	2941	2380	1994	Totals	3868	2380	3158	1994


7th Street West of Pitkin
Average Weekend
Vehicles (ph)
250
200
150
100
50
0
1:00 am
2:00 am
3:00 am
4:00 am
5:00 am
6:00 am
7:00 am
8:00 am
9:00 am
10:00 am
11:00 am
12:00 pm
1:00 pm
2:00 pm
3:00 pm
4:00 pm
5:00 pm
6:00 pm
7:00 pm
8:00 pm
9:00 pm
10:00 pm
11:00 pm
12:00 am
Ending Time
Sat EB
Sat WB

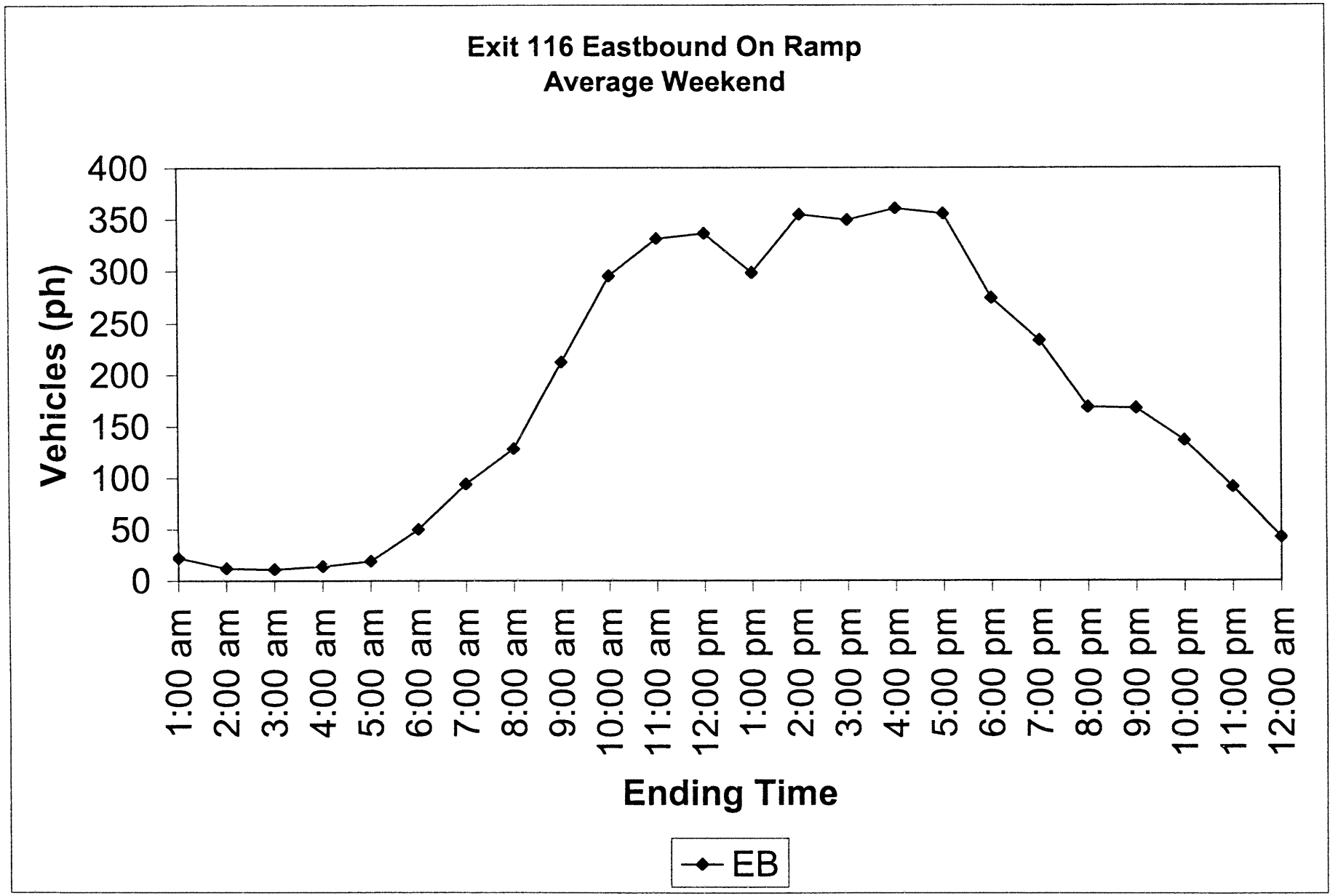

Exit 116 Westbound Off Ramp
Average Weekday
Vehicles (ph)
400
350
300
250
200
150
100
50
0
1:00 am
2:00 am
3:00 am
4:00 am
5:00 am
6:00 am
7:00 am
8:00 am
9:00 am
10:00 am
11:00 am
12:00 pm
1:00 pm
2:00 pm
3:00 pm
4:00 pm
5:00 pm
6:00 pm
7:00 pm
8:00 pm
9:00 pm
10:00 pm
11:00 pm
12:00 am
Ending Time
WB

Exit 116 Westbound On Ramp								
Ending Time	7/20/2004 Tuesday WB	7/21/2004 Wednesday WB	7/22/2004 Thursday WB	7/23/2004 Friday WB	7/24/2004 Saturday WB	Ending Time	WB Average	
							Weekday	Weekend
1:00 am	39	39	38	40	68	1:00 am	39	68
2:00 am	21	20	21	24	42	2:00 am	22	42
3:00 am	10	24	20	14	21	3:00 am	17	21
4:00 am	9	10	10	14	14	4:00 am	11	14
5:00 am	18	12	24	18	16	5:00 am	18	16
6:00 am	40	22	41	50	30	6:00 am	38	30
7:00 am	134	136	129	133	64	7:00 am	133	64
8:00 am	186	190	188	170	108	8:00 am	184	108
9:00 am	246	228	241	236	204	9:00 am	238	204
10:00 am	262	254	252	274	224	10:00 am	261	224
11:00 am	258	276	259	284	278	11:00 am	269	278
12:00 pm	320	272	300	304	258	12:00 pm	299	258
1:00 pm	316	332	312	352	302	1:00 pm	328	302
2:00 pm	341	416	343	416	307	2:00 pm	379	307
3:00 pm	392	400	388	491	314	3:00 pm	418	314
4:00 pm	508	482	503	569	356	4:00 pm	516	356
5:00 pm	686	638	654	678	328	5:00 pm	664	328
6:00 pm	836	792	824	724	369	6:00 pm	794	369
7:00 pm	622	646	669	454	276	7:00 pm	598	276
8:00 pm	316	365	320	318	238	8:00 pm	330	238
9:00 pm	244	272	252	251	244	9:00 pm	255	244
10:00 pm	196	272	222	276	253	10:00 pm	242	253
11:00 pm	149	218	181	196	198	11:00 pm	186	198
12:00 am	68	88	84	124	123	12:00 am	91	123
Total	6217	6404	6275	6410	4635	Totals	6327	4635


Exit 116 Westbound On Ramp
Average Weekend
Vehicles (ph)
400
350
300
250
200
150
100
50
0
1:00 am
2:00 am
3:00 am
4:00 am
5:00 am
6:00 am
7:00 am
8:00 am
9:00 am
10:00 am
11:00 am
12:00 pm
1:00 pm
2:00 pm
3:00 pm
4:00 pm
5:00 pm
6:00 pm
7:00 pm
8:00 pm
9:00 pm
10:00 pm
11:00 pm
12:00 am
Ending Time
WB


Exit 116 Eastbound Off Ramp
Average Weekday
Vehicles (ph)
700
600
500
400
300
200
100
0
1:00 am
2:00 am
3:00 am
4:00 am
5:00 am
6:00 am
7:00 am
8:00 am
9:00 am
10:00 am
11:00 am
12:00 pm
1:00 pm
2:00 pm
3:00 pm
4:00 pm
5:00 pm
6:00 pm
7:00 pm
8:00 pm
9:00 pm
10:00 pm
11:00 pm
12:00 am
Ending Time
EB

Exit 116 Eastbound On Ramp								
Ending Time	7/20/2004 Tuesday EB	7/21/2004 Wednesday EB	7/22/2004 Thursday EB	7/23/2004 Friday EB	7/24/2004 Saturday EB	Ending Time	EB Average	
							Weekday	Weekend
1:00 am	25	30	18	21	22	1:00 am	24	22
2:00 am	10	18	19	19	12	2:00 am	17	12
3:00 am	10	14	16	14	11	3:00 am	14	11
4:00 am	24	14	10	24	14	4:00 am	18	14
5:00 am	16	19	20	16	19	5:00 am	18	19
6:00 am	82	68	68	70	50	6:00 am	72	50
7:00 am	158	162	162	170	94	7:00 am	163	94
8:00 am	194	200	224	193	128	8:00 am	203	128
9:00 am	201	240	254	272	212	9:00 am	242	212
10:00 am	258	273	283	278	295	10:00 am	273	295
11:00 am	234	253	312	332	331	11:00 am	283	331
12:00 pm	300	298	352	318	336	12:00 pm	317	336
1:00 pm	234	296	298	364	298	1:00 pm	298	298
2:00 pm	305	328	340	343	354	2:00 pm	329	354
3:00 pm	318	350	366	385	349	3:00 pm	355	349
4:00 pm	307	336	342	405	360	4:00 pm	348	360
5:00 pm	316	324	366	376	355	5:00 pm	346	355
6:00 pm	309	310	343	340	274	6:00 pm	326	274
7:00 pm	250	266	276	241	233	7:00 pm	258	233
8:00 pm	151	182	194	197	168	8:00 pm	181	168
9:00 pm	134	131	152	156	167	9:00 pm	143	167
10:00 pm	102	145	116	119	136	10:00 pm	121	136
11:00 pm	74	95	82	88	91	11:00 pm	85	91
12:00 am	26	42	46	46	42	12:00 am	40	42
Total	4038	4394	4659	4787	4351	Totals	4470	4351


Exit 116 Eastbound On Ramp
Average Weekend
Vehicles (ph)
400
350
300
250
200
150
100
50
0
1:00 am
2:00 am
3:00 am
4:00 am
5:00 am
6:00 am
7:00 am
8:00 am
9:00 am
10:00 am
11:00 am
12:00 pm
1:00 pm
2:00 pm
3:00 pm
4:00 pm
5:00 pm
6:00 pm
7:00 pm
8:00 pm
9:00 pm
10:00 pm
11:00 pm
12:00 am
Ending Time
EB

Appendix B:
Vehicle Classification Count Data

Location: Midland Avenue (SB) south of I-70
Start Date: 7/20/2004
Start Time: 12:00:00 AM

Date	Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi
7/24/2004	12:00:00 AM	1	13	7	0	0	0	0	1	0	0	0	0	0
7/24/2004	1:00:00 AM	0	21	4	1	0	0	0	0	0	0	0	0	0
7/24/2004	2:00:00 AM	0	14	2	1	0	0	0	0	0	0	0	0	0
7/24/2004	3:00:00 AM	0	7	2	0	0	0	0	0	0	0	0	0	0
7/24/2004	4:00:00 AM	0	12	4	1	0	0	0	0	0	0	0	0	0
7/24/2004	5:00:00 AM	0	23	12	0	6	0	0	0	0	0	0	0	0
7/24/2004	6:00:00 AM	0	36	15	0	3	0	0	0	0	0	0	0	0
7/24/2004	7:00:00 AM	1	62	44	0	11	0	0	1	0	0	0	0	0
7/24/2004	8:00:00 AM	4	129	59	2	12	0	0	2	0	0	0	0	0
7/24/2004	9:00:00 AM	7	131	57	1	14	0	0	5	0	0	0	0	0
7/24/2004	10:00:00 AM	1	153	75	2	21	1	0	2	0	0	0	0	0
7/24/2004	11:00:00 AM	4	199	84	0	18	0	0	6	0	0	1	0	0
7/24/2004	12:00:00 PM	2	223	74	2	22	0	0	2	0	0	0	0	0
7/24/2004	1:00:00 PM	3	184	62	3	23	2	0	6	0	0	0	0	0
7/24/2004	2:00:00 PM	6	189	76	3	16	0	0	3	1	0	0	0	0
7/24/2004	3:00:00 PM	5	163	73	1	13	0	0	4	0	1	0	0	0
7/24/2004	4:00:00 PM	4	130	58	0	11	0	0	1	0	0	0	0	0
7/24/2004	5:00:00 PM	2	161	69	2	13	0	0	3	0	0	0	0	0
7/24/2004	6:00:00 PM	3	154	59	1	7	0	0	0	0	0	0	0	0
7/24/2004	7:00:00 PM	1	90	35	1	9	0	0	1	0	0	0	0	0
7/24/2004	8:00:00 PM	2	65	20	2	5	0	0	0	0	0	0	0	0
7/24/2004	9:00:00 PM	0	90	22	1	4	0	0	1	0	0	0	0	0
7/24/2004	10:00:00 PM	0	49	18	1	5	0	0	1	0	0	0	0	0
7/24/2004	11:00:00 PM	0	37	10	0	1	0	0	1	0	0	0	0	0

Location: Midland Avenue (SB) south of I-70
Start Date: 7/20/2004
Start Time: 12:00:00 AM

Date	Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi
7/20/2004	12:00:00 AM	0	19	2	0	0	0	0	1	0	0	0	0	0
7/20/2004	1:00:00 AM	0	8	1	1	0	0	0	0	0	0	0	0	0
7/20/2004	2:00:00 AM	1	4	3	1	0	1	0	0	0	0	0	0	0
7/20/2004	3:00:00 AM	0	10	1	1	0	0	0	0	0	0	0	0	0
7/20/2004	4:00:00 AM	0	13	3	0	0	0	0	0	0	0	0	0	0
7/20/2004	5:00:00 AM	0	58	49	0	9	0	0	0	1	0	0	0	0
7/20/2004	6:00:00 AM	4	239	172	0	39	1	0	1	1	0	0	0	0
7/20/2004	7:00:00 AM	4	426	170	1	43	0	0	3	0	2	0	0	0
7/20/2004	8:00:00 AM	6	355	152	2	42	3	0	4	1	0	0	0	0
7/20/2004	9:00:00 AM	3	168	89	3	23	0	0	5	2	0	0	0	0
7/20/2004	10:00:00 AM	2	163	79	2	21	1	0	4	1	0	0	0	0
7/20/2004	11:00:00 AM	2	199	80	0	25	2	0	1	0	0	0	0	0
7/20/2004	12:00:00 PM	5	227	87	1	33	1	0	3	1	0	0	0	0
7/20/2004	1:00:00 PM	8	194	87	0	25	4	1	5	2	0	0	0	0
7/20/2004	2:00:00 PM	2	169	85	3	20	0	0	5	1	0	0	0	0
7/20/2004	3:00:00 PM	3	172	77	1	19	3	0	1	0	0	0	0	0
7/20/2004	4:00:00 PM	5	197	77	1	22	3	1	1	0	0	0	0	0
7/20/2004	5:00:00 PM	1	242	89	2	18	0	0	1	0	0	0	0	0
7/20/2004	6:00:00 PM	1	187	71	3	17	0	0	2	0	0	0	0	0
7/20/2004	7:00:00 PM	3	128	45	1	5	0	0	1	0	0	0	0	0
7/20/2004	8:00:00 PM	3	97	22	2	9	0	0	3	0	0	0	0	0
7/20/2004	9:00:00 PM	1	85	21	1	6	0	0	2	0	0	0	0	0
7/20/2004	10:00:00 PM	0	57	12	1	2	0	0	0	0	0	0	0	0
7/20/2004	11:00:00 PM	0	29	7	0	0	0	0	0	0	0	0	0	0
7/21/2004	12:00:00 AM	0	20	5	0	0	0	0	1	1	0	0	0	0
7/21/2004	1:00:00 AM	0	7	0	1	0	0	0	0	0	0	0	0	0
7/21/2004	2:00:00 AM	0	4	3	1	0	0	0	0	0	0	0	0	0
7/21/2004	3:00:00 AM	1	12	2	0	0	0	0	0	0	0	0	0	0
7/21/2004	4:00:00 AM	0	14	4	0	0	0	0	0	0	0	0	0	0
7/21/2004	5:00:00 AM	0	62	46	0	7	1	0	0	0	0	0	0	0
7/21/2004	6:00:00 AM	4	226	156	0	39	1	0	2	0	0	0	0	0
7/21/2004	7:00:00 AM	9	439	182	0	39	4	0	8	2	0	0	0	0
7/21/2004	8:00:00 AM	5	326	136	0	37	1	0	5	0	1	0	0	0
7/21/2004	9:00:00 AM	2	162	92	3	29	1	0	4	0	0	0	0	0
7/21/2004	10:00:00 AM	2	163	82	3	19	1	0	2	0	0	0	0	0
7/21/2004	11:00:00 AM	3	185	103	3	30	2	0	2	0	0	0	0	0
7/21/2004	12:00:00 PM	4	218	74	2	33	2	0	5	0	0	0	0	0
7/21/2004	1:00:00 PM	2	187	73	1	27	2	0	4	2	0	0	0	0
7/21/2004	2:00:00 PM	2	169	75	1	24	1	0	2	1	0	0	0	0
7/21/2004	3:00:00 PM	3	194	93	1	11	2	0	4	0	0	0	0	0
7/21/2004	4:00:00 PM	8	186	75	0	20	1	0	3	0	0	0	0	0
7/21/2004	5:00:00 PM	2	228	90	3	17	1	0	5	0	0	0	0	0
7/21/2004	6:00:00 PM	2	206	62	3	15	1	0	2	0	0	0	0	0
7/21/2004	7:00:00 PM	2	157	55	2	15	0	0	0	0	0	0	0	0
7/21/2004	8:00:00 PM	0	132	36	2	9	0	0	0	0	0	0	0	0
7/21/2004	9:00:00 PM	1	92	29	2	5	0	0	1	1	0	0	0	0
7/21/2004	10:00:00 PM	0	53	13	1	1	0	0	0	0	0	0	0	0
7/21/2004	11:00:00 PM	0	29	11	0	0	0	0	0	0	0	0	0	0

Location: Midland Avenue (NB) south of I-70
Start Date: 7/20/2004
Start Time: 12:00:00 AM

Date	Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi
7/22/2004	12:00:00 AM	0	16	1	0	0	0	0	0	0	0	0	0	0
7/22/2004	1:00:00 AM	1	10	1	0	0	0	0	0	0	0	0	0	0
7/22/2004	2:00:00 AM	0	3	0	0	0	0	0	0	0	0	0	0	0
7/22/2004	3:00:00 AM	0	3	1	0	0	0	0	0	0	0	0	0	0
7/22/2004	4:00:00 AM	1	5	1	1	1	1	0	0	0	0	0	0	0
7/22/2004	5:00:00 AM	0	14	10	3	3	0	0	2	0	0	0	0	0
7/22/2004	6:00:00 AM	0	31	22	3	6	0	0	7	3	0	0	0	0
7/22/2004	7:00:00 AM	2	79	44	2	10	1	0	2	0	0	0	0	0
7/22/2004	8:00:00 AM	0	101	55	1	17	1	0	0	0	0	0	0	0
7/22/2004	9:00:00 AM	4	114	56	1	27	3	0	1	0	0	0	0	0
7/22/2004	10:00:00 AM	2	110	51	1	15	3	0	1	1	0	0	0	0
7/22/2004	11:00:00 AM	0	141	53	3	18	0	0	6	1	0	0	0	0
7/22/2004	12:00:00 PM	3	184	78	2	16	3	0	1	2	0	0	0	0
7/22/2004	1:00:00 PM	0	158	76	0	20	2	0	6	1	0	0	0	0
7/22/2004	2:00:00 PM	2	168	85	5	17	0	0	3	1	0	0	0	0
7/22/2004	3:00:00 PM	1	232	109	2	21	0	0	5	1	0	1	0	0
7/22/2004	4:00:00 PM	2	336	131	3	29	1	0	9	1	2	0	0	0
7/22/2004	5:00:00 PM	0	443	112	4	41	0	0	14	2	1	1	0	0
7/22/2004	6:00:00 PM	0	222	111	3	32	0	0	6	0	0	0	0	0
7/22/2004	7:00:00 PM	1	125	67	0	15	0	0	3	0	0	0	0	0
7/22/2004	8:00:00 PM	3	107	35	0	3	1	0	2	0	0	0	0	0
7/22/2004	9:00:00 PM	0	88	24	0	4	0	0	4	0	0	0	0	0
7/22/2004	10:00:00 PM	0	48	14	1	5	0	0	2	0	0	0	0	0
7/22/2004	11:00:00 PM	0	27	5	1	1	0	0	0	0	0	0	0	0
7/23/2004	12:00:00 AM	0	11	4	0	0	0	0	1	1	0	0	0	0
7/23/2004	1:00:00 AM	0	6	0	0	1	0	0	0	0	0	0	0	0
7/23/2004	2:00:00 AM	0	7	2	0	0	0	0	0	0	0	0	0	0
7/23/2004	3:00:00 AM	0	5	0	0	1	0	0	0	0	0	0	0	0
7/23/2004	4:00:00 AM	0	1	0	2	0	0	0	0	1	0	0	0	0
7/23/2004	5:00:00 AM	0	22	9	3	0	0	0	0	0	0	0	0	0
7/23/2004	6:00:00 AM	0	48	14	5	10	0	0	5	1	0	0	0	0
7/23/2004	7:00:00 AM	3	87	43	0	13	2	0	3	1	0	0	0	0
7/23/2004	8:00:00 AM	1	93	35	1	8	0	0	4	2	0	1	0	0
7/23/2004	9:00:00 AM	2	109	68	2	15	2	0	3	2	0	1	0	0
7/23/2004	10:00:00 AM	2	147	58	1	13	1	0	2	2	0	0	0	0
7/23/2004	11:00:00 AM	2	151	65	0	15	1	0	3	1	0	0	0	0
7/23/2004	12:00:00 PM	0	206	78	3	17	3	0	9	2	0	0	0	0
7/23/2004	1:00:00 PM	3	208	88	1	22	3	0	6	1	0	0	0	0
7/23/2004	2:00:00 PM	2	193	74	1	36	1	0	10	0	1	0	0	0
7/23/2004	3:00:00 PM	0	231	124	1	35	3	0	9	0	0	0	0	0
7/23/2004	4:00:00 PM	3	305	117	3	34	0	0	5	0	0	0	0	0
7/23/2004	5:00:00 PM	1	356	123	4	28	1	0	3	0	0	1	0	0
7/23/2004	6:00:00 PM	2	196	83	0	19	1	0	4	0	0	0	0	0
7/23/2004	7:00:00 PM	0	118	46	0	11	0	0	0	0	0	0	0	0
7/23/2004	8:00:00 PM	0	117	31	2	13	0	0	1	0	0	0	0	0
7/23/2004	9:00:00 PM	1	115	24	1	4	0	0	1	0	0	0	0	0
7/23/2004	10:00:00 PM	0	38	11	2	4	0	0	0	0	0	0	0	0
7/23/2004	11:00:00 PM	0	43	19	1	2	0	0	0	0	0	0	0	0

Location: US 6 (WB) west of Laurel
Start Date: 7/20/2004
Start Time: 12:00:00 AM

Date	Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi
7/24/2004	12:00:00 AM	0	45	7	0	2	0	0	1	0	0	0	0	0
7/24/2004	1:00:00 AM	0	23	4	1	0	0	0	0	0	0	0	0	0
7/24/2004	2:00:00 AM	0	21	5	1	0	0	0	0	0	0	0	0	0
7/24/2004	3:00:00 AM	0	9	1	1	1	0	0	0	0	0	0	0	0
7/24/2004	4:00:00 AM	0	4	2	2	1	0	0	0	0	0	0	0	0
7/24/2004	5:00:00 AM	0	12	8	1	1	1	0	0	0	0	0	0	0
7/24/2004	6:00:00 AM	1	32	11	3	3	0	0	2	0	0	0	0	0
7/24/2004	7:00:00 AM	0	67	27	3	11	0	0	0	0	0	0	0	0
7/24/2004	8:00:00 AM	0	142	64	2	22	1	0	1	0	0	0	0	0
7/24/2004	9:00:00 AM	1	172	64	0	22	1	0	2	0	0	0	0	0
7/24/2004	10:00:00 AM	2	258	124	2	29	0	0	2	1	0	1	0	0
7/24/2004	11:00:00 AM	4	273	146	3	35	0	0	4	0	0	0	0	0
7/24/2004	12:00:00 PM	2	374	153	3	39	0	0	5	0	0	0	0	0
7/24/2004	1:00:00 PM	3	333	143	2	29	1	0	3	0	0	0	0	0
7/24/2004	2:00:00 PM	2	361	128	4	24	0	0	4	2	0	0	0	0
7/24/2004	3:00:00 PM	5	340	143	2	24	0	0	6	1	0	0	0	0
7/24/2004	4:00:00 PM	4	298	123	1	33	0	0	1	0	0	0	0	0
7/24/2004	5:00:00 PM	0	271	118	5	22	0	0	6	0	0	0	0	0
7/24/2004	6:00:00 PM	4	280	102	2	36	0	0	2	1	0	0	0	0
7/24/2004	7:00:00 PM	4	245	98	5	20	0	0	2	0	0	0	0	0
7/24/2004	8:00:00 PM	2	224	121	1	22	0	0	1	0	0	0	0	0
7/24/2004	9:00:00 PM	0	228	84	1	20	0	0	0	0	0	0	0	0
7/24/2004	10:00:00 PM	0	165	65	1	18	0	0	0	1	0	0	0	0
7/24/2004	11:00:00 PM	0	90	27	0	5	0	0	1	0	0	0	0	0

Location: US 6 (WB) west of Laurel
Start Date: 7/20/2004
Start Time: 12:00:00 AM

Date	Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi
7/20/2004	12:00:00 AM	0	24	3	0	0	0	0	1	0	0	0	0	0
7/20/2004	1:00:00 AM	0	7	1	1	0	0	0	0	2	0	0	0	0
7/20/2004	2:00:00 AM	0	5	1	1	1	0	0	0	0	0	0	0	0
7/20/2004	3:00:00 AM	0	2	0	1	1	0	0	0	1	0	0	1	0
7/20/2004	4:00:00 AM	0	1	2	1	0	0	0	0	0	0	0	0	0
7/20/2004	5:00:00 AM	0	17	11	0	2	0	0	0	0	0	0	0	0
7/20/2004	6:00:00 AM	0	32	23	3	13	0	0	0	1	0	0	0	0
7/20/2004	7:00:00 AM	0	97	51	2	8	4	0	1	1	0	0	0	0
7/20/2004	8:00:00 AM	1	159	62	6	23	1	0	3	2	0	0	0	0
7/20/2004	9:00:00 AM	4	168	73	3	23	1	0	3	2	0	0	0	0
7/20/2004	10:00:00 AM	1	228	95	3	34	2	0	2	3	0	0	0	0
7/20/2004	11:00:00 AM	2	252	127	8	43	2	0	9	2	0	0	0	0
7/20/2004	12:00:00 PM	0	263	120	5	28	2	0	3	0	0	0	0	0
7/20/2004	1:00:00 PM	13	295	112	13	60	1	0	3	2	0	0	0	0
7/20/2004	2:00:00 PM	10	317	2	102	54	1	0	0	0	0	0	0	0
7/20/2004	3:00:00 PM	0	478	0	0	0	0	0	0	0	0	0	0	0
7/20/2004	4:00:00 PM	1	562	0	0	0	0	0	0	0	0	0	0	0
7/20/2004	5:00:00 PM	0	546	0	0	0	0	0	0	0	0	0	0	0
7/20/2004	6:00:00 PM	2	340	119	2	32	0	0	2	0	0	0	0	0
7/20/2004	7:00:00 PM	0	261	100	3	23	0	0	8	0	0	0	0	0
7/20/2004	8:00:00 PM	1	194	76	2	17	0	0	0	0	0	0	0	0
7/20/2004	9:00:00 PM	1	167	49	1	12	0	0	0	0	0	0	0	0
7/20/2004	10:00:00 PM	0	107	42	1	10	0	0	0	0	0	0	0	0
7/20/2004	11:00:00 PM	0	59	27	1	5	0	0	1	0	0	0	0	0
7/21/2004	12:00:00 AM	0	20	5	0	1	0	0	1	0	0	0	0	0
7/21/2004	1:00:00 AM	0	7	5	1	0	0	0	0	0	0	0	0	0
7/21/2004	2:00:00 AM	0	4	0	0	1	0	0	0	0	0	0	0	0
7/21/2004	3:00:00 AM	0	5	1	1	0	0	0	0	0	0	0	0	0
7/21/2004	4:00:00 AM	0	2	3	1	0	0	0	1	0	0	0	1	0
7/21/2004	5:00:00 AM	0	14	9	1	2	0	0	0	0	0	0	0	0
7/21/2004	6:00:00 AM	3	32	22	2	10	1	0	1	0	0	0	0	0
7/21/2004	7:00:00 AM	0	103	52	2	17	2	0	1	0	0	0	0	0
7/21/2004	8:00:00 AM	2	143	62	4	24	3	0	0	2	0	0	0	0
7/21/2004	9:00:00 AM	0	155	72	2	27	2	0	2	0	0	0	0	0
7/21/2004	10:00:00 AM	0	176	109	5	19	3	0	3	2	1	0	0	0
7/21/2004	11:00:00 AM	3	251	116	2	29	3	0	6	0	0	0	0	0
7/21/2004	12:00:00 PM	0	282	107	4	35	3	0	7	1	0	0	0	0
7/21/2004	1:00:00 PM	1	259	121	6	31	1	0	10	6	0	0	0	0
7/21/2004	2:00:00 PM	1	265	112	4	29	1	0	2	2	0	0	0	0
7/21/2004	3:00:00 PM	0	314	132	3	35	1	0	9	2	0	0	0	0
7/21/2004	4:00:00 PM	1	343	159	2	44	0	0	5	0	0	0	0	0
7/21/2004	5:00:00 PM	1	395	168	6	45	2	0	6	3	0	2	0	0
7/21/2004	6:00:00 PM	0	428	157	5	40	1	0	1	0	0	0	0	0
7/21/2004	7:00:00 PM	1	385	128	4	30	1	0	1	0	0	0	0	0
7/21/2004	8:00:00 PM	1	283	85	4	25	0	0	3	0	1	0	0	0
7/21/2004	9:00:00 PM	0	204	62	2	17	0	0	1	0	0	0	0	0
7/21/2004	10:00:00 PM	0	144	38	2	10	0	0	1	0	0	0	0	0
7/21/2004	11:00:00 PM	0	54	15	0	4	0	0	1	0	0	0	0	0

