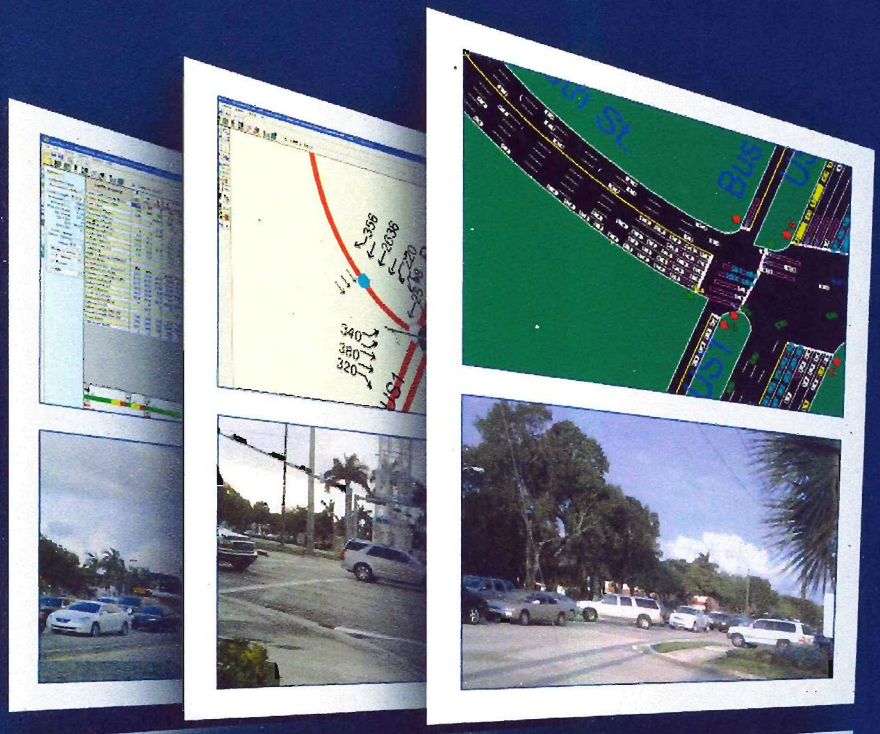
US-1 Intersection Improvement Study- Village of Pinecrest



Prepared for:

The Village of Pinecrest

and

Miami-Dade Metropolitan Organization (MPO)

Prepared by:

Lehman Center for Transportation Research

Florida International University

April 3, 2008

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Lehman Center for Transportation Research
at Florida International University
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Executive Summary

US-1 is the major route that connects the Village of Pinecrest to other destinations in South Florida. US-1 intersections that provide access to the village exhibit considerable congestion during the peak periods, resulting in high delays, fuel consumption, noise, emission, and crash frequencies. These adverse impacts of congestion affect the quality of life for those who live, work, shop, or pass-by the area.

The Village of Pinecrest is considering improvements to the geometry and operations of US-1 intersections to reduce the congestion levels at these intersections. For this purpose, the Miami-Dade Metropolitan Organization (MPO) and the Village of Pinecrest have initiated a study to identify issues and problems associated with US-1 operations in the area and to define intersection improvements that will accommodate existing conditions and future growth, while protecting and enhancing mobility, economic prosperity, and the quality of life.

A bus-way currently runs parallel to the west of US-1 in the study area. The bus-way operations interact with the operation of the US-1 intersections and affect the operations of the intersections. Thus, there is a need to include the bus-way in the operational and safety analysis of the US-1 corridor.

This document reports on the results of the US -1 improvement study mentioned above. The study investigates operational and safety needs and improvement alternatives for 12 intersections along US-1. The study intersections are:

- US 1 and SW 72nd Avenue (unsignalized)
- US 1 and SW 98th Street (signalized)
- US 1 and SW104th Street (signalized)
- US 1 and SW 106th Street (unsignalized)
- US 1 and SW110th Street (unsignalized)
- US 1 and SW 112th Street (signalized)

- US 1 and SW117th Street (unsignalized)
- US 1 and SW120th Street (unsignalized)
- US 1 and SW124th Street (signalized)
- US 1 and SW128th Street(signalized)
- US 1 and SW132nd Street (unsignalized with the westbound approach of 132nd Street) and signalized with the eastbound approach of 132nd Street)
- US 1 and 136th Street (signalized)

The objectives of this study is to identify safety, geometry, and operational issues and problems associated with current and forecasted US-1 corridor operations in the Village of Pinecrest and to propose and evaluate improvement alternatives to address these issues and problems.

Based on field observations, operational analysis, safety analysis, signal warrant analysis, and right-of-way analysis, the recommendations in Table E-1 can be given regarding improving the US-1 corridor intersections.

Table E.1 Recommended Improvements for the US-1 Corridor in the Study Area

Intersection	Recommended Modification	Justification
SW 72nd Avenue	Change intersection alignment to reduce the angle at which SW 72nd street joins US-1.	Geometry (US-1 intersects with SW 72nd Avenue at an angle) creates hazardous conditions
SW 98th Street & US-1	Parking need to formalized or prohibited by curbing. Add a left turn on westbound and eastbound approaches and change to split phase. Future year improvement: Add a 100 ft right-turn bay to WB approach and retime signal.	Having the WB and EB moving at the same phase create significant conflicts and created safety and operational problems. Operational analysis shows that the changes considerably improve EB and WB operations.
SW 104th Street & US-1	Future year improvements: Add a second exclusive left turn EB in addition to the existing one and the one shared with the through. Add right-turn pocket to EB (if possible). Add an exclusive WB right-turn bay. Retime signal.	EB and WB congestion
SW 106th Street & US-1	Put a detector and sign with flashing beacon and grid marking. Sign informing motorists to not block SW 106th Street when the queue backs up to the intersection.	Queue from SW 104th street back up to SW 106th street.
SW 110th Street & US-1	Same solution as SW 106th Street.	Queue from SW 104th street back up to SW 106th street.
SW 112th Street & US-1	Reconfigure the driveway access to Suniland Shopping Center to reduce the conflict caused by the enterance which is closest to SW 112th street Extend the two EB lanes to 300 ft upstream from bus-way	Conflict observed of traffic entry the shopping center from the access point closest to US-1. High crash rate on EB and WB EB and WB congestion

Intersection	Recommended Modification	Justification
	intersection. Convert WBR lane into a shared right and through Reconfigure EB lanes to make the exclusive left shared wit the through. Add a second NB left turn bay to prevent vehicles from backing into through lanes (this could be a future year improvement). Future year Improvement: add a WBR turn pay and make the shared thru and RT in 2007 solution, a thru only lane. Extend the EBR lane 150 ft upstream of the bus way intersection	NB left-turn congestion
SW 117th Street	Reconfigure the driveway access of the driveway near the intersection of SW 117th Street and US-1.	Left-turns from the shopping center causes blockage to traffic turning from US-1.
SW 120th Street	Consider signalization, under the justification from Warrants 2 & 3 or prevent SB left-turn into US-1. Prevent left turn from east on SW 120th Street to south on SW 81st Avenue	High crash rate and conflicts on WB approach Congestion on WB approach during school outbound period Signal warrant is satisfied
SW 124th Street	Extend westbound right turn bay further from the intersection. (250 ft.) Implement a special signal plan between 2:30 PM and 3:30 PM for SW 124th intersections with US-1 and SW 82nd Avenue. Future year improvements: Add a WB shared lane between thru and left. Extend EBR upstream of the bus-way	Right-turn and thru traffic on WB approach block each other Heavy congestion during school let-out period
SW 128th	Add a WB right turn bay and	Right-turn and thru traffic on WB

Intersection	Recommended Modification	Justification
Street	extend150 ft from the intersection. Implement a special signal plan between 2:30 PM and 3:30PM <u>Future year improvements:</u> Add a lane shared between EBT and EBL and extend the two EB lanes to 500 ft upstream from bus-way intersection	approach block each other Heavy congestion during school let-out period
SW 132nd Street (Unsignalized)	Provide "Do not Block Intersection" sign similar to that recommended for SW 106th Street.	
SW 132nd Street (signalized)	None	
SW 136th Street	Reconfigure the access to the mall at the southeast corner. Add an extra right-turn shared with through lane on the WB approach. This will require making the west approach departing (receiving) link three lanes. Allow EBR during NBL (this will require a special signal head and signage) Add an acceleration lane for EBR (going south on US-1), separated by delineators to prevent conflict with WBL. Modify the south side of the EB link east of US-1 to eliminate the alignment that affect the line of site of motorists turning from access points to SW 136 street. .	Heavy EB right turn congestion in the PM Conflict between EB right and WB left-turn Conflict between traffic entering/exiting the development mall at south east corner Heavy congestion on WB approach in the PM Alignment on the east approach upstream of the intersection causes line of sight problem.

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1. Introduction

1.1 Background

US-1 is the major route that connects the Village of Pinecrest to other destinations in South Florida. US-1 intersections that provide access to the village exhibit considerable congestion during the peak periods, resulting in high delays, fuel consumption, noise, emission, and crash frequencies. These adverse impacts of congestion affect the quality of life for those who live, work, shop, or pass-by the area.

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- US 1 and 136th Street (signalized)

Figure 1.1 shows an aerial photograph of the study area

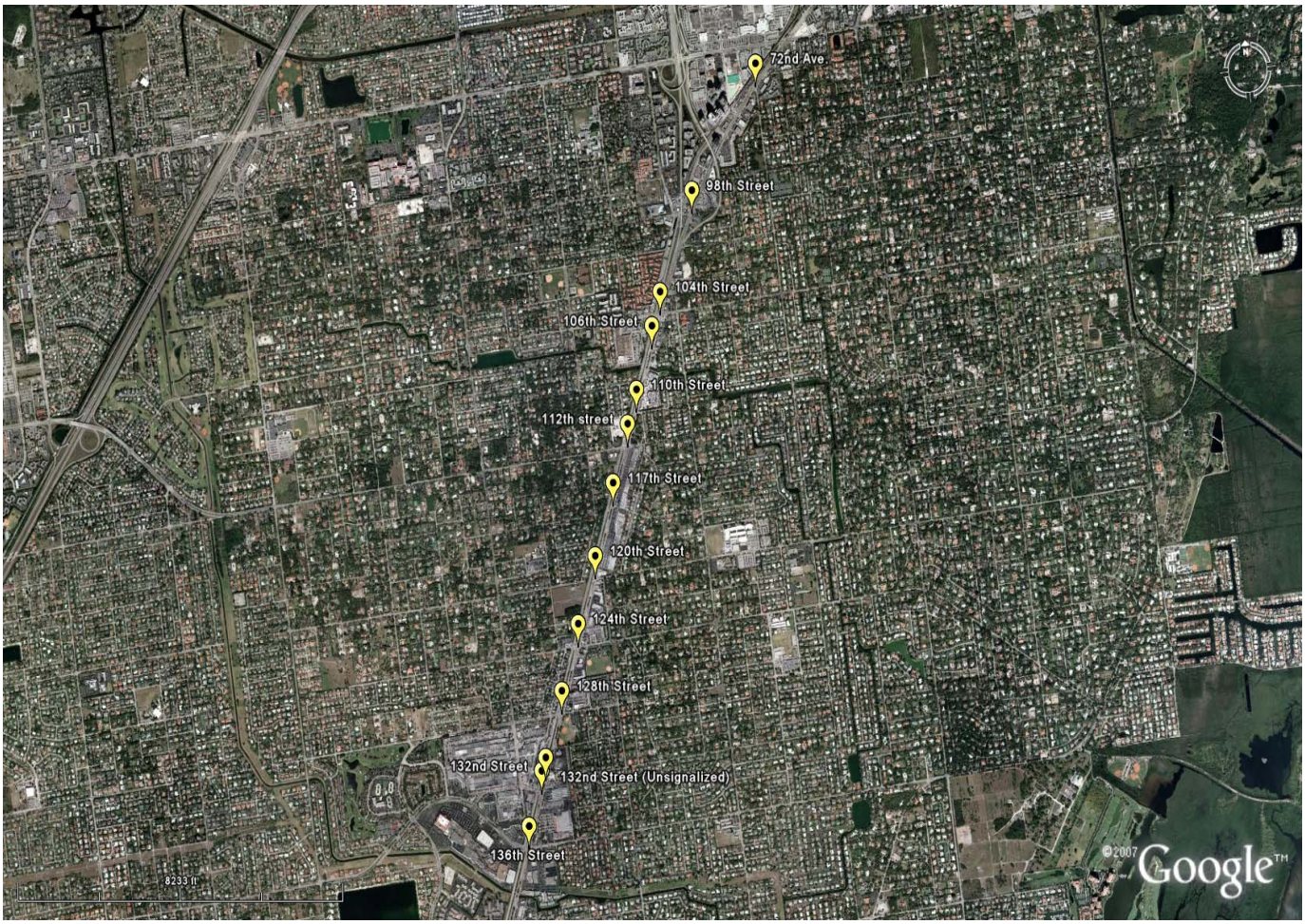


Figure 1.1 US-1 Study segments and intersections

1.2 Study Objectives

The objectives of this study is to identify safety, geometry, and operational issues and problems associated with current and forecasted US-1 corridor operations in the Village of Pinecrest and to propose and evaluate improvement alternatives to address these issues and problems.

1.3 Document Organization

This report consists of the following sections:

- *Section 1, Introduction* – This section presents background information and the objective of the US-1 Intersection Improvement Study, the subject of this document.
- *Section 2, Project Tasks and Methodologies* - This section lists the tasks of this study and the methodologies used in accomplishing the tasks.
- *Section 3, Field Observation Results* – This section summarizes the results of the observations made during the field visits to the study corridor and the results of the meetings conducted with the Village of Pinecrest and MPO staff personnel to discuss the corridor problems and potential solutions.
- *Section 4, Traffic Count Measurement Summary* – This section presents a summary of the automatic and manual traffic volume counts taken at the study intersections and segments. More detailed summary is presented in the appendices.
- *Section 5, Safety Analysis Results:* This section presents the results from the three types of safety analysis performed in this study. These are: Summary Statistics, Safety Ratio, and Movement Crash Frequency Analyses.
- *Section 6, Operational Analysis Results:* This section presents the results of the operational analysis performed using the Synchro and SimTraffic software for the existing operations and future conditions on the US-1 corridor, respectively. The

section presents the issues identified based on the analysis, proposed solutions to resolve these issues, and the operational assessments of these potential solutions.

- *Section 7, Right of Way* – This section discusses right-of-way issues associated with potential corridor improvements.

- *Section 8, Conclusions and Recommendations* - This section presents the conclusions that can be given based on the study results and recommendations for corridor improvements.

2. Project Tasks and Methodology

This section lists the tasks of this study and methodologies used in accomplishing the tasks.

2.1 Field Observations

The study team observed the morning (AM) and evening (PM) peak periods at all study intersection locations to understand the traffic conditions and to identify geometry, operational, and safety problems and potential solutions. In addition, the afternoon time period of peak school traffic (between 2:00 PM and 3:30 PM) was also observed. The study team visited the site several times to confirm the observations and to ensure that the developed operation models reflect the existing operations on US-1.

The study team also met three times with representatives from the Village of Pinecrest and the Miami-Dade MPO to discuss the potential problems and solutions for the corridor.

2.2 Data Collection

This effort included collecting current traffic demand data at the study intersections and at selected approaches to these intersections. Manual turning movement counts were conducted for the AM and PM peak periods for all movements and at all study intersections. In addition, 72 hour (three-day) tube counts (Tuesday to Thursday) were collected at seven critical locations on the corridor. The counts were taken between Tuesday 9/25/2007 and Thursday 9/27/2007. The locations of these counts were selected based on field observations and aerial photography examination. The tube count locations were:

- Location 1: US 1 Southbound (SB) just south of SW 88th Street
- Location 2: Palmetto Expressway SB Ramp west of US-1
- Location 3: Palmetto Expressway Northbound (NB) Ramp east of US-1
- Location 4: US 1 SB just south of SW 112th Street
- Location 5: US 1 NB just north of SW 124th Street
- Location 6: US 1 NB just north of SW 144th Street
- Location 7: SW136th St Eastbound (EB) west of US-1

The manual and automatic (tube) traffic counts were collected by a subcontractor (Quality Counts L.L.C.). The subcontractor also recorded videotapes of the vehicles as they were leaving the stop lines and provided DVDs of these videos at an additional cost to the project. These videos were very useful in confirming the signal timing parameters, traffic demands, and movement capacities during the operational model development and calibration processes. A field crew from Florida International University (FIU) also recorded queue length information in the field. This information was also very useful in calibrating the developed simulation model.

The collected traffic counts were reduced and analyzed by the study team to produce the data required as inputs to the traffic analysis model used in this study. Figures and

tables were produced to summarize the data and to visualize the temporal and spatial trends in traffic demands.

In addition, signalized intersection timing data were obtained from the Miami-Dade County signal timing database. Geometry data were obtained based on a combination of field observation and aerial photography. Average Annual Daily Traffic (AADT) information (that is required for safety analysis) for state roads were obtained from the Florida Traffic Information (FTI) CD-ROM produced by the Florida Department of Transportation (FDOT). For non-state roads, the AADT data was obtained from Miami-Dade County. These AADT values were also used to calculate the annual growth rates for the corridor. Growth rates were obtained for US-1 main street movements and separately for cross street movements.

2.3 Safety Analysis

A safety analysis was performed for the study area based on the corridor crash data. In Florida, crash data from the Florida Department of Highway Safety and Motor Vehicles (HSMV) is used as the data source for the FDOT Crash Analysis Reporting (CAR) System. The CAR system database was used for the safety analysis in this study.

The analysis was performed using crash data for a three year period (2003 to 2005). The safety analysis performed in this study includes:

- Summary statistics of the crashes in the corridor.
- Identification of the critical crash segments and spots (intersections) along the corridor using the FDOT Safety Ratio method
- Examination of the frequencies of different types of crashes for the turning movements at the study intersections. This analysis was performed to identify patterns in crash types for individual movements at the intersections.

The current methodology used by the FDOT to identify high crash spots and segments is the Safety Ratio method also known as the Rate Quality Control method. This method uses a statistical test to determine if the crash rate at a particular spot or segment is abnormally high when compared with the crash rates are at locations of similar roadway characteristics. In Florida, similar locations are categorized into segment or intersection categories. General categories are defined based on the number of lanes, urban or rural, and divided or undivided facilities. A critical crash rate above which a roadway spot or segment is considered a high crash location, is determined based on the average crash rate for a particular facility type and the vehicular exposure at the study location. The vehicle exposure reflects the traffic demand on the facility and is measured in crashes per million vehicles (MV) for intersection (spot) analysis or crashes per million vehicle-miles (MVM) for highway segment analysis.

The critical crash rates are calculated using the following equation:

$$CR = AVR + 0.5/TB + TF\sqrt{(AVR/TB)} \qquad (1)$$

where:

CR = critical crash rate for a particular location (crashes per MV for intersection analysis or crashes per MVM for highway segment analysis),

AVR = average crash rate for the facility type in the state of Florida,

TF = probability factor, standard deviation at a given confidence level for a critical crash rate for urban facilities (this value is set at 3.291), and

TB = traffic base or vehicle exposure (in total entering MV for intersections and MVM for segments)

The AADT corresponding to each spot and segment was identified as described in the previous section and was used in calculating the exposure rates. Once the critical crash rate for a particular segment or intersection was estimated as explained above, the Safety Ratio could be calculated as the ratio between the actual crash rate and the critical crash rate. A Safety Ratio greater than 1.0 indicates a high crash location.

While the Safety Ratio method is useful for identifying locations with high number of crashes, it cannot be used to identify problems with specific turning movements and cannot identify the types of crashes that are overrepresented at the analyzed locations. This is because the average crash rates are based on the total number of crashes and are not stratified by crash type. Thus, in this study the Safety Ratio method was used first to identify any segments and intersections with overall high crash locations, then an analysis based on the frequencies of specific types of crashes was used to determine the locations and movements that are prone to specific types of crashes.

To perform the intersection (spot) safety analysis, it was necessary to isolate the crashes that occur due to intersection operations from other types of crashes. In this study, it was assumed, as is usually done in similar studies, that crashes occurring 350 ft away from the center of the intersection are intersection related crashes.

2.4 Traffic Operational Analysis

The operational analysis was conducted for the signalized and unsignalized intersections within the study limits. The existing and future conditions for the study area were evaluated using the Synchro/SimTraffic program developed by Trafficware, Inc for the AM and PM peak periods. Both Synchro (macroscopic analytical model) and SimTraffic (microscopic simulation) analyses were used in assessing existing and future conditions. Synchro/SimTraffic is one of the most widely used methods for urban arterial street analysis and signal timing optimization. The US-1 corridor in vicinity of Pinecrest was coded in Synchro 6, as shown in ***Figure 2.1***. Synchro dataset can be automatically converted to SimTraffic dataset by the program. The corridor geometry was coded by first importing the aerial photograph of the corridor (downloaded from Google Earth) to Synchro for use as a background for the program. This imported aerial was used as the basis for overlaying the corridor geometry. The geometry was checked in the field visits and modifications/additions to the coded geometry was made based on this check. The signal phasing and timing was obtained from Miami-Dade County public work and was used when simulating/evaluating the existing conditions.

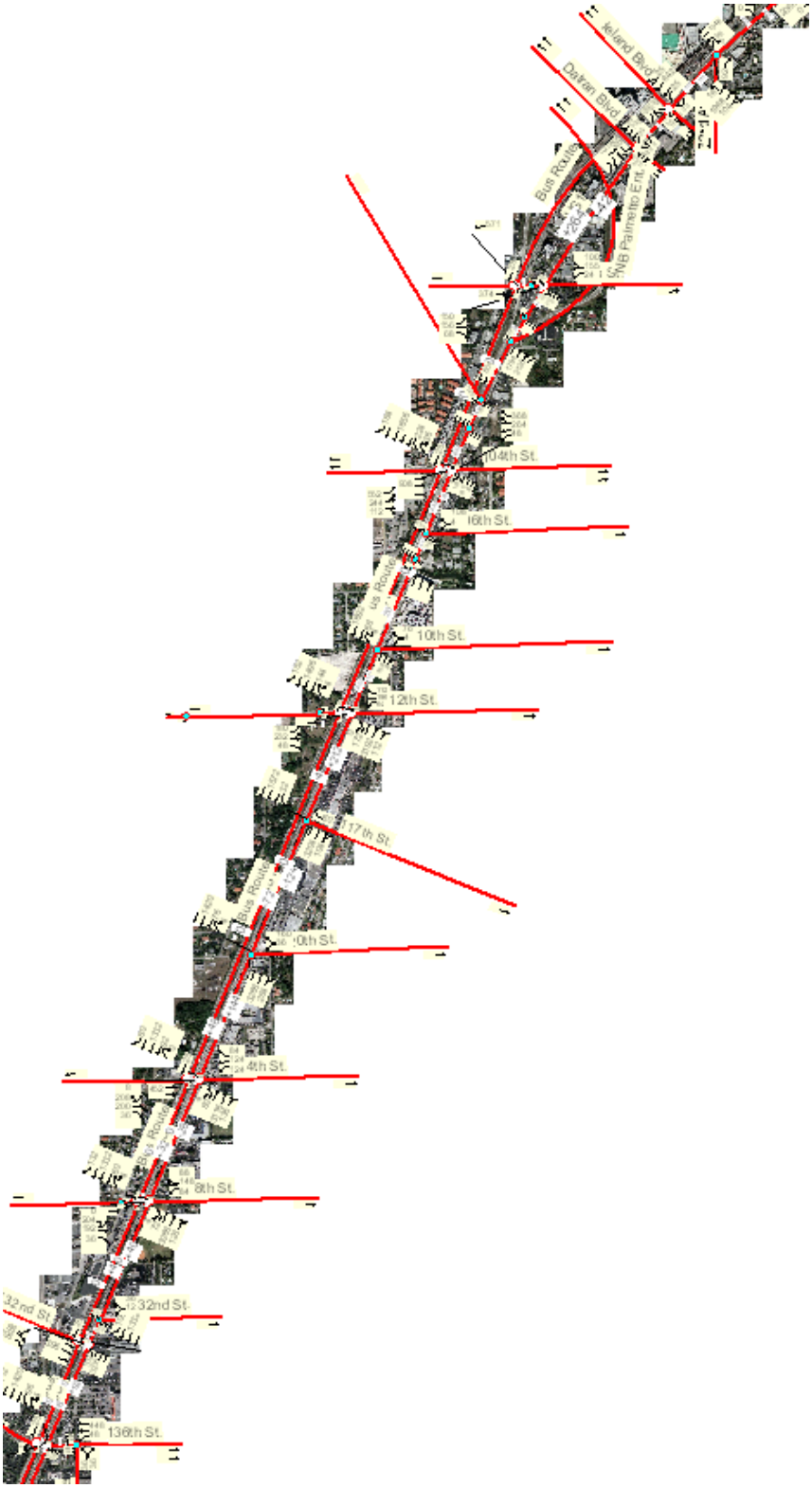


Figure 2.1 US-1 corridor in vicinity of Pinecrest

The analysis of traffic operations was performed based on the turning volumes counts. For existing conditions, the peak 15 minutes during the peak hour collected as described in ***Section 2.2*** were input to the Synchro model. For future conditions, growth factors were used to produce future demands based on existing demands. These factors were calculated as discussed in ***Section 2.5*** below.

The operation analysis models were calibrated to reflect the observed existing conditions. Both existing and future conditions were modeled. Performance indicators and measures such as the volume to capacity (V/C) ratios, levels of service, delays, and queue lengths were assessed based on the model outputs. Based on the results of the assessment, the study identified operational problems and potential geometric and operational improvements to mitigate the identified problems. These improvements were evaluated using the operational analysis models to determine if they are able to resolve the problems. Dynamic animation of the modeled intersections with and without improvements were produced and used in further assessing the problems and solution and for demonstrating the benefits of the improvements for public involvement purposes.

The ideal saturation flow rate used in calculating the capacities is the default value recommended by the Highway Capacity Manual (HCM 2000), which is the same default used in Synchro (1900 vehicle per hour per lane). This ideal saturation flow rates were adjusted for turning factors (0.95 for left turns and 0.85 for right turns) and permitted (versus protected left turns) by Synchro utilizing factors obtained from HCM 2000. The total lost time which is equal to the startup lost time plus the clearance interval lost time (yellow and all-red time, less the extension of effective green) was set to the default value used in Synchro (4 seconds). The headway parameters in the SimTraffic microscopic simulation model were adjusted as necessary to obtain capacities close to those observed in the field.

2.5 Growth Rate Estimation

The travel demands for the year 2015 that were used in the operational analysis of the future year were calculated based on the 2006 FTI (Florida International Information) data for state roads and based on Miami Dade County for other roads

The growth rates were calculated using the following formula.

$$\text{Future Volumes} = \text{Present Volumes} * (1+r)^{n} \qquad (2)$$

where:

r = growth rate
n = number of years between present and future years

For the state roads, the year 2003, 2004, 2005 and 2006 volumes were used in calculating the growth rates. For other roads, the volume data available for the growth rate estimation were from the years 2003, 2004 and 2005.

3. Field Observation Results

As mentioned in ***Section 2*****,** several field visits were made to the study corridor. In addition, meetings were conducted with the MPO and the Village of Pinecrest personnel to discuss corridor issues and potential solutions. ***Table 1*** presents a summary of the identified issues and potential solutions. The details of the field observations are included in ***Appendix A*****.** Please note that these observations are mainly concerned with cross street and left-turn movements since the northbound thru movement is always congested in the AM and southbound thru movement is always congested in the PM.

Table 3.1 Observed Issues and Potential Solutions

Intersection	Observed Issues
SW 72nd Avenue	No major operational issues were observed. All issues are related to horizontal geometry. Inbound to east approach requires sharp right turn (<90-degrees) from US-1 around sharp radius. There is no deceleration lane on US-1 and deceleration and sharp right must be made in short time frame. Outbound lane from east approach has oblique angle to US-1, affecting the sight distance.
SW 98th Street & US-1	Westbound and Eastbound movements have one lane each and both are moving on a common phase. Left turns are shared with the through movements and are not protected, moving on a green ball not a green arrow. Left turns from the east and west approaches were observed to cause some conflicts with the through movements from these approaches.
SW 104th Street & US-1	In the AM peak, both EB and WB approaches had long queues. Westbound right turn movement has extensive queuing. Permissive rights are inhibited by the lack of acceptable gaps in the NB US-1 flow and EB left turns. This right turn can move on US-1 SB protected left, but there are conflicts with the U-turns. EB left is very heavy in the AM. Both EB and WB greens are short due to heavy movements on all approaches In the PM peak, no major problems but relatively long queues observed on the EB.
SW 106th Street & US-1	No problems observed; however WB approach movements are often blocked by NB US-1 vehicles in queue at the downstream SW 104th and US-1 signal (SW. 104th queue extends to and blocks SW 106th St intersection).
SW 110th Street & US-1	No problems observed; however WB approach movements are often blocked by NB US-1 vehicles in queue at the downstream SW 104th and US-1 signal. Significant cut-through traffic noted using the intersection as an approach to NB US-1 via Veteran's Parkway (SW 79th Avenue).
SW 112th Street & US-1	The driveways to Suniland Shopping Center are very close to the intersection on the south side of the street, and conflicts were observed by vehicles turning left from the SB approach decelerating to make turns into driveway. Because of the longer central queue, some west-bound cars drive in the opposite lane of SW 112th to access the shopping center, also causing dangerous conflict potentials.

Intersection	Observed Issues
	In the AM Peak, long queues are observed in EB and WB directions In PM Peak, NB left-turn is heavy and the queues extend to fill the long turn bay of this movement.
SW 117th Street	No significant queues observed. Left-turns coming out of the shopping center cause a blockage for traffic turning lefts or rights from US-1.
SW 120th Street	The major issue for this intersection is the additional volumes caused by cut-through traffic via SW 82nd Avenue. SW 82nd Avenue is approximately 100 ft back from the intersection with US-1. Gas station drives are close to the US-1 intersection as well. In the PM Peak, left turn into 82nd Avenue from EB 120th street is very heavy, causing conflicts with other movements. During the high school let out time (2:30 PM to 3:00 PM), traffic increases but not to a level that causes congestion. The reason for this is that most of the vehicles avoid making a left to SB US-1 on SW 120th street and rather use SW 82 Avenue to access the signals at SW 124th and SW 128th Streets The vehicles that try to make that left get stuck in the median for long time potentially creating a safety problem.
SW 124th Street	During the AM peak, WB right turn vehicles to US-1 NB queue beyond the turning bay queuing capacity. Right turns are blocked upstream of intersection by through movements. During the school let-out period between 2:40 PM and 3:00 PM the traffic back up all the way to SW 82 Avenue. Also, long queue backup was observed on the signalized intersection of SW 82nd Avenue and SW 124 Street during the school let-out period.
SW 128th Street	Primary issue is that WB right turns exceed storage capacity and many right turns are blocked upstream of intersection by through movements. In the school let-out period, the SB traffic on SW 82nd Avenue traffic backs up at the stop sign of the intersection of SW 82nd Avenue with SW 128th Street. No problem was observed during the PM peak.
SW 132nd Street (Unsignalized)	Primary movement is from WB approach right turn to NB US-1. Queuing occurs in AM peak and midday as well, although queues are not large enough to cause operational problems. Right turns cannot easily clear as this US-1 outside lane is either in 30 - 40 mph saturated flow without sufficient gaps, or it is stopped.
SW 132nd Street	No major problems. In the PM peak, relatively long queues on EBL and SBL.

Intersection	Observed Issues
(signalized)	
SW 136th Street	The shopping center on the southeast corner of the intersection has an exit just to the east of the intersection. Exiting and entering traffic from this access point to/from the east approach of the intersection find difficulty turning and results in significant conflict with other movements on the approach, causing safety problem. In the AM peak and midday, no major problems, with queues in all east approach lanes ranging between 10 to 15 vehicles; however, all vehicles cleared during the green phase. Northbound queue is extremely long in the AM. For the EB approach in the PM, after green, 10 of 50 cars/lane remain on the RT-turn lane at the end of green. For WB approach, long queue with cycle failure for WB left and through movements. There is a serious conflict between WB right-turn and EB left-turn. The south side of EB approach has an alignment problem that affects the line of site of motorists.
Bus-Way	No operational problem observed. The bus-way operation, however, interact with the operation of US-1 and affect the performance of the movements on the corridor. In particular, the SBR and NBL cannot move while the Bus-way movements have green. This in particular have resulted in NBL turning movements been set to protected only (with no movement on green ball) for all intersections South of the Palmetto Expressway ramps. This has resulted in some congestions on some NBL movements such as at SW 112th Street in the PM and to a lesser extent SW 136th Street.

(a) Long Queues and Conflict of Vehicles Leaving Shopping Center on WB approach of SW 136th Street

(b) Conflict between WBL and EBR on SW 136th Street

(c) Long NBL queue on SW 112th Street

Figure 3.1 Examples of US-1 corridor observations

4. Traffic Count Measurement Summary

4.1 Automatic Traffic Count

The automatic traffic counts at the seven tube count locations are presented in tabular format in ***Appendix B***. ***Figures 4.1 to 4.7*** show these measurements in graphical representations. The peaking characteristics of US-1 traffic demands are clear from these figures with the southbound direction peaking between 3:30 PM and 6:30 PM and the northbound direction peaking between 6:00 AM and 8:00 AM. The AM peak seems to be somewhat shorter than the PM peak and occurs earlier than the AM peaks for corridors that are closer to trip destinations since many vehicles that are using this section of the corridor section of US-1 are in the early stages of their trips.

As indicated in ***Figures 4.1 to 4.7***, the highest variation in traffic demands between the three days was observed for the Palmetto Expressway southbound ramp to US-1. In particular, the data indicates that the PM peak volume for September, 27 2007 is very low compared to the other two days. This was most likely due to an incident that occurred on the Palmetto Expressway or one of its main feeders that prevented traffic from arriving at US-1 at the normal rate. Thus, the traffic volume on this ramp for the Thursday PM peak was ignored when calculating the expected traffic demands for the corridor. The peak 15-minute volume in the AM peak NB on US-1 is somewhat higher than that in the PM peak SB. This further indicates a sharper and shorter peak in the AM peak of the traffic on US-1 compared to the PM peak.