Location: US 6 (EB) west of Laurel
Start Date: 7/20/2004
Start Time: 12:00:00 AM

Date	Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi
7/22/2004	12:00:00 AM	1	28	3	0	1	0	0	1	0	0	0	0	0
7/22/2004	1:00:00 AM	0	24	4	0	1	0	0	0	1	0	0	0	0
7/22/2004	2:00:00 AM	1	6	5	0	0	0	0	0	0	0	1	0	0
7/22/2004	3:00:00 AM	0	6	0	3	1	0	0	1	1	0	0	0	0
7/22/2004	4:00:00 AM	0	4	3	0	2	0	0	2	0	0	0	0	0
7/22/2004	5:00:00 AM	0	52	26	1	8	0	0	1	2	0	0	0	0
7/22/2004	6:00:00 AM	1	139	82	6	25	1	0	9	4	0	0	0	0
7/22/2004	7:00:00 AM	2	188	91	6	31	3	0	5	1	0	0	0	0
7/22/2004	8:00:00 AM	6	194	102	5	31	4	0	3	4	0	0	0	0
7/22/2004	9:00:00 AM	3	165	84	2	17	3	0	8	1	1	0	0	0
7/22/2004	10:00:00 AM	3	183	92	5	26	2	0	5	0	0	0	0	0
7/22/2004	11:00:00 AM	1	220	112	3	15	1	0	3	2	0	0	0	0
7/22/2004	12:00:00 PM	4	253	94	3	27	2	0	6	1	0	0	0	0
7/22/2004	1:00:00 PM	3	277	100	4	27	1	0	3	0	0	0	0	0
7/22/2004	2:00:00 PM	1	247	96	3	29	2	0	5	1	0	0	0	0
7/22/2004	3:00:00 PM	2	255	87	2	19	0	0	4	2	0	0	0	0
7/22/2004	4:00:00 PM	2	217	72	2	19	0	0	2	0	0	0	0	0
7/22/2004	5:00:00 PM	5	245	89	1	22	1	0	7	0	0	0	0	0
7/22/2004	6:00:00 PM	3	234	86	2	20	0	0	1	1	0	0	0	0
7/22/2004	7:00:00 PM	6	228	87	2	15	0	0	2	0	0	1	0	0
7/22/2004	8:00:00 PM	2	247	88	0	18	1	0	1	1	0	0	0	0
7/22/2004	9:00:00 PM	0	204	68	1	22	0	0	3	0	0	0	0	0
7/22/2004	10:00:00 PM	0	105	31	3	6	0	0	0	1	0	0	1	0
7/22/2004	11:00:00 PM	0	69	11	3	0	0	0	0	0	0	0	0	0
7/23/2004	12:00:00 AM	0	28	5	0	0	0	0	2	0	0	0	0	0
7/23/2004	1:00:00 AM	0	10	3	1	1	0	0	0	0	0	0	0	0
7/23/2004	2:00:00 AM	0	10	3	0	0	0	0	0	1	0	0	0	0
7/23/2004	3:00:00 AM	0	8	4	3	0	2	0	0	0	0	0	0	0
7/23/2004	4:00:00 AM	0	2	3	0	0	1	0	4	2	0	0	0	0
7/23/2004	5:00:00 AM	1	50	29	3	7	0	0	0	2	0	0	0	0
7/23/2004	6:00:00 AM	1	141	62	7	30	2	0	10	4	0	0	0	0
7/23/2004	7:00:00 AM	1	157	78	5	21	0	0	5	2	0	0	0	0
7/23/2004	8:00:00 AM	4	190	107	2	27	2	0	4	4	0	0	0	0
7/23/2004	9:00:00 AM	6	207	99	1	27	2	0	0	1	0	0	0	0
7/23/2004	10:00:00 AM	1	205	88	4	30	1	0	3	1	0	0	0	0
7/23/2004	11:00:00 AM	2	222	129	3	28	1	0	5	0	0	0	0	0
7/23/2004	12:00:00 PM	5	280	101	2	25	3	0	3	0	0	0	0	0
7/23/2004	1:00:00 PM	2	241	88	3	28	3	0	7	0	1	0	0	0
7/23/2004	2:00:00 PM	3	265	110	3	28	2	0	3	0	0	0	0	0
7/23/2004	3:00:00 PM	0	239	91	3	24	0	0	4	1	0	0	0	0
7/23/2004	4:00:00 PM	3	256	74	4	23	0	0	4	0	0	0	0	0
7/23/2004	5:00:00 PM	0	246	74	2	16	0	0	1	0	0	0	0	0
7/23/2004	6:00:00 PM	3	251	74	3	16	0	0	2	0	0	0	0	0
7/23/2004	7:00:00 PM	1	238	74	2	17	0	0	0	0	0	0	0	0
7/23/2004	8:00:00 PM	3	235	84	1	20	0	0	2	0	0	0	0	0
7/23/2004	9:00:00 PM	4	206	54	1	11	0	0	2	0	0	0	0	0
7/23/2004	10:00:00 PM	0	115	43	2	6	0	0	1	0	0	0	0	0
7/23/2004	11:00:00 PM	0	62	24	2	3	0	0	0	1	0	0	0	0

Location: SH 82 (SB) south of 27th Street
Start Date: 7/20/2004
Start Time: 12:00:00 AM

Date	Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>5 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi
7/24/2004	12:00:00 AM	1	56	11	1	3	0	0	0	0	0	0	0	0
7/24/2004	1:00:00 AM	0	48	15	0	0	0	0	0	0	0	0	0	0
7/24/2004	2:00:00 AM	0	54	14	2	0	0	0	1	0	0	0	0	0
7/24/2004	3:00:00 AM	0	17	5	1	2	0	0	0	2	0	0	0	0
7/24/2004	4:00:00 AM	0	22	5	1	3	0	0	0	0	0	1	1	0
7/24/2004	5:00:00 AM	0	76	25	3	12	0	0	2	0	0	0	0	0
7/24/2004	6:00:00 AM	3	169	78	1	26	5	0	6	2	0	0	0	0
7/24/2004	7:00:00 AM	7	249	98	2	31	2	0	11	5	1	1	0	0
7/24/2004	8:00:00 AM	8	325	122	1	43	4	0	12	4	1	1	0	0
7/24/2004	9:00:00 AM	16	517	164	1	38	11	0	16	2	2	1	0	0
7/24/2004	10:00:00 AM	14	578	198	6	45	9	2	18	0	0	1	0	1
7/24/2004	11:00:00 AM	17	651	195	5	50	9	2	18	4	1	2	0	0
7/24/2004	12:00:00 PM	19	669	183	7	38	8	1	16	0	1	0	0	1
7/24/2004	1:00:00 PM	11	620	179	8	47	17	1	29	4	0	2	1	0
7/24/2004	2:00:00 PM	24	651	185	4	46	19	0	17	1	1	1	0	0
7/24/2004	3:00:00 PM	22	661	176	3	34	11	1	22	3	3	2	0	0
7/24/2004	4:00:00 PM	21	630	167	3	25	14	0	23	2	1	2	0	0
7/24/2004	5:00:00 PM	6	577	179	5	29	3	0	20	2	1	2	0	0
7/24/2004	6:00:00 PM	5	478	134	0	24	3	0	11	2	1	1	1	0
7/24/2004	7:00:00 PM	7	374	111	0	28	3	0	11	0	1	1	0	0
7/24/2004	8:00:00 PM	7	348	100	2	21	3	0	6	1	0	0	0	0
7/24/2004	9:00:00 PM	3	287	84	1	20	3	0	6	0	1	0	0	0
7/24/2004	10:00:00 PM	2	189	56	1	7	0	0	11	2	1	0	0	0
7/24/2004	11:00:00 PM	2	133	33	1	5	0	0	2	1	0	0	0	0

Location: SH 82 (SB) south of 27th Street
Start Date: 7/20/2004
Start Time: 12:00:00 AM

Date	Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi
7/20/2004	12:00:00 AM	2	31	10	0	0	0	0	0	1	0	0	0	0
7/20/2004	1:00:00 AM	0	20	5	0	0	0	0	0	0	0	0	0	0
7/20/2004	2:00:00 AM	0	20	7	0	1	0	0	1	2	0	0	1	0
7/20/2004	3:00:00 AM	0	26	9	1	0	1	0	0	2	0	0	0	0
7/20/2004	4:00:00 AM	0	50	18	4	3	0	0	2	3	0	1	0	0
7/20/2004	5:00:00 AM	10	233	84	3	34	3	1	19	3	1	1	0	1
7/20/2004	6:00:00 AM	28	682	260	4	70	16	1	43	8	8	1	3	3
7/20/2004	7:00:00 AM	16	702	225	6	76	14	1	34	8	3	2	3	7
7/20/2004	8:00:00 AM	22	562	191	3	70	15	2	30	9	3	0	1	1
7/20/2004	9:00:00 AM	18	474	169	8	66	17	2	13	10	3	2	1	1
7/20/2004	10:00:00 AM	11	495	153	9	63	16	0	16	4	0	1	0	1
7/20/2004	11:00:00 AM	15	523	158	6	46	19	4	23	6	3	0	1	2
7/20/2004	12:00:00 PM	23	587	176	4	55	23	1	18	8	1	0	0	1
7/20/2004	1:00:00 PM	12	536	173	8	49	21	0	17	5	1	1	1	1
7/20/2004	2:00:00 PM	11	522	141	6	36	18	2	16	6	3	0	0	0
7/20/2004	3:00:00 PM	11	560	153	7	54	23	2	16	7	2	0	0	0
7/20/2004	4:00:00 PM	13	626	160	3	52	21	2	28	4	4	2	0	0
7/20/2004	5:00:00 PM	15	626	175	4	48	15	0	24	4	1	1	0	0
7/20/2004	6:00:00 PM	5	521	128	1	36	7	0	23	1	1	1	3	0
7/20/2004	7:00:00 PM	6	358	107	3	14	6	0	9	2	1	1	2	0
7/20/2004	8:00:00 PM	5	331	72	3	14	5	0	11	1	1	0	0	0
7/20/2004	9:00:00 PM	1	263	72	1	11	0	1	2	3	0	0	0	0
7/20/2004	10:00:00 PM	0	153	39	0	9	0	0	4	4	1	0	0	0
7/20/2004	11:00:00 PM	1	109	25	1	7	0	0	1	0	0	0	0	0
7/21/2004	12:00:00 AM	2	30	6	0	1	0	0	1	1	0	0	0	0
7/21/2004	1:00:00 AM	0	26	1	0	0	0	0	1	0	0	0	0	0
7/21/2004	2:00:00 AM	0	17	11	1	1	1	0	2	1	0	0	1	0
7/21/2004	3:00:00 AM	0	20	9	4	0	0	0	0	1	0	0	0	0
7/21/2004	4:00:00 AM	0	46	13	1	5	1	0	1	1	0	2	0	0
7/21/2004	5:00:00 AM	2	225	94	1	37	5	1	9	4	3	0	1	3
7/21/2004	6:00:00 AM	15	696	263	9	66	25	2	48	12	4	2	1	3
7/21/2004	7:00:00 AM	13	674	253	5	66	25	2	44	8	10	1	2	3
7/21/2004	8:00:00 AM	14	589	198	4	66	34	1	32	7	2	2	3	2
7/21/2004	9:00:00 AM	18	471	146	6	60	17	0	31	11	3	0	0	4
7/21/2004	10:00:00 AM	14	457	176	9	69	17	2	21	9	3	1	0	2
7/21/2004	11:00:00 AM	10	538	129	9	43	16	2	11	10	1	0	0	4
7/21/2004	12:00:00 PM	0	842	0	0	0	0	0	0	0	0	0	0	0
7/21/2004	1:00:00 PM	0	727	0	0	0	0	0	0	0	0	0	0	0
7/21/2004	2:00:00 PM	0	700	0	0	0	0	0	0	0	0	0	0	0
7/21/2004	3:00:00 PM	1	743	0	0	0	0	0	0	0	0	0	0	0
7/21/2004	4:00:00 PM	4	728	35	2	12	4	0	3	1	0	1	0	0
7/21/2004	5:00:00 PM	12	627	171	5	53	16	2	27	4	3	0	1	1
7/21/2004	6:00:00 PM	9	530	159	2	42	9	0	10	1	1	1	0	0
7/21/2004	7:00:00 PM	5	384	117	1	31	3	0	9	1	0	0	0	0
7/21/2004	8:00:00 PM	5	304	91	3	22	5	0	9	0	1	0	0	0
7/21/2004	9:00:00 PM	7	324	83	0	20	5	0	8	0	1	1	0	0
7/21/2004	10:00:00 PM	6	237	61	2	11	2	1	3	2	0	0	0	0
7/21/2004	11:00:00 PM	1	111	25	1	1	0	0	0	0	0	0	0	0

Location: SH 82 (NB) south of 27th Street
Start Date: 7/20/2004
Start Time: 12:00:00 AM

Date	Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi
7/22/2004	12:00:00 AM	0	38	5	0	0	0	0	1	0	0	0	0	0
7/22/2004	1:00:00 AM	0	16	3	1	0	0	0	1	2	0	0	0	0
7/22/2004	2:00:00 AM	0	23	2	1	1	0	0	0	3	0	0	1	0
7/22/2004	3:00:00 AM	0	14	3	0	1	0	0	1	1	0	0	0	0
7/22/2004	4:00:00 AM	0	16	4	0	4	2	0	0	1	0	0	1	0
7/22/2004	5:00:00 AM	0	74	21	2	6	4	0	2	7	0	0	0	0
7/22/2004	6:00:00 AM	1	200	67	3	23	15	0	8	5	0	0	0	0
7/22/2004	7:00:00 AM	5	447	122	4	37	13	2	12	2	3	1	0	0
7/22/2004	8:00:00 AM	9	537	130	4	51	10	2	12	13	4	3	0	0
7/22/2004	9:00:00 AM	3	561	136	6	49	18	1	14	7	4	2	0	0
7/22/2004	10:00:00 AM	11	608	123	3	46	21	0	15	10	0	0	1	1
7/22/2004	11:00:00 AM	9	712	143	6	47	26	0	12	10	2	1	0	1
7/22/2004	12:00:00 PM	7	811	156	10	52	26	1	18	11	3	1	0	0
7/22/2004	1:00:00 PM	11	754	143	13	46	17	1	22	16	3	2	2	0
7/22/2004	2:00:00 PM	10	832	182	6	68	25	0	16	8	1	1	2	1
7/22/2004	3:00:00 PM	7	890	199	10	66	18	0	34	11	4	2	1	1
7/22/2004	4:00:00 PM	20	1092	232	6	57	22	1	39	11	3	3	0	1
7/22/2004	5:00:00 PM	24	1255	197	9	87	26	0	51	8	4	4	2	1
7/22/2004	6:00:00 PM	10	927	184	5	48	8	1	28	6	2	0	0	5
7/22/2004	7:00:00 PM	13	598	135	0	37	12	0	8	2	0	1	0	0
7/22/2004	8:00:00 PM	9	480	71	1	35	4	0	7	5	2	1	0	0
7/22/2004	9:00:00 PM	3	365	59	2	14	3	0	8	5	0	0	0	0
7/22/2004	10:00:00 PM	2	230	34	2	10	0	0	2	3	1	0	0	0
7/22/2004	11:00:00 PM	0	103	17	1	1	0	0	1	4	0	0	0	0
7/23/2004	12:00:00 AM	1	49	9	0	2	1	0	1	0	0	0	0	0
7/23/2004	1:00:00 AM	2	21	4	1	1	0	0	1	2	0	0	0	0
7/23/2004	2:00:00 AM	0	24	2	1	3	0	0	0	0	0	0	0	0
7/23/2004	3:00:00 AM	0	8	5	0	4	1	0	3	1	0	0	0	0
7/23/2004	4:00:00 AM	0	19	8	1	4	1	0	1	0	0	0	0	0
7/23/2004	5:00:00 AM	0	67	14	1	11	4	0	5	1	0	0	0	0
7/23/2004	6:00:00 AM	0	216	64	2	23	14	1	7	5	0	0	0	0
7/23/2004	7:00:00 AM	5	395	81	1	31	11	0	11	4	0	0	1	0
7/23/2004	8:00:00 AM	5	501	160	7	35	11	1	15	9	1	1	0	1
7/23/2004	9:00:00 AM	8	559	139	3	52	11	2	16	8	2	0	0	1
7/23/2004	10:00:00 AM	11	662	153	8	46	13	0	16	14	1	0	0	2
7/23/2004	11:00:00 AM	13	777	148	3	57	16	0	13	9	1	3	2	2
7/23/2004	12:00:00 PM	7	881	159	6	44	28	0	21	10	5	1	0	0
7/23/2004	1:00:00 PM	13	868	176	7	55	15	0	28	12	4	5	0	2
7/23/2004	2:00:00 PM	11	969	174	10	66	16	1	20	6	4	2	1	1
7/23/2004	3:00:00 PM	23	949	207	4	69	21	1	26	11	4	2	0	3
7/23/2004	4:00:00 PM	19	1064	210	6	73	21	0	34	4	8	3	1	5
7/23/2004	5:00:00 PM	14	1088	204	4	45	22	1	34	9	3	5	2	3
7/23/2004	6:00:00 PM	12	831	160	5	41	13	1	11	3	3	0	1	0
7/23/2004	7:00:00 PM	5	587	105	2	26	6	0	4	2	0	0	0	0
7/23/2004	8:00:00 PM	3	541	82	1	27	4	1	2	2	0	0	0	0
7/23/2004	9:00:00 PM	3	519	75	3	13	3	0	4	2	1	1	1	0
7/23/2004	10:00:00 PM	3	331	66	1	8	2	0	2	2	0	0	0	0
7/23/2004	11:00:00 PM	0	148	22	1	4	1	0	2	1	0	0	0	0

Location: SH 82 (SB) south of 11th Street
Start Date: 7/20/2004
Start Time: 12:00:00 AM

Date	Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi
7/24/2004	12:00:00 AM	2	73	18	1	3	0	0	0	1	0	1	0	0
7/24/2004	1:00:00 AM	1	69	7	0	1	1	1	0	2	0	0	0	0
7/24/2004	2:00:00 AM	0	65	14	2	0	1	0	1	0	0	0	0	0
7/24/2004	3:00:00 AM	0	19	5	1	3	0	0	0	3	0	0	0	0
7/24/2004	4:00:00 AM	0	22	7	1	5	0	0	1	0	0	0	1	0
7/24/2004	5:00:00 AM	0	72	25	2	9	2	0	1	0	0	0	0	0
7/24/2004	6:00:00 AM	0	175	71	1	21	5	0	4	5	0	0	0	0
7/24/2004	7:00:00 AM	4	245	76	5	25	1	1	11	6	1	0	0	0
7/24/2004	8:00:00 AM	24	274	113	36	90	9	1	12	0	0	2	0	0
7/24/2004	9:00:00 AM	11	534	153	2	28	13	3	22	2	2	2	1	0
7/24/2004	10:00:00 AM	18	617	166	7	37	14	2	21	0	5	1	1	1
7/24/2004	11:00:00 AM	14	630	157	3	37	15	1	24	2	4	2	1	0
7/24/2004	12:00:00 PM	24	664	188	6	31	12	1	26	1	4	0	2	1
7/24/2004	1:00:00 PM	19	615	172	8	28	10	1	17	7	1	2	2	1
7/24/2004	2:00:00 PM	17	661	179	3	24	16	1	26	0	2	2	1	1
7/24/2004	3:00:00 PM	13	663	162	6	24	15	1	18	2	3	0	2	1
7/24/2004	4:00:00 PM	16	621	164	4	36	19	1	24	3	5	2	0	1
7/24/2004	5:00:00 PM	12	604	166	5	32	14	2	19	5	1	0	2	1
7/24/2004	6:00:00 PM	12	551	139	5	20	4	0	13	1	1	0	0	1
7/24/2004	7:00:00 PM	7	418	119	1	20	11	0	9	2	0	0	0	3
7/24/2004	8:00:00 PM	15	444	105	0	17	9	0	7	0	0	1	0	0
7/24/2004	9:00:00 PM	8	349	116	0	19	5	3	10	2	0	0	0	0
7/24/2004	10:00:00 PM	3	265	71	1	5	2	1	8	5	0	0	0	0
7/24/2004	11:00:00 PM	2	196	45	2	4	1	0	4	0	0	0	0	0

Location: SH 82 (SB) south of 11th Street
Start Date: 7/20/2004
Start Time: 12:00:00 AM

Date	Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi
7/20/2004	12:00:00 AM	7	42	15	0	1	0	0	2	1	0	0	0	0
7/20/2004	1:00:00 AM	2	30	6	0	1	0	0	0	1	0	0	0	0
7/20/2004	2:00:00 AM	1	25	5	1	2	1	0	1	0	0	0	1	0
7/20/2004	3:00:00 AM	4	24	9	0	2	1	0	0	2	0	1	0	0
7/20/2004	4:00:00 AM	10	60	18	2	7	1	1	1	3	0	1	0	0
7/20/2004	5:00:00 AM	21	250	85	3	38	11	1	5	4	2	0	1	1
7/20/2004	6:00:00 AM	50	617	144	4	55	12	8	36	11	6	2	2	1
7/20/2004	7:00:00 AM	35	669	167	11	55	28	2	32	10	2	3	1	2
7/20/2004	8:00:00 AM	39	620	155	8	62	21	4	21	7	7	1	0	3
7/20/2004	9:00:00 AM	20	534	154	10	53	10	0	23	6	3	0	0	3
7/20/2004	10:00:00 AM	36	497	166	9	47	11	2	18	9	2	0	0	3
7/20/2004	11:00:00 AM	28	541	165	5	47	20	2	22	13	2	1	0	2
7/20/2004	12:00:00 PM	39	616	171	7	64	24	2	16	8	3	3	0	1
7/20/2004	1:00:00 PM	27	594	198	9	58	16	3	28	5	2	1	0	3
7/20/2004	2:00:00 PM	29	569	166	7	49	14	1	18	7	3	1	1	4
7/20/2004	3:00:00 PM	27	587	180	8	48	24	4	12	8	4	0	0	3
7/20/2004	4:00:00 PM	38	642	147	5	57	16	3	26	8	2	1	1	2
7/20/2004	5:00:00 PM	35	623	148	5	33	10	2	26	6	4	1	1	3
7/20/2004	6:00:00 PM	26	558	151	2	38	9	1	11	2	1	2	2	1
7/20/2004	7:00:00 PM	23	432	118	3	18	11	0	11	4	0	1	0	0
7/20/2004	8:00:00 PM	9	409	109	2	18	12	0	9	2	1	1	1	0
7/20/2004	9:00:00 PM	7	355	72	1	7	8	1	5	2	0	1	0	1
7/20/2004	10:00:00 PM	3	208	42	1	11	4	1	5	3	1	0	0	0
7/20/2004	11:00:00 PM	4	134	22	1	6	0	0	2	2	1	0	0	0
7/21/2004	12:00:00 AM	1	46	5	0	1	0	0	1	2	1	0	0	0
7/21/2004	1:00:00 AM	1	35	3	0	2	0	0	0	0	0	0	0	0
7/21/2004	2:00:00 AM	0	21	9	1	1	1	0	3	1	0	0	1	0
7/21/2004	3:00:00 AM	0	23	7	3	2	0	0	0	2	0	0	0	0
7/21/2004	4:00:00 AM	0	51	15	1	5	1	0	2	3	1	0	0	0
7/21/2004	5:00:00 AM	5	222	92	4	33	9	3	9	8	0	0	0	0
7/21/2004	6:00:00 AM	14	610	201	4	62	20	5	30	14	4	0	2	3
7/21/2004	7:00:00 AM	25	622	170	5	45	18	4	26	8	11	0	2	1
7/21/2004	8:00:00 AM	27	608	161	6	58	22	0	38	5	3	1	2	3
7/21/2004	9:00:00 AM	23	515	162	5	42	13	1	24	9	3	0	3	2
7/21/2004	10:00:00 AM	26	551	169	9	49	16	1	21	10	3	3	0	4
7/21/2004	11:00:00 AM	35	559	180	12	49	23	1	16	7	5	0	0	2
7/21/2004	12:00:00 PM	49	617	170	12	65	23	0	26	15	5	1	2	3
7/21/2004	1:00:00 PM	19	569	160	11	62	14	1	21	12	3	0	0	2
7/21/2004	2:00:00 PM	17	540	182	8	54	9	1	18	6	3	2	0	1
7/21/2004	3:00:00 PM	32	632	192	10	55	28	2	18	6	3	2	3	2
7/21/2004	4:00:00 PM	37	615	192	6	39	16	1	23	7	2	0	2	3
7/21/2004	5:00:00 PM	26	641	172	4	64	23	2	28	13	6	1	0	3
7/21/2004	6:00:00 PM	13	616	103	2	35	8	1	15	1	2	1	0	1
7/21/2004	7:00:00 PM	13	494	90	2	28	9	2	13	1	0	1	0	1
7/21/2004	8:00:00 PM	7	462	73	2	20	8	0	12	1	0	1	0	1
7/21/2004	9:00:00 PM	8	462	67	1	15	11	0	8	3	1	0	0	0
7/21/2004	10:00:00 PM	4	340	46	0	12	5	0	3	4	0	0	0	1
7/21/2004	11:00:00 PM	1	146	29	1	3	1	0	1	0	0	0	0	0

Location: SH 82 (NB) south of 11th Street
Start Date: 7/20/2004
Start Time: 12:00:00 AM

Date	Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi
7/22/2004	12:00:00 AM	1	52	5	0	0	0	0	2	0	1	0	0	0
7/22/2004	1:00:00 AM	1	25	6	2	1	1	0	0	1	0	1	0	0
7/22/2004	2:00:00 AM	0	23	1	1	0	0	0	0	2	0	0	1	0
7/22/2004	3:00:00 AM	0	12	5	1	1	0	0	1	1	0	0	0	0
7/22/2004	4:00:00 AM	0	18	7	1	7	1	0	1	0	0	0	1	0
7/22/2004	5:00:00 AM	2	70	20	4	13	2	0	6	3	0	0	0	0
7/22/2004	6:00:00 AM	6	203	70	2	21	10	1	11	4	0	0	0	1
7/22/2004	7:00:00 AM	13	392	98	4	50	11	2	13	4	4	0	1	0
7/22/2004	8:00:00 AM	8	510	132	8	50	8	5	18	8	4	2	1	1
7/22/2004	9:00:00 AM	14	562	122	8	46	19	2	15	7	1	1	0	1
7/22/2004	10:00:00 AM	12	570	132	3	39	8	2	23	12	5	1	1	0
7/22/2004	11:00:00 AM	21	675	117	5	45	22	2	18	5	2	2	1	1
7/22/2004	12:00:00 PM	27	673	125	10	36	28	0	31	6	2	2	0	1
7/22/2004	1:00:00 PM	15	696	158	5	33	31	2	30	13	2	2	3	5
7/22/2004	2:00:00 PM	15	676	153	7	64	27	1	24	4	2	2	3	2
7/22/2004	3:00:00 PM	20	698	138	7	52	26	2	21	6	4	3	1	1
7/22/2004	4:00:00 PM	16	706	134	5	50	24	3	25	4	1	3	0	2
7/22/2004	5:00:00 PM	26	462	50	8	18	9	0	14	1	1	0	1	1
7/22/2004	6:00:00 PM	27	615	102	6	41	12	1	21	2	3	4	0	2
7/22/2004	7:00:00 PM	17	544	127	5	34	15	0	6	1	1	3	0	2
7/22/2004	8:00:00 PM	13	479	100	3	26	11	1	15	3	0	0	1	0
7/22/2004	9:00:00 PM	5	396	59	2	18	8	1	8	5	1	1	2	2
7/22/2004	10:00:00 PM	0	263	42	3	11	3	0	3	1	1	0	1	1
7/22/2004	11:00:00 PM	1	126	20	1	3	1	0	1	6	0	0	0	0
7/23/2004	12:00:00 AM	0	68	8	0	0	0	0	1	2	0	0	0	0
7/23/2004	1:00:00 AM	1	26	5	1	1	0	0	1	4	0	0	0	0
7/23/2004	2:00:00 AM	0	27	3	1	2	0	0	0	1	0	0	0	0
7/23/2004	3:00:00 AM	0	13	6	1	4	0	0	4	1	0	0	0	0
7/23/2004	4:00:00 AM	0	17	7	2	4	1	0	1	1	0	0	0	0
7/23/2004	5:00:00 AM	0	77	20	1	15	3	1	6	2	0	2	0	0
7/23/2004	6:00:00 AM	5	218	70	3	24	12	0	11	3	0	0	0	1
7/23/2004	7:00:00 AM	5	349	88	3	32	13	0	22	1	0	2	0	0
7/23/2004	8:00:00 AM	12	495	125	9	40	18	2	21	10	0	1	0	3
7/23/2004	9:00:00 AM	4	503	135	6	36	19	2	18	13	5	1	0	3
7/23/2004	10:00:00 AM	17	565	133	4	50	21	4	21	7	3	0	0	4
7/23/2004	11:00:00 AM	23	684	110	4	48	28	1	23	5	5	1	1	5
7/23/2004	12:00:00 PM	19	732	150	5	43	27	6	32	6	3	4	2	4
7/23/2004	1:00:00 PM	33	729	175	6	46	24	1	32	7	2	1	1	2
7/23/2004	2:00:00 PM	25	727	151	12	38	22	4	18	9	4	2	3	1
7/23/2004	3:00:00 PM	33	708	153	14	49	30	1	22	7	2	4	1	0
7/23/2004	4:00:00 PM	27	754	150	8	59	20	3	22	4	2	1	4	1
7/23/2004	5:00:00 PM	26	770	127	8	32	30	3	26	7	1	1	2	2
7/23/2004	6:00:00 PM	20	739	110	4	28	22	0	15	0	3	0	1	1
7/23/2004	7:00:00 PM	15	576	102	4	26	15	0	11	2	3	0	0	1
7/23/2004	8:00:00 PM	15	477	73	0	16	9	1	10	4	2	0	0	0
7/23/2004	9:00:00 PM	5	471	88	4	15	6	0	3	1	0	3	1	0
7/23/2004	10:00:00 PM	3	326	54	1	9	4	1	7	2	0	0	0	0
7/23/2004	11:00:00 PM	1	182	34	0	2	1	0	2	2	0	0	0	0

Appendix C:
Turning Movement Count Data

PBS&J

TURNING MOVEMENT COUNT SUMMARY

INTERSECTION:
N-S STREET: *Laurel Street.*
E-W STREET: *6th Street*

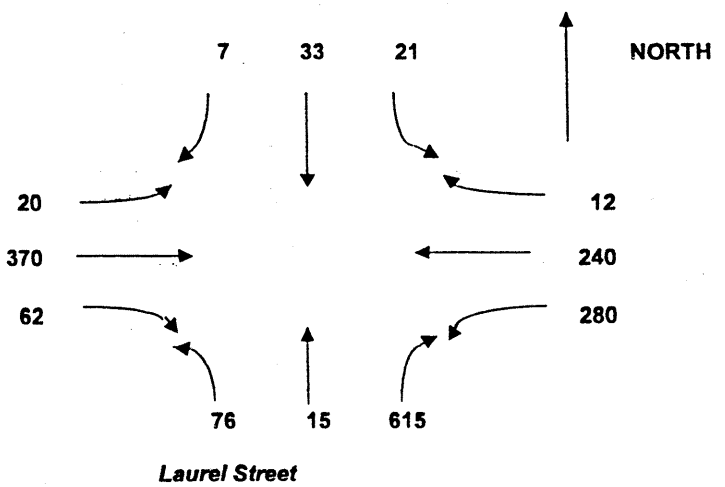
PROJ. NO.:
COUNT DATE: *09-Jul-01*
NOTES:

COUNT TIME:
FROM: *7:00 AM*
TO: *9:00 AM*

Notes: Weeday AM

PK HR VOLUME:	1,751
PHF:	0.95
PEAK HOUR:	
FROM:	TO:
8:00 AM	9:00 AM

Peak Hour Volumes



COUNT DATA INPUT:

TIME PERIOD		NORTHBOUND			EASTBOUND			SOUTHBOUND			WESTBOUND			TOTAL
FROM:	TO:	L	T	R	L	T	R	L	T	R	L	T	R	VOLUMES
7:00 AM	7:15 AM	6	3	144	4	58	8	7	3	1	47	33	1	315
7:15 AM	7:30 AM	6	4	158	3	67	8	6	7	1	54	38	4	356
7:30 AM	7:45 AM	4	4	189	9	86	6	3	5	1	87	50	0	424
7:45 AM	8:00 AM	6	6	162	8	76	12	1	6	1	57	89	2	426
8:00 AM	8:15 AM	20	4	140	4	81	9	5	8	5	54	69	3	402
8:15 AM	8:30 AM	15	3	169	7	93	15	4	6	0	67	48	3	430
8:30 AM	8:45 AM	16	5	163	2	85	20	4	11	1	90	62	1	460
8:45 AM	9:00 AM	25	3	143	7	111	18	8	8	1	69	61	5	459

HOURLY TOTALS:

TIME PERIOD		NORTHBOUND			EASTBOUND			SOUTHBOUND			WESTBOUND			TOTAL	DO NOT DELETE	
FROM:	TO:	L	T	R	L	T	R	L	T	R	L	T	R	VOLUMES	BELOW FORMULAS	
7:00 AM	8:00 AM	22	17	653	24	287	34	17	21	4	225	210	7	1,521	0	0
7:15 AM	8:15 AM	36	18	649	24	310	35	15	26	8	232	246	9	1,608	0	0
7:30 AM	8:30 AM	45	17	660	28	336	42	13	25	7	245	256	8	1,682	0	0
7:45 AM	8:45 AM	57	18	634	21	335	56	14	31	7	268	268	9	1,718	0	0
8:00 AM	9:00 AM	76	15	615	20	370	62	21	33	7	280	240	12	1,751	1	460

NOTE PHF IS BASED ON 15 MIN. PEAK WITHIN THE PEAK HOUR.

PBS&J

TURNING MOVEMENT COUNT SUMMARY

INTERSECTION:
N-S STREET: *Laurel Street*
E-W STREET: *6th Street*

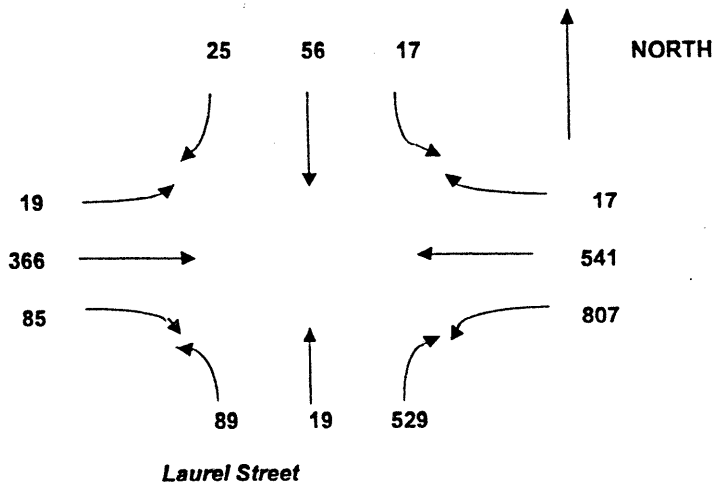
PROJ. NO.:
COUNT DATE: *09-Jul-01*
NOTES:

COUNT TIME:
FROM: *4:00 PM*
TO: *6:00 PM*

Notes: Weekday PM

PK HR VOLUME:	2,570
PHF:	0.95
PEAK HOUR:	
FROM:	TO:
4:45 PM	5:45 PM

Peak Hour Volumes



COUNT DATA INPUT:

TIME PERIOD		NORTHBOUND			EASTBOUND			SOUTHBOUND			WESTBOUND			TOTAL
FROM:	TO:	L	T	R	L	T	R	L	T	R	L	T	R	VOLUMES
4:00 PM	4:15 PM	19	13	144	4	102	15	5	13	4	198	135	3	655
4:15 PM	4:30 PM	11	5	125	3	100	17	10	15	1	195	119	3	604
4:30 PM	4:45 PM	29	7	145	3	86	19	5	10	7	197	133	4	645
4:45 PM	5:00 PM	20	1	123	4	107	24	4	16	9	207	139	4	658
5:00 PM	5:15 PM	24	5	158	4	75	17	4	11	5	210	117	5	635
5:15 PM	5:30 PM	17	9	113	5	92	27	1	16	6	168	138	7	599
5:30 PM	5:45 PM	28	4	135	6	92	17	8	13	5	222	147	1	678
5:45 PM	6:00 PM	26	5	126	8	109	23	3	9	8	173	159	2	651

HOURLY TOTALS:

TIME PERIOD		NORTHBOUND			EASTBOUND			SOUTHBOUND			WESTBOUND			TOTAL	DO NOT DELETE	
FROM:	TO:	L	T	R	L	T	R	L	T	R	L	T	R	VOLUMES	BELOW FORMULAS	
4:00 PM	5:00 PM	79	26	537	14	395	75	24	54	21	797	526	14	2,562	0	0
4:15 PM	5:15 PM	84	18	551	14	368	77	23	52	22	809	508	16	2,542	0	0
4:30 PM	5:30 PM	90	22	539	16	360	87	14	53	27	782	527	20	2,537	0	0
4:45 PM	5:45 PM	89	19	529	19	366	85	17	56	25	807	541	17	2,570	1	678
5:00 PM	6:00 PM	95	23	532	23	368	84	16	49	24	773	561	15	2,563	0	0

*NOTE: PHF IS BASED ON 15 MIN. PEAK WITHIN THE PEAK HOUR

PBS&J

TURNING MOVEMENT COUNT SUMMARY

INTERSECTION:
N-S STREET: *Pine Street*
E-W STREET: *6th Street*

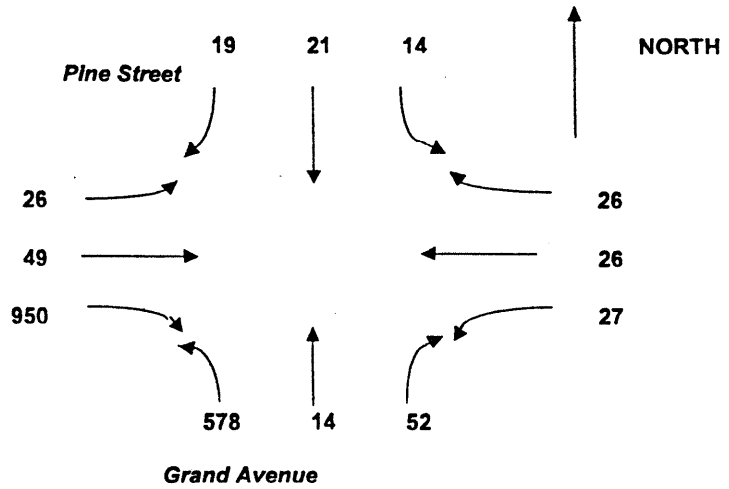
PROJ. NO.:
COUNT DATE: *09-Jul-01*
NOTES:

COUNT TIME:
FROM: *7:00 AM*
TO: *9:00 AM*

Notes: Weeday AM

PK HR VOLUME:	1,802
PHF:	0.96
PEAK HOUR:	
FROM:	TO:
8:00 AM	9:00 AM

Peak Hour Volumes



COUNT DATA INPUT:

TIME PERIOD		NORTHBOUND			EASTBOUND			SOUTHBOUND			WESTBOUND			TOTAL
FROM:	TO:	L	T	R	L	T	R	L	T	R	L	T	R	VOLUMES
7:00 AM	7:15 AM	93	1	1	0	5	220	1	5	1	4	6	0	337
7:15 AM	7:30 AM	105	3	10	0	9	236	1	4	1	6	2	1	378
7:30 AM	7:45 AM	132	2	10	1	21	264	0	11	0	2	7	1	451
7:45 AM	8:00 AM	137	0	16	2	9	242	2	8	4	5	6	0	431
8:00 AM	8:15 AM	143	4	19	7	10	218	0	7	7	5	6	5	431
8:15 AM	8:30 AM	131	8	16	5	15	238	8	3	4	8	2	10	448
8:30 AM	8:45 AM	163	1	4	6	14	244	4	5	4	7	7	9	468
8:45 AM	9:00 AM	141	1	13	8	10	250	2	6	4	7	11	2	455

HOURLY TOTALS:

TIME PERIOD		NORTHBOUND			EASTBOUND			SOUTHBOUND			WESTBOUND			TOTAL	DO NOT DELETE	
FROM:	TO:	L	T	R	L	T	R	L	T	R	L	T	R	VOLUMES	BELOW FORMULAS	
7:00 AM	8:00 AM	467	6	37	3	44	962	4	28	6	17	21	2	1,597	0	0
7:15 AM	8:15 AM	517	9	55	10	49	960	3	30	12	18	21	7	1,691	0	0
7:30 AM	8:30 AM	543	14	61	15	55	962	10	29	15	20	21	16	1,761	0	0
7:45 AM	8:45 AM	574	13	55	20	48	942	14	23	19	25	21	24	1,778	0	0
8:00 AM	9:00 AM	578	14	52	26	49	950	14	21	19	27	26	26	1,802	1	468

NOTE PHF IS BASED ON 15 MIN. PEAK WITHIN THE PEAK HOUR.

PBS&J

TURNING MOVEMENT COUNT SUMMARY

INTERSECTION:
N-S STREET: *Pine Street*
E-W STREET: *6th Street*

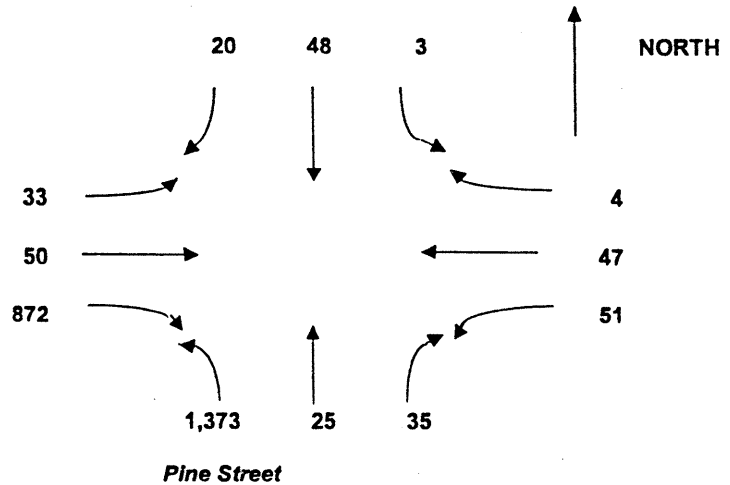
PROJ. NO.:
COUNT DATE: *09-Jul-01*
NOTES:

COUNT TIME:
FROM: *4:00 PM*
TO: *6:00 PM*

Notes: Weekday PM

PK HR VOLUME:	2,561
PHF:	0.94
PEAK HOUR:	
FROM:	TO:
4:45 PM	5:45 PM

Peak Hour Volumes



COUNT DATA INPUT:

TIME PERIOD		NORTHBOUND			EASTBOUND			SOUTHBOUND			WESTBOUND			TOTAL
FROM:	TO:	L	T	R	L	T	R	L	T	R	L	T	R	VOLUMES
4:00 PM	4:15 PM	311	7	15	9	12	236	2	10	11	21	21	4	659
4:15 PM	4:30 PM	289	10	10	4	10	215	1	7	9	15	8	3	581
4:30 PM	4:45 PM	315	6	13	14	30	201	1	8	11	12	16	2	629
4:45 PM	5:00 PM	341	5	10	3	24	217	0	15	2	11	10	2	640
5:00 PM	5:15 PM	348	9	9	9	13	236	0	18	13	16	13	0	684
5:15 PM	5:30 PM	348	4	4	11	7	207	1	5	2	11	6	1	607
5:30 PM	5:45 PM	336	7	12	10	6	212	2	10	3	13	18	1	630
5:45 PM	6:00 PM	340	12	6	5	11	202	1	10	8	10	5	1	611

HOURLY TOTALS:

TIME PERIOD		NORTHBOUND			EASTBOUND			SOUTHBOUND			WESTBOUND			TOTAL	DO NOT DELETE	
FROM:	TO:	L	T	R	L	T	R	L	T	R	L	T	R	VOLUMES	BELOW FORMULAS	
4:00 PM	5:00 PM	1,256	28	48	30	76	869	4	40	33	59	55	11	2,509	0	0
4:15 PM	5:15 PM	1,293	30	42	30	77	869	2	48	35	54	47	7	2,534	0	0
4:30 PM	5:30 PM	1,352	24	36	37	74	861	2	46	28	50	45	5	2,560	0	0
4:45 PM	5:45 PM	1,373	25	35	33	50	872	3	48	20	51	47	4	2,561	1	684
5:00 PM	6:00 PM	1,372	32	31	35	37	857	4	43	26	50	42	3	2,532	0	0

NOTE PHF IS BASED ON 15 MIN. PEAK WITHIN THE PEAK HOUR.

PBS&J

TURNING MOVEMENT COUNT SUMMARY

INTERSECTION:
N-S STREET: *Grand Avenue*
E-W STREET: *8th Street*

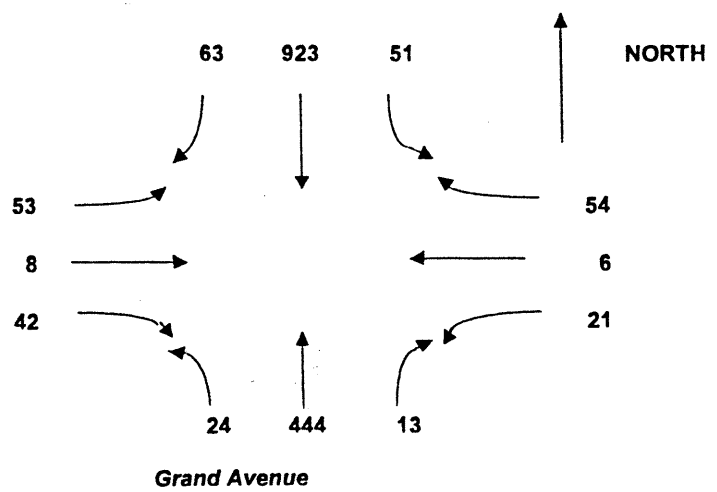
PROJ. NO.:
COUNT DATE: *21-Jun-01*
NOTES:

COUNT TIME:
FROM: *6:00 AM*
TO: *8:00 AM*

Notes: Weeday AM

PK HR VOLUME:	1,702
PHF:	0.88
PEAK HOUR:	
FROM:	TO:
7:00 AM	8:00 AM

Peak Hour Volumes



COUNT DATA INPUT:

TIME PERIOD FROM:	TO:	NORTHBOUND L	T	R	EASTBOUND L	T	R	SOUTHBOUND L	T	R	WESTBOUND L	T	R	TOTAL VOLUMES
6:00 AM	6:15 AM	2	48	2	6	0	4	9	233	1	2	1	7	315
6:15 AM	6:30 AM	2	77	0	5	0	5	2	221	0	7	0	5	324
6:30 AM	6:45 AM	2	82	1	5	2	6	11	248	6	7	0	5	375
6:45 AM	7:00 AM	3	96	1	4	1	10	9	234	6	0	3	5	372
7:00 AM	7:15 AM	2	75	1	8	1	10	10	216	11	6	1	9	350
7:15 AM	7:30 AM	6	109	4	19	2	9	13	216	8	4	3	11	404
7:30 AM	7:45 AM	8	121	2	13	2	12	18	268	18	6	0	17	485
7:45 AM	8:00 AM	8	139	6	13	3	11	10	223	26	5	2	17	463

HOURLY TOTALS:

TIME PERIOD FROM:	TO:	NORTHBOUND L	T	R	EASTBOUND L	T	R	SOUTHBOUND L	T	R	WESTBOUND L	T	R	TOTAL VOLUMES	DO NOT DELETE BELOW FORMULAS	
6:00 AM	7:00 AM	9	303	4	20	3	25	31	936	13	16	4	22	1,386	0	0
6:15 AM	7:15 AM	9	330	3	22	4	31	32	919	23	20	4	24	1,421	0	0
6:30 AM	7:30 AM	13	362	7	36	6	35	43	914	31	17	7	30	1,501	0	0
6:45 AM	7:45 AM	19	401	8	44	6	41	50	934	43	16	7	42	1,611	0	0
7:00 AM	8:00 AM	24	444	13	53	8	42	51	923	63	21	6	54	1,702	1	485

NOTE PHF IS BASED ON 15 MIN. PEAK WITHIN THE PEAK HOUR.

PBS&J

TURNING MOVEMENT COUNT SUMMARY

INTERSECTION:
N-S STREET: *Grand Avenue*
E-W STREET: *8th Street*

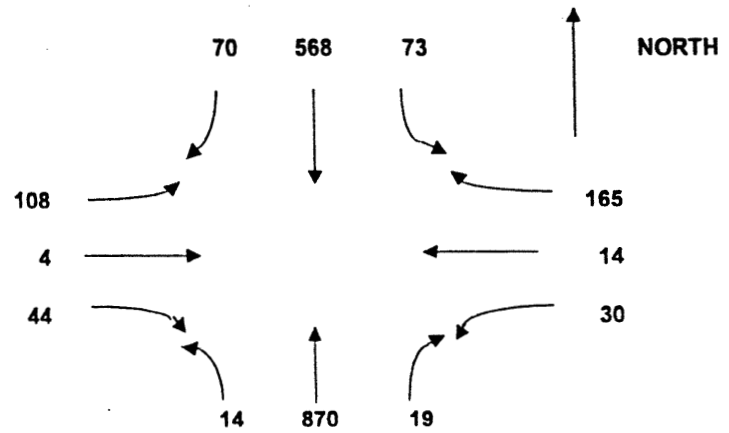
PROJ. NO.:
COUNT DATE: *20-Jun-01*
NOTES:

COUNT TIME:
FROM: *4:00 PM*
TO: *6:00 PM*

Notes: Weekday PM

PK HR VOLUME:	1,979
PHF:	0.76
PEAK HOUR:	
FROM:	TO:
4:45 PM	5:45 PM

Peak Hour Volumes



COUNT DATA INPUT:

TIME PERIOD FROM:	TO:	NORTHBOUND L	T	R	EASTBOUND L	T	R	SOUTHBOUND L	T	R	WESTBOUND L	T	R	TOTAL VOLUMES
4:00 PM	4:15 PM	16	182	3	23	5	9	12	166	27	12	4	32	491
4:15 PM	4:30 PM	6	204	5	19	3	16	13	154	19	8	3	23	473
4:30 PM	4:45 PM	5	7	4	6	3	15	16	133	15	11	4	29	248
4:45 PM	5:00 PM	6	293	7	28	1	10	24	197	29	6	2	44	647
5:00 PM	5:15 PM	3	239	4	1	0	13	14	132	14	11	8	44	483
5:15 PM	5:30 PM	1	132	7	35	1	16	12	99	9	5	1	34	352
5:30 PM	5:45 PM	4	206	1	44	2	5	23	140	18	8	3	43	497
5:45 PM	6:00 PM	1	226	0	26	1	7	14	115	16	5	3	25	439

HOURLY TOTALS:

TIME PERIOD FROM:	TO:	NORTHBOUND L	T	R	EASTBOUND L	T	R	SOUTHBOUND L	T	R	WESTBOUND L	T	R	TOTAL VOLUMES	DO NOT DELETE BELOW FORMULAS	
4:00 PM	5:00 PM	33	686	19	76	12	50	65	650	90	37	13	128	1,859	0	0
4:15 PM	5:15 PM	20	743	20	54	7	54	67	616	77	36	17	140	1,851	0	0
4:30 PM	5:30 PM	15	671	22	70	5	54	66	561	67	33	15	151	1,730	0	0
4:45 PM	5:45 PM	14	870	19	108	4	44	73	568	70	30	14	165	1,979	1	647
5:00 PM	6:00 PM	9	803	12	106	4	41	63	486	57	29	15	146	1,771	0	0

NOTE PHF IS BASED ON 15 MIN. PEAK WITHIN THE PEAK HOUR.

PBS&J

TURNING MOVEMENT COUNT SUMMARY

INTERSECTION:
N-S STREET: *Grand Avenue*
E-W STREET: *9th Street*

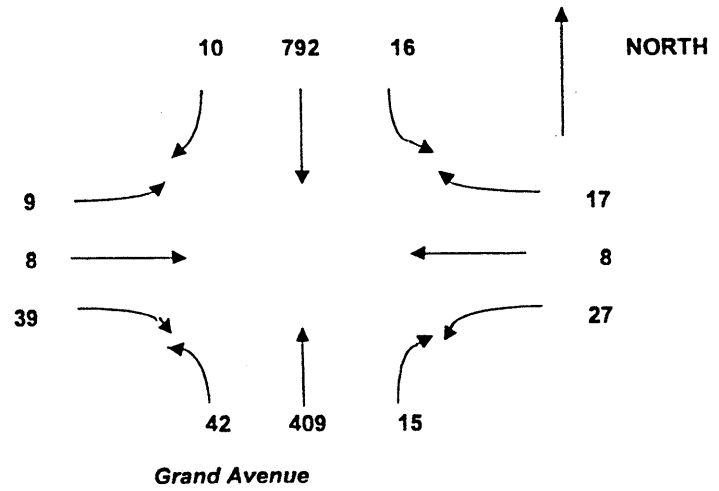
PROJ. NO.:
COUNT DATE: *21-Jun-01*
NOTES:

COUNT TIME:
FROM: *6:00 AM*
TO: *8:00 AM*

Notes: Weeday AM

PK HR VOLUME:	1,392
PHF:	0.81
PEAK HOUR:	
FROM:	TO:
7:00 AM	8:00 AM

Peak Hour Volumes



COUNT DATA INPUT:

TIME PERIOD FROM:	TO:	NORTHBOUND L	T	R	EASTBOUND L	T	R	SOUTHBOUND L	T	R	WESTBOUND L	T	R	TOTAL VOLUMES
6:00 AM	6:15 AM	1	32	1	1	0	4	0	140	1	3	2	2	187
6:15 AM	6:30 AM	3	72	2	1	1	3	1	231	2	8	1	3	328
6:30 AM	6:45 AM	2	77	4	6	0	0	1	245	2	7	1	3	348
6:45 AM	7:00 AM	3	60	4	4	2	9	2	171	3	5	0	1	264
7:00 AM	7:15 AM	3	58	3	0	0	9	1	150	1	5	2	3	235
7:15 AM	7:30 AM	9	90	2	2	1	5	2	184	2	9	1	4	311
7:30 AM	7:45 AM	14	115	4	5	2	16	6	242	1	3	3	4	415
7:45 AM	8:00 AM	16	146	6	2	5	9	7	216	6	10	2	6	431

HOURLY TOTALS:

TIME PERIOD FROM:	TO:	NORTHBOUND L	T	R	EASTBOUND L	T	R	SOUTHBOUND L	T	R	WESTBOUND L	T	R	TOTAL VOLUMES	DO NOT DELETE BELOW FORMULAS	
6:00 AM	7:00 AM	9	241	11	12	3	16	4	787	8	23	4	9	1,127	0	0
6:15 AM	7:15 AM	11	267	13	11	3	21	5	797	8	25	4	10	1,175	0	0
6:30 AM	7:30 AM	17	285	13	12	3	23	6	750	8	26	4	11	1,158	0	0
6:45 AM	7:45 AM	29	323	13	11	5	39	11	747	7	22	6	12	1,225	0	0
7:00 AM	8:00 AM	42	409	15	9	8	39	16	792	10	27	8	17	1,392	1	431

NOTE PHF IS BASED ON 15 MIN. PEAK WITHIN THE PEAK HOUR.