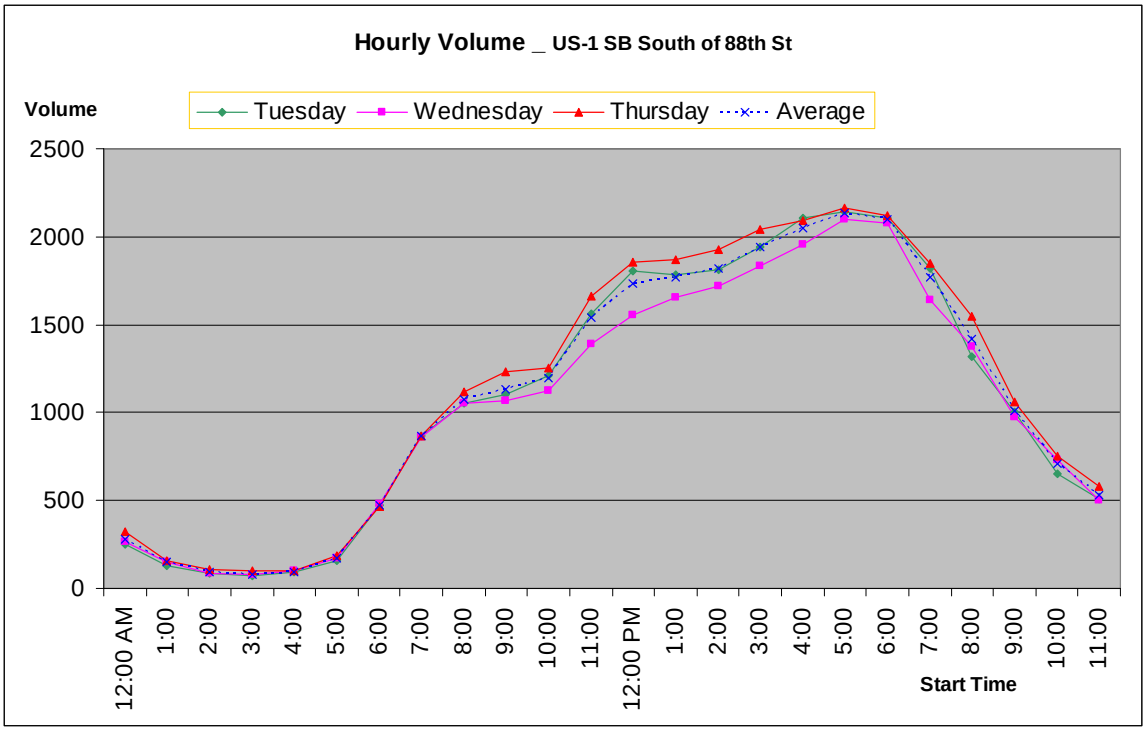


Figure 4.1 Temporal Variation of Demand for US-1 SB Just South of SW 88th St

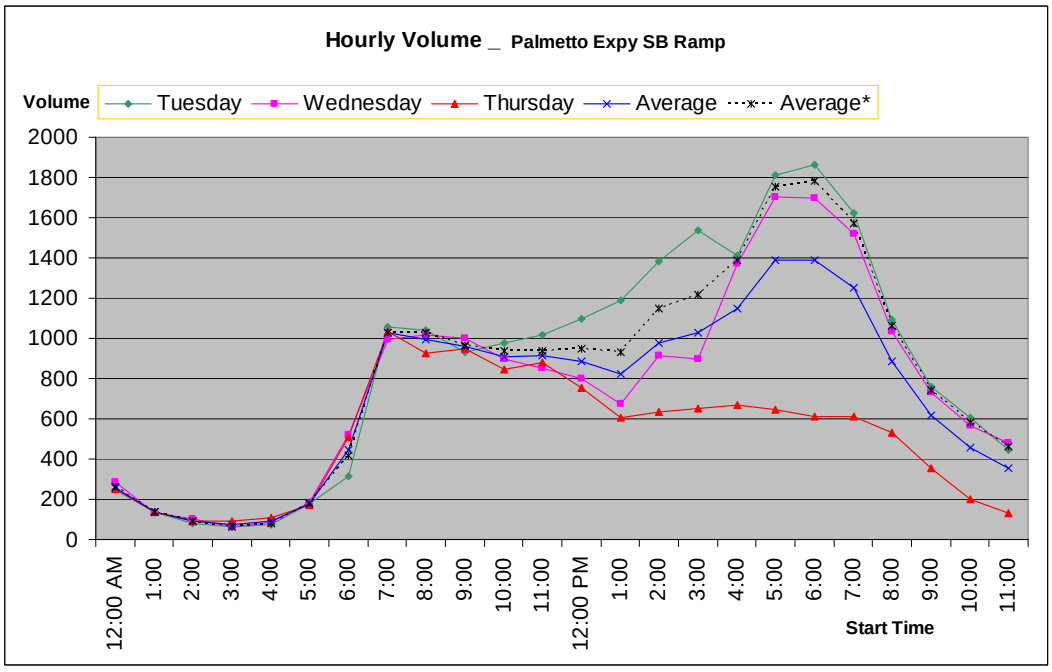


Figure 4.2 Temporal Variation of Demand for Palmetto Expressway SB Ramp

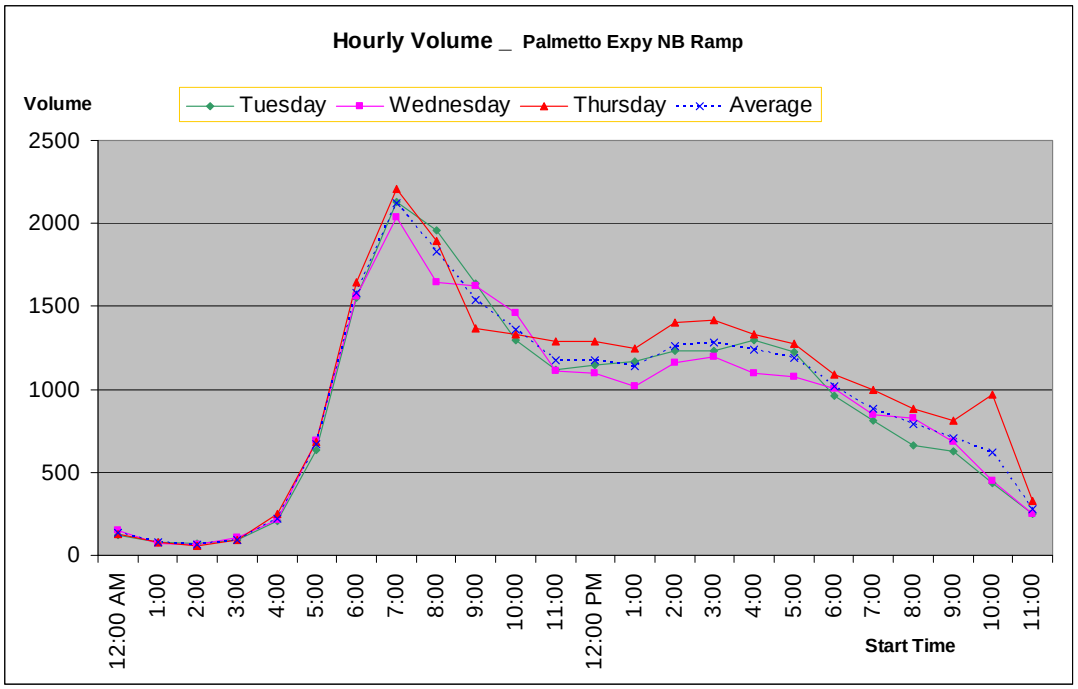


Figure 4.3 Temporal Variation of Demand for Palmetto Expressway NB Ramp

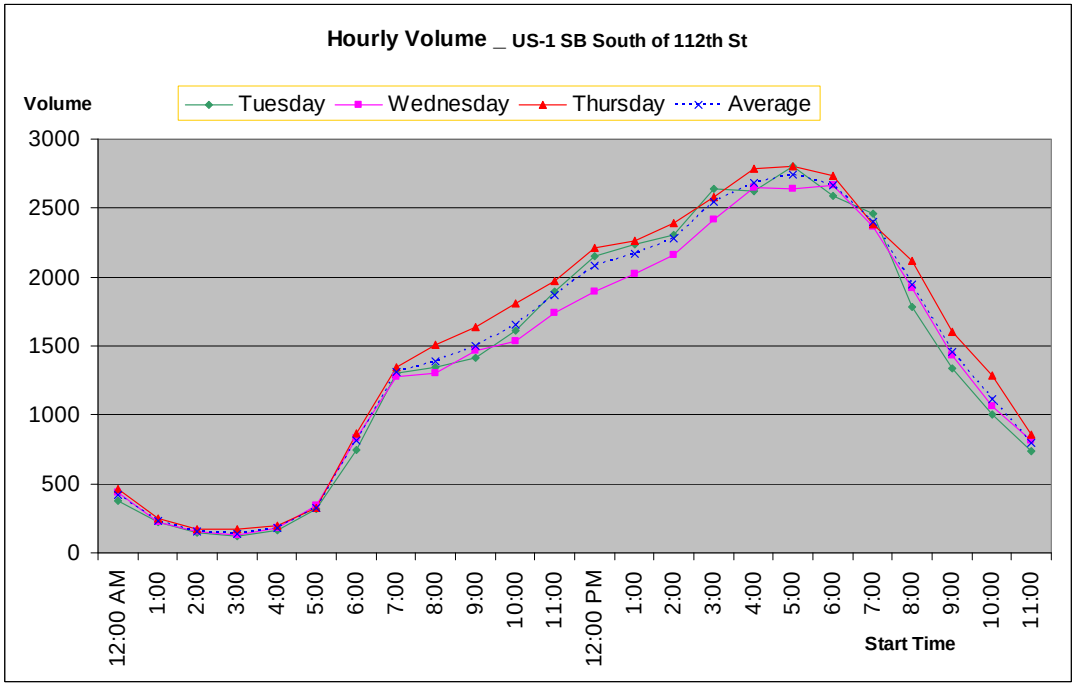


Figure 4.4 Temporal Variation of Demand for US-1 SB Just South of SW 112th St

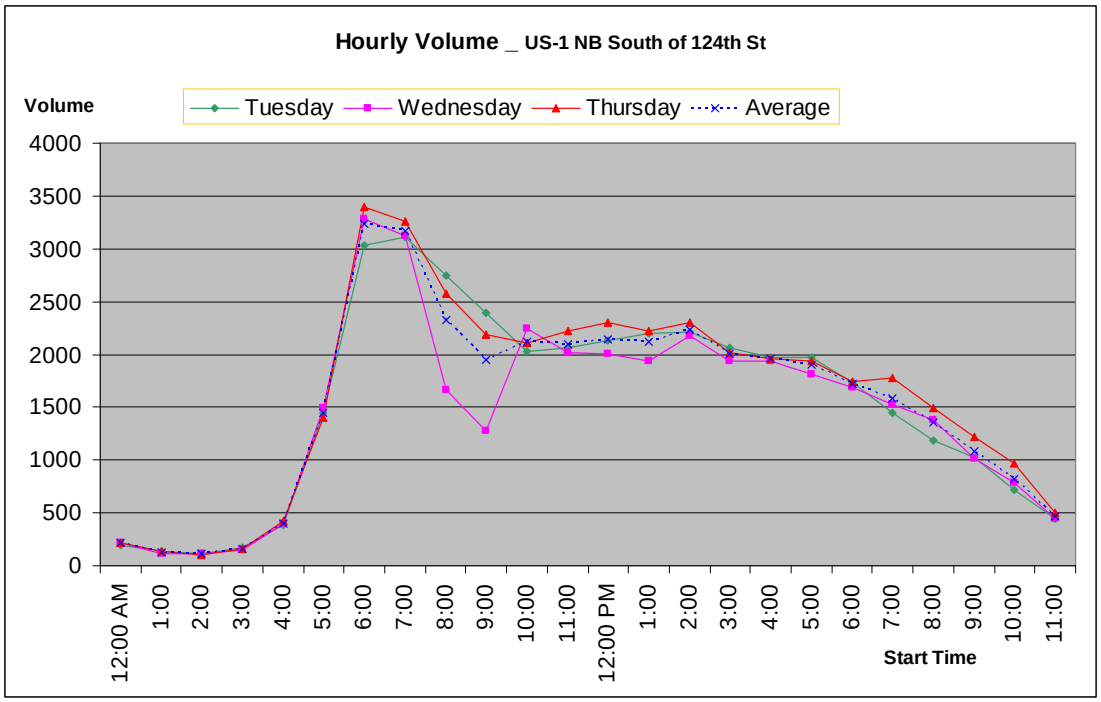


Figure 4.5 Temporal Variation of Demand for US-1 NB Just North of SW 124th St

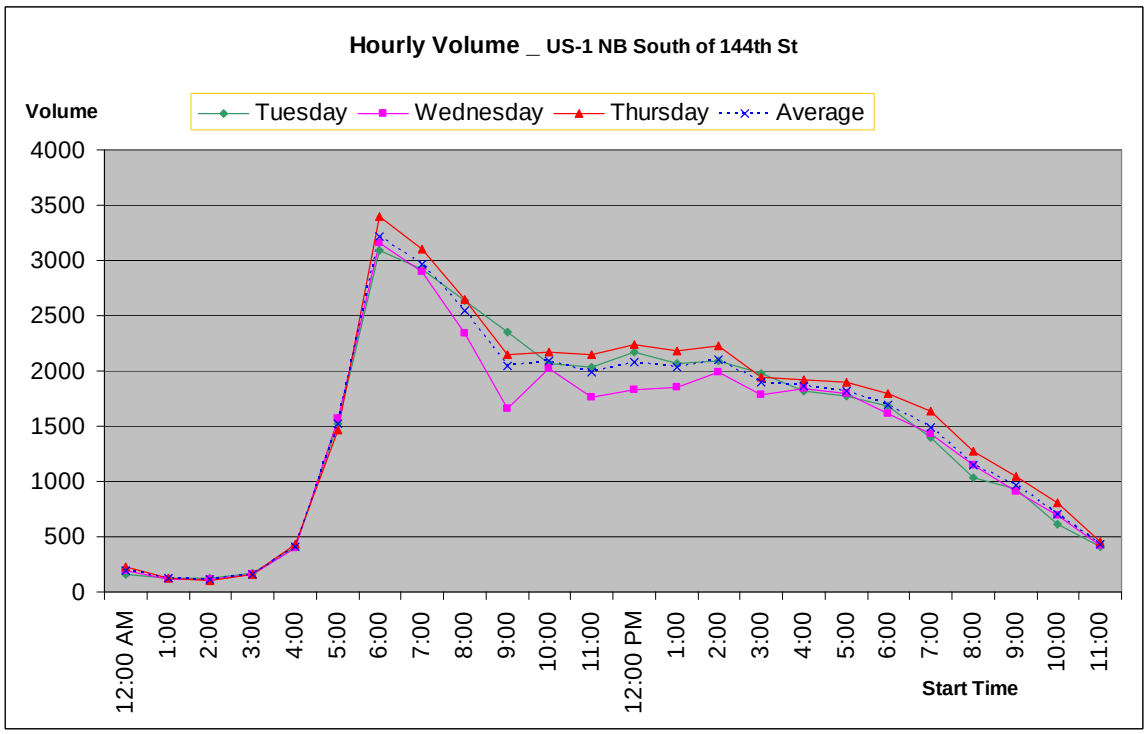


Figure 4.6 Temporal Variation of Demand for US-1 NB Just North of SW 144th St

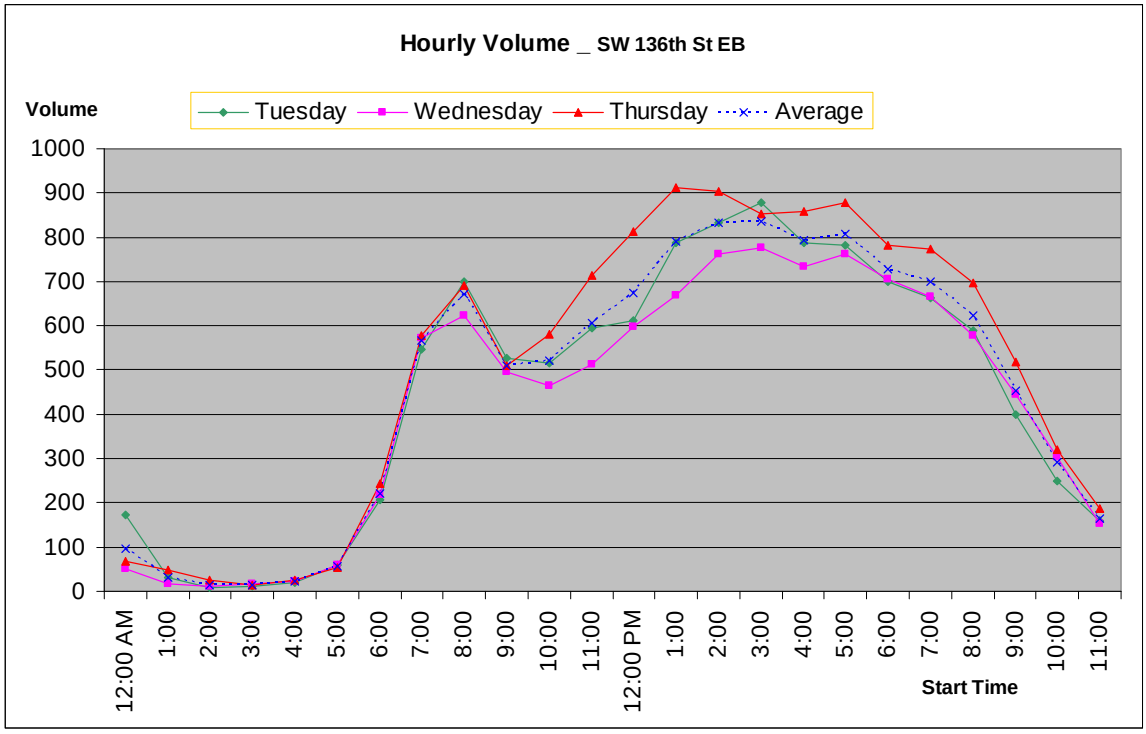


Figure 4.7 Temporal Variation of Demand for SW 136th St EB West of US-1

4.2 Turning Movement Counts

The turning movement counts for the study intersections are presented in graphical format in ***Appendix C***. For each of the intersections, the AM and PM traffic flow (in vehicle/hr) during the peak 15 minutes when considering the peaking of all movements of the corridor together are presented in red and blue color in ***Appendix C*** figures, respectively. The absolute peak 15 minute traffic flows for each movement in vehicles per hour are also shown for the AM and PM peaks in ***Appendix C*** figures, in green and brown colors, respectively.

5. Safety Analysis

This section presents the results from the three types of safety analysis performed in this study. These are: Summary Statistics, Safety Ratio, and Movement Crash Frequency analyses.

5.1 Summary Statistics

Table 5.1 summarizes the three-year crash history of US-1. As shown in this table, a total of 969 crashes occurred on US-1 with 1907 vehicles involved during the analysis period (2003 to 2005). These crashes resulted in 583 injuries and one fatality. As with other signalized arterials, a large proportion of the crashes are rear-end crashes (480 out of 969, which is about 50%). Other common types of crashes the US-1 corridor in the study area are sideswipe (109 crashes or 11% of the total crashes), angle (83 or 8.6% of the total crashes), and left-turn (82 or 8.5% of the total crashes).

Table 5.1 Crash Statistics Summary for US-1

Crashes		2003	2004	2005	Total
Crash Type	Rear End	170	163	147	480
	Head On	7	4	2	13
	Angle	3	45	35	83
	Left Turn	24	23	35	82
	Right Turn	17	8	10	35
	Sideswipe	35	33	41	109
	Backed Into	2	2	7	11
	Parked	1	1	1	3
	Pedestrian	1	4	4	9
	Bike	0	0	1	1
	Animal	0	0	0	0
	Fixed Objects	9	9	10	28
	Movable Objects	0	0	0	0
	Out of Control	2	4	1	7
	Others	27	25	22	74
	Total	332	321	316	969
Vehicles Involved		651	631	625	1907
Injuries		195	206	182	583
Fatalities		0	1	0	1

5.2 Safety Ratio Analysis

As discussed in ***Section 2*****,** the FDOT Safety Ratio Method was used to identify any locations with overrepresented crash rates compared to other similar facilities. The method involves comparing observed crash rates for a specific location to critical crash rates obtained using ***Equation 1***, based on statewide average crash rates for similar facilities. High crash locations are considered as those locations where the observed crash rate is greater than the critical crash rate (with Safety Ratio > 1.0). This method was applied for both intersection analysis and segment analysis in this study.

The segment analysis results are presented in ***Tables 5.2***. The results in ***Table 5.2*** consider that the facility type is urban 2-3 Lane two-way Divided and Raised. Hence the average crash rate for the facility type (AVR) is taken to be 6.368. ***Table 5.2*** shows that

all US-1 corridor segments are not especially high crash locations compared to similar roads with the same volumes in Florida.

Table 5.2 Segment Safety Analysis

Segment	Length (Miles)	AADT	Million Vehicle-Mile MVM (TB)	AVR	Test Factor (TF)	Crashes per 3 Yr	Crash Rate (Per MVM)	Critical Crash Rate (Per MVM)	Crash Ratio
72 Street to 98 Street	0.628	59166	40.686	6.037	3.291	107	2.63	7.32	0.36
98 Street to 104 Street	0.414	91000	41.253	6.037	3.291	188	4.56	7.31	0.62
104 Street to 106 Street	0.147	91000	14.647	6.037	3.291	90	6.14	8.18	0.75
106 Street to 110 Street	0.269	91000	26.804	6.037	3.291	62	2.31	7.62	0.30
110 Street to 112 Street	0.142	91000	14.149	6.037	3.291	89	6.29	8.22	0.77
112 Street to 117 Street	0.251	91000	25.01	6.037	3.291	104	4.16	7.67	0.54
117 Street to 120 Street	0.304	91000	30.292	6.037	3.291	51	1.68	7.52	0.22
120 Street to 124 Street	0.287	91000	28.598	6.037	3.291	97	3.39	7.57	0.45
124 Street to 128 Street	0.28	91000	27.9	6.037	3.291	116	4.16	7.59	0.55
128 Street to 132 Street	0.281	91000	28	6.037	3.291	103	3.68	7.58	0.49
132 Street to 136 Street	0.331	72416	26.246	6.037	3.291	146	5.56	7.63	0.73
Total	3.334		303.585	6.037	3.291	1153	3.8	6.50	0.58

Similar analysis was conducted for intersection (spot) crash ratio analysis. The results are shown in ***Tables 5.3***. The results in this table shows that the SW 104th Street, SW 112th Street, SW 124th Street and SW 136th Street have a safety ratio considerably higher than 1.0. The table also shows that SW 98th Street and 128th Street have a safety ratio higher than 1.0. The above indicates that these intersections are high crash locations when compared to similar intersections in Florida.

Table 5.3 Intersection Safety Analysis

Intersection	Entering AADT	Million Entering Vehicles (TB)	AVR	Crashes per 3 Yr	Crash Rate (Per MV)	Critical Crash Rate (Per MV)	Crash Ratio
SW 72 Street	59166	64.786	0.475	22	0.34	0.76	0.44
SW 98 Street	72300	79.168	0.475	63	0.8	0.74	1.09
SW 104 Street	92000	100.74	0.475	104	1.03	0.71	1.46
SW 106 Street	92000	100.74	0.543	40	0.4	0.79	0.51
SW 110 Street	92000	100.74	0.543	30	0.3	0.79	0.38
SW 112 Street	79900	87.49	0.475	94	1.07	0.72	1.48
SW 117 Street	71833	78.657	0.543	28	0.36	0.82	0.44
SW 120 Street	71833	78.657	0.543	34	0.43	0.82	0.52
SW 124 Street	71833	78.657	0.475	75	0.95	0.74	1.29
SW 128 Street	71833	78.657	0.475	59	0.75	0.74	1.02
SW 132 Street	71833	78.657	0.543	40	0.51	0.82	0.62
SW 136 Street	72416	79.295	0.475	98	1.24	0.74	1.68

Tables 5.4 and 5.5 show the segment and intersection safety analysis for the bus-way. It appears that the segment north of SW 98th Street and the SW 98th Street and SW 104th St bus-way intersections have higher crash rates that the other intersections. Since there was no AADT data for the bus-way, The AADT was calculated from the bus schedule available at http://www.miamidade.gov/transit/routes1.asp. It should be noted that police and other emergency vehicles are also allowed to use the bus-way, the used AADT values are lower than the actual values. In addition, since the volumes on the bus-way is very low compared to other highways in Florida, the absolute values of the safety ratio may not be as useful for the bus-way as with other US corridor movement safety analysis. However, it can be used to assess the relative safety of different segments and intersections of the bus-way.

Table 5.4 Bus-Way Segment Safety Analysis

Segment	Length	AADT	Million Vehicle-Mile MVM (TB)	AVR	Crashes per 3 Yr	Crash Rate (Per MVM)	Critical Crash Rate (Per MVM)	Crash Ratio
Datran Blvd to 98 Street	0.100	478.63	0.05	3.825	3	57.24	41.48	1.38
98 Street to 104 Street	0.425	478.63	0.22	3.825	4	17.96	19.71	0.91
104 Street to 112 Street	0.544	478.63	0.29	3.825	1	3.51	17.63	0.20
112 Street to 124Street	0.850	478.63	0.45	3.825	2	4.49	14.59	0.31
124 Street to 128 Street	0.282	478.63	0.15	3.825	1	6.77	23.95	0.28
128 Street to 136Street	0.555	478.63	0.29	3.825	1	3.44	17.48	0.20
Total	2.756	478.63	1.44	3.825	12	8.31	9.53	0.87

Table 5.5 Bus-way Intersection Safety Analysis

Intersection	Entering AADT	Million Entering Vehicles (TB)	AVR	Crashes per 3 Yr	Crash Rate (Per MV)	Critical Crash Rate (Per MV)	Crash Ratio
SW 98 Street	478.63	0.52	0.435	4	7.63	4.39	1.74
SW 104 Street	478.63	0.52	0.435	3	5.72	4.39	1.30
SW 112 Street	478.63	0.52	0.435	1	1.91	4.39	0.43
SW 124 Street	478.63	0.52	0.435	1	1.91	4.39	0.43
SW 128 Street	478.63	0.52	0.435	1	1.91	4.39	0.43
SW 136 Street	478.63	0.52	0.435	0	0.00	4.39	0.00
Total				10			

5.3 Movement Crash Analysis

As stated in ***Section 2.3***, while the Safety Ratio method is useful for identifying locations with high number of crashes, it cannot be used to identify problems with specific turning movements and cannot identify the types of crashes that are overrepresented for a given movement. This section presents the results of an analysis performed based on the frequencies of specific types of crashes for individual movements. The results of this analysis can be used to determine the locations and movements that are prone to specific types of crashes.

The results of the movement crash frequency analysis is presented in ***Appendix D***. Below is what can be stated based on the results presented in ***Appendix D***.

- As expected, the highest frequencies of crashes occurred for the northbound and southbound thru movements. These are the major movements with the highest demand in the network. Although the frequencies of these movement crashes are the highest, the crash rates (in crash per MVM) for some of the minor movements may be higher given the considerably lower traffic volumes of these movements compared to the northbound and southbound through movements.

- Rear-end is the crash type with the highest frequency of crashes constituting about half of the total number of crashes. This frequency is much higher than the frequency of any other type of crashes. Other types of crashes with relatively high frequencies compared to other types of crashes are left-turn, angle, and sideswipe.

- The intersection with the highest number of crashes is SW 104 th Street, followed by SW 112 th Street followed by SW 124 th Street followed by SW 136 th Street followed by SW 128 th Street. It is interesting to note that SW 124 th street total number of crashes is higher than the total number of SW 136 th Street, considering the much higher demand on SW 136 th Street compared to SW 124 th Street. This probably indicates that the quality of progression on SW 136th street is better than SW 124th street.

- Minor (northbound and southbound left turns and cross street) movements that have relatively high number of crashes include:

    - NB left turn on SW 98th Street (7 crashes): This could be due to the short green time for this movement (9 seconds) and the limited sight distance due to the angles of the approaches. The NB Left movement traffic sight is blocked by SB left turn proceeding and waiting at the middle of the intersection to make left.

    - EB and WB movements on SW 98th Street (8 crashes): WB and EB movements have one lane each and both are moving on a common

phase. Left turns are shared with the through movements and are not protected (permitted), moving on a green ball not a green arrow. Left turns from the east and west approaches were observed to cause some conflicts with the through movements from these approaches. Most of the observed 8 crashes are left turn or angle, which are generally more severe that other more common crashes on the corridor such as rear end crashes.

- WB right-turn crashes on SW 104 (5 crashes): This movement is congested in the morning and has a conflict with NB through and SB U-turn.

- SB left-turn on SW 104th Street (6 crashes): This U-Turn movement has a conflict with WB right-turn. There is also a short weaving length between it and palmetto Expressway SB off-ramp.

- WB left-turn 106th (5 crashes): This movement has conflict with SB left-turn, SB through, and NB through. In addition it is blocked by North bound queue from SW 104th street.

- EB left-turn on SW 112th Street (8 crashes) and EB through SW 112th Street (6 crashes): These are very congested movements and needs capacity improvement. Most of the crashes are angle and left turn crashes.

- WB SW 120th Street (13 crashes): This approach has conflict between traffic moving in and out of SW 82nd Avenue and SW 120th street traffic. In addition, WB left turn on US-1 has a conflict with SB left, SB through and NB through.

- SW 124th Street SBL (6 crashes): Most of the crashes are left turn and angle crashes.

- SW 136th Street WB through (9 crashes): There is a heavy congestion on WB approach in the PM peak and a conflict with traffic exiting the development at the southeast corner of the intersection.

- SW 136th Street EBT (6 crashes): Heavy congestion of the EB approach.

6. Operational Analysis Results

An important component of this study is the operational analysis conducted to investigate the operational deficiencies, causes of the deficiencies, and the effects of proposed solutions on the operations.

Tables 6.1 and 6.2 present a summary of the results of the macroscopic analysis performed using Synchro and the microscopic simulation analysis performed using SimTraffic for the existing operations and future conditions, respectively. These tables show the issues identified by these programs, comments on these issues, proposed solutions to resolve these issues, and the model assessments of these potential solutions. The results of the analysis for the individual intersections and individual turning movements are included in ***Appendix E***.

It should be mentioned that the important criteria considered in the analysis includes queue length, volume to capacity ratio, delays, in addition to level of service. The level of service as defined by the HCM is not appropriate measure by itself to assess the minor movement performance (cross street and left turn movements). This is because due to the long cycle lengths in the peak periods, the level of service of many minor movements is F, even if the movements are not over capacity. To illustrate this, suppose a minor movement has only one vehicle arriving on green, with the green length equal to 20 seconds and cycle length equal to 180 seconds. The vehicle, if arrive randomly, during the cycle will have to wait more than 80 seconds on average to get the green, which is a level of service F, although the movement is not congested. Since nothing can be done to reduce the cycle length, level of service F with acceptable V/C ratios and queue lengths for minor movements is considered acceptable for the corridor.

Table 6.1 Summary of the Operational Analysis for 2007

Intersection	Peak	Synchro Analysis Summary	SimTraffic Analysis Summary	Investigated Solutions in Analysis	Simulation Assessment of Solution
SW 72nd Avenue	AM Peak	N/A[a]	No major problems	None	None
	PM Peak	N/A[a]	No major problems		
SW 98th Street	AM Peak	EBL v/c ratio is higher than 1.0 with high delay	Long EB queue and simulation show gaps not available for EBL.	Add a left turn bays on westbound and eastbound approaches (about 100 ft long). Use Split phasing for cross streets.	v/c for EBL in Synchro dropped to 0.77 in the AM and 0.66 in the PM Queues in SimTraffic Eliminated and enough capacity is provided for cross street left turns
	PM Peak	EBL left turn v/c ratio is close to 1.0 with high delay	Long queues for cross streets. Gap is not sufficient for EBL		
SW 104th Street	AM Peak	EBL, EBT, WBT, WBR are oversaturated movements (v/c higher than 1.0)	Long queues for westbound and eastbound approaches	A number of improvements considered but none found feasible Additional lanes should be considered in the future on the east and west approaches (as discussed in the year 2015 analysis)	Additional lanes on east and westbound approaches were found to reduce the congestion problem but these were not considered for 2007 but for 2015

Intersection	Peak	Synchro Analysis Summary	SimTraffic Analysis Summary	Investigated Solutions in Analysis	Simulation Assessment of Solution
	PM Peak	None	Long queue on EB	None	
SW 106th Street	AM Peak	N/A[a]	EBR find difficulty making right turn due to heavy opposing traffic	None	None
	PM Peak	N/A[a]	No significant problem		
SW 110th Street	AM Peak	N/A[a]	No significant problem	None	None
	PM Peak	N/A[a]	No significant problem		
SW 112th Street	AM Peak	WBT and EBT in the peak 15 minutes are over capacity for the peak 15 minutes (1.07 and 1.0 respectively).	Long EB queue. WB Left turns are some time prevented from reaching the stop line due to WBT queue.	Extend the two EB lanes to 300 ft upstream from bus-way intersection. Convert WBR lane into a shared right and through Reconfigure EB	EB, WB, and NBL problems eliminated.

Intersection	Peak	Synchro Analysis Summary	SimTraffic Analysis Summary	Investigated Solutions in Analysis	Simulation Assessment of Solution
	PM Peak	NBL and WBT are over capacity (V/C are 1.06 in both cases).	WB Left turns are some time prevented from reaching the stop line due to WBT queue. Long NBL queue	lanes to make the exclusive left shared wit the through. Add a second NB left turn bay to prevent vehicles from backing into through lanes (this could be a future improvement).	
SW 117th Street	AM Peak	N/A[a]	No major problems	None	None
	PM Peak	N/A[a]	No major problems		
SW 120th Street	AM Peak	N/Aa	None	None	None

Intersection	Peak	Synchro Analysis Summary	SimTraffic Analysis Summary	Investigated Solutions in Analysis	Simulation Assessment of Solution
	PM Peak	N/A[a]	None	None	
SW 124th Street	AM Peak	All minor movement V/C are below 1.0	WB Right-turns are blocked by through	Extend WB Right turn further from the intersection.	WB Right-turn blocking from reaching stop line resolved
	PM Peak	All minor movement V/C are below 1.0	WB Right-turns are blocked by through		
SW 128th Street	AM Peak	The shared WBT and WBR lane has V/C ratio of 1.04	WB Right-turns are blocked by through	Provide Right turn bay	Right-turn obstruction from reaching stop line resolved

Intersection	Peak	Synchro Analysis Summary	SimTraffic Analysis Summary	Investigated Solutions in Analysis	Simulation Assessment of Solution
	PM Peak	All minor movement V/C are below 1.0. EBL and WBT have V/C close to 1.0 (0.98)	WB Right-turns are blocked by through		
SW 132nd Street (unsignalized)	AM Peak	N/A[a]	No major problems	None	None
	PM Peak	N/A[a]	No major problems		
SW 132nd Street	AM Peak	No major problems	No major problems	None	None
	PM Peak	No major problems	No major problems		
SW 136th Street	AM Peak	No major problems except NBT	Long Northbound queue.	Extra right turn shared with thru on the WB approach. This required changing the receiving link on the west approach to three lanes. Reconfigure the	Problems resolved

Intersection	Peak	Synchro Analysis Summary	SimTraffic Analysis Summary	Investigated Solutions in Analysis	Simulation Assessment of Solution
	PM Peak	WBL, WBT and EBR are over capacity. NBL is close to capacity (V/C = 0.97)	Long WB,EBR and NBL queue	access to the mall at the southeast corner. Allow EBR during NBL (this will require a special signal head and signage) Acceleration lane for EBR (going south on US-1), separated by delineators to prevent conflict with WBL.	

"a"= Synchro is not capable of correctly evaluating unsignalized intersections with median storage for vehicles jumping from cross street.