PBS&J

TURNING MOVEMENT COUNT SUMMARY

INTERSECTION:
N-S STREET: *Grand Avenue*
E-W STREET: *9th Street*

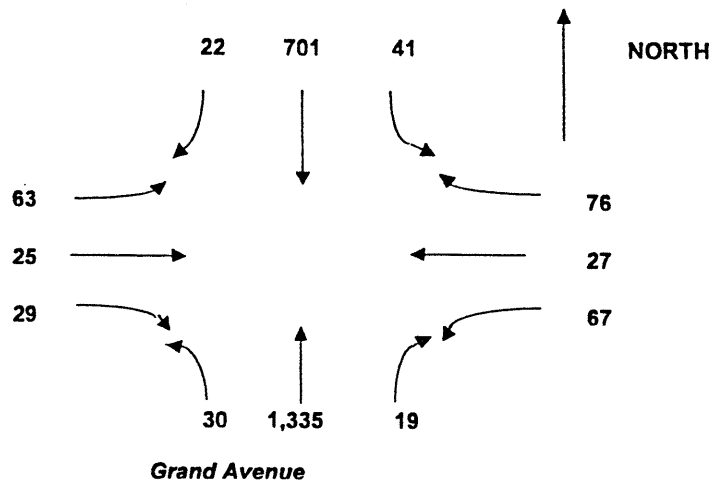
PROJ. NO.:
COUNT DATE: *20-Jun-01*
NOTES:

COUNT TIME:
FROM: *3:00 PM*
TO: *5:00 PM*

Notes: Weekday PM

PK HR VOLUME:	2,435
PHF:	0.95
PEAK HOUR:	
FROM:	TO:
3:45 PM	4:45 PM

Peak Hour Volumes



COUNT DATA INPUT:

TIME PERIOD		NORTHBOUND			EASTBOUND			SOUTHBOUND			WESTBOUND			TOTAL
FROM:	TO:	L	T	R	L	T	R	L	T	R	L	T	R	VOLUMES
3:00 PM	3:15 PM	22	234	6	6	6	3	6	175	7	13	9	8	495
3:15 PM	3:30 PM	10	218	1	0	4	10	6	182	5	13	7	7	463
3:30 PM	3:45 PM	23	270	4	0	7	8	6	171	4	13	5	3	514
3:45 PM	4:00 PM	13	315	5	0	5	2	11	177	6	16	8	9	567
4:00 PM	4:15 PM	8	334	8	4	4	6	16	198	5	23	5	27	638
4:15 PM	4:30 PM	4	308	2	38	10	15	5	168	4	17	8	23	602
4:30 PM	4:45 PM	5	378	4	21	6	6	9	158	7	11	6	17	628
4:45 PM	5:00 PM	3	326	3	13	6	6	7	127	6	14	6	33	550

HOURLY TOTALS:

TIME PERIOD		NORTHBOUND			EASTBOUND			SOUTHBOUND			WESTBOUND			TOTAL	DO NOT DELETE	
FROM:	TO:	L	T	R	L	T	R	L	T	R	L	T	R	VOLUMES	BELOW FORMULAS	
3:00 PM	4:00 PM	68	1,037	16	6	22	23	29	705	22	55	29	27	2,039	0	0
3:15 PM	4:15 PM	54	1,137	18	4	20	26	39	728	20	65	25	46	2,182	0	0
3:30 PM	4:30 PM	48	1,227	19	42	26	31	38	714	19	69	26	62	2,321	0	0
3:45 PM	4:45 PM	30	1,335	19	63	25	29	41	701	22	67	27	76	2,435	1	638
4:00 PM	5:00 PM	20	1,346	17	76	26	33	37	651	22	65	25	100	2,418	0	0

NOTE PHF IS BASED ON 15 MIN. PEAK WITHIN THE PEAK HOUR.

PBS&J

TURNING MOVEMENT COUNT SUMMARY

INTERSECTION:
N-S STREET: *Grand Avenue*
E-W STREET: *10th Street*

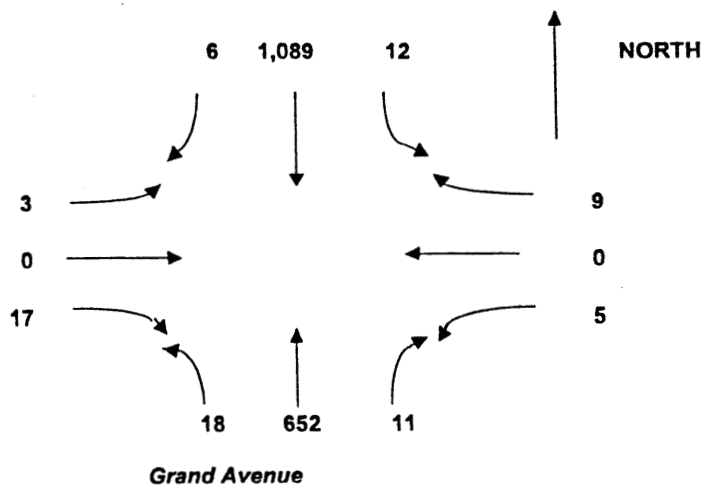
PROJ. NO.:
COUNT DATE: *09-Jul-01*
NOTES:

COUNT TIME:
FROM: *7:00 AM*
TO: *9:00 AM*

Notes: Weeday AM

PK HR VOLUME:	1,822
PHF:	0.89
PEAK HOUR:	
FROM:	TO:
7:30 AM	8:30 AM

Peak Hour Volumes



COUNT DATA INPUT:

TIME PERIOD		NORTHBOUND			EASTBOUND			SOUTHBOUND			WESTBOUND			TOTAL
FROM:	TO:	L	T	R	L	T	R	L	T	R	L	T	R	VOLUMES
7:00 AM	7:15 AM	1	90	2	0	0	1	3	221	4	0	0	2	324
7:15 AM	7:30 AM	3	101	1	1	0	1	3	267	0	1	0	1	379
7:30 AM	7:45 AM	3	139	3	1	0	3	3	265	2	4	0	2	425
7:45 AM	8:00 AM	7	186	4	0	0	4	3	307	0	0	0	1	512
8:00 AM	8:15 AM	4	142	2	1	0	5	3	257	2	0	0	3	419
8:15 AM	8:30 AM	4	185	2	1	0	5	3	260	2	1	0	3	466
8:30 AM	8:45 AM	2	162	5	0	1	3	2	232	0	0	0	3	410
8:45 AM	9:00 AM	4	171	3	1	0	6	6	295	3	0	0	2	491

HOURLY TOTALS:

TIME PERIOD		NORTHBOUND			EASTBOUND			SOUTHBOUND			WESTBOUND			TOTAL	DO NOT DELETE	
FROM:	TO:	L	T	R	L	T	R	L	T	R	L	T	R	VOLUMES	BELOW FORMULAS	
7:00 AM	8:00 AM	14	516	10	2	0	9	12	1,060	6	5	0	6	1,640	0	0
7:15 AM	8:15 AM	17	568	10	3	0	13	12	1,096	4	5	0	7	1,735	0	0
7:30 AM	8:30 AM	18	652	11	3	0	17	12	1,089	6	5	0	9	1,822	1	512
7:45 AM	8:45 AM	17	675	13	2	1	17	11	1,056	4	1	0	10	1,807	0	0
8:00 AM	9:00 AM	14	660	12	3	1	19	14	1,044	7	1	0	11	1,786	0	0

NOTE PHF IS BASED ON 15 MIN. PEAK WITHIN THE PEAK HOUR.

PBS&J

TURNING MOVEMENT COUNT SUMMARY

INTERSECTION:
N-S STREET: *Grand Avenue*
E-W STREET: *10th Street*

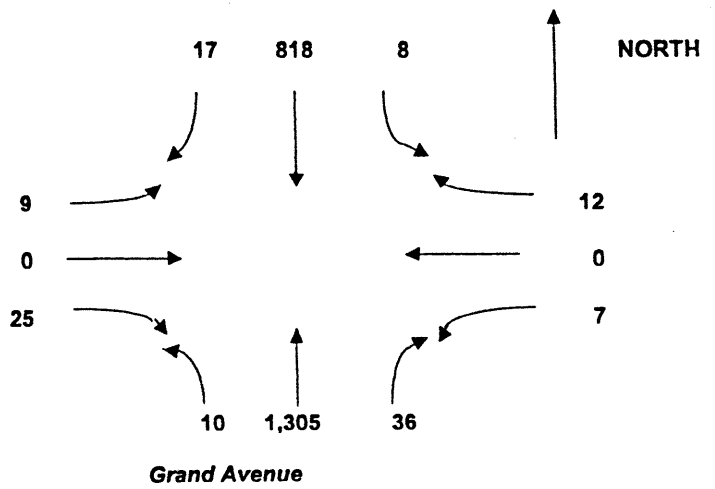
PROJ. NO.:
COUNT DATE: *09-Jul-01*
NOTES:

COUNT TIME:
FROM: *4:00 PM*
TO: *6:00 PM*

Notes: Weekday PM

PK HR VOLUME:	2,247
PHF:	0.98
PEAK HOUR:	
FROM:	TO:
4:30 PM	5:30 PM

Peak Hour Volumes



COUNT DATA INPUT:

TIME PERIOD FROM:	TO:	NORTHBOUND L	NORTHBOUND T	NORTHBOUND R	EASTBOUND L	EASTBOUND T	EASTBOUND R	SOUTHBOUND L	SOUTHBOUND T	SOUTHBOUND R	WESTBOUND L	WESTBOUND T	WESTBOUND R	TOTAL VOLUMES
4:00 PM	4:15 PM	4	289	3	7	0	12	1	214	2	2	0	3	537
4:15 PM	4:30 PM	2	265	5	3	2	1	2	197	5	0	1	4	487
4:30 PM	4:45 PM	2	298	25	2	0	2	6	201	6	0	0	4	546
4:45 PM	5:00 PM	3	362	4	4	0	10	0	185	3	1	0	1	573
5:00 PM	5:15 PM	3	338	4	1	0	8	2	206	7	0	0	2	571
5:15 PM	5:30 PM	2	307	3	2	0	5	0	226	1	6	0	5	557
5:30 PM	5:45 PM	1	248	2	0	0	4	1	190	0	1	1	0	448
5:45 PM	6:00 PM	0	236	1	1	0	1	1	178	2	2	0	3	425

HOURLY TOTALS:

TIME PERIOD FROM:	TO:	NORTHBOUND L	NORTHBOUND T	NORTHBOUND R	EASTBOUND L	EASTBOUND T	EASTBOUND R	SOUTHBOUND L	SOUTHBOUND T	SOUTHBOUND R	WESTBOUND L	WESTBOUND T	WESTBOUND R	TOTAL VOLUMES	DO NOT DELETE BELOW FORMULAS	
4:00 PM	5:00 PM	11	1,214	37	16	2	25	9	797	16	3	1	12	2,143	0	0
4:15 PM	5:15 PM	10	1,263	38	10	2	21	10	789	21	1	1	11	2,177	0	0
4:30 PM	5:30 PM	10	1,305	36	9	0	25	8	818	17	7	0	12	2,247	1	573
4:45 PM	5:45 PM	9	1,255	13	7	0	27	3	807	11	8	1	8	2,149	0	0
5:00 PM	6:00 PM	6	1,129	10	4	0	18	4	800	10	9	1	10	2,001	0	0

NOTE: PHF IS BASED ON 15 MIN. PEAK WITHIN THE PEAK HOUR

PBS&J

TURNING MOVEMENT COUNT SUMMARY

INTERSECTION:
N-S STREET: *Grand Avenue*
E-W STREET: *11th Street*

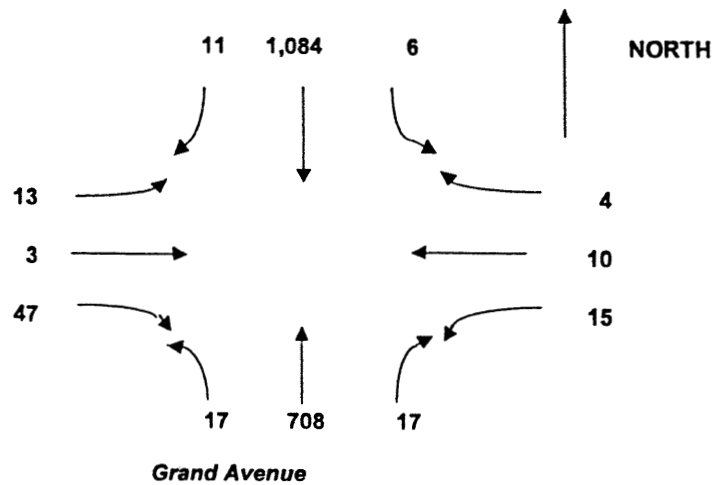
PROJ. NO.:
COUNT DATE: *09-Jul-01*
NOTES:

COUNT TIME:
FROM: *7:00 AM*
TO: *9:00 AM*

Notes: Weeday AM

PK HR VOLUME:	1,935
PHF:	0.95
PEAK HOUR:	
FROM:	TO:
7:30 AM	8:30 AM

Peak Hour Volumes



COUNT DATA INPUT:

TIME PERIOD		NORTHBOUND			EASTBOUND			SOUTHBOUND			WESTBOUND			TOTAL
FROM:	TO:	L	T	R	L	T	R	L	T	R	L	T	R	VOLUMES
7:00 AM	7:15 AM	3	99	2	2	0	17	0	227	5	2	1	0	358
7:15 AM	7:30 AM	1	120	2	3	2	12	0	289	1	3	0	0	433
7:30 AM	7:45 AM	6	193	4	4	1	12	0	269	3	2	4	2	500
7:45 AM	8:00 AM	5	162	2	5	1	12	0	312	4	5	1	1	510
8:00 AM	8:15 AM	3	172	6	1	0	13	3	245	1	5	3	0	452
8:15 AM	8:30 AM	3	181	5	3	1	10	3	258	3	3	2	1	473
8:30 AM	8:45 AM	4	185	3	3	1	9	3	240	1	5	0	1	455
8:45 AM	9:00 AM	4	189	5	2	1	5	1	253	0	3	1	2	466

HOURLY TOTALS:

TIME PERIOD		NORTHBOUND			EASTBOUND			SOUTHBOUND			WESTBOUND			TOTAL	DO NOT DELETE	
FROM:	TO:	L	T	R	L	T	R	L	T	R	L	T	R	VOLUMES	BELOW FORMULAS	
7:00 AM	8:00 AM	15	574	10	14	4	53	0	1,097	13	12	6	3	1,801	0	0
7:15 AM	8:15 AM	15	647	14	13	4	49	3	1,115	9	15	8	3	1,895	0	0
7:30 AM	8:30 AM	17	708	17	13	3	47	6	1,084	11	15	10	4	1,935	1	510
7:45 AM	8:45 AM	15	700	16	12	3	44	9	1,055	9	18	6	3	1,890	0	0
8:00 AM	9:00 AM	14	727	19	9	3	37	10	996	5	16	6	4	1,846	0	0

NOTE PHF IS BASED ON 15 MIN. PEAK WITHIN THE PEAK HOUR.

PBS&J

TURNING MOVEMENT COUNT SUMMARY

INTERSECTION:
N-S STREET: *Grand Avenue*
E-W STREET: *11th Street*

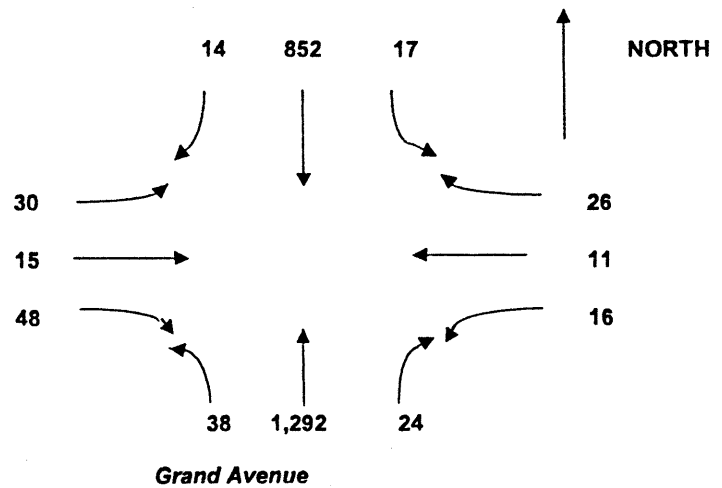
PROJ. NO.:
COUNT DATE: *09-Jul-01*
NOTES:

COUNT TIME:
FROM: *4:00 PM*
TO: *6:00 PM*

Notes: Weekday PM

PK HR VOLUME:	2,383
PHF:	0.97
PEAK HOUR:	
FROM:	TO:
4:15 PM	5:15 PM

Peak Hour Volumes



COUNT DATA INPUT:

TIME PERIOD FROM:	TO:	NORTHBOUND L	T	R	EASTBOUND L	T	R	SOUTHBOUND L	T	R	WESTBOUND L	T	R	TOTAL VOLUMES
4:00 PM	4:15 PM	13	311	6	10	2	10	4	218	5	5	1	1	586
4:15 PM	4:30 PM	8	326	5	8	2	7	6	201	5	3	1	5	577
4:30 PM	4:45 PM	7	344	7	12	5	15	2	208	3	3	5	4	615
4:45 PM	5:00 PM	9	321	5	4	4	10	7	227	2	5	1	8	603
5:00 PM	5:15 PM	14	301	7	6	4	16	2	216	4	5	4	9	588
5:15 PM	5:30 PM	11	254	8	3	4	10	3	214	3	1	1	2	514
5:30 PM	5:45 PM	7	264	4	4	5	12	3	185	4	4	2	5	499
5:45 PM	6:00 PM	5	249	3	2	1	9	1	173	2	3	1	4	453

HOURLY TOTALS:

TIME PERIOD FROM:	TO:	NORTHBOUND L	T	R	EASTBOUND L	T	R	SOUTHBOUND L	T	R	WESTBOUND L	T	R	TOTAL VOLUMES	DO NOT DELETE BELOW FORMULAS	
4:00 PM	5:00 PM	37	1,302	23	34	13	42	19	854	15	16	8	18	2,381	0	0
4:15 PM	5:15 PM	38	1,292	24	30	15	48	17	852	14	16	11	26	2,383	1	615
4:30 PM	5:30 PM	41	1,220	27	25	17	51	14	865	12	14	11	23	2,320	0	0
4:45 PM	5:45 PM	41	1,140	24	17	17	48	15	842	13	15	8	24	2,204	0	0
5:00 PM	6:00 PM	37	1,068	22	15	14	47	9	788	13	13	8	20	2,054	0	0

NOTE PHF IS BASED ON 15 MIN. PEAK WITHIN THE PEAK HOUR.

PBS&J

TURNING MOVEMENT COUNT SUMMARY

INTERSECTION:
N-S STREET: *Grand Avenue*
E-W STREET: *14th Street*

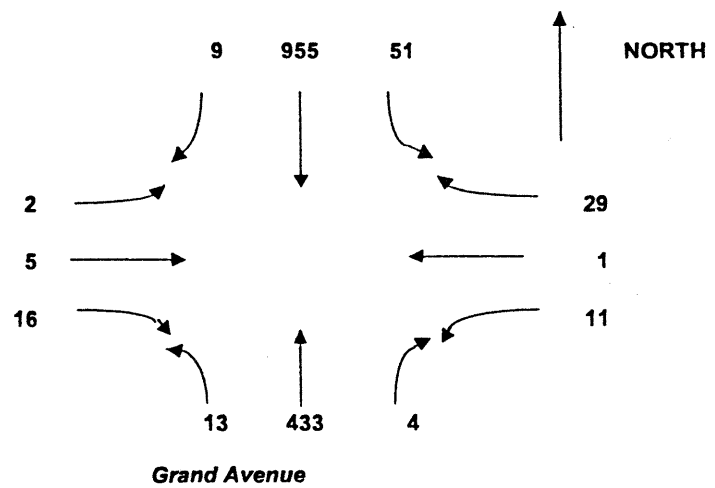
PROJ. NO.:
COUNT DATE: *21-Jun-01*
NOTES:

COUNT TIME:
FROM: *7:00 AM*
TO: *9:00 AM*

Notes: Weeday AM

PK HR VOLUME:	1,529
PHF:	0.85
PEAK HOUR:	
FROM:	TO:
7:45 AM	8:45 AM

Peak Hour Volumes



COUNT DATA INPUT:

TIME PERIOD		NORTHBOUND			EASTBOUND			SOUTHBOUND			WESTBOUND			TOTAL
FROM:	TO:	L	T	R	L	T	R	L	T	R	L	T	R	VOLUMES
7:00 AM	7:15 AM	2	51	0	0	0	7	6	232	2	2	0	9	311
7:15 AM	7:30 AM	1	68	2	0	1	6	5	233	0	2	1	11	330
7:30 AM	7:45 AM	1	89	0	1	2	1	7	279	0	4	0	6	390
7:45 AM	8:00 AM	2	84	0	0	3	5	6	228	5	2	0	4	339
8:00 AM	8:15 AM	1	90	2	0	0	4	14	215	2	4	0	6	338
8:15 AM	8:30 AM	5	101	1	1	2	6	14	258	2	2	0	11	403
8:30 AM	8:45 AM	5	158	1	1	0	1	17	254	0	3	1	8	449
8:45 AM	9:00 AM	4	80	1	1	1	1	10	95	0	2	2	0	197

HOURLY TOTALS:

TIME PERIOD		NORTHBOUND			EASTBOUND			SOUTHBOUND			WESTBOUND			TOTAL	DO NOT DELETE	
FROM:	TO:	L	T	R	L	T	R	L	T	R	L	T	R	VOLUMES	BELOW FORMULAS	
7:00 AM	8:00 AM	6	292	2	1	6	19	24	972	7	10	1	30	1,370	0	0
7:15 AM	8:15 AM	5	331	4	1	6	16	32	955	7	12	1	27	1,397	0	0
7:30 AM	8:30 AM	9	364	3	2	7	16	41	980	9	12	0	27	1,470	0	0
7:45 AM	8:45 AM	13	433	4	2	5	16	51	955	9	11	1	29	1,529	1	449
8:00 AM	9:00 AM	15	429	5	3	3	12	55	822	4	11	3	25	1,387	0	0

NOTE PHF IS BASED ON 15 MIN. PEAK WITHIN THE PEAK HOUR.

PBS&J

TURNING MOVEMENT COUNT SUMMARY

INTERSECTION:
N-S STREET: *Grand Avenue*
E-W STREET: *14th Street*

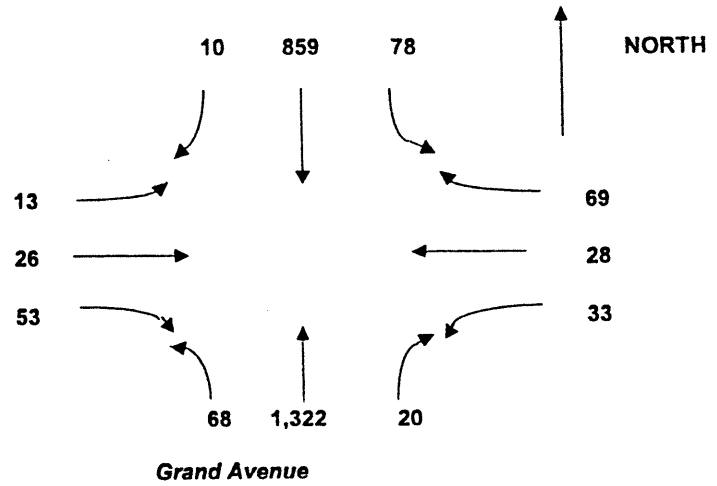
PROJ. NO.:
COUNT DATE: *20-Jun-01*
NOTES:

COUNT TIME:
FROM: *4:00 PM*
TO: *6:00 PM*

Notes: Weekday PM

PK HR VOLUME:	2,579
PHF:	0.96
PEAK HOUR:	
FROM:	TO:
4:45 PM	5:45 PM

Peak Hour Volumes



COUNT DATA INPUT:

TIME PERIOD		NORTHBOUND			EASTBOUND			SOUTHBOUND			WESTBOUND			TOTAL
FROM:	TO:	L	T	R	L	T	R	L	T	R	L	T	R	VOLUMES
4:00 PM	4:15 PM	11	266	4	2	3	13	16	205	1	6	2	8	537
4:15 PM	4:30 PM	8	294	2	3	7	16	15	219	2	4	4	15	589
4:30 PM	4:45 PM	7	297	3	3	9	8	14	199	0	10	6	19	575
4:45 PM	5:00 PM	10	358	5	5	5	13	17	225	3	8	4	19	672
5:00 PM	5:15 PM	11	346	5	2	8	13	16	210	3	9	8	18	649
5:15 PM	5:30 PM	20	302	6	4	3	14	22	238	2	7	5	16	639
5:30 PM	5:45 PM	27	316	4	2	10	13	23	186	2	9	11	16	619
5:45 PM	6:00 PM	19	324	10	0	6	4	17	175	4	9	9	15	592

HOURLY TOTALS:

TIME PERIOD		NORTHBOUND			EASTBOUND			SOUTHBOUND			WESTBOUND			TOTAL	DO NOT DELETE	
FROM:	TO:	L	T	R	L	T	R	L	T	R	L	T	R	VOLUMES	BELOW FORMULAS	
4:00 PM	5:00 PM	36	1,215	14	13	24	50	62	848	6	28	16	61	2,373	0	0
4:15 PM	5:15 PM	36	1,295	15	13	29	50	62	853	8	31	22	71	2,485	0	0
4:30 PM	5:30 PM	48	1,303	19	14	25	48	69	872	8	34	23	72	2,535	0	0
4:45 PM	5:45 PM	68	1,322	20	13	26	53	78	859	10	33	28	69	2,579	1	672
5:00 PM	6:00 PM	77	1,288	25	8	27	44	78	809	11	34	33	65	2,499	0	0

NOTE PHF IS BASED ON 15 MIN. PEAK WITHIN THE PEAK HOUR.

PBS&J

TURNING MOVEMENT COUNT SUMMARY

INTERSECTION:
N-S STREET: *Grand Avenue*
E-W STREET: *15th Street*

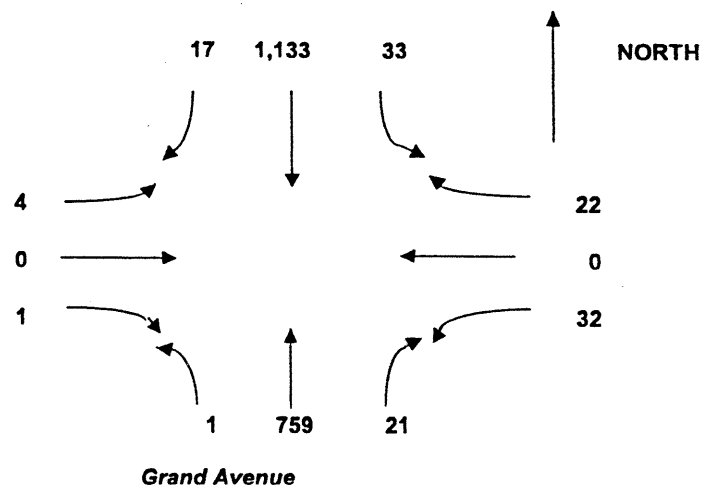
PROJ. NO.:
COUNT DATE: *09-Jul-01*
NOTES:

COUNT TIME:
FROM: *7:00 AM*
TO: *9:00 AM*

Notes: Weeday AM

PK HR VOLUME:	2,023
PHF:	0.97
PEAK HOUR:	
FROM:	TO:
7:30 AM	8:30 AM

Peak Hour Volumes



COUNT DATA INPUT:

TIME PERIOD		NORTHBOUND			EASTBOUND			SOUTHBOUND			WESTBOUND			TOTAL
FROM:	TO:	L	T	R	L	T	R	L	T	R	L	T	R	VOLUMES
7:00 AM	7:15 AM	0	95	2	0	0	0	1	258	3	5	0	8	372
7:15 AM	7:30 AM	0	120	3	1	0	0	5	283	1	8	0	1	422
7:30 AM	7:45 AM	0	209	7	0	0	0	9	290	0	8	0	0	523
7:45 AM	8:00 AM	0	167	5	1	0	0	10	312	1	8	0	8	512
8:00 AM	8:15 AM	0	192	4	2	0	0	12	272	8	7	0	6	503
8:15 AM	8:30 AM	1	191	5	1	0	1	2	259	8	9	0	8	485
8:30 AM	8:45 AM	0	176	9	2	0	0	8	258	9	5	0	3	470
8:45 AM	9:00 AM	1	201	7	5	0	0	14	223	10	18	0	7	486

HOURLY TOTALS:

TIME PERIOD		NORTHBOUND			EASTBOUND			SOUTHBOUND			WESTBOUND			TOTAL	DO NOT DELETE	
FROM:	TO:	L	T	R	L	T	R	L	T	R	L	T	R	VOLUMES	BELOW FORMULAS	
7:00 AM	8:00 AM	0	591	17	2	0	0	25	1,143	5	29	0	17	1,829	0	0
7:15 AM	8:15 AM	0	688	19	4	0	0	36	1,157	10	31	0	15	1,960	0	0
7:30 AM	8:30 AM	1	759	21	4	0	1	33	1,133	17	32	0	22	2,023	1	523
7:45 AM	8:45 AM	1	726	23	6	0	1	32	1,101	26	29	0	25	1,970	0	0
8:00 AM	9:00 AM	2	760	25	10	0	1	36	1,012	35	39	0	24	1,944	0	0

NOTE PHF IS BASED ON 15 MIN. PEAK WITHIN THE PEAK HOUR.