Table 6.2 Summary of the Operational Analysis for 2015

Intersection	Peak	Synchro Analysis Summary	SimTraffic Analysis Summary	Investigated Operational Solution	Simulation Assessment of Solution
SW 72nd Avenue	AM Peak	N/A[a]	No major problems	none	None
	PM Peak	N/A[a]	No major problems		
SW 98th Street	AM Peak	NBL has V/C ratio of 1.06 and EBL has a V/C ratio close to 1.0	Long EB and NBL queue and simulation shows gaps not available for EBL.	In addition to 2007 improvement, add a 100 ft right-turn bay to WB approach and shift 4 seconds from cross street to NBL in the PM.	V/C ratios and queues dropped to acceptable levels
	PM Peak	EBL has V/C ratio close to 1.0	Long EB and NBL queue and simulation shows gaps not available for EBL. NBL queue is long		
SW 104th Street	AM Peak	EBL, EBT, WBT, and WBR ratios are considerably higher than 1.0	Long queues for westbound and eastbound approaches r	Second exclusive left turn EB in addition to the existing one and the one shared with the through Add right-turn pocket to EB (if possible) and additional right turn WB. Retime signal	Eliminate congestion except for WBR that still has V/C above 1.0 which is still considerably less than with no improvements
	PM Peak	EBL and EBT with V/C equal 1.0 in the peak hour	NBL approach		

Intersection	Peak	Synchro Analysis Summary	SimTraffic Analysis Summary	Investigated Operational Solution	Simulation Assessment of Solution
SW 106th Street	AM Peak	N/A[a]	EBR find difficulty making right turn due to heavy opposing traffic	None.	None.
	PM Peak	N/A[a]	No significant problem		
SW 110th Street	AM Peak	N/A[a]	No significant problem		None.
	PM Peak	N/A[a]	No significant problem		
SW 112th Street	AM Peak	NBL has V/C of 1.0 EBT and WBT are over capacity (have V/C of 1.1 and 1.26, respectively)	Long NBL, EB, and WB queue	In addition to 2007 improvements, add a WBR turn pay and make the shared thru and RT in 2007 solution, a thru only lane. Extend the EBR lane 150 ft upstream of the bus way intersection.	Problems solved

Intersection	Peak	Synchro Analysis Summary	SimTraffic Analysis Summary	Investigated Operational Solution	Simulation Assessment of Solution
	PM Peak	V/C ratios for WBT, NBL, and SBL are 1.16, 1.15, and 1.03, respectively.	Long NBL, SBL, EB, and WB queue		
SW 117th Street	AM Peak	N/A[a]	No significant problem	None	None
	PM Peak	N/A[a]	No significant problems		
SW 120th Street	AM Peak	N/Aa	None	None	
	PM Peak	N/A[a]	None		

Intersection	Peak	Synchro Analysis Summary	SimTraffic Analysis Summary	Investigated Operational Solution	Simulation Assessment of Solution
SW 124th Street	AM Peak	All minor movement V/C are below 1.0	Right-turns are blocked by through on WB.	Extend WB Right turn further from the intersection. (2007 improvement) Add a WB shared lane between thru and left Extend EBR upstream of the bus-way	Right-turn back-up resolved
	PM Peak	All minor movement V/C are below 1.0	Right-turns are blocked by through on WB. Long EB queue.		
SW 128th Street	AM Peak	All minor movement V/C are below 1.0	WB Right-turns are blocked by through	Provide right turn bay (2007 improvement) Add a lane shared between EBT and EBL Extend the two EB lanes to 500 ft upstream from bus-way intersection	. Right-turn back-up resolved
	PM Peak	EBL V/C is 1.04 and WBT is 1.02	WB Right-turns are blocked by through. Long EB queue		

Intersection	Peak	Synchro Analysis Summary	SimTraffic Analysis Summary	Investigated Operational Solution	Simulation Assessment of Solution
SW 132nd Street (unsignalized)	AM Peak	N/A[a]	No major problems	None	None
	PM Peak	N/A[a]	No major problems		
SW 132nd Street	AM Peak	No major problems	No major problems	None	None
	PM Peak	No major problems	No major problems		
SW 136th Street	AM Peak	No major problems	No major problems except NBT		The only movements with V/C ratios remaining after improvements are WBL =1.08 and NBL =1.0

Intersection	Peak	Synchro Analysis Summary	SimTraffic Analysis Summary	Investigated Operational Solution	Simulation Assessment of Solution
	PM Peak	V/C ratios for EBR, WBL, NBL, and WT are 1.05, 1.08, 1.05, and 1.27, respectively	WBT, NBL and EBR are over capacity.		

“a” = Syncro is not capable of correctly evaluating unsignalized intersections with median storage for vehicles jumping from cross streets.

7. Warrant Study

A warrant study was conducted on the intersection of US-1 and SW 120th Street, in order to verify if a control signal was justified for the intersection. Four total hours of traffic volumes counts were taken at the intersection for all of the approaches. Two hour counts were taken during the morning peak from 7:00 AM to 9:00 AM, as well as two hour counts were taken during the afternoon peak from 4:00 PM to 6:00 PM. The volumes were later utilized for the warrant analysis, in accordance to the eight traffic signal warrants specified by the Manual of Uniform Traffic Control Devices (MUTCD). **Table *7.1 and 7.2*** present, the traffic volumes collected at the intersection of US-1 and 120th Street, for the AM and PM peak, respectively.

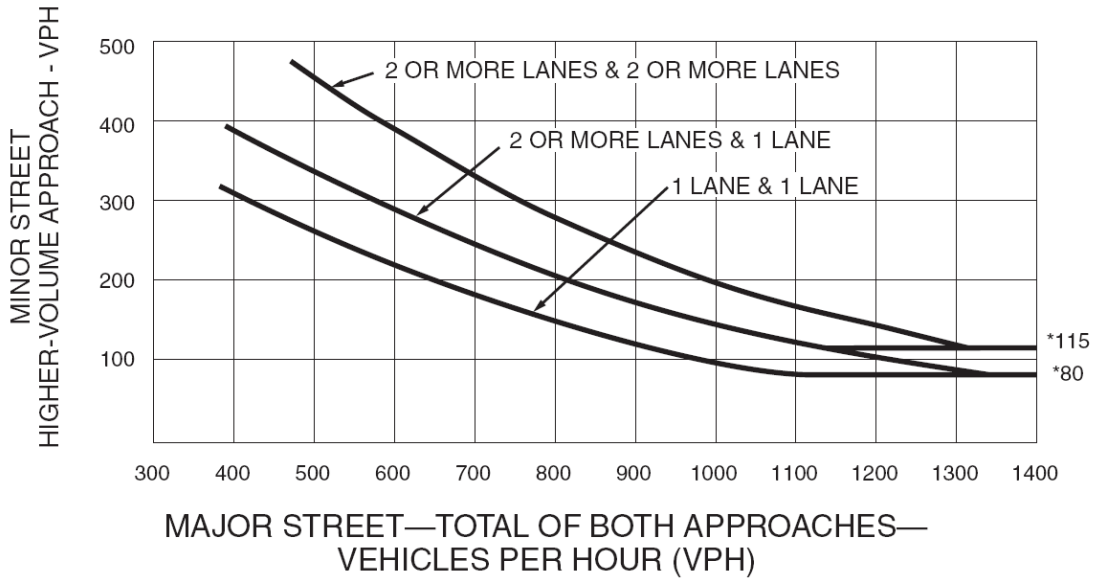
Table 7.1 AM peak traffic volumes at the intersection of US-1 and 120th street

AM Peak		
Road	**Time (AM)**	**Vehicles/Hour**
US-1	7:00-8:00	4,432
120th Street	7:00-8:00	135
US-1	8:00-9:00	4,001
120th Street	8:00-9:00	130

Table 7.2 PM peak traffic volumes at the intersection of US-1 and 120th street

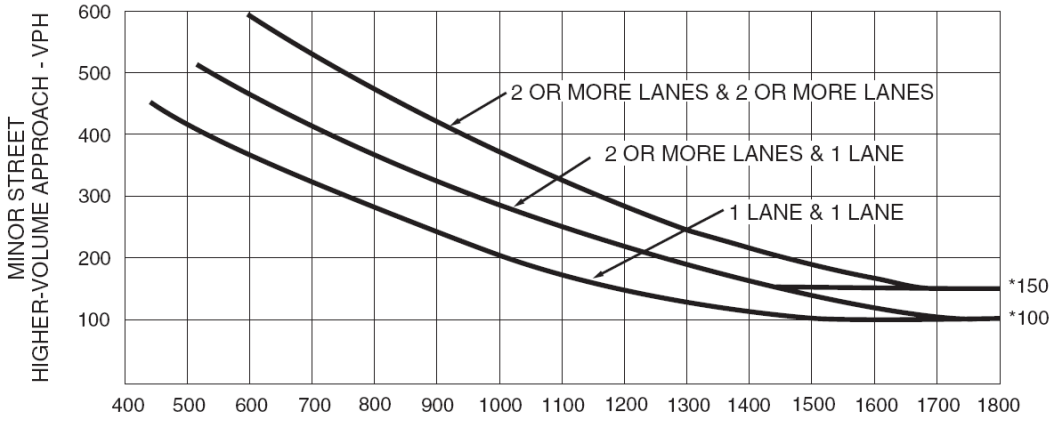
PM Peak		
Road	**Time (PM)**	**Vehicle/Hour**
US1	4:00-5:00	4703
120th Street	4:00-5:00	147
US1	5:00-6:00	4793
120th Street	5:00-6:00	115

Figure 7.1 and 7.2 present the MUTCD warrants 2 and 3. Warrants 2 and 3 are met for the US-1 and 120th street intersection and a traffic signal can be justifiably installed.



*Note: 115 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 80 vph applies as the lower threshold volume for a minor-street approach with one lane.

Figure 7.1 Signal Control Warrant 2



*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Figure 7.2 Signal Control Warrant 3

8. Right-of-Way Analysis

This section discusses issues associated with the right-of-way availability as it related to potential improvement alternatives.

8.1 SW 72nd Avenue and US-1

Figure 8-1 and Table 8-1 present and adjacent land use for the intersection respectively.

Existing Section

Cross-section:	70-foot
Lanes on Approach:	2 southbound lanes: 1 right- urn in from northbound US-1
	1 left turn in from south US-1
	1 northbound lane: right turn only to northbound US-1
Approach Length:	130-ft. along centerline
Lanes Upstream:	1 southbound
	1 northbound
Pavement Width:	30-ft. (upstream)
Sidewalk:	both sides, 5-ft. cross-section
Landscape Strip:	both sides, 15-ft. cross section
Curb and Gutter:	both sides

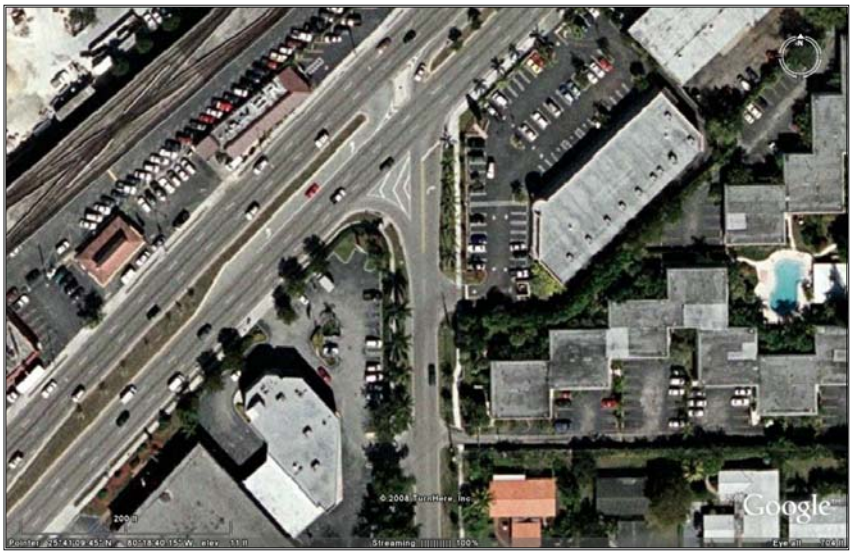


Figure 8.1 Aerial View of SW 72nd Avenue and US-1 Intersection

Table 8.1 Adjacent Land Uses- SW 72nd Avenue and US-1 Intersection

	West Side of SW 72nd Avenue	East Side of SW 72nd Avenue
Abutting Land Uses:		
Length along ROW	390 ft.	190 ft.
Existing Use	Office (Bank)	Retail
	Bank of America with 3 drive-through lanes	Dixie Dadeland Shopping Center
Zoned	BU-2	BU-1A
Lot Area	48,602 ft.2	48,988 ft.2
Building Area	15,496 ft.2	13,239 ft.2
Building Height	1 story	1 story
Building Age	Built 1987	Built 2001
Driveways:		
On ROW:	2-way	2-way
Distance	320 ft. from intersection	150 ft. from intersection
On US-1:	2-way on US-1	2-way on US-1
Distance	130 ft. from intersection	100 ft. from intersection
Property Value: Note 1		
Land:	$4,155,471	$4,408,920
unit value	$85.50 /ft.2	$90.00 /ft.2
Building:	$1,268,129	$921,539
unit value	$81.84 /ft.2	$69.61 /ft.2

Note 1: Property values based on 2008 market value data, Dade County Property Appraiser

Recommended Right-of-Way Improvements

Change pavement markings for northbound lane to intersect US-1 at nearer to perpendicular angle. There is no change in pavement area, curbing, drainage, or right-of-way needs.

Land Requirements

ROW Area: None
Appraised Value: Not Applicable

ROW Acquisition

Not Applicable.

8.2 SW 98th Street and US-1

Figure 8-2 and Table 8-2 present and adjacent land use for the intersection respectively.

Existing Section

Cross-section:	50-foot
Lanes on Approach:	2 westbound lanes: 1 right turn out to northbound US-1
	1 through and left turn to southbound US-1
	1 eastbound lane: right or left from US-1, through from SW 98th St.
Approach Length:	100 ft. along centerline
Lanes Upstream:	1 westbound
	1 eastbound
Pavement Width:	25-ft. (upstream)
Sidewalk:	both sides, 5-ft. cross-section
Landscape Strip:	both sides, south 5-ft. cross section, north 10-ft. cross section
Curb and Gutter:	none, swale drainage

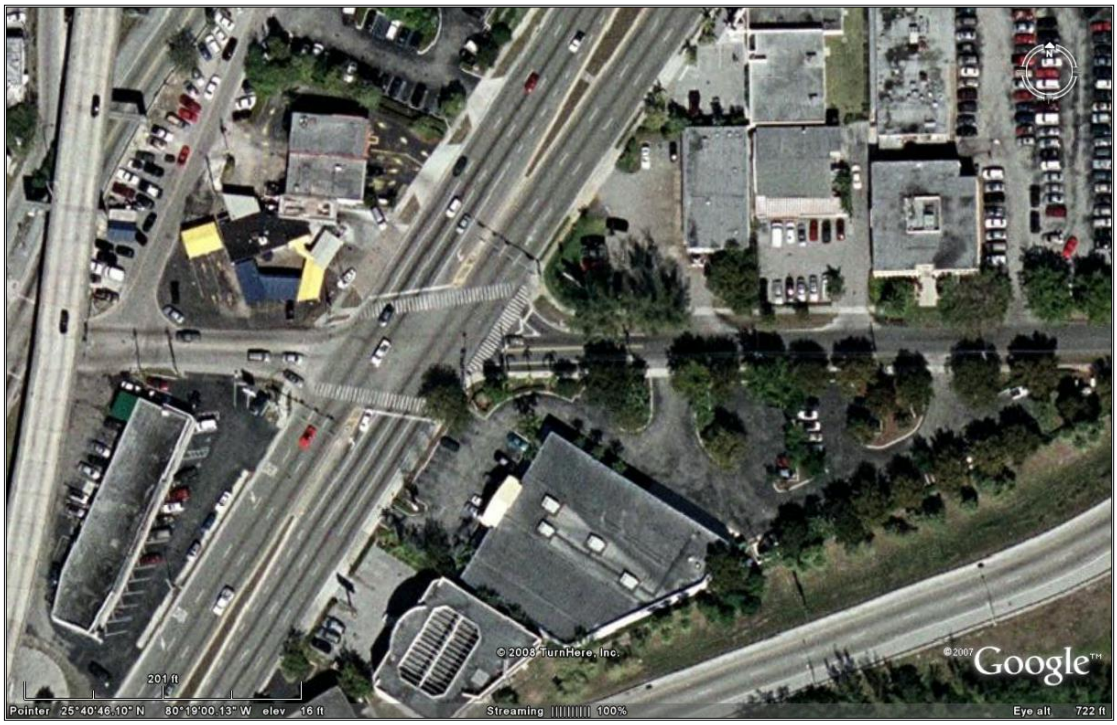


Figure 8.2 Aerial View of SW 98th Street and US-1 Intersection

Table 8.2 Adjacent Land Uses- SW 98th Street and US-1 Intersection

	North Side of SW 98th Street	South Side of SW 98th Street
Abutting Land Uses:		
Length along ROW	255 ft.	550 ft.
Existing Use	Commercial	Retail
	Firestone Auto Repair Center	Staples
Zoned	BU-1	BU-1A
Lot Area	16,091 ft.2	66,647 ft.2
Building Area	3,604 ft.2	18,098 ft.2
Building Height	1 story	1 story
Building Age	Built 1976	Built 1994
Driveways:		
On ROW:	two, 2-way	two, 2-way
Distance	100 ft. from intersection 250 ft. from intersection	140 ft. from intersection 340 ft. from intersection
On US-1:	2-way on US-1	2-way on US-1
Distance	75 ft. from intersection	100 ft. from intersection
Property Value: Note 1		
Land:	$1,448,190	$5,098,496
unit value	$90.00 /ft.2	$76.50 /ft.2
Building:	$183,494	$1,322,922
unit value	$50.91 /ft.2	$73.10 /ft.2

Note 1: Property values based on 2008 market value data, Dade County Property Appraiser

Recommended Right-of-Way Improvements

Westbound Left-Turn Lane:

Recommendations include the addition of a left-turn lane on both the eastbound and westbound approaches. The left turn lane requirement is to provide storage for 3 vehicles, and would have the following approximate requirements:

Lane width (minimum/desirable):	11-ft.
Deceleration & Taper Length:	145-ft.(35 mph design speed)
Storage length:	73-ft. (2 cars +1 single unit truck +10%)
Total Length:	218-ft.

Note: Auxiliary Turn Lane requirements based on FDOT Florida Intersection Design Guide, Table 3-9, Minimum Deceleration Lengths

Eleven feet of additional pavement is needed for a distance of 218 feet. Additional ROW is not needed if the 11-feet of additional pavement width is moved mostly into the north swale. Approximately 10-feet would be accommodated by the north swale area, while still leaving a 5-foot wide landscaping strip. The additional foot may be accomplished by re-striping the existing pavement to more exactly meet the 11-foot through lane requirements. The driveway for the Firestone would be affected, but not that for the Captain's Tavern.

Curb and Gutter:

Informal parking for the commercial uses was observed to occur in the north swale area. This street-side parking impedes traffic approaching the intersection, and may reduce safety. Providing curb and gutter along both sides, especially with the reduced landscape areas to protect sidewalks, will enhance operations and safety. SW 98th Street has a County force main under it, and its adjacent uses are connected to County sewer services.

Land Requirements

Pavement Area:	2,398 ft.2
ROW Area:	None
Appraised Value:	Not Applicable

ROW Acquisition

Not Applicable

8.3 SW 112th Street and US-1

Figure 8-3 and Table 8-3 present and adjacent land use for the intersection respectively.

Existing Section

Cross-section:	70-foot	
Lanes on Approach:	3 westbound lanes:	1 right turn out to northbound US-1
		1 through to westbound SW 112th Street
		1 left turn to southbound US-1
	1 eastbound lane:	right or left from US-1, through from SW 112th St.
Approach Length:	170 ft. along centerline	
Lanes Upstream:	1 westbound	
	1 eastbound	
Pavement Width:	35-ft. (upstream)	
Sidewalk:	both sides, 5-ft. cross-section	
Landscape Strip:	South side: less than 5-ft. sidewalk to street, up to 10' outside sidewalk	
	North side: part of Veteran's Wayside Park, and some paved	
Curb and Gutter:	both sides	

Figure 8.3 Aerial View of SW 112th Street and US-1 Intersection

Table 8.3 Adjacent Land Uses- SW 112th Street and US-1 Intersection

	North Side of SW 112th Street	South Side of SW 112th Street
Abutting Land Uses:		
Length along ROW	380 ft.	365 ft.
Existing Use	Parks and Recreation	Retail
	Veteran's Wayside Park	Suniland Shopping Center
Zoned	PR	BU-1A
Lot Area	143,958 ft.2	298,864 ft.2
Building Area	0 ft.2	128,315 ft.2
Building Height	none	2 stories
Building Age	none	Built 1954-2006
Driveways:		
On ROW:	none	three, 2-way
Distance	not applicable	15 ft. from intersection 100 ft. from intersection 250 ft. from intersection
On US-1:	none	two, 2-way on US-1
Distance	not applicable	380 ft. from intersection 900 ft. from intersection
Property Value: Note 1		
Land:	$5,614,362	$19,732,640 Note 2
unit value	$39.00 /ft.2	$66.02 /ft.2
Building:	$0	$9,049,159
unit value	$0.00 /ft.2	$70.52 /ft.2

Note 1: Property values based on 2008 market value data, Dade County Property Appraiser
Note 2: Suniland Shopping Plaza, lot area, building area, assessment, and driveways are for entire center, but not including the residential properties along SW 81st Road that are under the same ownership.

Recommended Right-of-Way Improvements

Northbound US-1 Left-turn Bay

Recommendations include the expansion of the northbound left-turn bay on US-1 to be expanded to two lanes, if possible. This recommendation is contingent on the ability to use median space, without taking any right-of-way.

Eastbound Lane Extensions

This recommendation is applicable to the west approach of Killian Drive (SW 112th Street), and is to extend the second lane to 300 feet upstream (west) of the intersection. This approach is not within the jurisdiction of the Village of Pinecrest (it is in un-incorporated Dade County). Right-of-way issues are beyond the scope of this document.

Suniland Driveways

The location of the western-most driveway from Suniland Shopping Center along SW 112th Street is 15 to 20-feet from the intersection. Accommodating both entering and exiting vehicles, the driveway causes conflicts with intersection traffic, particularly to left turns from southbound US-1 and right turns from northbound US-1. The Florida Greenbook (Manual of Uniform Minimum Standards for Design, Construction and Maintenance for Streets and Highways) requires that driveways should not be placed near intersections or other points that would tend to produce traffic conflict. Adequate spacing between access and decision points is necessary to avoid burdening the driver with the need for rapid decisions of maneuvers.(Ch. 3, Se C-8.b.1)

There are a total of three driveways providing access to the shopping center from SW 112th Street: two the the front parking lot, and one to the service alley and rear parking.

The recommendation is for the Village to work with the property owners to develop a plan to reconfigure the driveways and alleviate the conflicts. Although private property is affected, additional ROW is not needed.

Land Requirements

Pavement Area:	None
ROW Area:	None
Appraised Value:	Not Applicable

ROW Acquisition

Not Applicable

8.4 SW 117th Street and US-1

Figure 8-4 and Table 8-4 present and adjacent land use for the intersection respectively.

Existing Section

Cross-section:	50-foot	
Lanes on Approach:	1 westbound lane:	1 right turn out to northbound US-1
	1 eastbound lane:	right from northbound US-1, or
		left from southbound US-1
Approach Length:	40 ft. along centerline	
Lanes Upstream:	1 westbound	
	1 eastbound	
Pavement Width:	25-ft. (upstream)	
Sidewalk:	both sides, north side, 5+-ft. cross-section, south side, 5-ft. wide	
Landscape Strip:	South side only: 10' + outside sidewalk	
Curb and Gutter:	both sides	

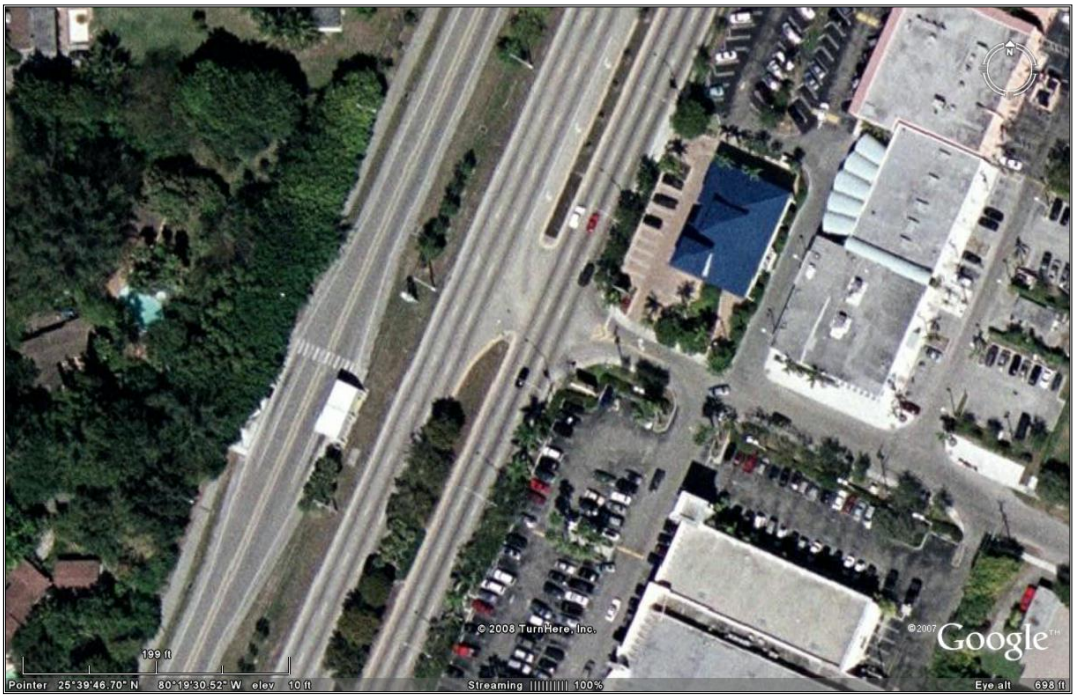


Figure 8.4 Aerial View of SW 117th Street and US-1 Intersection

Table 8.4 Adjacent Land Uses- SW 117th Street and US-1 Intersection

	North Side of SW 117th Street	South Side of SW 117th Street
Abutting Land Uses:		
Length along ROW	135 ft.	340 ft.
Existing Use	Office (Bank)	Retail
	City National Bank	Pinecrest Plaza, Wild Oats
Zoned	BU-1A	BU-1A
Lot Area	18,000 ft.2	173,250 ft.2
Building Area	9,068 ft.2	67,764 ft.2
Building Height	1 story	1 story
Building Age	Built 2002	Built 1962-1968
Driveways:		
On ROW:	Three total: One 2-way, One drive-through exit One 2-way (retail center)	Two, 2-way
Distance	30 ft. from intersection 80 ft. from intersection 110 ft. from intersection	100 ft. from intersection 330 ft. from intersection
On US-1:	one, 2-way on US-1	one, 2-way on US-1
Distance	110 ft. from intersection	520 ft. from intersection
Property Value: Note 1		
Land:	$1,170,000	$11,690,250 Note 2
unit value	$65.00 /ft.2	$67.48 /ft.2
Building:	$832,065	$3,066,238
unit value	$91.76 /ft.2	$45.25 /ft.2

Note 1: Property values based on 2008 market value data, Dade County Property Appraiser
Note 2: Pinecrest Plaza, lot area, building area, assessment, and driveways are for entire center (to driveway).

Recommended Right-of-Way Improvements

Bank Driveways

The location of the western-most driveway from the Citi National Bank along SW 117th Street is 30-feet from the intersection. Accommodating both entering and exiting vehicles, the driveway causes conflicts with intersection traffic, particularly for left turns from southbound US-1 and right turns from northbound US-1. There are a total of three driveways providing access or egress to the bank: one from US-1 and this one. Further east is the drive-through lanes exit which is very close to the driveway to the shopping center immediately to the east of this. The bank can also be accessed internally from the shopping center, via its access drive on SW 117th Street. The Florida Greenbook (Manual of Uniform Minimum Standards for Design, Construction and Maintenance for Streets and Highways) requires that driveways should not be placed near intersections or other points that would tend to produce traffic conflict. Adequate spacing between access and decision points is necessary to avoid burdening the driver with the need for rapid decisions of maneuvers.(Ch. 3, Se C-8.b.1)

The recommendation is for the Village to work with the property owner to develop a plan to reconfigure driveways and alleviate the conflicts caused by the eastern-most driveway along SW 117th Street. Although private property is affected, additional ROW is not needed.

Pinecrest Plaza Access

In combination with the proximity to the intersection and the three closely-spaced driveways on the north side of SW 117th Street, the most western driveway of the Pinecrest Plaza causes additional conflicts due to vehicles turning left out of the plaza to reach US-1. It is preferable to have the drivers that wish to access US-1 either go to the US-1 driveway for Pinecrest Plaza, or to turn left onto westbound SW 117th Street from the more western driveway that is 330-feet back from the intersection. This can be

accomplished by adding a medial divider from the intersection, to a point approximately 150-feet upstream (east) along SW 117th Street. The divider may be extended from a triangular island at the intersection, replacing the existing triangle divider pavement markings. A full median or barrier is not possible without expanding the pavement width and potentially requiring additional ROW, and is not recommended. A medial divider requires only approximately 3-feet of cross-sectional width. This width may be gained from extending pavement on each side, using area from the landscape strips. The landscape strips may be relocated between the sidewalk and roadway at this time.

The recommendation is to design and construct a raised triangular divider island at the intersection to replace the pavement markings, and to extend a low, medial divider from the island to a point approximately 150-feet east from the intersection. The medial divider should include flexible delineators, and may be of a mountable curbing design. No private property is affected, and no additional ROW is required.

Land Requirements

Pavement Area:	450 ft.2
ROW Area:	None
Appraised Value:	Not Applicable

ROW Acquisition

Not Applicable

Dedication by Development Bonus Option: Is site FAR limited? Limitation on Development Value needed for Development Bonus Developed value of floor area for highest zoned use..

8.5 SW 124th Street and US-1

Figure 8-5 and Table 8-5 present and adjacent land use for the intersection respectively.

Existing Section

Cross-section:	70-foot
Lanes on Approach:	3 westbound lanes: 1 right turn out to northbound US-1
	1 through lane westbound to SW 124th Street
	1 left turn out to southbound US-1
	2 eastbound lanes: right from northbound US-1
	left from southbound US-1, and
	through from SW 124th Street
Approach Length:	210 ft. along centerline
Lanes Upstream:	1 westbound
	1 eastbound
	scramble lane for 300 ft.
Pavement Width:	35-ft. (upstream)
Sidewalk:	North Side, 5-ft. cross-section
Landscape Strip:	North Side only: 10'
Curb and Gutter:	North Side only, South Side by swale

Figure 8.5 Aerial View of SW 124th Street and US-1 Intersection

Table 8.5 Adjacent Land Uses- SW 124th Street and US-1 Intersection

	North Side of SW 124th Street	South Side of SW 124th Street
Abutting Land Uses:		
Length along ROW	235 ft. 200 ft.	110 ft. 110 ft.
Existing Use	Vacant (proposed bank) Retail	Office Retail
	Market	Dooley Real Estate Farm Store
Zoned	BU-3	BU-2
Lot Area	26,592 ft.2 64,904 ft.2	12,330 ft.2 12,248 ft.2
Building Area	0 ft.2 20,766 ft.2	1,160 ft.2 3,311 ft.2
Building Height	No Structure 1 story	1 story 1 story
Building Age	Not Applicable Built 1960	Built 1955 Built 1957
Driveways:		
On ROW:	Two, 2-way Two, 2-way	One, 2-way All driveway
Distance	40 ft. from intersection 140 ft. from intersection	
On US-1:	one, 2-way on US-1 Market not on US-1	one, 2-way on US-1 Farm Store not on US-1
Distance	45 ft. from intersection 150 ft. from intersection	520 ft. from intersection
Property Value: Note 1		
Land:	$2,020,992 $3,391,234	$863,100 $612,400
unit value	$76.00 /ft.2 $52.25 /ft.2	$70.00 /ft.2 $50.00 /ft.2
Building:	$0 $762,928	$78,151 $201,689
unit value	$0.00 /ft.2 $36.74 /ft.2	$67.37 /ft.2 $60.91 /ft.2

Note 1: Property values based on 2008 market value data, Dade County Property Appraiser

Recommended Right-of-Way Improvements

Westbound Right-Turn Lane:

The recommendation for this intersection is to extend the right-turn lane on the westbound approach to alleviate long queues in the through-right lane. Currently during the AM peak and during school let-out time (2:40 to 3:00 pm) vehicles that are to turn right at the intersection are blocked by the lane through lane queue. The existing right turn lane extends back approximately 50-ft. from the stop bar, and in operation stores 3 vehicles (one past stop bar). The existing observed peak queues are of10 to 15 vehicles. The right turn lane requirement is to provide storage for 8 vehicles, and would have the following approximate requirements:

Lane Width:	11-ft.
Deceleration & Taper Length	145-ft(35 mph design speed)
Storage Length	172-ft. (7 cars +1 single unit truck +10%)
Total Length	317-ft.

Auxiliary Turn Lane requirements based on FDOT Florida Intersection Design Guide, Table 3-9, Minimum Deceleration Lengths

The length of the turn lane to meet this requirement extends back to the end of the western driveway of the Farmer's Market, and would locate the taper in the same area as that driveway. This is not desirable for maintaining good sight line distances. For this reason, the recommendation is for a shorter auxiliary lane that ends at the property line of the redevelopment site on the northeast corner of the intersection. This right turn lane would provide storage for 5 passenger vehicles, and may also store 2 to 3 vehicles in the deceleration area during peak periods with lower speed traffic. The lane requirements would be:

Lane Width	11-ft.
Deceleration & Taper Length	145-ft(35 mph design speed)
Storage Length	90-ft. (3 cars +1 single unit truck +10%)
Total Length	235-ft.

Auxiliary Turn Lane requirements based on FDOT Florida Intersection Design Guide, Table 3-9, Minimum Deceleration Lengths

Eleven feet of additional pavement is needed for a distance of 235 feet. Although substandard in width and design, the existing turn lane is about 50-ft., requiring an extension of 185-ft. The swale area between the curb and the sidewalk is approximately 8-ft' wide, and may be reduced to 5-ft in width, providing 3 feet of the 11-foot width required. The net amount of additional ROW needed is for a strip of land that is 185-ft. long by 8-ft. wide. The entire land and widening would impact one parcel of land, and would not impact existing, operational driveways.

Land Requirements

Pavement Area:	2,585 ft.^{2}
ROW Area:	1,480 ft. ^{2}
Appraised Value:	$112,480.00

ROW Acquisition

The required land for the improvement may be purchased by agreement, or by the eminent domain process. In either case, the cost of acquisition including soft costs, should be expected to be significantly higher than the appraised value of the land.

An alternative method of acquisition may be by voluntary dedication on the part of the property owner in exchange for a development bonus of commensurate or greater value to the property owner. This would require that the City determine areas where right-of-way may be needed for this or other public purposes, and use legislative means to

amend the Village's land development regulations (LDR) to provide a defined development benefit in exchange for ROW dedications in defined areas.

In this particular location, the property is to be redeveloped soon, and this approach is more viable in the short-term. If a legislative approach is not used by the Village, there are other possibilities. At the time of the development's permitting, if the developer / owner requires any variances from existing LDR requirements, the developer may proffer the dedication as part of a development proposal package requesting such variances.

8.6 SW 128th Street and US-1

Figure 8-6 and Table 8-6 present and adjacent land use for the intersection respectively.