PBS&J

TURNING MOVEMENT COUNT SUMMARY

INTERSECTION:
N-S STREET: *Grand Avenue*
E-W STREET: *15th Street*

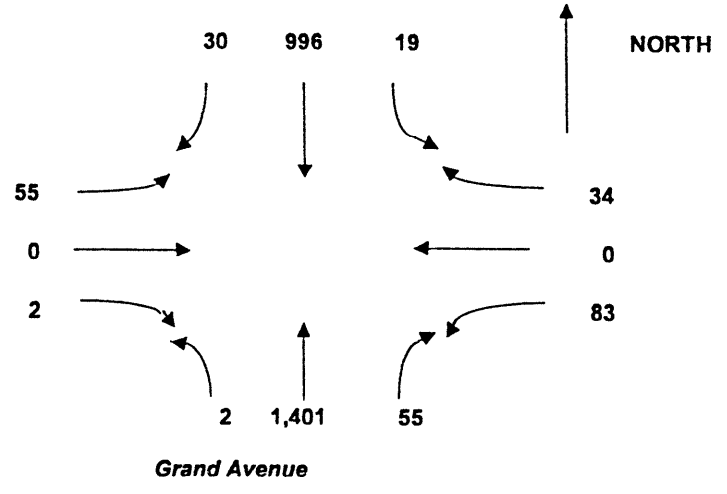
PROJ. NO.:
COUNT DATE: *09-Jul-01*
NOTES:

COUNT TIME:
FROM: *4:00 PM*
TO: *6:00 PM*

Notes: Weekday PM

PK HR VOLUME:	2,677
PHF:	0.95
PEAK HOUR:	
FROM:	TO:
4:30 PM	5:30 PM

Peak Hour Volumes



COUNT DATA INPUT:

TIME PERIOD		NORTHBOUND			EASTBOUND			SOUTHBOUND			WESTBOUND			TOTAL
FROM:	TO:	L	T	R	L	T	R	L	T	R	L	T	R	VOLUMES
4:00 PM	4:15 PM	0	321	14	18	0	1	2	229	5	19	0	17	626
4:15 PM	4:30 PM	0	310	11	9	1	1	9	220	8	14	0	9	592
4:30 PM	4:45 PM	1	329	11	13	0	0	6	246	12	28	0	11	657
4:45 PM	5:00 PM	0	350	13	13	0	0	7	217	9	20	0	10	639
5:00 PM	5:15 PM	1	367	10	23	0	2	2	269	4	23	0	7	708
5:15 PM	5:30 PM	0	355	21	6	0	0	4	264	5	12	0	6	673
5:30 PM	5:45 PM	0	335	13	11	0	0	5	194	7	22	0	5	592
5:45 PM	6:00 PM	1	301	10	5	0	1	3	180	5	13	0	3	522

HOURLY TOTALS;

TIME PERIOD		NORTHBOUND			EASTBOUND			SOUTHBOUND			WESTBOUND			TOTAL	DO NOT DELETE	
FROM:	TO:	L	T	R	L	T	R	L	T	R	L	T	R	VOLUMES	BELOW FORMULAS	
4:00 PM	5:00 PM	1	1,310	49	53	1	2	24	912	34	81	0	47	2,514	0	0
4:15 PM	5:15 PM	2	1,356	45	58	1	3	24	952	33	85	0	37	2,596	0	0
4:30 PM	5:30 PM	2	1,401	55	55	0	2	19	996	30	83	0	34	2,677	1	708
4:45 PM	5:45 PM	1	1,407	57	53	0	2	18	944	25	77	0	28	2,612	0	0
5:00 PM	6:00 PM	2	1,358	54	45	0	3	14	907	21	70	0	21	2,495	0	0

NOTE PHF IS BASED ON 15 MIN. PEAK WITHIN THE PEAK HOUR.

PBS&J

TURNING MOVEMENT COUNT SUMMARY

INTERSECTION:
N-S STREET: *Grand Avenue*
E-W STREET: *20th Street*

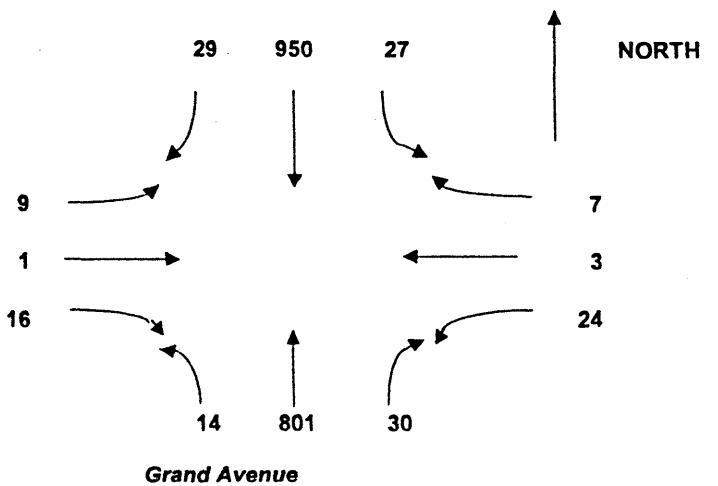
PROJ. NO.:
COUNT DATE: *09-Jul-01*
NOTES:

COUNT TIME:
FROM: *7:00 AM*
TO: *9:00 AM*

Notes: Weeday AM

PK HR VOLUME:	1,911
PHF:	0.97
PEAK HOUR:	
FROM:	TO:
7:30 AM	8:30 AM

Peak Hour Volumes



COUNT DATA INPUT:

TIME PERIOD FROM:	TO:	NORTHBOUND L	T	R	EASTBOUND L	T	R	SOUTHBOUND L	T	R	WESTBOUND L	T	R	TOTAL VOLUMES
7:00 AM	7:15 AM	3	101	5	1	0	3	5	233	2	1	1	0	355
7:15 AM	7:30 AM	2	144	5	1	1	4	3	274	3	6	0	0	443
7:30 AM	7:45 AM	3	190	9	3	0	7	9	250	8	7	0	2	488
7:45 AM	8:00 AM	2	200	12	4	1	1	9	242	9	9	1	2	492
8:00 AM	8:15 AM	1	218	7	1	0	4	2	225	6	5	1	1	471
8:15 AM	8:30 AM	8	193	2	1	0	4	7	233	6	3	1	2	460
8:30 AM	8:45 AM	8	195	15	8	0	4	5	222	9	10	4	4	484
8:45 AM	9:00 AM	7	224	6	6	2	4	8	192	7	15	0	7	478

HOURLY TOTALS:

TIME PERIOD FROM:	TO:	NORTHBOUND L	T	R	EASTBOUND L	T	R	SOUTHBOUND L	T	R	WESTBOUND L	T	R	TOTAL VOLUMES	DO NOT DELETE BELOW FORMULAS	
7:00 AM	8:00 AM	10	635	31	9	2	15	26	999	22	23	2	4	1,778	0	0
7:15 AM	8:15 AM	8	752	33	9	2	16	23	991	26	27	2	5	1,894	0	0
7:30 AM	8:30 AM	14	801	30	9	1	16	27	950	29	24	3	7	1,911	1	492
7:45 AM	8:45 AM	19	806	36	14	1	13	23	922	30	27	7	9	1,907	0	0
8:00 AM	9:00 AM	24	830	30	16	2	16	22	872	28	33	6	14	1,893	0	0

NOTE PHF IS BASED ON 15 MIN. PEAK WITHIN THE PEAK HOUR.

PBS&J

TURNING MOVEMENT COUNT SUMMARY

INTERSECTION:
N-S STREET: *Grand Avenue*
E-W STREET: *20th Street*

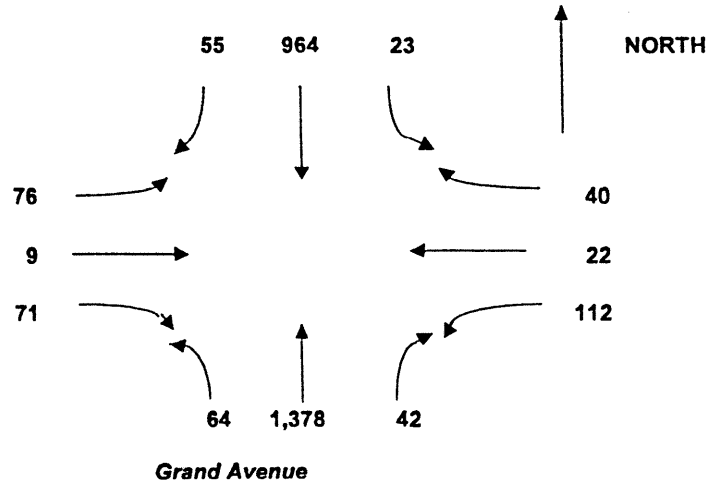
PROJ. NO.:
COUNT DATE: *09-Jul-01*
NOTES:

COUNT TIME:
FROM: *4:00 PM*
TO: *6:00 PM*

Notes: Weekday PM

PK HR VOLUME:	2,856
PHF:	0.92
PEAK HOUR:	
FROM:	TO:
5:00 PM	6:00 PM

Peak Hour Volumes



COUNT DATA INPUT:

TIME PERIOD		NORTHBOUND			EASTBOUND			SOUTHBOUND			WESTBOUND			TOTAL
FROM:	TO:	L	T	R	L	T	R	L	T	R	L	T	R	VOLUMES
4:00 PM	4:15 PM	12	314	13	19	2	12	5	224	13	21	5	9	649
4:15 PM	4:30 PM	12	333	19	12	3	11	7	236	12	20	4	9	678
4:30 PM	4:45 PM	8	364	13	11	0	11	7	248	16	17	3	7	705
4:45 PM	5:00 PM	7	327	13	16	3	9	2	211	12	17	3	9	629
5:00 PM	5:15 PM	16	350	7	25	2	29	7	269	13	38	7	9	772
5:15 PM	5:30 PM	10	333	13	9	1	12	5	239	18	22	5	5	672
5:30 PM	5:45 PM	22	363	13	24	4	9	3	207	12	20	7	12	696
5:45 PM	6:00 PM	16	332	9	18	2	21	8	249	12	32	3	14	716

HOURLY TOTALS:

TIME PERIOD		NORTHBOUND			EASTBOUND			SOUTHBOUND			WESTBOUND			TOTAL	DO NOT DELETE BELOW FORMULAS	
FROM:	TO:	L	T	R	L	T	R	L	T	R	L	T	R	VOLUMES		
4:00 PM	5:00 PM	39	1,338	58	58	8	43	21	919	53	75	15	34	2,661	0	0
4:15 PM	5:15 PM	43	1,374	52	64	8	60	23	964	53	92	17	34	2,784	0	0
4:30 PM	5:30 PM	41	1,374	46	61	6	61	21	967	59	94	18	30	2,778	0	0
4:45 PM	5:45 PM	55	1,373	46	74	10	59	17	926	55	97	22	35	2,769	0	0
5:00 PM	6:00 PM	64	1,378	42	76	9	71	23	964	55	112	22	40	2,856	1	772

NOTE PHF IS BASED ON 15 MIN. PEAK WITHIN THE PEAK HOUR.

PBS&J

TURNING MOVEMENT COUNT SUMMARY

INTERSECTION:
N-S STREET: *SH 82*
E-W STREET: *23rd Street*

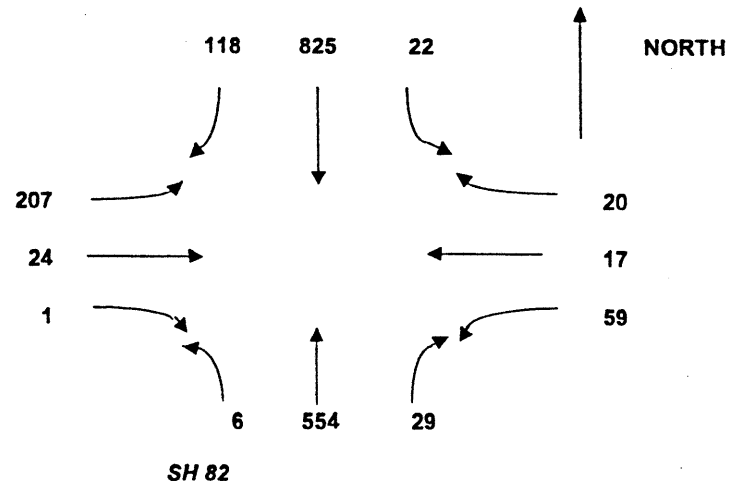
PROJ. NO.:
COUNT DATE: *10-Jul-01*
NOTES:

COUNT TIME:
FROM: *7:00 AM*
TO: *9:00 AM*

Notes: Weeday AM

PK HR VOLUME:	1,882
PHF:	0.91
PEAK HOUR:	
FROM:	TO:
7:30 AM	8:30 AM

Peak Hour Volumes



COUNT DATA INPUT:

TIME PERIOD		NORTHBOUND			EASTBOUND			SOUTHBOUND			WESTBOUND			TOTAL
FROM:	TO:	L	T	R	L	T	R	L	T	R	L	T	R	VOLUMES
7:00 AM	7:15 AM	1	79	4	26	5	0	2	224	12	10	4	3	370
7:15 AM	7:30 AM	0	103	3	45	10	1	3	229	28	11	1	3	437
7:30 AM	7:45 AM	1	114	5	47	7	0	6	241	22	21	1	4	469
7:45 AM	8:00 AM	1	162	6	57	6	0	7	224	26	15	6	7	517
8:00 AM	8:15 AM	1	131	11	57	5	1	4	186	32	14	4	4	450
8:15 AM	8:30 AM	3	147	7	46	6	0	5	174	38	9	6	5	446
8:30 AM	8:45 AM	0	149	8	36	2	0	4	182	32	11	4	2	430
8:45 AM	9:00 AM	6	152	8	49	5	1	7	168	47	17	4	4	468

HOURLY TOTALS:

TIME PERIOD		NORTHBOUND			EASTBOUND			SOUTHBOUND			WESTBOUND			TOTAL	DO NOT DELETE	
FROM:	TO:	L	T	R	L	T	R	L	T	R	L	T	R	VOLUMES	BELOW FORMULAS	
7:00 AM	8:00 AM	3	458	18	175	28	1	18	918	88	57	12	17	1,793	0	0
7:15 AM	8:15 AM	3	510	25	206	28	2	20	880	108	61	12	18	1,873	0	0
7:30 AM	8:30 AM	6	554	29	207	24	1	22	825	118	59	17	20	1,882	1	517
7:45 AM	8:45 AM	5	589	32	196	19	1	20	766	128	49	20	18	1,843	0	0
8:00 AM	9:00 AM	10	579	34	188	18	2	20	710	149	51	18	15	1,794	0	0

NOTE PHF IS BASED ON 15 MIN. PEAK WITHIN THE PEAK HOUR.

PBS&J

TURNING MOVEMENT COUNT SUMMARY

INTERSECTION:
N-S STREET: *SH 82*
E-W STREET: *23rd Street*

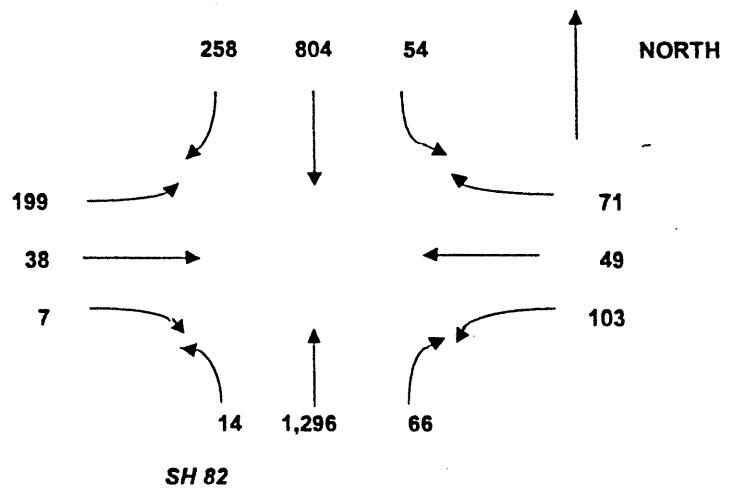
PROJ. NO.:
COUNT DATE: *10-Jul-01*
NOTES:

COUNT TIME:
FROM: *4:00 PM*
TO: *6:00 PM*

Notes: Weekday PM

PK HR VOLUME:	2,959
PHF:	0.98
PEAK HOUR:	
FROM:	TO:
4:30 PM	5:30 PM

Peak Hour Volumes



COUNT DATA INPUT:

TIME PERIOD		NORTHBOUND			EASTBOUND			SOUTHBOUND			WESTBOUND			TOTAL
FROM:	TO:	L	T	R	L	T	R	L	T	R	L	T	R	VOLUMES
4:00 PM	4:15 PM	3	337	20	33	12	1	14	179	44	28	4	14	689
4:15 PM	4:30 PM	2	268	15	49	6	0	9	214	53	26	9	13	664
4:30 PM	4:45 PM	1	347	20	50	9	2	14	205	53	23	13	17	754
4:45 PM	5:00 PM	6	301	15	41	6	0	11	212	63	24	13	22	714
5:00 PM	5:15 PM	5	332	13	53	7	4	16	199	76	32	9	12	758
5:15 PM	5:30 PM	2	316	18	55	16	1	13	188	66	24	14	20	733
5:30 PM	5:45 PM	8	347	12	37	5	0	16	180	49	29	26	11	720
5:45 PM	6:00 PM	0	305	10	37	13	2	8	151	60	20	22	11	639

HOURLY TOTALS:

TIME PERIOD		NORTHBOUND			EASTBOUND			SOUTHBOUND			WESTBOUND			TOTAL	DO NOT DELETE	
FROM:	TO:	L	T	R	L	T	R	L	T	R	L	T	R	VOLUMES	BELOW FORMULAS	
4:00 PM	5:00 PM	12	1,253	70	173	33	3	48	810	213	101	39	66	2,821	0	0
4:15 PM	5:15 PM	14	1,248	63	193	28	6	50	830	245	105	44	64	2,890	0	0
4:30 PM	5:30 PM	14	1,296	66	199	38	7	54	804	258	103	49	71	2,959	1	758
4:45 PM	5:45 PM	21	1,296	58	186	34	5	56	779	254	109	62	65	2,925	0	0
5:00 PM	6:00 PM	15	1,300	53	182	41	7	53	718	251	105	71	54	2,850	0	0

NOTE PHF IS BASED ON 15 MIN. PEAK WITHIN THE PEAK HOUR.

PBS&J

TURNING MOVEMENT COUNT SUMMARY

INTERSECTION:
N-S STREET: *SH 82*
E-W STREET: *27th Street*

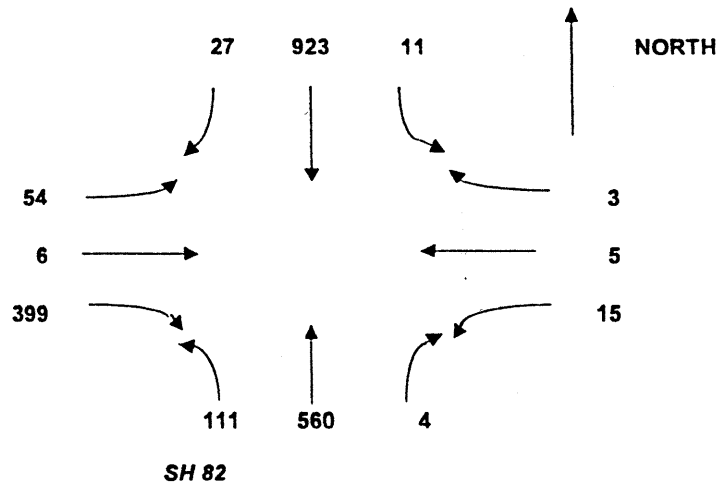
PROJ. NO.:
COUNT DATE: *29-Jul-01*
NOTES:

COUNT TIME:
FROM: *7:00 AM*
TO: *9:00 AM*

Notes: Weeday AM

PK HR VOLUME:	2,118
PHF:	0.96
PEAK HOUR:	
FROM:	TO:
7:15 AM	8:15 AM

Peak Hour Volumes



COUNT DATA INPUT:

TIME PERIOD		NORTHBOUND			EASTBOUND			SOUTHBOUND			WESTBOUND			TOTAL
FROM:	TO:	L	T	R	L	T	R	L	T	R	L	T	R	VOLUMES
7:00 AM	7:15 AM	23	83	1	2	0	81	1	217	3	0	1	0	412
7:15 AM	7:30 AM	30	111	2	6	0	102	2	246	5	2	0	0	506
7:30 AM	7:45 AM	21	148	1	14	2	100	3	249	6	5	2	2	553
7:45 AM	8:00 AM	33	146	1	19	3	105	4	220	12	5	1	1	550
8:00 AM	8:15 AM	27	155	0	15	1	92	2	208	4	3	2	0	509
8:15 AM	8:30 AM	26	142	2	18	1	63	3	188	9	4	3	1	460
8:30 AM	8:45 AM	39	166	4	9	1	75	3	192	4	4	4	0	501
8:45 AM	9:00 AM	30	176	1	9	5	66	1	204	8	3	1	3	507

HOURLY TOTALS:

TIME PERIOD		NORTHBOUND			EASTBOUND			SOUTHBOUND			WESTBOUND			TOTAL	DO NOT DELETE	
FROM:	TO:	L	T	R	L	T	R	L	T	R	L	T	R	VOLUMES	BELOW FORMULAS	
7:00 AM	8:00 AM	107	488	5	41	5	388	10	932	26	12	4	3	2,021	0	0
7:15 AM	8:15 AM	111	560	4	54	6	399	11	923	27	15	5	3	2,118	1	553
7:30 AM	8:30 AM	107	591	4	66	7	360	12	865	31	17	8	4	2,072	0	0
7:45 AM	8:45 AM	125	609	7	61	6	335	12	808	29	16	10	2	2,020	0	0
8:00 AM	9:00 AM	122	639	7	51	8	296	9	792	25	14	10	4	1,977	0	0

NOTE PHF IS BASED ON 15 MIN. PEAK WITHIN THE PEAK HOUR.

PBS&J

TURNING MOVEMENT COUNT SUMMARY

INTERSECTION:
N-S STREET: *SH 82*
E-W STREET: *27th Street*

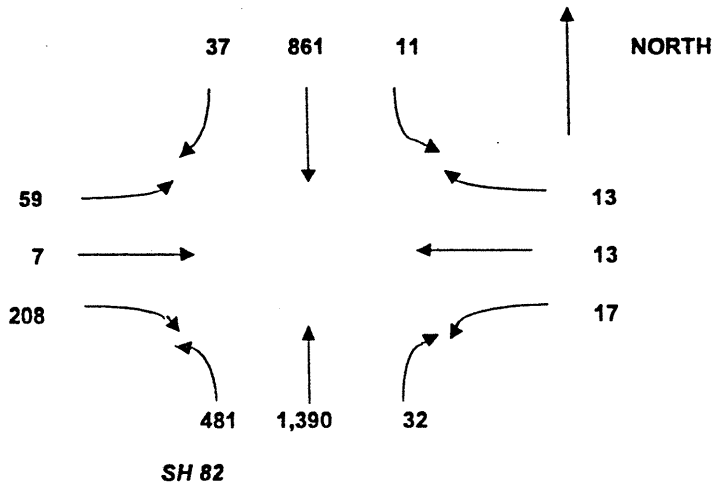
PROJ. NO.:
COUNT DATE: *10-Jul-01*
NOTES:

COUNT TIME:
FROM: *4:00 PM*
TO: *6:00 PM*

Notes: Weekday PM

PK HR VOLUME:	3,129
PHF:	0.95
PEAK HOUR:	
FROM:	TO:
4:45 PM	5:45 PM

Peak Hour Volumes



COUNT DATA INPUT:

TIME PERIOD FROM:	TO:	NORTHBOUND L	T	R	EASTBOUND L	T	R	SOUTHBOUND L	T	R	WESTBOUND L	T	R	TOTAL VOLUMES
4:00 PM	4:15 PM	63	300	8	13	2	46	0	216	7	5	2	4	666
4:15 PM	4:30 PM	84	304	3	8	3	54	3	213	4	1	0	2	679
4:30 PM	4:45 PM	99	313	5	9	0	46	1	225	3	6	0	2	709
4:45 PM	5:00 PM	90	336	6	18	3	38	3	212	9	0	2	7	724
5:00 PM	5:15 PM	126	345	12	16	1	68	2	235	15	4	2	1	827
5:15 PM	5:30 PM	116	351	9	17	1	49	0	227	7	6	5	4	792
5:30 PM	5:45 PM	149	358	5	8	2	53	6	187	6	7	4	1	786
5:45 PM	6:00 PM	115	308	4	13	2	51	0	175	7	9	2	3	689

HOURLY TOTALS:

TIME PERIOD FROM:	TO:	NORTHBOUND L	T	R	EASTBOUND L	T	R	SOUTHBOUND L	T	R	WESTBOUND L	T	R	TOTAL VOLUMES	DO NOT DELETE BELOW FORMULAS	
4:00 PM	5:00 PM	336	1,253	22	48	8	184	7	866	23	12	4	15	2,778	0	0
4:15 PM	5:15 PM	399	1,298	26	51	7	206	9	885	31	11	4	12	2,939	0	0
4:30 PM	5:30 PM	431	1,345	32	60	5	201	6	899	34	16	9	14	3,052	0	0
4:45 PM	5:45 PM	481	1,390	32	59	7	208	11	861	37	17	13	13	3,129	1	827
5:00 PM	6:00 PM	506	1,362	30	54	6	221	8	824	35	26	13	9	3,094	0	0

NOTE: PHF IS BASED ON 15 MIN. PEAK WITHIN THE PEAK HOUR

PBS&J

TURNING MOVEMENT COUNT SUMMARY

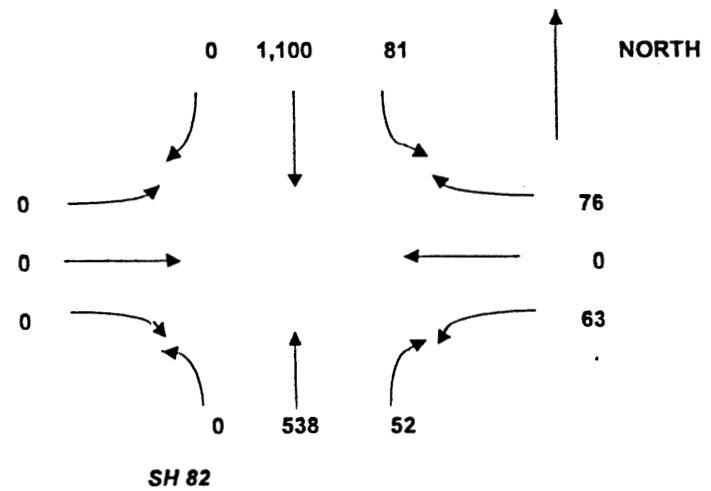
INTERSECTION:
N-S STREET: *SH 82*
E-W STREET: *32nd Street* (Roaring Fork)
PROJ. NO.:
COUNT DATE: *10-Jul-01*
NOTES:

COUNT TIME:
FROM: *7:00 AM*
TO: *9:00 AM*

Notes: Weeday AM

PK HR VOLUME:	1,910
PHF:	0.94
PEAK HOUR:	
FROM:	TO:
7:15 AM	8:15 AM

Peak Hour Volumes



COUNT DATA INPUT:

TIME PERIOD FROM:	TO:	NORTHBOUND L	T	R	EASTBOUND L	T	R	SOUTHBOUND L	T	R	WESTBOUND L	T	R	TOTAL VOLUMES
7:00 AM	7:15 AM	0	79	12	0	0	0	15	289	0	11	0	9	415
7:15 AM	7:30 AM	0	107	15	0	0	0	13	298	0	18	0	19	470
7:30 AM	7:45 AM	0	121	12	0	0	0	22	320	0	19	0	10	504
7:45 AM	8:00 AM	0	167	15	0	0	0	21	265	0	14	0	27	509
8:00 AM	8:15 AM	0	143	10	0	0	0	25	217	0	12	0	20	427
8:15 AM	8:30 AM	0	144	16	0	0	0	28	206	0	21	0	17	432
8:30 AM	8:45 AM	0	150	21	0	0	0	35	189	0	15	0	24	434
8:45 AM	9:00 AM	0	147	23	0	0	0	37	181	0	17	0	17	422

HOURLY TOTALS:

TIME PERIOD FROM:	TO:	NORTHBOUND L	T	R	EASTBOUND L	T	R	SOUTHBOUND L	T	R	WESTBOUND L	T	R	TOTAL VOLUMES	DO NOT DELETE BELOW FORMULAS	
7:00 AM	8:00 AM	0	474	54	0	0	0	71	1,172	0	62	0	65	1,898	0	0
7:15 AM	8:15 AM	0	538	52	0	0	0	81	1,100	0	63	0	76	1,910	1	509
7:30 AM	8:30 AM	0	575	53	0	0	0	96	1,008	0	66	0	74	1,872	0	0
7:45 AM	8:45 AM	0	604	62	0	0	0	109	877	0	62	0	88	1,802	0	0
8:00 AM	9:00 AM	0	584	70	0	0	0	125	793	0	65	0	78	1,715	0	0

NOTE PHF IS BASED ON 15 MIN. PEAK WITHIN THE PEAK HOUR.