Existing Sectio

Cross-section:	70-foot	
Lanes on Approach:	3 westbound lanes:	1 right turn out to northbound US-1
		1 through lane westbound to SW 128th Street
		1 left turn out to southbound US-1
	2 eastbound lanes:	right from northbound US-1
		left from southbound US-1, and
		through from SW 128th Street
Approach Length:	180 ft. along centerline	
Lanes Upstream:	1 westbound	
	1 eastbound	
Pavement Width:	35-ft. (upstream)	
Sidewalk:	North Side, 5-ft. cross-section	
Landscape Strip:	North Side: 2 ft. to 3 ft.	
	South Side: 5 ft. to 7 ft.	
Curb and Gutter:	both sides	

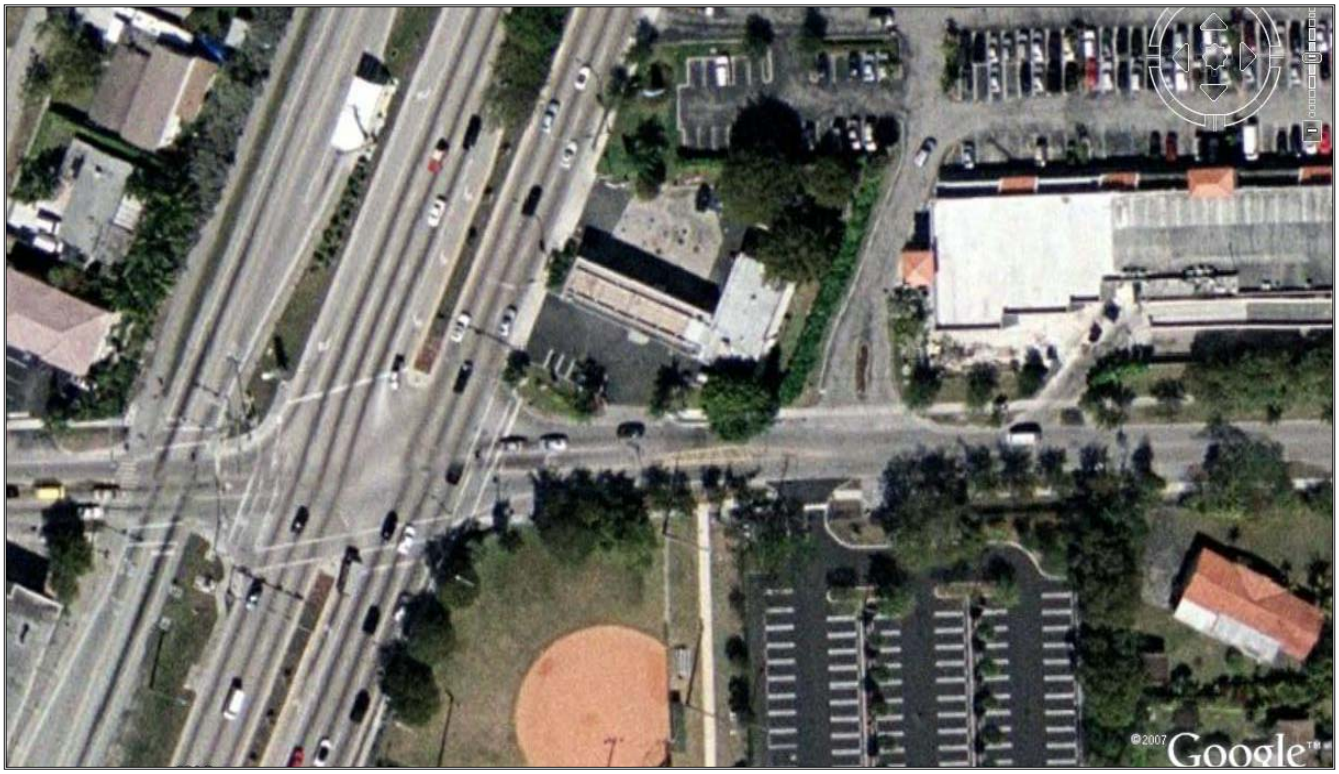


Figure 8.6 Aerial View of SW 128th Street and US-1 Intersection

Table 8.6 Adjacent Land Uses- SW 128th Street and US-1 Intersection

	North Side of SW 128th Street	South Side of SW 128th Street
Abutting Land Uses:		
Length along ROW	175 ft.	570 ft.
Existing Use	Gas Station	Park
	U-Gas	Suniland Park
Zoned	BU-1A	PR
Lot Area	25,265 ft.2	348,480 ft.2
Building Area	4,220 ft.2	2,307 ft.2
Building Height	1 story	1 story
Building Age	Built 1982	Built 2003
Driveways:		
On ROW:	One, 2-way	One, 2-way
Distance	65 ft. from intersection	175 ft. from intersection
On US-1:	Two, 2-way on US-1	None
Distance	20 ft. from intersection 100 ft. from intersection	Not Applicable
Property Value: **Note 1**		
Land:	$2,021,200	$7,318,080
unit value	$80.00 /ft.2	$21.00 /ft.2
Building:	$237,348	$351,649
unit value	$56.24 /ft.2	$152.42 /ft.2

Note 1: Property values based on 2008 market value data, Dade County Property Appraiser

Recommended Right-of-Way Improvements

Westbound Right-Turn Lane:

The recommendation for this intersection is to extend the right-turn lane on the westbound approach to alleviate long queues in the through-right lane. Currently during

the AM peak and during school let-out time (2:40 to 3:00 pm) vehicles that are to turn right at the intersection are blocked by the lane through lane queue. The existing right turn lane extends back approximately 20-ft. from the stop bar, and in operation stores 2 vehicles (one past stop bar). The existing observed peak queues are of10 to 15 vehicles. The right turn lane requirement is to provide storage for 8 vehicles, and would have the following approximate requirements:

Lane Width	11-ft.
Deceleration & Taper Length	145-ft.(35 mph design speed)
Storage Length	172-ft. (7 cars +1 single unit truck +10%)
Total Length	317-ft.

Auxiliary Turn Lane requirements based on FDOT Florida Intersection Design Guide, Table 3-9, Minimum Deceleration Lengths

The length of the turn lane to meet this requirement extends back to the end of the western driveway of the shopping center, and would locate the taper in the same area as that driveway. This is not desirable for maintaining good sight line distances. Further, the lane would extend well past the intersection approach through the transition area to two travel lanes. For these reasons, the recommendation is for a shorter auxiliary lane that ends at the property line of the redevelopment site on the northeast corner of the intersection. This right turn lane would provide storage for 2 passenger vehicles, and may also store 2 to 3 vehicles in the deceleration area during peak periods with lower speed traffic. The lane requirements would be:

Lane Width	11-ft.
Deceleration & Taper Length	145-ft. (35 mph design speed)
Storage Length	30-ft. (2 cars or 1 single unit truck)
Total Length	175-ft.

Auxiliary Turn Lane requirements based on FDOT Florida Intersection Design Guide, Table 3-9, Minimum Deceleration Lengths

Eleven feet of additional pavement is needed for a distance of 175 feet. Although substandard in width and design, the existing turn lane is about 20-ft., requiring an extension of 155-ft. The swale area between the curb and the sidewalk is insufficient to provide sufficient protection as a buffer area for pedestrians, and there is no sidewalk where the existing turn lane is. To provide space for the turn lane, sufficient landscape area for pedestrian protection, and to provide a continuous pedestrian path, the additional ROW cross-sectional requirement is 15-ft. (11 ft. for the traffic lane + 3 ft. to bring planting area to 5-ft). The total amount of additional ROW needed is for a strip of land that is 175-ft. long by 14-ft. wide. The entire land and widening would impact one parcel of land, and would impact its existing, operational driveway.

Southbound US-1 Left-Turn Bay

Recommendations include the extension of the southbound left-turn bay on US-1 to be to increase storage, if possible. This recommendation is contingent on the ability to use median space, without taking any right-of-way.

Land Requirements

Pavement Area:	1,925 ft.2
ROW Area:	2,450 ft.2
Appraised Value:	$196,000.00

ROW Acquisition

The required land for the improvement may be purchased by agreement, or by the eminent domain process. In either case, the cost of acquisition including soft costs, should be expected to be significantly higher than the appraised value of the land.

The additional ROW would impact 6 parking spaces that are on the gas station property; however, fuel islands, their canopy, and maneuvering areas do not appear to be significantly impacted by the 14-ft. reduction. The location of the building may be more problematic, as the taper area of the lane would occur near the southeast corner of the building, and may impact its side street setback requirement for 14-ft. (Div. 4.3-(e)-6.e., Village of Pinecrest Land Development Regulations)

Acquisition by voluntary dedication on the part of the property owner in exchange for a development bonus, or as part of a development approval may be applicable; however the likelihood of this method providing the necessary ROW is uncertain, as there are no know redevelopment plans for this property. The gas station is a viable business, and there should be no expectation for redevelopment unless stated by the property owner.

8.7 SW 132th Street and US-1

Figure 8-7 and Table 8-7 present and adjacent land use for the intersection respectively.

Existing Section

Cross-section:	50-foot
Lanes on Approach:	1 westbound lane: 1 right turn out to northbound US-1, or left turn out to southbound US-1
	1 eastbound lane: right from northbound US-1, or left from southbound US-1
Approach Length:	50 ft. along centerline
Lanes Upstream:	1 westbound
	1 eastbound
Pavement Width:	35-ft. (upstream)
Sidewalk:	none
Landscape Strip:	7 ft. to 8 ft. on both sides
Curb and Gutter:	none, swale drainage on both sides

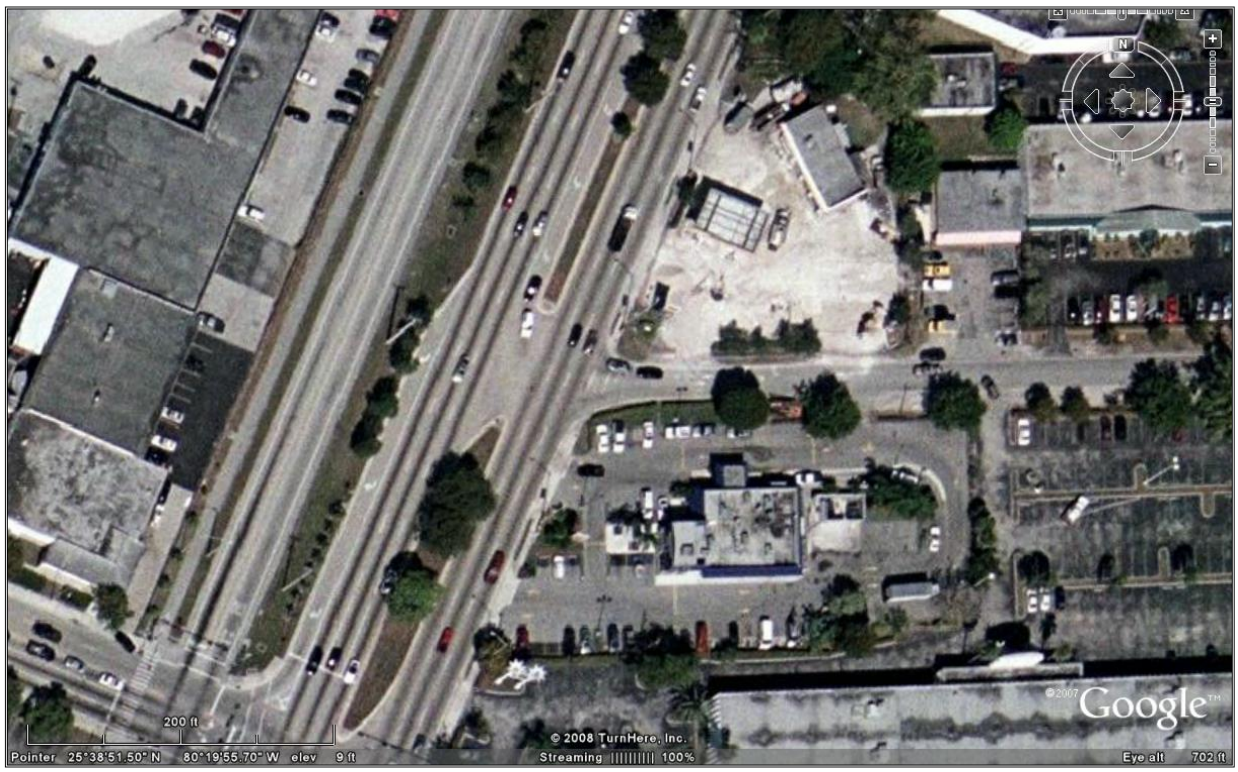


Figure 8.7 Aerial View of SW 132nd Street and US-1 Intersection

Table 8.7 Adjacent Land Uses- SW 132nd Street and US-1 Intersection

	North Side of SW 132nd Street	South Side of SW 132nd Street
Abutting Land Uses:		
Length along ROW	200 ft.	260 ft.
Existing Use	Gas Station	Fast Food w/ drive-through
	Shell	Burger King
Zoned	BU-1A	BU-1A, BU-2
Lot Area	27,298 ft.2	32,670 ft.2
Building Area	3,880 ft.2	4,223 ft.2
Building Height	1 story	1 story
Building Age	Built 1960	Built 1965
Driveways:		
On ROW:	Two, 2-way	One, 2-way
Distance	45 ft. from intersection 135 ft. from intersection	175 ft. from intersection
On US-1:	Two, 2-way on US-1	Two, 2-way on US-1
Distance	75 ft. from intersection 135 ft. from intersection	35 ft. from intersection 125 ft. from intersection
Property Value: Note 1		
Land:	$2,074,648	$2,286,900
unit value	$76.00 /ft.2	$70.00 /ft.2
Building:	$178,422	$384,692
unit value	$45.99 /ft.2	$91.09 /ft.2

Note 1: Property values based on 2008 market value data, Dade County Property Appraiser

Recommended Right-of-Way Improvements

Westbound Left-Turn Lane:

The recommendation for this intersection is to add a left-turn lane to segregate the two westbound turning movements onto US-1. This will alleviate long queues that are caused by the larger volume of right-turn movements that are blocked by left-tuning vehicles waiting for long periods for sufficient gaps. This would also help to attract left turns onto southbound US-1 to this intersection, and away from the overcapacity SW 136th Street intersection.

In part due to the expected attraction of new turning movements, storage capacity has not been determined. The existing configuration has only one lane. The proposal shown creates a left-turn lane of length matching the length of the shortest abutting property, which is the Shell filling station, plus a short length from the property to the east of the Shell station that adds 40 ft without impacting the driveway for that property. The total length then is 240 ft., and a storage capacity of 4 mixed vehicles, or 5 passenger cars is possible.

Lane Width	11-ft.
Deceleration & Taper Length	145-ft.(35 mph design speed)
Storage Length	95-ft. (3 cars +1 single unit truck +10%)
Total Length	240-ft.

Auxiliary Turn Lane requirements based on FDOT Florida Intersection Design Guide, Table 3-9, Minimum Deceleration Lengths

Eleven feet of additional pavement is needed for a distance of 240 feet. The pavement width is about 30 to 35-ft. Wide. The requirement for the three lanes is 35-ft, requiring, at most, 5 additional feet. The swale area between the edges of the ROW and the pavement are 7 to 8-ft on each side, providing enough width to provide the additional lane within the ROW, if the existing cross-sectional configuration is retained. If a sidewalk and protective swale are desired, then an a total of 55 feet cross-section is required, and 5 feet of additional ROW would be required. Since the uses along this street are very auto-oriented, and there is no crossing at US-1, the recommendation is to keep the

existing configuration unless sidewalks are warranted at some future time. With the existing configuration (no sidewalk), no additional ROW is required to construct the additional lane.

Southbound US-1 Left-Turn Bay

Recommendations include the extension of the southbound left-turn bay on US-1 to be to increase storage, if possible. This recommendation is contingent on the ability to use median space, without taking any right-of-way.

Land Requirements

Pavement Area:	2,640 ft.2
ROW Area:	None
Appraised Value:	Not Applicable

ROW Acquisition

Not Applicable

8.8 SW 136th Street and US-1

Figure 8-6 and Table 8-8 present and adjacent land use for the intersection respectively.