PBS&J

TURNING MOVEMENT COUNT SUMMARY

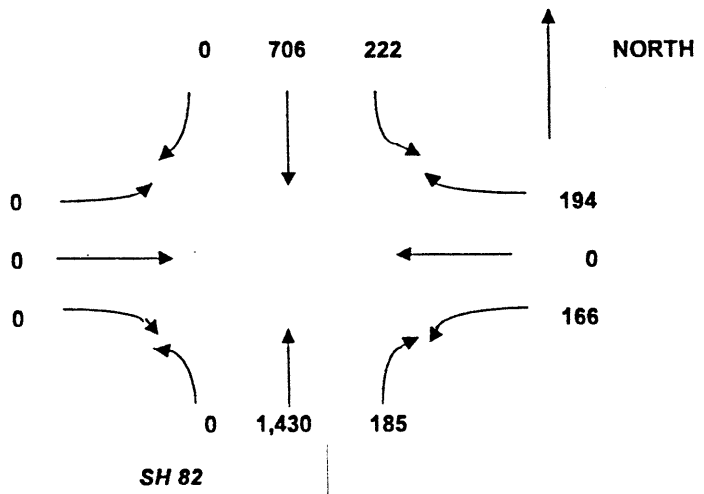
INTERSECTION:
N-S STREET: *SH 82*
E-W STREET: *32nd Street* (Roaring Fork)
PROJ. NO.:
COUNT DATE: *10-Jul-01*
NOTES:

COUNT TIME:
FROM: *4:00 PM*
TO: *6:00 PM*

Notes: Weekday PM

PK HR VOLUME:	2,903
PHF:	0.95
PEAK HOUR:	
FROM:	TO:
4:30 PM	5:30 PM

Peak Hour Volumes



COUNT DATA INPUT:

TIME PERIOD FROM:	TO:	NORTHBOUND L	T	R	EASTBOUND L	T	R	SOUTHBOUND L	T	R	WESTBOUND L	T	R	TOTAL VOLUMES
4:00 PM	4:15 PM	0	334	44	0	0	0	48	137	0	50	0	43	656
4:15 PM	4:30 PM	0	297	36	0	0	0	57	169	0	44	0	50	653
4:30 PM	4:45 PM	0	354	50	0	0	0	66	170	0	39	0	42	721
4:45 PM	5:00 PM	0	313	43	0	0	0	50	170	0	47	0	61	684
5:00 PM	5:15 PM	0	380	57	0	0	0	49	198	0	41	0	38	763
5:15 PM	5:30 PM	0	383	35	0	0	0	57	168	0	39	0	53	735
5:30 PM	5:45 PM	0	383	49	0	0	0	42	166	0	38	0	40	718
5:45 PM	6:00 PM	0	310	47	0	0	0	32	157	0	34	0	45	625

HOURLY TOTALS:

TIME PERIOD FROM:	TO:	NORTHBOUND L	T	R	EASTBOUND L	T	R	SOUTHBOUND L	T	R	WESTBOUND L	T	R	TOTAL VOLUMES	DO NOT DELETE BELOW FORMULAS	
4:00 PM	5:00 PM	0	1,298	173	0	0	0	221	646	0	180	0	196	2,714	0	0
4:15 PM	5:15 PM	0	1,344	186	0	0	0	222	707	0	171	0	191	2,821	0	0
4:30 PM	5:30 PM	0	1,430	185	0	0	0	222	706	0	166	0	194	2,903	1	763
4:45 PM	5:45 PM	0	1,459	184	0	0	0	198	702	0	165	0	192	2,900	0	0
5:00 PM	6:00 PM	0	1,456	188	0	0	0	180	689	0	152	0	176	2,841	0	0

NOTE PHF IS BASED ON 15 MIN. PEAK WITHIN THE PEAK HOUR.

Appendix D:
Level-of-Service Data

The following table summarizes the results of the LOS analysis that was performed for each time period for the existing conditions. The supporting documents from Synchro are provided on subsequent pages. Again, the LOS listed in this table is an overall LOS for the entire intersection. It should be noted that in most cases the side street LOS is expected to be much worse than that of the entire intersection.

Summary of Intersection LOS

Intersection	Intersection Level of Service			
	AM	NN	PM	WE
SH 82 & Laurel	D	C	C	C
SH 82 & Pine	B	B	C	B
SH 82 & 8th Street	B	C	E	B
SH 82 & 9th Street	A	B	B	A
SH 82 & 10th Street	A	A	A	B
SH 82 & 11th Street	A	A	A	A
SH 82 & 14th Street	A	B	A	A
SH 82 & 15th Street	A	B	B	A
SH 82 & 20th Street	A	A	B	A
SH 82 & 23rd Street	B	B	C	A
SH 82 & 27th Street	C	B	D	A
SH 82 & 32nd Street	A	B	B	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0	4.0		4.0	
Lane Util. Factor	1.00	0.95		0.97	1.00			1.00	1.00		1.00	
Frt	1.00	0.98		1.00	0.99			1.00	0.85		0.97	
Flt Protected	0.95	1.00		0.95	1.00			0.96	1.00		0.99	
Satd. Flow (prot)	1490	2918		2839	1530			1492	1321		1487	
Flt Permitted	0.45	1.00		0.95	1.00			0.96	1.00		0.99	
Satd. Flow (perm)	705	2918		2839	1530			1492	1321		1487	
Volume (vph)	17	463	75	475	500	23	125	25	500	21	47	21
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Growth Factor (vph)	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%
Adj. Flow (vph)	19	506	82	520	547	25	137	27	547	23	51	23
RTOR Reduction (vph)	0	10	0	0	2	0	0	0	0	0	11	0
Lane Group Flow (vph)	19	578	0	520	570	0	0	164	547	0	86	0
Heavy Vehicles (%)	9%	9%	9%	11%	11%	11%	10%	10%	10%	10%	10%	10%
Turn Type	Perm			Prot			Split		custom	Split		
Protected Phases		6		2	2 6		8	8	5 8	4	4	
Permitted Phases	6											
Actuated Green, G (s)	22.9	22.9		28.3	55.2			15.5	47.8		8.6	
Effective Green, g (s)	22.9	22.9		28.3	55.2			15.5	47.8		8.6	
Actuated g/C Ratio	0.25	0.25		0.31	0.60			0.17	0.52		0.09	
Clearance Time (s)	4.0	4.0		4.0				4.0			4.0	
Vehicle Extension (s)	4.0	4.0		3.0				3.0			2.5	
Lane Grp Cap (vph)	177	732		880	925			253	692		140	
v/s Ratio Prot		c0.20		0.18	0.37			0.11	c0.41		c0.06	
v/s Ratio Perm	0.03											
v/c Ratio	0.11	0.79		0.59	0.62			0.65	0.79		0.62	
Uniform Delay, d1	26.3	31.9		26.6	11.4			35.4	17.7		39.8	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	0.4	6.0		1.1	1.2			5.6	6.1		6.7	
Delay (s)	26.7	37.9		27.7	12.6			41.0	23.8		46.4	
Level of Service	C	D		C	B			D	C		D	
Approach Delay (s)		37.6			19.8			27.8			46.4	
Approach LOS		D			B			C			D	

Intersection Summary			
HCM Average Control Delay	27.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	91.3	Sum of lost time (s)	12.0
Intersection Capacity Utilization	69.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0	4.0		4.0	
Lane Util. Factor	1.00	0.95		0.97	1.00			1.00	1.00		1.00	
Frt	1.00	0.98		1.00	0.99			1.00	0.85		0.97	
Flt Protected	0.95	1.00		0.95	1.00			0.96	1.00		0.98	
Satd. Flow (prot)	1518	2990		2918	1571			1534	1358		1526	
Flt Permitted	0.42	1.00		0.95	1.00			0.96	1.00		0.98	
Satd. Flow (perm)	670	2990		2918	1571			1534	1358		1526	
Volume (vph)	23	399	45	490	555	30	104	21	550	31	46	23
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor (vph)	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%
Adj. Flow (vph)	25	441	50	542	613	33	115	23	608	34	51	25
RTOR Reduction (vph)	0	9	0	0	2	0	0	0	0	0	11	0
Lane Group Flow (vph)	25	482	0	542	644	0	0	138	608	0	99	0
Heavy Vehicles (%)	7%	7%	7%	8%	8%	8%	7%	7%	7%	7%	7%	7%
Turn Type	Perm			Prot			Split		custom	Split		
Protected Phases		6		2	2 6		8	8	5 8	4	4	
Permitted Phases	6											
Actuated Green, G (s)	29.7	29.7		40.6	74.3			12.0	56.6		11.7	
Effective Green, g (s)	29.7	29.7		40.6	74.3			12.0	56.6		11.7	
Actuated g/C Ratio	0.27	0.27		0.37	0.68			0.11	0.51		0.11	
Clearance Time (s)	4.0	4.0		4.0				4.0			4.0	
Vehicle Extension (s)	4.0	4.0		3.0				3.0			2.5	
Lane Grp Cap (vph)	181	807		1077	1061			167	699		162	
v/s Ratio Prot		0.16		0.19	c0.41			0.09	c0.45		c0.07	
v/s Ratio Perm	0.04											
v/c Ratio	0.14	0.60		0.50	0.61			0.83	0.87		0.61	
Uniform Delay, d1	30.4	34.9		26.9	9.8			48.0	23.5		47.0	
Progression Factor	1.00	1.00		0.77	0.57			1.00	1.00		1.00	
Incremental Delay, d2	0.5	1.4		1.3	0.9			27.1	11.2		5.8	
Delay (s)	30.9	36.3		21.9	6.4			75.1	34.7		52.7	
Level of Service	C	D		C	A			E	C		D	
Approach Delay (s)		36.1			13.5			42.1			52.7	
Approach LOS		D			B			D			D	

Intersection Summary			
HCM Average Control Delay	28.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	70.9%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	12	16	12	8	8	16	12	13	12
Grade (%)		0%			0%			-1%			0%	
Total Lost time (s)		4.0	4.0		4.0		4.0	4.0	4.0		4.0	
Lane Util. Factor		1.00	1.00		1.00		0.95	0.95	1.00		1.00	
Frt		1.00	0.85		0.98		1.00	1.00	0.85		0.96	
Flt Protected		0.98	1.00		0.98		0.95	0.95	1.00		0.99	
Satd. Flow (prot)		1381	1201		1735		1190	1195	1465		1551	
Flt Permitted		0.77	1.00		0.77		0.95	0.95	1.00		0.99	
Satd. Flow (perm)		1091	1201		1369		1190	1195	1465		1551	
Volume (vph)	45	53	875	53	48	18	959	22	59	12	58	27
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Growth Factor (vph)	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%
Adj. Flow (vph)	48	57	938	57	51	19	1028	24	63	13	62	29
RTOR Reduction (vph)	0	0	0	0	8	0	0	0	5	0	17	0
Lane Group Flow (vph)	0	105	938	0	119	0	514	538	58	0	87	0
Heavy Vehicles (%)	13%	13%	13%	3%	13%	3%	13%	13%	13%	3%	13%	3%
Turn Type	Perm		Free	Perm			Split		Perm	Split		
Protected Phases		2			2		1	1		4	4	
Permitted Phases	2		Free	2					1			
Actuated Green, G (s)		10.8	82.7		10.8		51.4	51.4	51.4		8.5	
Effective Green, g (s)		10.8	82.7		10.8		51.4	51.4	51.4		8.5	
Actuated g/C Ratio		0.13	1.00		0.13		0.62	0.62	0.62		0.10	
Clearance Time (s)		4.0			4.0		4.0	4.0	4.0		4.0	
Vehicle Extension (s)		2.0			2.0		0.2	0.2	0.2		2.0	
Lane Grp Cap (vph)		142	1201		179		740	743	911		159	
v/s Ratio Prot							0.43	0.45			0.06	
v/s Ratio Perm		0.10	c0.78		0.09				0.04			
v/c Ratio		0.74	0.78		0.67		0.69	0.72	0.06		0.55	
Uniform Delay, d1		34.6	0.0		34.2		10.4	10.8	6.2		35.3	
Progression Factor		1.00	1.00		1.00		1.00	1.00	1.00		1.00	
Incremental Delay, d2		15.8	5.1		7.0		2.3	3.0	0.0		2.1	
Delay (s)		50.4	5.1		41.3		12.7	13.8	6.2		37.3	
Level of Service		D	A		D		B	B	A		D	
Approach Delay (s)		9.6			41.3			12.8			37.3	
Approach LOS		A			D			B			D	

Intersection Summary			
HCM Average Control Delay	14.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	82.7	Sum of lost time (s)	0.0
Intersection Capacity Utilization	59.3%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	12	16	12	9	9	16	12	13	12
Grade (%)		0%			0%			-1%			0%	
Total Lost time (s)		4.0	4.0		4.0		4.0	4.0	4.0		4.0	
Lane Util. Factor		1.00	1.00		1.00		0.95	0.95	1.00		1.00	
Frt		1.00	0.85		0.98		1.00	1.00	0.85		0.94	
Flt Protected		0.98	1.00		0.98		0.95	0.96	1.00		1.00	
Satd. Flow (prot)		1431	1245		1768		1292	1301	1533		1567	
Flt Permitted		0.75	1.00		0.66		0.95	0.96	1.00		1.00	
Satd. Flow (perm)		1095	1245		1184		1292	1301	1533		1567	
Volume (vph)	59	67	850	50	44	17	990	48	29	9	52	44
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Growth Factor (vph)	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%
Adj. Flow (vph)	65	73	930	55	48	19	1083	52	32	10	57	48
RTOR Reduction (vph)	0	0	0	0	6	0	0	0	2	0	24	0
Lane Group Flow (vph)	0	138	930	0	116	0	552	583	30	0	91	0
Heavy Vehicles (%)	9%	9%	9%	3%	8%	3%	8%	8%	8%	3%	9%	3%
Turn Type	Perm		Free	Perm			Split		Perm	Split		
Protected Phases		2			2		1	1		4	4	
Permitted Phases	2		Free	2					1			
Actuated Green, G (s)		16.0	110.0		16.0		71.5	71.5	71.5		10.5	
Effective Green, g (s)		16.0	110.0		16.0		71.5	71.5	71.5		10.5	
Actuated g/C Ratio		0.15	1.00		0.15		0.65	0.65	0.65		0.10	
Clearance Time (s)		4.0			4.0		4.0	4.0	4.0		4.0	
Vehicle Extension (s)		2.0			2.0		0.2	0.2	0.2		2.0	
Lane Grp Cap (vph)		159	1245		172		840	846	996		150	
v/s Ratio Prot							0.43	0.45			0.06	
v/s Ratio Perm		0.13	c0.75		0.10				0.02			
v/c Ratio		0.87	0.75		0.67		0.66	0.69	0.03		0.60	
Uniform Delay, d1		46.0	0.0		44.5		11.8	12.2	6.9		47.8	
Progression Factor		0.69	1.00		1.00		0.28	0.28	0.24		1.00	
Incremental Delay, d2		27.5	3.0		7.9		3.3	3.7	0.0		4.6	
Delay (s)		59.4	3.0		52.5		6.6	7.2	1.7		52.4	
Level of Service		E	A		D		A	A	A		D	
Approach Delay (s)		10.3			52.5			6.7			52.4	
Approach LOS		B			D			A			D	

Intersection Summary			
HCM Average Control Delay	12.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	0.0
Intersection Capacity Utilization	60.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	9	8	12	8	9	12	10	11	12	8	8	12
Grade (%)		0%			0%			0%			-2%	
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.88		1.00	0.88		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1419	1109		1367	1156		1342	2550		1258	2482	
Flt Permitted	0.95	1.00		0.95	1.00		0.21	1.00		0.21	1.00	
Satd. Flow (perm)	1419	1109		1367	1156		297	2550		283	2482	
Volume (vph)	94	17	68	49	23	78	55	877	50	69	850	85
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Growth Factor (vph)	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%
Adj. Flow (vph)	103	19	74	54	25	85	60	959	55	75	930	93
RTOR Reduction (vph)	0	67	0	0	77	0	0	3	0	0	5	0
Lane Group Flow (vph)	103	26	0	54	33	0	60	1011	0	75	1018	0
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	13%	13%	13%	13%	13%	13%
Parking (#/hr)		5	5		5	5		10	10			
Turn Type	Prot			Prot			pm+pt			pm+pt		
Protected Phases	3	4		3	4		1	2		1	2	
Permitted Phases							2			2		
Actuated Green, G (s)	12.9	10.6		12.9	10.6		70.5	63.6		70.5	63.6	
Effective Green, g (s)	12.9	10.6		12.9	10.6		70.5	63.6		70.5	63.6	
Actuated g/C Ratio	0.12	0.10		0.12	0.10		0.64	0.58		0.64	0.58	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	0.2		3.0	0.2		3.5	0.2		3.5	0.2	
Lane Grp Cap (vph)	166	107		160	111		256	1474		243	1435	
v/s Ratio Prot	c0.07	0.02		0.04	c0.03		0.01	0.40		c0.02	c0.41	
v/s Ratio Perm							0.14			0.18		
v/c Ratio	0.62	0.24		0.34	0.30		0.23	0.69		0.31	0.71	
Uniform Delay, d1	46.2	46.0		44.6	46.2		8.8	16.2		8.9	16.6	
Progression Factor	1.00	1.00		1.00	1.00		1.38	0.69		1.00	1.00	
Incremental Delay, d2	7.0	0.4		1.3	0.6		0.4	2.1		0.9	3.0	
Delay (s)	53.2	46.4		45.9	46.8		12.5	13.3		9.8	19.6	
Level of Service	D	D		D	D		B	B		A	B	
Approach Delay (s)		50.0			46.5			13.2			18.9	
Approach LOS		D			D			B			B	

Intersection Summary			
HCM Average Control Delay	20.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	59.1%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	9	8	12	8	9	12	10	11	12	9	9	12
Grade (%)		0%			0%			0%			-2%	
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.88		1.00	0.87		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1419	1107		1367	1133		1404	2672		1355	2684	
Flt Permitted	0.95	1.00		0.95	1.00		0.24	1.00		0.21	1.00	
Satd. Flow (perm)	1419	1107		1367	1133		352	2672		300	2684	
Volume (vph)	52	13	52	37	12	95	45	920	43	65	830	56
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor (vph)	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%
Adj. Flow (vph)	57	14	57	41	13	105	50	1017	48	72	917	62
RTOR Reduction (vph)	0	52	0	0	95	0	0	2	0	0	3	0
Lane Group Flow (vph)	57	19	0	41	23	0	50	1063	0	72	976	0
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	8%	8%	8%	9%	9%	9%
Parking (#/hr)		5	5		5	5		10	10			
Turn Type	Prot			Prot			pm+pt			pm+pt		
Protected Phases	3	4		3	4		1	2		1	2	
Permitted Phases							2			2		
Actuated Green, G (s)	8.5	10.5		8.5	10.5		75.0	68.4		75.0	68.4	
Effective Green, g (s)	8.5	10.5		8.5	10.5		75.0	68.4		75.0	68.4	
Actuated g/C Ratio	0.08	0.10		0.08	0.10		0.68	0.62		0.68	0.62	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	0.2		3.0	0.2		3.5	0.2		3.5	0.2	
Lane Grp Cap (vph)	110	106		106	108		303	1661		268	1669	
v/s Ratio Prot	c0.04	0.02		0.03	c0.02		0.01	c0.40		c0.02	0.36	
v/s Ratio Perm							0.10			0.17		
v/c Ratio	0.52	0.18		0.39	0.21		0.17	0.64		0.27	0.58	
Uniform Delay, d1	48.8	45.8		48.3	45.9		6.6	13.1		7.1	12.4	
Progression Factor	1.00	1.00		1.00	1.00		0.84	0.46		0.89	0.95	
Incremental Delay, d2	4.1	0.3		2.3	0.4		0.3	1.6		0.4	1.0	
Delay (s)	52.9	46.1		50.6	46.3		5.8	7.6		6.7	12.7	
Level of Service	D	D		D	D		A	A		A	B	
Approach Delay (s)		49.1			47.4			7.6			12.3	
Approach LOS		D			D			A			B	

Intersection Summary			
HCM Average Control Delay	14.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	57.1%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	12	12	11	11	12	10	11	12	10	11	12
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.88		1.00	0.92		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1525	1280		1525	1294		1342	2554		1342	2556	
Flt Permitted	0.95	1.00		0.95	1.00		0.20	1.00		0.20	1.00	
Satd. Flow (perm)	1525	1280		1525	1294		285	2554		282	2556	
Volume (vph)	60	13	48	56	29	31	78	900	42	41	900	36
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Growth Factor (vph)	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%
Adj. Flow (vph)	71	15	57	66	34	37	92	1062	50	48	1062	42
RTOR Reduction (vph)	0	53	0	0	34	0	0	2	0	0	2	0
Lane Group Flow (vph)	71	19	0	66	37	0	92	1110	0	48	1102	0
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	13%	13%	13%	13%	13%	13%
Parking (#/hr)		5	5		5	5		10	10		10	10
Turn Type	Prot			Prot			pm+pt			pm+pt		
Protected Phases	3	4		3	4		1	2		1	2	
Permitted Phases							2			2		
Actuated Green, G (s)	9.1	8.2		9.1	8.2		76.7	69.7		76.7	69.7	
Effective Green, g (s)	9.1	8.2		9.1	8.2		76.7	69.7		76.7	69.7	
Actuated g/C Ratio	0.08	0.07		0.08	0.07		0.70	0.63		0.70	0.63	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	0.2		3.0	0.2		3.5	0.2		3.5	0.2	
Lane Grp Cap (vph)	126	95		126	96		266	1618		264	1620	
v/s Ratio Prot	c0.05	0.02		0.04	c0.03		c0.02	c0.43		0.01	0.43	
v/s Ratio Perm							0.22			0.12		
v/c Ratio	0.56	0.20		0.52	0.38		0.35	0.69		0.18	0.68	
Uniform Delay, d1	48.5	47.8		48.4	48.5		6.8	13.1		6.5	13.0	
Progression Factor	1.00	1.00		1.00	1.00		2.39	0.33		0.79	0.34	
Incremental Delay, d2	5.7	0.4		3.9	0.9		0.8	2.1		0.3	1.9	
Delay (s)	54.2	48.2		52.3	49.4		17.1	6.4		5.4	6.3	
Level of Service	D	D		D	D		B	A		A	A	
Approach Delay (s)		51.2			50.8			7.2			6.3	
Approach LOS		D			D			A			A	

Intersection Summary			
HCM Average Control Delay	11.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	57.0%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	12	12	11	11	12	10	11	12	10	11	12
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.88		1.00	0.88		1.00	1.00		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1525	1280		1525	1242		1404	2681		1391	2656	
Flt Permitted	0.95	1.00		0.95	1.00		0.25	1.00		0.22	1.00	
Satd. Flow (perm)	1525	1280		1525	1242		366	2681		319	2656	
Volume (vph)	13	6	25	46	10	34	35	960	22	18	875	21
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Growth Factor (vph)	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%
Adj. Flow (vph)	14	7	27	50	11	37	38	1050	24	20	957	23
RTOR Reduction (vph)	0	25	0	0	34	0	0	1	0	0	1	0
Lane Group Flow (vph)	14	9	0	50	14	0	38	1073	0	20	979	0
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	8%	8%	8%	9%	9%	9%
Parking (#/hr)		5	5		5	5		10	10		10	10
Turn Type	Prot			Prot			pm+pt			pm+pt		
Protected Phases	3	4		3	4		1	2		1	2	
Permitted Phases							2			2		
Actuated Green, G (s)	7.8	8.0		7.8	8.0		78.2	72.5		78.2	72.5	
Effective Green, g (s)	7.8	8.0		7.8	8.0		78.2	72.5		78.2	72.5	
Actuated g/C Ratio	0.07	0.07		0.07	0.07		0.71	0.66		0.71	0.66	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	0.2		3.0	0.2		3.5	0.2		3.5	0.2	
Lane Grp Cap (vph)	108	93		108	90		314	1767		282	1751	
v/s Ratio Prot	0.01	0.01		c0.03	c0.01		c0.01	c0.40		0.00	0.37	
v/s Ratio Perm							0.08			0.05		
v/c Ratio	0.13	0.10		0.46	0.15		0.12	0.61		0.07	0.56	
Uniform Delay, d1	47.9	47.6		49.1	47.8		5.3	10.7		5.5	10.1	
Progression Factor	1.00	1.00		1.00	1.00		0.17	0.25		0.41	0.26	
Incremental Delay, d2	0.5	0.2		3.1	0.3		0.2	1.4		0.1	1.1	
Delay (s)	48.5	47.8		52.2	48.1		1.1	4.0		2.4	3.8	
Level of Service	D	D		D	D		A	A		A	A	
Approach Delay (s)		48.0			50.2			3.9			3.8	
Approach LOS		D			D			A			A	

Intersection Summary

HCM Average Control Delay	6.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	50.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	14	12	12	13	12	12	11	12	11	12	12
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frt		0.90			0.90		1.00	0.99		1.00	1.00	
Flt Protected		0.99			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1377			1342		1438	2556		1390	2647	
Flt Permitted		0.95			0.94		0.24	1.00		0.22	1.00	
Satd. Flow (perm)		1323			1275		371	2556		327	2647	
Volume (vph)	4	3	24	2	1	7	35	1010	40	20	946	30
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Growth Factor (vph)	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%
Adj. Flow (vph)	5	3	28	2	1	8	40	1165	46	23	1092	35
RTOR Reduction (vph)	0	26	0	0	8	0	0	1	0	0	1	0
Lane Group Flow (vph)	0	10	0	0	3	0	40	1210	0	23	1126	0
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	13%	13%	13%	13%	13%	13%
Parking (#/hr)		5	5		5	5		10	10		10	10
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)		6.0			6.0		96.0	96.0		96.0	96.0	
Effective Green, g (s)		6.0			6.0		96.0	96.0		96.0	96.0	
Actuated g/C Ratio		0.05			0.05		0.87	0.87		0.87	0.87	
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)		2.0			2.0		0.2	0.2		0.2	0.2	
Lane Grp Cap (vph)		72			70		324	2231		285	2310	
v/s Ratio Prot								c0.47			0.43	
v/s Ratio Perm		c0.01			0.00		0.11			0.07		
v/c Ratio		0.13			0.05		0.12	0.54		0.08	0.49	
Uniform Delay, d1		49.5			49.3		1.0	1.7		1.0	1.6	
Progression Factor		1.00			1.00		0.06	0.04		1.11	0.85	
Incremental Delay, d2		0.3			0.1		0.7	0.8		0.4	0.6	
Delay (s)		49.8			49.4		0.8	0.9		1.5	1.9	
Level of Service		D			D		A	A		A	A	
Approach Delay (s)		49.8			49.4			0.9			1.9	
Approach LOS		D			D			A			A	

Intersection Summary			
HCM Average Control Delay	2.3	HCM Level of Service	A
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	49.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	14	12	12	13	12	12	11	12	11	12	12
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frt		0.91			0.94		1.00	0.99		1.00	0.99	
Flt Protected		0.99			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1395			1375		1504	2666		1441	2737	
Flt Permitted		0.82			0.64		0.26	1.00		0.25	1.00	
Satd. Flow (perm)		1163			903		409	2666		376	2737	
Volume (vph)	45	9	97	62	11	64	94	900	57	24	880	46
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor (vph)	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%
Adj. Flow (vph)	50	10	107	69	12	71	104	995	63	27	973	51
RTOR Reduction (vph)	0	64	0	0	31	0	0	3	0	0	2	0
Lane Group Flow (vph)	0	103	0	0	121	0	104	1055	0	27	1022	0
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	8%	8%	8%	9%	9%	9%
Parking (#/hr)		5	5		5	5		10	10		10	10
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)		16.7			16.7		85.3	85.3		85.3	85.3	
Effective Green, g (s)		16.7			16.7		85.3	85.3		85.3	85.3	
Actuated g/C Ratio		0.15			0.15		0.78	0.78		0.78	0.78	
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)		2.0			2.0		0.2	0.2		0.2	0.2	
Lane Grp Cap (vph)		177			137		317	2067		292	2122	
v/s Ratio Prot								c0.40			0.37	
v/s Ratio Perm		0.09			c0.13		0.25			0.07		
v/c Ratio		0.58			0.88		0.33	0.51		0.09	0.48	
Uniform Delay, d1		43.4			45.7		3.7	4.6		3.0	4.4	
Progression Factor		1.00			1.00		0.88	1.02		0.43	0.37	
Incremental Delay, d2		2.8			42.4		2.5	0.8		0.5	0.7	
Delay (s)		46.2			88.1		5.8	5.5		1.8	2.3	
Level of Service		D			F		A	A		A	A	
Approach Delay (s)		46.2			88.1			5.5			2.3	
Approach LOS		D			F			A			A	

Intersection Summary			
HCM Average Control Delay	11.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	89.7%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	12	16	12	10	12	12	10	12	12
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frt		0.91			0.96		1.00	0.99		1.00	1.00	
Flt Protected		0.99			0.97		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1480			1541		1342	2645		1342	2656	
Flt Permitted		0.92			0.76		0.27	1.00		0.22	1.00	
Satd. Flow (perm)		1377			1209		376	2645		315	2656	
Volume (vph)	14	6	40	45	10	20	35	1065	40	11	950	8
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Growth Factor (vph)	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%
Adj. Flow (vph)	15	6	43	49	11	22	38	1153	43	12	1028	9
RTOR Reduction (vph)	0	40	0	0	14	0	0	1	0	0	0	0
Lane Group Flow (vph)	0	24	0	0	68	0	38	1195	0	12	1037	0
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	13%	13%	13%	13%	13%	13%
Parking (#/hr)		5	5		5	5		10	10		10	10
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)		8.9			8.9		93.1	93.1		93.1	93.1	
Effective Green, g (s)		8.9			8.9		93.1	93.1		93.1	93.1	
Actuated g/C Ratio		0.08			0.08		0.85	0.85		0.85	0.85	
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)		2.0			2.0		0.2	0.2		0.2	0.2	
Lane Grp Cap (vph)		111			98		318	2239		267	2248	
v/s Ratio Prot								c0.45			0.39	
v/s Ratio Perm		0.02			c0.06		0.10			0.04		
v/c Ratio		0.22			0.70		0.12	0.53		0.04	0.46	
Uniform Delay, d1		47.3			49.2		1.4	2.4		1.3	2.1	
Progression Factor		1.00			1.00		1.26	3.60		1.53	1.25	
Incremental Delay, d2		0.4			15.9		0.6	0.7		0.3	0.6	
Delay (s)		47.7			65.1		2.4	9.3		2.3	3.3	
Level of Service		D			E		A	A		A	A	
Approach Delay (s)		47.7			65.1			9.1			3.3	
Approach LOS		D			E			A			A	

Intersection Summary			
HCM Average Control Delay	9.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	53.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	12	16	12	10	12	12	10	12	12
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frt		0.90			0.92		1.00	1.00		1.00	1.00	
Flt Protected		0.99			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1469			1489		1404	2775		1391	2756	
Flt Permitted		0.92			0.92		0.24	1.00		0.24	1.00	
Satd. Flow (perm)		1371			1390		361	2775		349	2756	
Volume (vph)	5	2	20	8	1	13	9	1030	20	15	1025	4
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor (vph)	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%
Adj. Flow (vph)	6	2	22	9	1	14	10	1138	22	17	1133	4
RTOR Reduction (vph)	0	21	0	0	13	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	9	0	0	11	0	10	1160	0	17	1137	0
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	8%	8%	8%	9%	9%	9%
Parking (#/hr)		5	5		5	5		10	10		10	10
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)		4.4			4.4		97.6	97.6		97.6	97.6	
Effective Green, g (s)		4.4			4.4		97.6	97.6		97.6	97.6	
Actuated g/C Ratio		0.04			0.04		0.89	0.89		0.89	0.89	
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)		2.0			2.0		0.2	0.2		0.2	0.2	
Lane Grp Cap (vph)		55			56		320	2462		310	2445	
v/s Ratio Prot								c0.42			0.41	
v/s Ratio Perm		0.01			c0.01		0.03			0.05		
v/c Ratio		0.16			0.19		0.03	0.47		0.05	0.46	
Uniform Delay, d1		51.0			51.1		0.7	1.2		0.7	1.2	
Progression Factor		1.00			1.00		0.19	1.80		1.43	1.22	
Incremental Delay, d2		0.5			0.6		0.2	0.6		0.3	0.6	
Delay (s)		51.5			51.7		0.3	2.8		1.3	2.0	
Level of Service		D			D		A	A		A	A	
Approach Delay (s)		51.5			51.7			2.7			2.0	
Approach LOS		D			D			A			A	

Intersection Summary

HCM Average Control Delay	3.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	46.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	12	12	13	12	11	11	12	11	11	12
Total Lost time (s)	4.0	4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00			1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.88			0.93		1.00	1.00		1.00	1.00	
Flt Protected	0.95	1.00			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1694	1564			1749		1544	3078		1544	3078	
Flt Permitted	0.52	1.00			0.73		0.23	1.00		0.16	1.00	
Satd. Flow (perm)	932	1564			1303		366	3078		262	3078	
Volume (vph)	9	17	76	33	17	49	39	1087	25	84	930	20
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Growth Factor (vph)	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%
Adj. Flow (vph)	11	20	90	39	20	58	46	1282	29	99	1097	24
RTOR Reduction (vph)	0	80	0	0	36	0	0	1	0	0	1	0
Lane Group Flow (vph)	11	30	0	0	81	0	46	1310	0	99	1120	0
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	13%	13%	13%	13%	13%	13%
Turn Type	Perm			Perm			pm+pt			pm+pt		
Protected Phases		8			4		1	6		5	2	
Permitted Phases	8			4			6			2		
Actuated Green, G (s)	12.1	12.1			12.1		83.8	77.4		88.0	79.5	
Effective Green, g (s)	12.1	12.1			12.1		83.8	77.4		88.0	79.5	
Actuated g/C Ratio	0.11	0.11			0.11		0.76	0.70		0.80	0.72	
Clearance Time (s)	4.0	4.0			4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.5	3.5			3.5		3.5	0.2		3.5	0.2	
Lane Grp Cap (vph)	103	172			143		347	2166		309	2225	
v/s Ratio Prot		0.02					0.01	c0.43		c0.02	0.36	
v/s Ratio Perm	0.01				c0.06		0.09			0.23		
v/c Ratio	0.11	0.17			0.56		0.13	0.60		0.32	0.50	
Uniform Delay, d1	44.1	44.4			46.4		3.6	8.4		4.5	6.6	
Progression Factor	1.00	1.00			1.00		0.28	0.41		1.74	1.21	
Incremental Delay, d2	0.5	0.6			5.4		0.2	1.1		0.7	0.8	
Delay (s)	44.6	45.0			51.9		1.2	4.5		8.5	8.8	
Level of Service	D	D			D		A	A		A	A	
Approach Delay (s)		45.0			51.9			4.4			8.8	
Approach LOS		D			D			A			A	

Intersection Summary			
HCM Average Control Delay	10.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	66.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	12	12	13	12	11	11	12	11	11	12
Total Lost time (s)	4.0	4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00			1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.89			0.89		1.00	0.99		1.00	1.00	
Flt Protected	0.95	1.00			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1694	1584			1702		1616	3210		1601	3186	
Flt Permitted	0.72	1.00			1.00		0.25	1.00		0.23	1.00	
Satd. Flow (perm)	1282	1584			1702		417	3210		389	3186	
Volume (vph)	39	13	38	0	11	43	30	970	45	55	975	32
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Growth Factor (vph)	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%
Adj. Flow (vph)	42	14	41	0	12	46	32	1039	48	59	1045	34
RTOR Reduction (vph)	0	38	0	0	42	0	0	2	0	0	1	0
Lane Group Flow (vph)	42	17	0	0	16	0	32	1085	0	59	1078	0
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	8%	8%	8%	9%	9%	9%
Turn Type	Perm			Perm			pm+pt			pm+pt		
Protected Phases		8			4		1	6		5	2	
Permitted Phases	8			4			6			2		
Actuated Green, G (s)	8.8	8.8			8.8		87.6	82.8		90.8	84.4	
Effective Green, g (s)	8.8	8.8			8.8		87.6	82.8		90.8	84.4	
Actuated g/C Ratio	0.08	0.08			0.08		0.80	0.75		0.83	0.77	
Clearance Time (s)	4.0	4.0			4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.5	3.5			3.5		3.5	0.2		3.5	0.2	
Lane Grp Cap (vph)	103	127			136		384	2416		392	2445	
v/s Ratio Prot		0.01			0.01		0.00	0.34		c0.01	c0.34	
v/s Ratio Perm	c0.03						0.06			0.12		
v/c Ratio	0.41	0.14			0.12		0.08	0.45		0.15	0.44	
Uniform Delay, d1	48.1	47.1			47.0		2.5	5.1		2.3	4.5	
Progression Factor	1.00	1.00			1.00		0.14	0.13		1.25	0.85	
Incremental Delay, d2	3.1	0.6			0.4		0.1	0.5		0.2	0.5	
Delay (s)	51.2	47.6			47.4		0.5	1.2		3.1	4.4	
Level of Service	D	D			D		A	A		A	A	
Approach Delay (s)		49.2			47.4			1.2			4.3	
Approach LOS		D			D			A			A	

Intersection Summary			
HCM Average Control Delay	5.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	63.1%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	10	12	12	10	12	12
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frt		0.98			0.96		1.00	0.99		1.00	0.99	
Flt Protected		0.96			0.97		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1738			1709		1491	3173		1491	3174	
Flt Permitted		0.96			0.97		0.19	1.00		0.17	1.00	
Satd. Flow (perm)		1738			1709		302	3173		266	3174	
Volume (vph)	40	1	6	71	0	32	45	1073	50	20	975	43
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor (vph)	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%
Adj. Flow (vph)	44	1	7	78	0	35	50	1186	55	22	1078	48
RTOR Reduction (vph)	0	6	0	0	17	0	0	2	0	0	2	0
Lane Group Flow (vph)	0	46	0	0	96	0	50	1239	0	22	1124	0
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	13%	13%	13%	13%	13%	13%
Turn Type	Split			Split			pm+pt			pm+pt		
Protected Phases	8	8		4	4		1	6		5	2	
Permitted Phases							6			2		
Actuated Green, G (s)		8.1			11.5		75.0	70.3		73.8	70.2	
Effective Green, g (s)		7.6			12.0		75.5	70.8		73.3	69.7	
Actuated g/C Ratio		0.07			0.11		0.69	0.64		0.67	0.63	
Clearance Time (s)		3.5			4.5		4.0	4.5		4.0	3.5	
Vehicle Extension (s)		2.0			2.0		2.0	0.2		2.0	0.2	
Lane Grp Cap (vph)		120			186		258	2042		217	2011	
v/s Ratio Prot		c0.03			c0.06		c0.01	c0.39		0.00	0.35	
v/s Ratio Perm							0.12			0.06		
v/c Ratio		0.39			0.52		0.19	0.61		0.10	0.56	
Uniform Delay, d1		49.0			46.3		7.1	11.5		7.7	11.4	
Progression Factor		1.00			1.00		0.87	0.71		0.76	0.51	
Incremental Delay, d2		0.8			1.0		0.1	0.3		0.1	1.0	
Delay (s)		49.7			47.3		6.3	8.5		5.9	6.8	
Level of Service		D			D		A	A		A	A	
Approach Delay (s)		49.7			47.3			8.4			6.8	
Approach LOS		D			D			A			A	

Intersection Summary			
HCM Average Control Delay	10.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	54.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	10	12	12	10	12	12
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frt		1.00			0.96		1.00	0.99		1.00	0.99	
Flt Protected		0.95			0.97		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1752			1713		1560	3322		1546	3294	
Flt Permitted		0.95			0.97		0.23	1.00		0.17	1.00	
Satd. Flow (perm)		1752			1713		384	3322		285	3294	
Volume (vph)	50	0	2	47	0	18	5	980	43	45	940	35
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%
Adj. Flow (vph)	57	0	2	54	0	21	6	1118	49	51	1073	40
RTOR Reduction (vph)	0	1	0	0	15	0	0	2	0	0	1	0
Lane Group Flow (vph)	0	58	0	0	60	0	6	1165	0	51	1112	0
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	8%	8%	8%	9%	9%	9%
Turn Type	Split			Split			pm+pt			pm+pt		
Protected Phases	8	8		4	4		1	6		5	2	
Permitted Phases							6			2		
Actuated Green, G (s)		8.3			8.4		70.6	69.6		81.8	76.8	
Effective Green, g (s)		7.8			8.9		71.1	70.1		81.3	76.3	
Actuated g/C Ratio		0.07			0.08		0.65	0.64		0.74	0.69	
Clearance Time (s)		3.5			4.5		4.0	4.5		4.0	3.5	
Vehicle Extension (s)		2.0			2.0		2.0	0.2		2.0	0.2	
Lane Grp Cap (vph)		124			139		259	2117		293	2285	
v/s Ratio Prot		c0.03			c0.04		0.00	c0.35		c0.01	c0.34	
v/s Ratio Perm							0.01			0.12		
v/c Ratio		0.47			0.43		0.02	0.55		0.17	0.49	
Uniform Delay, d1		49.1			48.1		7.1	11.1		6.1	7.8	
Progression Factor		1.00			1.00		0.75	0.64		0.99	0.48	
Incremental Delay, d2		1.0			0.8		0.0	0.2		0.1	0.7	
Delay (s)		50.1			48.9		5.3	7.3		6.1	4.5	
Level of Service		D			D		A	A		A	A	
Approach Delay (s)		50.1			48.9			7.3			4.5	
Approach LOS		D			D			A			A	

Intersection Summary			
HCM Average Control Delay	8.3	HCM Level of Service	A
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	54.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	10	12	12	10	12	12
Total Lost time (s)		4.0	4.0		4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00		1.00		1.00	0.95		1.00	0.95	
Frt		1.00	0.85		0.96		1.00	0.99		1.00	0.99	
Flt Protected		0.96	1.00		0.97		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1763	1568		1713		1491	3167		1491	3168	
Flt Permitted		0.63	1.00		0.75		0.22	1.00		0.23	1.00	
Satd. Flow (perm)		1161	1568		1331		344	3167		358	3168	
Volume (vph)	71	6	42	105	13	56	45	1050	65	60	925	55
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Growth Factor (vph)	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%
Adj. Flow (vph)	76	6	45	112	14	60	48	1125	70	64	991	59
RTOR Reduction (vph)	0	0	37	0	17	0	0	3	0	0	3	0
Lane Group Flow (vph)	0	82	8	0	169	0	48	1192	0	64	1047	0
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	13%	13%	13%	13%	13%	13%
Turn Type	Perm		Perm	Perm			pm+pt			Perm		
Protected Phases		4			4		1	6			2	
Permitted Phases	4		4	4			6			2		
Actuated Green, G (s)		19.1	19.1		19.1		82.4	82.4		74.4	74.4	
Effective Green, g (s)		19.1	19.1		19.1		82.9	82.9		74.9	74.9	
Actuated g/C Ratio		0.17	0.17		0.17		0.75	0.75		0.68	0.68	
Clearance Time (s)		4.0	4.0		4.0		4.0	4.5		4.5	4.5	
Vehicle Extension (s)		4.0	4.0		4.0		0.2	0.2		0.2	0.2	
Lane Grp Cap (vph)		202	272		231		301	2387		244	2157	
v/s Ratio Prot							0.01	c0.38			0.33	
v/s Ratio Perm		0.07	0.00		c0.13		0.11			0.18		
v/c Ratio		0.41	0.03		0.73		0.16	0.50		0.26	0.49	
Uniform Delay, d1		40.4	37.7		43.0		4.7	5.4		6.8	8.4	
Progression Factor		1.00	1.00		1.00		0.67	0.58		0.32	0.43	
Incremental Delay, d2		1.8	0.1		11.9		0.1	0.7		2.2	0.7	
Delay (s)		42.2	37.8		54.9		3.2	3.8		4.4	4.2	
Level of Service		D	D		D		A	A		A	A	
Approach Delay (s)		40.7			54.9			3.7			4.2	
Approach LOS		D			D			A			A	

Intersection Summary			
HCM Average Control Delay	9.3	HCM Level of Service	A
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	76.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	10	12	12	10	12	12
Total Lost time (s)		4.0	4.0		4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00		1.00		1.00	0.95		1.00	0.95	
Frt		1.00	0.85		0.97		1.00	0.99		1.00	0.99	
Flt Protected		0.96	1.00		0.97		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1767	1568		1736		1560	3324		1546	3288	
Flt Permitted		0.75	1.00		0.76		0.24	1.00		0.25	1.00	
Satd. Flow (perm)		1388	1568		1372		395	3324		412	3288	
Volume (vph)	40	5	28	37	6	11	18	980	38	40	910	45
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor (vph)	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%
Adj. Flow (vph)	44	6	31	41	7	12	20	1083	42	44	1006	50
RTOR Reduction (vph)	0	0	28	0	9	0	0	1	0	0	2	0
Lane Group Flow (vph)	0	50	3	0	51	0	20	1124	0	44	1054	0
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	8%	8%	8%	9%	9%	9%
Turn Type	Perm		Perm	Perm			pm+pt			Perm		
Protected Phases		4			4		1	6			2	
Permitted Phases	4		4	4			6			2		
Actuated Green, G (s)		9.1	9.1		9.1		92.4	92.4		86.4	86.4	
Effective Green, g (s)		9.1	9.1		9.1		92.9	92.9		86.9	86.9	
Actuated g/C Ratio		0.08	0.08		0.08		0.84	0.84		0.79	0.79	
Clearance Time (s)		4.0	4.0		4.0		4.0	4.5		4.5	4.5	
Vehicle Extension (s)		4.0	4.0		4.0		0.2	0.2		0.2	0.2	
Lane Grp Cap (vph)		115	130		114		355	2807		325	2598	
v/s Ratio Prot							0.00	c0.34			0.32	
v/s Ratio Perm		0.04	0.00		c0.04		0.05			0.11		
v/c Ratio		0.43	0.02		0.45		0.06	0.40		0.14	0.41	
Uniform Delay, d1		48.0	46.4		48.0		1.9	2.0		2.7	3.6	
Progression Factor		1.00	1.00		1.00		0.72	0.69		1.05	1.87	
Incremental Delay, d2		3.6	0.1		3.8		0.0	0.4		0.8	0.4	
Delay (s)		51.6	46.4		51.8		1.4	1.8		3.6	7.1	
Level of Service		D	D		D		A	A		A	A	
Approach Delay (s)		49.6			51.8			1.8			7.0	
Approach LOS		D			D			A			A	

Intersection Summary			
HCM Average Control Delay	7.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	54.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	15	16	12	14	14	12	16	12	11	12	12
Grade (%)		2%			0%			0%			0%	
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	1.00
Frt	1.00	0.97		1.00	0.90		1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1735	1953		1752	1776		1597	3584		1544	3195	1429
Flt Permitted	0.54	1.00		0.73	1.00		0.24	1.00		0.18	1.00	1.00
Satd. Flow (perm)	990	1953		1351	1776		401	3584		294	3195	1429
Volume (vph)	200	28	6	98	34	62	50	910	65	53	835	177
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Growth Factor (vph)	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%
Adj. Flow (vph)	219	31	7	107	37	68	55	995	71	58	913	194
RTOR Reduction (vph)	0	6	0	0	61	0	0	4	0	0	0	40
Lane Group Flow (vph)	219	32	0	107	44	0	55	1062	0	58	913	154
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	13%	13%	13%	13%	13%	13%
Turn Type	pm+pt			pm+pt			pm+pt			pm+pt		Perm
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases	8			4			6			2		2
Actuated Green, G (s)	29.3	11.0		28.9	10.8		64.0	58.6		64.8	59.0	59.0
Effective Green, g (s)	29.3	11.0		28.9	10.8		64.5	59.1		65.3	59.5	59.5
Actuated g/C Ratio	0.27	0.10		0.26	0.10		0.59	0.54		0.59	0.54	0.54
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.5		4.0	4.5	4.5
Vehicle Extension (s)	4.0	3.5		4.0	4.0		3.0	0.2		2.0	0.2	0.2
Lane Grp Cap (vph)	388	195		421	174		294	1926		240	1728	773
v/s Ratio Prot	c0.09	0.02		0.04	0.02		0.01	c0.30		c0.01	0.29	
v/s Ratio Perm	c0.06			0.02			0.10			0.13		0.11
v/c Ratio	0.56	0.16		0.25	0.25		0.19	0.55		0.24	0.53	0.20
Uniform Delay, d1	33.9	45.3		31.8	45.9		10.7	16.7		11.4	16.2	13.0
Progression Factor	1.00	1.00		1.00	1.00		0.36	0.66		1.63	0.69	0.69
Incremental Delay, d2	2.3	0.5		0.4	1.0		0.3	1.1		0.2	1.0	0.5
Delay (s)	36.2	45.8		32.3	46.9		4.2	12.0		18.8	12.2	9.5
Level of Service	D	D		C	D		A	B		B	B	A
Approach Delay (s)		37.6			39.5			11.7			12.1	
Approach LOS		D			D			B			B	

Intersection Summary

HCM Average Control Delay	16.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	61.1%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	15	16	12	14	14	12	16	12	11	12	12
Grade (%)		2%			0%			0%			0%	
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	1.00
Frt	1.00	0.97		1.00	0.92		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1735	1956		1752	1805		1671	3772		1601	3312	1482
Flt Permitted	0.69	1.00		0.74	1.00		0.29	1.00		0.22	1.00	1.00
Satd. Flow (perm)	1265	1956		1369	1805		512	3772		362	3312	1482
Volume (vph)	138	17	4	48	20	24	15	880	25	23	780	164
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor (vph)	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%
Adj. Flow (vph)	153	19	4	53	22	27	17	973	28	25	862	181
RTOR Reduction (vph)	0	4	0	0	25	0	0	1	0	0	0	33
Lane Group Flow (vph)	153	19	0	53	24	0	17	1000	0	25	862	148
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	8%	8%	8%	9%	9%	9%
Turn Type	pm+pt			pm+pt			pm+pt			pm+pt		Perm
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases	8			4			6			2		2
Actuated Green, G (s)	23.8	8.9		23.0	8.5		67.5	65.1		72.7	67.7	67.7
Effective Green, g (s)	23.8	8.9		23.0	8.5		68.0	65.6		73.2	68.2	68.2
Actuated g/C Ratio	0.22	0.08		0.21	0.08		0.62	0.60		0.67	0.62	0.62
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.5		4.0	4.5	4.5
Vehicle Extension (s)	4.0	3.5		4.0	4.0		3.0	0.2		2.0	0.2	0.2
Lane Grp Cap (vph)	337	158		337	139		342	2249		297	2053	919
v/s Ratio Prot	c0.06	0.01		0.02	0.01		0.00	c0.27		c0.00	0.26	
v/s Ratio Perm	c0.04			0.01			0.03			0.05		0.10
v/c Ratio	0.45	0.12		0.16	0.17		0.05	0.44		0.08	0.42	0.16
Uniform Delay, d1	37.0	46.9		35.5	47.5		8.4	12.2		7.6	10.7	8.8
Progression Factor	1.00	1.00		1.00	1.00		0.72	0.55		0.23	0.20	0.04
Incremental Delay, d2	1.3	0.4		0.3	0.8		0.1	0.6		0.0	0.6	0.4
Delay (s)	38.4	47.3		35.8	48.3		6.1	7.3		1.8	2.8	0.7
Level of Service	D	D		D	D		A	A		A	A	A
Approach Delay (s)		39.5			41.8			7.3			2.4	
Approach LOS		D			D			A			A	

Intersection Summary			
HCM Average Control Delay	8.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	49.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	9	9	12	16	12	12	13	12	12	13	16
Grade (%)		1%			0%			0%			0%	
Total Lost time (s)	4.0	4.0			4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00			1.00		1.00	0.95		1.00	0.95	1.00
Frt	1.00	0.85			0.96		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00			0.98		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1744	1412			1964		1671	3447		1641	3391	1664
Flt Permitted	0.78	1.00			0.24		0.27	1.00		0.25	1.00	1.00
Satd. Flow (perm)	1439	1412			487		480	3447		426	3391	1664
Volume (vph)	52	7	227	20	10	12	194	966	13	45	840	30
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Growth Factor (vph)	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%
Adj. Flow (vph)	56	8	246	22	11	13	210	1046	14	49	909	32
RTOR Reduction (vph)	0	198	0	0	12	0	0	1	0	0	0	0
Lane Group Flow (vph)	56	56	0	0	34	0	210	1059	0	49	909	32
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	8%	8%	8%	10%	10%	10%
Turn Type	Perm			Perm			pm+pt			pm+pt		Free
Protected Phases		8			4		1	6		5	2	
Permitted Phases	8			4			6			2		Free
Actuated Green, G (s)	12.2	12.2			12.2		88.0	79.7		82.6	77.0	110.0
Effective Green, g (s)	12.2	12.2			12.2		88.5	80.2		83.1	77.5	110.0
Actuated g/C Ratio	0.11	0.11			0.11		0.80	0.73		0.76	0.70	1.00
Clearance Time (s)	4.0	4.0			4.0		4.0	4.5		4.0	4.5	
Vehicle Extension (s)	3.5	3.5			3.5		3.0	0.2		3.0	0.2	
Lane Grp Cap (vph)	160	157			54		476	2513		384	2389	1664
v/s Ratio Prot		0.04					c0.03	0.31		0.01	0.27	
v/s Ratio Perm	0.04				c0.07		c0.32			0.09		0.02
v/c Ratio	0.35	0.35			0.64		0.44	0.42		0.13	0.38	0.02
Uniform Delay, d1	45.2	45.3			46.8		3.2	5.8		3.6	6.6	0.0
Progression Factor	1.00	1.00			1.00		4.55	0.25		0.57	1.22	1.00
Incremental Delay, d2	1.6	1.6			23.0		0.6	0.5		0.1	0.4	0.0
Delay (s)	46.8	46.9			69.8		15.2	1.9		2.2	8.4	0.0
Level of Service	D	D			E		B	A		A	A	A
Approach Delay (s)		46.9			69.8			4.1			7.8	
Approach LOS		D			E			A			A	

Intersection Summary			
HCM Average Control Delay	11.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	71.3%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	9	9	12	16	12	12	13	12	12	13	16
Grade (%)		1%			0%			0%			0%	
Total Lost time (s)	4.0	4.0			4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00			1.00		1.00	0.95		1.00	0.95	1.00
Frt	1.00	0.85			0.98		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00			0.96		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1744	1406			1968		1687	3478		1671	3454	1695
Flt Permitted	0.83	1.00			0.37		0.28	1.00		0.25	1.00	1.00
Satd. Flow (perm)	1524	1406			761		499	3478		438	3454	1695
Volume (vph)	30	1	155	20	2	4	135	885	15	11	810	11
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%
Adj. Flow (vph)	34	1	177	23	2	5	154	1010	17	13	924	13
RTOR Reduction (vph)	0	160	0	0	5	0	0	1	0	0	0	0
Lane Group Flow (vph)	34	18	0	0	25	0	154	1026	0	13	924	13
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	7%	7%	7%	8%	8%	8%
Turn Type	Perm			Perm			pm+pt			pm+pt		Free
Protected Phases		8			4		1	6		5	2	
Permitted Phases	8			4			6			2		Free
Actuated Green, G (s)	10.8	10.8			10.8		86.9	79.7		86.5	79.5	110.0
Effective Green, g (s)	10.8	10.8			10.8		87.4	80.2		87.0	80.0	110.0
Actuated g/C Ratio	0.10	0.10			0.10		0.79	0.73		0.79	0.73	1.00
Clearance Time (s)	4.0	4.0			4.0		4.0	4.5		4.0	4.5	
Vehicle Extension (s)	3.5	3.5			3.5		3.0	0.2		3.0	0.2	
Lane Grp Cap (vph)	150	138			75		474	2536		425	2512	1695
v/s Ratio Prot		0.01					c0.02	c0.30		0.00	0.27	
v/s Ratio Perm	0.02				c0.03		0.24			0.02		c0.01
v/c Ratio	0.23	0.13			0.34		0.32	0.40		0.03	0.37	0.01
Uniform Delay, d1	45.7	45.3			46.3		2.9	5.7		2.8	5.6	0.0
Progression Factor	1.00	1.00			1.00		1.82	0.35		0.91	0.72	1.00
Incremental Delay, d2	0.9	0.5			3.2		0.4	0.4		0.0	0.4	0.0
Delay (s)	46.7	45.8			49.5		5.6	2.5		2.6	4.4	0.0
Level of Service	D	D			D		A	A		A	A	A
Approach Delay (s)		46.0			49.5			2.9			4.4	
Approach LOS		D			D			A			A	

Intersection Summary			
HCM Average Control Delay	7.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.38		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	66.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	14	15	13	16	12	12
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1869	1725	3454	1695	1641	3282
Flt Permitted	0.95	1.00	1.00	1.00	0.20	1.00
Satd. Flow (perm)	1869	1725	3454	1695	353	3282
Volume (vph)	155	209	950	154	276	800
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Growth Factor (vph)	105%	105%	105%	105%	105%	105%
Adj. Flow (vph)	170	229	1039	168	302	875
RTOR Reduction (vph)	0	201	0	29	0	0
Lane Group Flow (vph)	170	28	1039	139	302	875
Heavy Vehicles (%)	3%	3%	8%	8%	10%	10%
Turn Type		Perm		Perm	pm+pt	
Protected Phases	4		6		5	2
Permitted Phases		4		6	2	
Actuated Green, G (s)	13.4	13.4	67.1	67.1	88.1	88.1
Effective Green, g (s)	13.4	13.4	67.6	67.6	88.6	88.6
Actuated g/C Ratio	0.12	0.12	0.61	0.61	0.81	0.81
Clearance Time (s)	4.0	4.0	4.5	4.5	4.0	4.5
Vehicle Extension (s)	2.0	2.0	0.2	0.2	2.0	0.2
Lane Grp Cap (vph)	228	210	2123	1042	483	2644
v/s Ratio Prot	c0.09		0.30		c0.10	0.27
v/s Ratio Perm		0.02		0.08	c0.41	
v/c Ratio	0.75	0.13	0.49	0.13	0.63	0.33
Uniform Delay, d1	46.7	43.1	11.7	8.9	6.8	2.8
Progression Factor	1.00	1.00	1.00	1.00	0.52	2.10
Incremental Delay, d2	11.0	0.1	0.8	0.3	1.7	0.3
Delay (s)	57.6	43.2	12.5	9.2	5.2	6.3
Level of Service	E	D	B	A	A	A
Approach Delay (s)	49.4		12.0			6.0
Approach LOS	D		B			A

Intersection Summary			
HCM Average Control Delay	14.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	72.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	14	15	13	16	12	12
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1869	1725	3486	1711	1671	3343
Flt Permitted	0.95	1.00	1.00	1.00	0.23	1.00
Satd. Flow (perm)	1869	1725	3486	1711	409	3343
Volume (vph)	225	225	810	211	293	700
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	105%	105%	105%	105%	105%	105%
Adj. Flow (vph)	257	257	924	241	334	799
RTOR Reduction (vph)	0	214	0	67	0	0
Lane Group Flow (vph)	257	43	924	174	334	799
Heavy Vehicles (%)	3%	3%	7%	7%	8%	8%
Turn Type		Perm		Perm	pm+pt	
Protected Phases	4		6		5	2
Permitted Phases		4		6	2	
Actuated Green, G (s)	18.3	18.3	63.7	63.7	83.2	83.2
Effective Green, g (s)	18.3	18.3	64.2	64.2	83.7	83.7
Actuated g/C Ratio	0.17	0.17	0.58	0.58	0.76	0.76
Clearance Time (s)	4.0	4.0	4.5	4.5	4.0	4.5
Vehicle Extension (s)	2.0	2.0	0.2	0.2	2.0	0.2
Lane Grp Cap (vph)	311	287	2035	999	489	2544
v/s Ratio Prot	c0.14		0.27		c0.10	0.24
v/s Ratio Perm		0.02		0.10	c0.42	
v/c Ratio	0.83	0.15	0.45	0.17	0.68	0.31
Uniform Delay, d1	44.3	39.2	13.0	10.6	7.3	4.1
Progression Factor	1.00	1.00	1.00	1.00	2.05	0.77
Incremental Delay, d2	15.5	0.1	0.7	0.4	3.0	0.3
Delay (s)	59.8	39.3	13.7	11.0	18.0	3.5
Level of Service	E	D	B	B	B	A
Approach Delay (s)	49.6		13.1			7.7
Approach LOS	D		B			A

Intersection Summary			
HCM Average Control Delay	17.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	77.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Appendix E:
Future Intersection Level-of-Service Data

The following tables summarize the results of the future condition intersection LOS analysis that was performed for each time period and for each annual growth rate. The shaded boxes show those intersections that experience an overall LOS of 'E' or worse. Again, the LOS listed in this table is an overall LOS for the entire intersection. It should be noted that in most cases the side street LOS is expected to be much worse than that of the entire intersection.

Intersection	Intersection Level of Service (1% Growth)																			
	Existing				5 Year				10 Year				15 Year				20 Year			
	AM	NN	PM	WE	AM	NN	PM	WE	AM	NN	PM	WE	AM	NN	PM	WE	AM	NN	PM	WE
SH 82 & Laurel	D	C	C	C	D	C	D	C	D	C	D	D	D	C	D	D	D	D	D	E
SH 82 & Pine	B	B	C	B	B	B	C	B	B	B	D	B	B	B	D	B	B	C	E	B
SH 82 & 8th Street	B	C	E	B	B	C	E	B	B	C	F	B	B	C	F	B	B	C	F	B
SH 82 & 9th Street	A	B	B	A	A	B	B	A	A	B	B	A	A	B	B	A	A	B	B	A
SH 82 & 10th Street	A	A	A	B	A	A	A	B	A	A	A	B	A	A	A	B	A	A	A	B
SH 82 & 11th Street	A	A	A	A	A	A	A	A	A	B	A	A	A	B	B	A	A	B	B	A
SH 82 & 14th Street	A	B	A	A	A	B	A	A	A	B	A	A	A	B	B	A	A	B	B	A
SH 82 & 15th Street	A	B	B	A	A	B	B	A	A	B	B	A	A	B	B	A	A	B	B	A
SH 82 & 20th Street	A	A	B	A	A	A	B	A	A	A	B	A	A	B	B	A	A	B	B	A
SH 82 & 23rd Street	B	B	C	A	B	B	C	A	B	B	C	A	B	B	C	A	B	B	C	A
SH 82 & 27th Street	C	B	D	A	C	B	D	A	C	B	E	A	C	B	E	A	C	B	F	A
SH 82 & 32nd Street	A	B	B	B	A	B	C	B	A	B	C	B	A	B	C	C	A	B	C	C

Intersection	Intersection Level of Service (1.5% Growth)																			
	Existing				5 Year				10 Year				15 Year				20 Year			
	AM	NN	PM	WE	AM	NN	PM	WE	AM	NN	PM	WE	AM	NN	PM	WE	AM	NN	PM	WE
SH 82 & Laurel	D	C	C	C	D	C	D	C	D	C	D	D	E	D	D	E	E	E	D	F
SH 82 & Pine	B	B	C	B	B	B	C	B	B	B	D	B	C	C	E	B	E	C	F	B
SH 82 & 8th Street	B	C	E	B	B	C	F	B	B	C	F	B	B	C	F	B	C	D	F	C
SH 82 & 9th Street	A	B	B	A	A	B	B	A	A	B	B	A	A	B	C	A	A	C	C	A
SH 82 & 10th Street	A	A	A	B	A	A	A	B	A	A	A	B	A	A	A	B	A	A	A	B
SH 82 & 11th Street	A	A	A	A	A	A	A	A	A	B	B	A	A	B	B	A	A	B	B	A
SH 82 & 14th Street	A	B	A	A	A	B	A	A	A	B	B	A	A	B	B	A	A	B	B	A
SH 82 & 15th Street	A	B	B	A	A	B	B	A	A	B	B	A	A	B	B	B	A	B	B	B
SH 82 & 20th Street	A	A	B	A	A	A	B	A	A	B	B	A	A	B	B	A	A	B	B	A
SH 82 & 23rd Street	B	B	C	A	B	B	C	A	B	B	C	A	B	B	C	A	B	C	C	B
SH 82 & 27th Street	C	B	D	A	C	B	E	A	C	B	E	A	C	B	F	A	C	B	F	B
SH 82 & 32nd Street	A	B	B	B	A	B	C	B	A	B	C	C	A	B	C	C	A	C	D	C

Appendix F:
Future Arterial Level-of-Service Data

The following tables summarize the results of the future condition arterial LOS analysis that was performed for each time period and for each annual growth rate. The shaded boxes show those time periods and direction of travel that experience an overall LOS of 'E' or worse. Again, the LOS listed in this table is an overall LOS for the entire intersection. It should be noted that in most cases the side street LOS is expected to be much worse than that of the entire intersection.

Time Period	Route	Direction of Travel	Existing		5 Year		10 Year		15 Year		20 Year	
			Speed	LOS	Speed	LOS	Speed	LOS	Speed	LOS	Speed	LOS
Arterial Level of Service (1% Growth Rate)												
Weekday AM	SH 82 (32nd to Laurel)	NB	25	B	26	B	26	B	25	B	25	B
		SB	28	B	22	C	21	C	21	C	21	C
Weekday NN	SH 82 (32nd to Laurel)	NB	24	C	22	C	22	C	21	C	21	C
		SB	21	C	19	C	19	C	18	D	17	D
Weekday PM	SH 82 (32nd to Laurel)	NB	21	C	18	D	18	D	16	D	16	D
		SB	23	C	18	D	18	D	18	D	18	D
Weekend	SH 82 (32nd to Laurel)	NB	27	B	24	C	23	C	23	C	22	C
		SB	27	B	25	B	23	C	24	C	24	C
Arterial Level of Service (1.5% Growth Rate)												
Weekday AM	SH 82 (32nd to Laurel)	NB	25	B	26	B	26	B	25	B	25	B
		SB	28	B	22	C	22	C	22	C	21	C
Weekday NN	SH 82 (32nd to Laurel)	NB	24	C	22	C	21	C	15	D	18	D
		SB	21	C	20	C	18	D	17	D	16	D
Weekday PM	SH 82 (32nd to Laurel)	NB	21	C	17	D	16	D	13	E	12	E
		SB	23	C	18	D	18	D	17	D	17	D
Weekend	SH 82 (32nd to Laurel)	NB	27	B	24	C	22	C	22	C	20	C
		SB	27	B	25	B	24	C	24	C	19	C
Arterial Level of Service (2.5% Growth Rate)												
Weekday AM	SH 82 (32nd to Laurel)	NB	25	B	25	B	25	B	24	C	23	C
		SB	28	B	22	C	21	C	20	C	19	C
Weekday NN	SH 82 (32nd to Laurel)	NB	24	C	22	C	19	C	13	E	11	E
		SB	21	C	18	D	17	D	16	D	14	E
Weekday PM	SH 82 (32nd to Laurel)	NB	21	C	15	D	14	E	9	F	7	F
		SB	23	C	18	D	17	D	16	D	16	D
Weekend	SH 82 (32nd to Laurel)	NB	27	B	23	C	21	C	19	C	11	E
		SB	27	B	24	C	22	C	21	C	17	D

The following tables summarize the results of the future condition intersection LOS analysis that was performed for each time period and for each annual growth rate. The shaded boxes show those intersections that experience an overall LOS of 'E' or worse. Again, the LOS listed in this table is an overall LOS for the entire intersection. It should be noted that in most cases the side street LOS is expected to be much worse than that of the entire intersection.

Intersection	Intersection Level of Service (1% Growth)																			
	Existing				5 Year				10 Year				15 Year				20 Year			
	AM	NN	PM	WE	AM	NN	PM	WE	AM	NN	PM	WE	AM	NN	PM	WE	AM	NN	PM	WE
SH 82 & Laurel	D	C	C	C	D	C	D	C	D	C	D	D	D	C	D	D	D	D	D	E
SH 82 & Pine	B	B	C	B	B	B	C	B	B	B	D	B	B	B	D	B	B	C	E	B
SH 82 & 8th Street	B	C	E	B	B	C	E	B	B	C	F	B	B	C	F	B	B	C	F	B
SH 82 & 9th Street	A	B	B	A	A	B	B	A	A	B	B	A	A	B	B	A	A	B	B	A
SH 82 & 10th Street	A	A	A	B	A	A	A	B	A	A	A	B	A	A	A	B	A	A	A	B
SH 82 & 11th Street	A	A	A	A	A	A	A	A	A	B	A	A	A	B	B	A	A	B	B	A
SH 82 & 14th Street	A	B	A	A	A	B	A	A	A	B	A	A	A	B	B	A	A	B	B	A
SH 82 & 15th Street	A	B	B	A	A	B	B	A	A	B	B	A	A	B	B	A	A	B	B	A
SH 82 & 20th Street	A	A	B	A	A	A	B	A	A	A	B	A	A	B	B	A	A	B	B	A
SH 82 & 23rd Street	B	B	C	A	B	B	C	A	B	B	C	A	B	B	C	A	B	B	C	A
SH 82 & 27th Street	C	B	D	A	C	B	D	A	C	B	E	A	C	B	E	A	C	B	F	A
SH 82 & 32nd Street	A	B	B	B	A	B	C	B	A	B	C	B	A	B	C	C	A	B	C	C

Intersection	Intersection Level of Service (1.5% Growth)																			
	Existing				5 Year				10 Year				15 Year				20 Year			
	AM	NN	PM	WE	AM	NN	PM	WE	AM	NN	PM	WE	AM	NN	PM	WE	AM	NN	PM	WE
SH 82 & Laurel	D	C	C	C	D	C	D	C	D	C	D	D	E	D	D	E	E	E	D	F
SH 82 & Pine	B	B	C	B	B	B	C	B	B	B	D	B	C	C	E	B	E	C	F	B
SH 82 & 8th Street	B	C	E	B	B	C	F	B	B	C	F	B	B	C	F	B	C	D	F	C
SH 82 & 9th Street	A	B	B	A	A	B	B	A	A	B	B	A	A	B	C	A	A	C	C	A
SH 82 & 10th Street	A	A	A	B	A	A	A	B	A	A	A	B	A	A	A	B	A	A	A	B
SH 82 & 11th Street	A	A	A	A	A	A	A	A	A	B	B	A	A	B	B	A	A	B	B	A
SH 82 & 14th Street	A	B	A	A	A	B	A	A	A	B	B	A	A	B	B	A	A	B	B	A
SH 82 & 15th Street	A	B	B	A	A	B	B	A	A	B	B	A	A	B	B	B	A	B	B	B
SH 82 & 20th Street	A	A	B	A	A	A	B	A	A	B	B	A	A	B	B	A	A	B	B	A
SH 82 & 23rd Street	B	B	C	A	B	B	C	A	B	B	C	A	B	B	C	A	B	C	C	B
SH 82 & 27th Street	C	B	D	A	C	B	E	A	C	B	E	A	C	B	F	A	C	B	F	B
SH 82 & 32nd Street	A	B	B	B	A	B	C	B	A	B	C	C	A	B	C	C	A	C	D	C

Appendix F:
Future Arterial Level-of-Service Data

The following tables summarize the results of the future condition arterial LOS analysis that was performed for each time period and for each annual growth rate. The shaded boxes show those time periods and direction of travel that experience an overall LOS of 'E' or worse. Again, the LOS listed in this table is an overall LOS for the entire intersection. It should be noted that in most cases the side street LOS is expected to be much worse than that of the entire intersection.

Time Period	Route	Direction of Travel	Existing		5 Year		10 Year		15 Year		20 Year	
			Speed	LOS	Speed	LOS	Speed	LOS	Speed	LOS	Speed	LOS
Arterial Level of Service (1% Growth Rate)												
Weekday AM	SH 82 (32nd to Laurel)	NB	25	B	26	B	26	B	25	B	25	B
		SB	28	B	22	C	21	C	21	C	21	C
Weekday NN	SH 82 (32nd to Laurel)	NB	24	C	22	C	22	C	21	C	21	C
		SB	21	C	19	C	19	C	18	D	17	D
Weekday PM	SH 82 (32nd to Laurel)	NB	21	C	18	D	18	D	16	D	16	D
		SB	23	C	18	D	18	D	18	D	18	D
Weekend	SH 82 (32nd to Laurel)	NB	27	B	24	C	23	C	23	C	22	C
		SB	27	B	25	B	23	C	24	C	24	C
Arterial Level of Service (1.5% Growth Rate)												
Weekday AM	SH 82 (32nd to Laurel)	NB	25	B	26	B	26	B	25	B	25	B
		SB	28	B	22	C	22	C	22	C	21	C
Weekday NN	SH 82 (32nd to Laurel)	NB	24	C	22	C	21	C	15	D	18	D
		SB	21	C	20	C	18	D	17	D	16	D
Weekday PM	SH 82 (32nd to Laurel)	NB	21	C	17	D	16	D	13	E	12	E
		SB	23	C	18	D	18	D	17	D	17	D
Weekend	SH 82 (32nd to Laurel)	NB	27	B	24	C	22	C	22	C	20	C
		SB	27	B	25	B	24	C	24	C	19	C
Arterial Level of Service (2.5% Growth Rate)												
Weekday AM	SH 82 (32nd to Laurel)	NB	25	B	25	B	25	B	24	C	23	C
		SB	28	B	22	C	21	C	20	C	19	C
Weekday NN	SH 82 (32nd to Laurel)	NB	24	C	22	C	19	C	13	E	11	E
		SB	21	C	18	D	17	D	16	D	14	E
Weekday PM	SH 82 (32nd to Laurel)	NB	21	C	15	D	14	E	9	F	7	F
		SB	23	C	18	D	17	D	16	D	16	D
Weekend	SH 82 (32nd to Laurel)	NB	27	B	23	C	21	C	19	C	11	E
		SB	27	B	24	C	22	C	21	C	17	D

Appendix G:
Future Travel Times

The following tables summarize the results of the future condition travel time analysis that was performed for each time period and for each annual growth rate. Each table is for a different growth rate and presents the time periods and direction of travel that was analyzed. Each of the future year travel times was compared to the existing conditions time to get a percent change.

Time Period	Route	Direction of Travel	Existing Model	5 Year		10 Year		15 Year		20 Year	
				Model	% Diff.	Model	% Diff.	Model	% Diff.	Model	% Diff.
Travel Time 1%											
Weekday AM	SH 82 (32nd to Laurel)	NB	321	322	0.3%	320	-0.2%	331	3.1%	331	3.1%
		SB	323	322	-0.4%	340	5.1%	337	4.3%	344	6.4%
Weekday OP	SH 82 (32nd to Laurel)	NB	361	368	1.9%	380	5.4%	382	5.7%	387	7.1%
		SB	378	391	3.3%	391	3.5%	400	5.8%	410	8.3%
Weekday PM	SH 82 (32nd to Laurel)	NB	435	433	-0.6%	448	2.9%	474	9.0%	491	12.8%
		SB	387	391	1.1%	394	1.7%	399	3.0%	405	4.6%
Weekend	SH 82 (32nd to Laurel)	NB	329	342	3.8%	347	5.3%	349	6.0%	358	8.8%
		SB	310	307	-1.0%	320	3.1%	320	3.1%	318	2.5%
Travel Time 1.5%											
Weekday AM	SH 82 (32nd to Laurel)	NB	321	323	0.6%	325	1.3%	329	2.6%	336	4.5%
		SB	323	337	4.4%	354	9.6%	338	4.5%	355	9.8%
Weekday OP	SH 82 (32nd to Laurel)	NB	361	374	3.7%	386	7.0%	522	44.5%	451	24.9%
		SB	378	381	0.7%	404	7.0%	409	8.2%	426	12.6%
Weekday PM	SH 82 (32nd to Laurel)	NB	435	452	3.9%	486	11.8%	522	19.9%	705	62.0%
		SB	387	391	1.0%	398	2.8%	409	5.7%	423	9.4%
Weekend	SH 82 (32nd to Laurel)	NB	329	337	2.5%	360	9.4%	369	12.2%	405	23.2%
		SB	310	306	-1.4%	318	2.5%	324	4.6%	406	30.8%
Travel Time 2.5%											
Weekday AM	SH 82 (32nd to Laurel)	NB	321	327	1.9%	331	3.1%	342	6.6%	364	13.4%
		SB	323	331	2.5%	359	11.0%	365	12.8%	400	23.7%
Weekday OP	SH 82 (32nd to Laurel)	NB	361	381	5.5%	437	21.2%	628	74.0%	796	120.5%
		SB	378	398	5.2%	420	11.1%	441	16.7%	499	32.0%
Weekday PM	SH 82 (32nd to Laurel)	NB	435	513	17.9%	566	30.0%	871	100.2%	1170	168.9%
		SB	387	396	2.3%	409	5.7%	438	13.3%	448	15.8%
Weekend	SH 82 (32nd to Laurel)	NB	329	354	7.5%	386	17.2%	428	30.1%	740	125.0%
		SB	310	315	1.7%	338	8.9%	376	21.3%	438	41.2%

Appendix H:
Future Emissions

Time Period	Existing			5 Year			10 Year			15 Year			20 Year		
	CO Emissions (lb)	NOx Emissions (lb)	VOC Emissions (lb)	CO Emissions (lb)	NOx Emissions (lb)	VOC Emissions (lb)	CO Emissions (lb)	NOx Emissions (lb)	VOC Emissions (lb)	CO Emissions (lb)	NOx Emissions (lb)	VOC Emissions (lb)	CO Emissions (lb)	NOx Emissions (lb)	VOC Emissions (lb)
Emissions (1% Growth Rate)															
AM	85	17	20	91	18	21	97	19	22	100	20	24	112	22	26
NN	108	21	25	114	22	26	122	24	28	132	26	31	140	27	33
PM	161	31	37	176	34	41	196	38	45	260	51	60	344	67	80
WE	101	20	23	107	21	25	114	22	27	124	24	29	134	26	31
Average WD	3,232	629	749	3,462	673	802	3,759	731	871	4,423	865	1,030	5,280	1,027	1,224
Average WE	2,422	471	561	2,570	500	596	2,746	534	636	2,988	582	693	3,210	624	744
Average Daily	3,000	583	695	3,207	624	743	3,470	675	804	4,013	784	934	4,688	912	1,087
Total Weekly	21,001	4,084	4,868	22,448	4,366	5,201	24,290	4,726	5,629	28,090	5,487	6,536	32,817	6,385	7,606
Total Yearly	1,092,067	212,384	253,119	1,167,272	227,042	270,463	1,263,057	245,768	292,706	1,460,654	285,344	339,863	1,706,473	331,996	395,499
Emissions (1.5% Growth Rate)															
AM	86	17	20	94	18	22	100	20	24	117	23	27	134	26	31
NN	108	21	25	119	23	28	132	26	31	146	28	34	168	33	39
PM	161	31	37	188	36	43	260	51	60	366	71	85	848	165	197
WE	101	20	23	111	22	26	125	24	29	140	27	32	162	31	38
Average WD	3,232	629	749	3,634	707	842	4,423	865	1,030	5,559	1,081	1,288	9,809	1,908	2,273
Average WE	2,422	471	561	2,675	521	620	2,988	582	693	3,352	652	777	3,887	756	901
Average Daily	3,000	583	695	3,360	654	779	4,013	784	934	4,928	959	1,142	8,117	1,579	1,881
Total Weekly	21,001	4,084	4,868	23,523	4,577	5,451	28,090	5,487	6,536	34,497	6,712	7,995	56,820	11,054	13,168
Total Yearly	1,092,067	212,384	253,119	1,223,178	237,989	283,466	1,460,654	285,344	339,863	1,793,838	349,008	415,739	2,954,656	574,795	684,755
Emissions 2.5%															
AM	86	17	20	100	20	23	122	24	28	155	30	36	441	86	102
NN	108	21	25	127	25	29	153	30	35	201	39	46	422	82	98
PM	161	31	37	244	47	57	390	76	90	969	189	225	1,457	283	338
WE	101	20	23	119	23	28	146	28	34	192	37	44	407	79	94
Average WD	3,232	629	749	4,228	823	980	5,862	1,141	1,359	11,334	2,205	2,627	19,767	3,846	4,581
Average WE	2,422	471	561	2,865	557	664	3,493	679	810	4,602	895	1,067	9,768	1,901	2,264
Average Daily	3,000	583	695	3,839	747	890	5,185	1,009	1,202	9,411	1,831	2,181	16,910	3,290	3,919
Total Weekly	21,001	4,084	4,868	26,870	5,227	6,227	36,298	7,062	8,413	65,875	12,817	15,267	118,372	23,031	27,434
Total Yearly	1,092,067	212,384	253,119	1,397,216	271,824	323,818	1,887,480	367,218	437,478	3,425,515	666,479	793,907	6,155,360	1,197,608	1,426,579

Appendix I:
Future Pass Through Trips

Entry Point	Weekday Daily Flow Rates at Network Entry Points											
	5 Year			10 Year			15 Year			20 Year		
	1%	1.50%	2.50%	1%	1.50%	2.50%	1%	1.50%	2.50%	1%	1.50%	2.50%
SH 82 South of 27th (NB)	17162	17653	18470	17980	18960	20758	18960	20268	23537	19777	21902	26479
SH 82 South of 11th (NB)	16556	17029	17818	17345	18291	20025	18291	19552	22706	19079	21129	25544
SH 82 South of 11th (SB)	17206	17698	18517	18026	19009	20811	19009	20320	23597	19828	21959	26547
EB Off-Ramp	6160	6336	6630	6454	6806	7451	6806	7275	8448	7099	7862	9505
WB Off-Ramp	4804	4941	5170	5033	5307	5810	5307	5673	6588	5536	6131	7412
US 6 West of Laurel (EB)	6280	6459	6759	6579	6938	7596	6938	7416	8613	7237	8015	9689
Midland Ave S of I-70 (SB)	5725	5888	6161	5997	6324	6924	6324	6760	7851	6597	7306	8832
Total	40131	41278	43189	42042	44335	48539	44335	47393	55037	46246	51215	61916

Entry Point	Weekday Daily Pass-Through from Network Entry Points											
	5 Year			10 Year			15 Year			20 Year		
	1%	1.50%	2.50%	1%	1.50%	2.50%	1%	1.50%	2.50%	1%	1.50%	2.50%
SH 82 South of 27th (NB)	6178	6355	6649	6473	6826	7473	6826	7296	8473	7120	7885	9532
SH 82 South of 11th (NB)	5629	5790	6058	5897	6219	6809	6219	6648	7720	6487	7184	8685
SH 82 South of 11th (SB)	3613	3717	3889	3785	3992	4370	3992	4267	4955	4164	4611	5575
EB Off-Ramp	1663	1711	1790	1742	1838	2012	1838	1964	2281	1917	2123	2566
WB Off-Ramp	1153	1186	1241	1208	1274	1394	1274	1362	1581	1329	1471	1779
US 6 West of Laurel (EB)	879	904	946	921	971	1063	971	1038	1206	1013	1122	1356
Midland Ave S of I-70 (SB)	916	942	986	960	1012	1108	1012	1082	1256	1056	1169	1413
Total	10790	11098	11612	11304	11920	13050	11920	12742	14797	12434	13770	16647

Entry Point	Weekend Daily Flow Rates at Network Entry Points											
	5 Year			10 Year			15 Year			20 Year		
	1%	1.50%	2.50%	1%	1.50%	2.50%	1%	1.50%	2.50%	1%	1.50%	2.50%
SH 82 South of 27th (NB)	14911	15337	16047	15621	16473	18035	16473	17609	20449	17183	19029	23006
SH 82 South of 11th (NB)	14524	14939	15630	15215	16045	17567	16045	17152	19918	16737	18535	22408
SH 82 South of 11th (SB)	14201	14607	15283	14878	15689	17177	15689	16771	19476	16365	18124	21911
EB Off-Ramp	4822	4959	5189	5051	5327	5832	5327	5694	6612	5556	6153	7439
WB Off-Ramp	4897	5037	5270	5130	5410	5923	5410	5783	6716	5643	6250	7556
US 6 West of Laurel (EB)	6418	6601	6907	6723	7090	7762	7090	7579	8801	7396	8190	9901
Midland Ave S of I-70 (SB)	3848	3958	4141	4032	4251	4655	4251	4545	5278	4435	4911	5937
Total	34896	35893	37554	36557	38551	42207	38551	41210	47857	40213	44534	53839

Entry Point	Weekend Daily Pass-Through from Network Entry Points											
	5 Year			10 Year			15 Year			20 Year		
	1%	1.50%	2.50%	1%	1.50%	2.50%	1%	1.50%	2.50%	1%	1.50%	2.50%
SH 82 South of 27th (NB)	6710	6902	7221	7029	7413	8116	7413	7924	9202	7732	8563	10353
SH 82 South of 11th (NB)	6100	6274	6565	6390	6739	7378	6739	7204	8366	7029	7785	9411
SH 82 South of 11th (SB)	4402	4528	4738	4612	4864	5325	4864	5199	6038	5073	5618	6792
EB Off-Ramp	1639	1686	1764	1717	1811	1983	1811	1936	2248	1889	2092	2529
WB Off-Ramp	1567	1612	1687	1642	1731	1895	1731	1851	2149	1806	2000	2418
US 6 West of Laurel (EB)	1155	1188	1243	1210	1276	1397	1276	1364	1584	1331	1474	1782
Midland Ave S of I-70 (SB)	654	673	704	685	723	791	723	773	897	754	835	1009
Total	11726	12061	12619	12284	12954	14183	12954	13848	16081	13513	14964	18091