Existing Section

Cross-section: 80-foot

Lanes on Approach: 4 westbound lanes: 1 right turn to northbound US-1 w/ through traffic
1 through lane westbound to SW 136th Street
2 left turn out to southbound US-1
2 eastbound lanes: 1 right from northbound US-1, and through

traffic

1 left from southbound US-1, and through traffic

Approach Length:	110 ft. along centerline
	1,040 ft. area of influence to end of taper at two-lane section
Lanes Upstream:	1 westbound
	1 eastbound
Pavement Width:	40-ft. upstream
	70-ft. at shopping enters
	70-ft. at intersection approach
Sidewalk:	both sides, 5-ft. cross-section
Landscape Strip:	none in ROW: landscape strips are part of parking lots on both sides
Curb and Gutter:	both sides

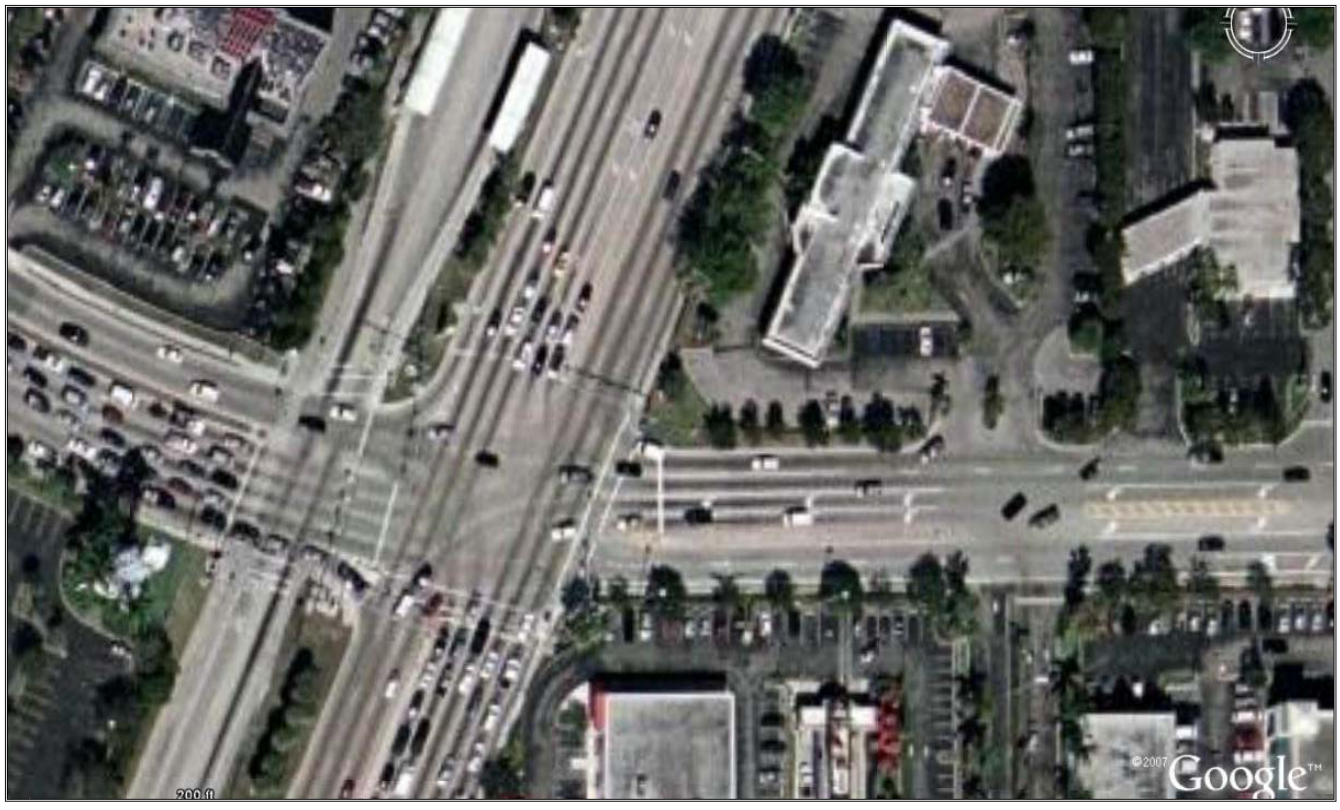


Figure 8.8 Aerial View of SW 136th Street and US-1 Intersection

Table 8.8 Adjacent Land Uses- SW 136th Street and US-1 Intersection

	North Side of SW 136th Street	South Side of SW 136th Street
Abutting Land Uses:		
Length along ROW	1,150 ft.	640 ft.
Existing Use	Retail	Retail
	Bank of America, Office Depot, Home Depot	Colonial Palm Plaza shopping center
Zoned	BU-2	Village of Palmetto Bay
Lot Area	625,908 ft.2 Note 2	661,603 ft.2 Note 3
Building Area	182,536 ft.2	197,368 ft.2
Building Height	2 story	1 story
Building Age	Built 1962, 1994	Built 1988-1989
Driveways:		
On ROW:	Five, 2-way	Two, 2-way
Distance	200 ft. from intersection 310 ft. from intersection 425 ft. from intersection 575 ft. from intersection 1,075 ft. from intersection	265 ft. from intersection 485 ft. from intersection
On US-1:	Two, 2-way on US-1	Four, 2-way on US-1
Distance	270 ft. from intersection 535 ft. from intersection	185 ft. from intersection 400 ft. from intersection 550 ft. from intersection 840 ft. from intersection
Property Value: Note 1		
Land:	$23,786,404	$12,882,264
unit value	$38.00 /ft.2	$19.47 /ft.2
Building:	$12,474,516	$13,515,627
unit value	$68.34 /ft.2	$68.48 /ft.2

Note 1: Property values based on 2008 market value data, Dade County Property Appraiser
Note 2: Bank, Office Depot, home Depot property includes 2 folios under same owner
Note 3: Colonial Palms Plaza property includes 4 folios owned by Metropolitan Life Insurance Co.

Recommended Right-of-Way Improvements

Additional Westbound Right-Turn Lane and Acceleration Lane:

Overall, this intersection is over-capacity in peak periods. In particular to the westbound traffic (east approach of SW 136th Street on Village of Pinecrest side) during the AM peak, long queues of 10 to 15 vehicles exist in all lanes. In the PM peak, the right turn queue to northbound US-1 is almost double the length of the through lanes. Among the recommendations for this intersection is to expand westbound right turn capacity by the addition of a right-turn lane on the westbound approach. This would allow more right-turn movements to clear during limited green time, and also alleviate blockage to the Bank-of-America driveways and the Office Depot / Home Depot west driveway.

The length of the additional right-turn lane is somewhat constrained by the presence of numerous driveways; therefore, the full length of the intersection approach should not be used. The lane should extend up to the western most driveways, which serves the bank and bank drive-through. This would provide about 180 ft. length, and provide storage for 1 vehicle; however, during peak periods, when traffic is moving slowly, the deceleration length (105 ft., not including 50-ft. taper length) may store 5 more vehicles. The right-turn lane would have the following approximate requirements:

Lane Width	11-ft.
Deceleration & Taper Length	155-ft.(40 mph design speed)
Storage Length	25-ft.(1 car +10%, additional vehicles in deceleration distance)
Total Length	180-ft.

Auxiliary Turn Lane requirements based on FDOT Florida Intersection Design Guide, Table 3-9, Minimum Deceleration Lengths

In addition to the right-turn lane, the recommendations include an acceleration lane along northbound US-1 just north of the SW 136th Street intersection. The acceleration lane allows greater throughput of right turn movements from the proposed right turn lane by allowing more vehicles to pass through on permissive rights (“right on red”)during the green time for US-1. The requirements for the acceleration lane are:

Lane Width	11-ft.
Acceleration Length	360-ft.(40 mph design speed from stop)
Taper Length	160-ft.(40 mph design speed from stop)
Total	520-ft.

Acceleration Lane requirements based on FDOT Florida Green Book, Table 3-16, Minimum Acceleration Lengths

The right turn lane requires 11 feet of additional pavement for a distance of 180 feet. Right-of-way is very constrained as 70 ft of the 80-ft. Cross-section is used by the roadway. The other 10 ft are used by minimum standard sidewalks, and there is no landscape area at all within the ROW. The additional lane cross-sectional requirement would require additional ROW, totaling 1,980 ft.2. The widening would impact one parcel of land, but would not impact its existing, operational driveway.

The acceleration lane requires 11 feet of additional pavement for a distance of 520 feet. Right of way is also very constrained on this side of US-1. The additional lane cross-sectional requirement would require additional ROW, totaling 5,720 ft.2. The widening would impact one parcel of land, and would impact one of its existing, operational driveways. The south driveway along US-1 would have to be eliminated or relocated, as it would be within the acceleration lane. The north driveway would also have to e relocated further away from the transition area of the acceleration land to the outside travel lane of northbound US-1.

The acceleration lane requires eleven feet of additional pavement for a distance of 520 feet. Right-of-way is very constrained, and the additional lane cross-sectional requirement would require additional ROW, totaling 5,720ft.^{2}. The widening would impact one parcel of land, and its driveway operations.

Southbound US-1 Acceleration Lane

Recommendations include the addition of a southbound acceleration lane on along US-1 just south of SW 136th Street to facilitate more throughput of right turn movements from eastbound SW 136th Street during permissive right phases. This recommendation is contingent on the ability to use median space between the South Dade Busway and US-1 without taking any additional right-of-way.

Colonial Palm Plaza Driveway

The western-most driveway of the Colonial Palm Plaza along SW 136th Street is located within the approach of the intersection. Accommodating both entering and exiting vehicles, the driveway causes conflicts with intersection traffic, particularly by exiting traffic the turns left to westbound SW 136th Street. These movements cause observed conflicts with both eastbound traffic along SW 136th Street as the vehicles cross these lanes, and with westbound traffic as these vehicles may weave across lanes to reach a through or right turn lane on SW 136th Street. There are a two driveways providing access or egress to Colonial Palm Plaza along SW 136th Street. The plaza can also be accessed by four driveways along US-1. The Florida Greenbook (Manual of Uniform Minimum Standards for Design, Construction and Maintenance for Streets and Highways) requires that driveways should not be placed near intersections or other points that would tend to produce traffic conflict. Adequate spacing between access and decision points is necessary to avoid burdening the driver with the need for rapid decisions of maneuvers.(Ch. 3, Se C-8.b.1)

The recommendation is for the Village of Pinecrest to work with the Village of Palmetto Bay (The shopping center is located in Palmetto Bay.) and the Colonial Palms property

owner or management to develop a plan to reconfigure driveway access and egress such that the west driveway along SE 136th Street is used for access only, and the east driveway is used for egress to SW 136th Street.

Land Requirements

Pavement Area:

right-turn lane:	1,980 ft.^{2}
acceleration lane:	5,720 ft.^{2}
total:	7,700 ft.^{2}
ROW Area:	7,700 ft.^{2}
Appraised Value:	$292,600.00

ROW Acquisition

The required land for the improvement may be purchased by agreement, or by the eminent domain process. In either case, the cost of acquisition including soft costs, should be expected to be significantly higher than the appraised value of the land.

An alternative method of acquisition may be by voluntary dedication on the part of the property owner in exchange for a development bonus of commensurate or greater value to the property owner. This would require that the City determine areas where right-of-way may be needed for this or other public purposes, and use legislative means to amend the Village's land development regulations (LDR) to provide a defined development benefit in exchange for ROW dedications in defined areas.

In this particular location, the out-parcels of the property may be redeveloped, and this approach is more viable in the short-term. If a legislative approach is not used by the Village, there are other possibilities. At the time of the redevelopment's permitting, if the developer / owner requests any variances from existing LDR requirements, the developer

may proffer the dedication as part of a development proposal package requesting such variances.

9. Recommendations

Based on the results of this study, the recommended improvements for the US-1 Corridor in the study area are shown in ***Table 9.1***.

Table 9.1 Recommended Improvements for the US-1 Corridor in the Study Area

Intersection	Recommended Modification	Justification
SW 72nd Avenue	Change intersection alignment to reduce the angle at which SW 72nd street joins US-1.	Geometry (US-1 intersects with SW 72nd Avenue at an angle) creates hazardous conditions
SW 98th Street & US-1	Parking need to formalized or prohibited by curbing. Add a left turn on westbound and eastbound approaches and change to split phase. Future year improvement: Add a 100 ft right-turn bay to WB approach and retime signal.	Having the WB and EB moving at the same phase create significant conflicts and created safety and operational problems. Operational analysis shows that the changes considerably improve EB and WB operations.
SW 104th Street & US-1	Future year improvements: Add a second exclusive left turn EB in addition to the existing one and the one shared with the through. Add right-turn pocket to EB (if possible). Add an exclusive WB right-turn bay. Retime signal.	EB and WB congestion
SW 106th Street & US-1	Put a detector and sign with flashing beacon and grid marking. Sign informing motorists to not block SW 106th Street when the queue backs up to the intersection.	Queue from SW 104th street back up to SW 106th street.
SW 110th Street & US-1	Same solution as SW 106th Street.	Queue from SW 104th street back up to SW 106th street.

Intersection	Recommended Modification	Justification
SW 112th Street & US-1	Reconfigure the driveway access to Suniland Shopping Center to reduce the conflict caused by the entrance which is closest to SW 112th street Extend the two EB lanes to 300 ft upstream from bus-way intersection. Convert WBR lane into a shared right and through Reconfigure EB lanes to make the exclusive left shared wit the through. Add a second NB left turn bay to prevent vehicles from backing into through lanes (this could be a future year improvement). Future year Improvement: add a WBR turn pay and make the shared thru and RT in 2007 solution, a thru only lane. Extend the EBR lane 150 ft upstream of the bus way intersection	Conflict observed of traffic entry the shopping center from the access point closest to US-1. High crash rate on EB and WB EB and WB congestion NB left-turn congestion
SW 117th Street	Reconfigure the driveway access of the driveway near the intersection of SW 117th Street and US-1.	Left-turns from the shopping center causes blockage to traffic turning from US-1.
SW 120th Street	Consider signalization, under the justification from Warrants 2 & 3 or prevent SB left-turn into US-1. Prevent left turn from east on SW 120th Street to south on SW 81st Avenue	High crash rate and conflicts on WB approach Congestion on WB approach during school outbound period Signal warrant is satisfied
SW 124th Street	Extend westbound right turn bay further from the intersection. (250 ft.) Implement a special signal plan	Right-turn and thru traffic on WB approach block each other Heavy congestion during school let-out period

Intersection	Recommended Modification	Justification
	between 2:30 PM and 3:30 PM for SW 124th intersections with US-1 and SW 82nd Avenue. Future year improvements: Add a WB shared lane between thru and left. Extend EBR upstream of the bus-way	
SW 128th Street	Add a WB right turn bay and extend150 ft from the intersection. Implement a special signal plan between 2:30 PM and 3:30PM Future year improvements: Add a lane shared between EBT and EBL and extend the two EB lanes to 500 ft upstream from bus-way intersection	Right-turn and thru traffic on WB approach block each other Heavy congestion during school let-out period
SW 132nd Street (Unsignalized)	Provide "Do not Block Intersection" sign similar to that recommended for SW 106th Street.	
SW 132nd Street (signalized)	None	
SW 136th Street	Reconfigure the access to the mall at the southeast corner. Add an extra right-turn shared with through lane on the WB approach. This will require making the west approach departing (receiving) link three lanes. Allow EBR during NBL (this will require a special signal head and signage) Add an acceleration lane for EBR (going south on US-1), separated by delineators to prevent conflict with WBL. Modify the south side of the EB link	Heavy EB right turn congestion in the PM Conflict between EB right and WB left-turn Conflict between traffic entering/exiting the development mall at south east corner Heavy congestion on WB approach in the PM Alignment on the east approach upstream of the intersection causes line of sight problem.

Intersection	Recommended Modification	Justification
	east of US-1 to eliminate the alignment that affect the line of site of motorists turning from access points to SW 136 street. .	

Appendix A - Field Observation Details

Intersection	SW 104th Street & US-1		
Geometry:		**Land Use:**	
Number of Approaches	4: N, S, E, W	**NE Corner**	Mobil gas station, then Washington Mutual Bank
Intersection Angle	right angle	**SE Corner**	Shell gas station, then offices
EB Lanes (inbound)	3 to 2 beyond intersection	**Across US-1**	Williamson Cadillac / Hummer
WB Lanes (outbound)	2 to 4 at intersection	**Pinecrest Major Generators:**	ends at Red Road (SW 57th Avenue) Coral Pine Park at 104th and SW 70th Av Pinecrest Elementary at SW 104th & Red Road Pinecrest Presbyterian Chirch and Daycare at SW 104th & Red Road
Parking Lanes	none		
Curb	south side		
Sidewalk	south side		
Swale	north side		
ROW Cross-Sec Width	70'	**Observations:** Extensive queueing was observed on all approaches. On east approach, queues often extend back to Palmetto Road (SW 77th Av), especially on the right turn. The right turn is a major movement from this approach, about as high a volume as the through movement; however, permissive rights are inhibited by the lack of acceptable gaps in the NB US-1 outside lane flow. EB green time is very short (15 sec), and right turn queues cannot clear. RTs clear on US-1 protected left, but there are serious conflicts w/ SB U-turns	
Operations:			
East Approach	left, through, right		
WB Thru Lane (outbound)	1 thru only, 1 right & thru		
WB LT Lane (outbound)	1		
WB RT Lane (outbound)	1 right only, 1 right & thru		
US-1 SB LT Storage	2 lanes	**Issues:** The distance between this intersection and 77th Avenue is very short, and there are also driveways in this segment. Although lane split addresses volume splits, more right turn capacity is needed, since clearing the right turn queue may alleviate many problems. judging from observed queues, volume is close to capacity on all approaches. Green time for the east approach is very short. Permitted U-turns on SB US-1 produce numerous and dangerous conflicts.	
US-1 NB RT Storage	no		
Signalized	yes		
Cycle Time			
NB/SB Through GT			
NB/SB LT GT		**Possible Recommendations:** Prohibit -turns on SB US-1. emark approach to provide 2 dedicated right turn lanes, and provide right-turn green arrow for both during SB US-1 left turns phases. This requires that u-turns from SB US-1 are prohibited. Also, check coordination between US-1 signal and SW 77th Avenue . Village staff noted that these were recently coordinated.	
SB RT GT			
EB/WB Through GT			
EB/WB LT GT			

Intersection	SW 106th Street & US-1		
Geometry:		**Land Use:**	
Number of Approaches	3: N, S, E	**NE Corner**	Stanfill Funeral Home w/ parking behind
Intersection Angle	right angle	**SE Corner**	Shell gas station, then offices
EB Lanes (inbound)	1 (wide)	**Across US-1**	
WB Lanes (outbound)	1	**Pinecrest Major Generators:**	ends at SW 77th Avenue
Parking Lanes	none		all low-density residential
Curb	none		
Sidewalk	none		
Swale	yes		
ROW Cross-Sec Width	50'	**Observations:**	
Operations:		No significant queueing observed; however outbound movements are often blocked by NB US-1 vehicles in queue for downstream SW 104th and US-1 signal (ie. 104th queue extends to and blocks SW 106th St intersection).	
East Approach	left, right only		
WB Thru Lane (outbound)	1	**Issues:**	
WB LT Lane (outbound)	no	Gas station driveway is close to intersection: approximately 30'; however, swale area on this side is paved to become an informal additional lane that extends for about 70 to 100 feet. This area functions to allow deceleration into gas station. The funeral home drop-off/pick-up driveway is very close to the intersection, about 20'; however, on the outbound lane it does not appear to cause conflict. The funeral home guest parking lot access is further from the intersection. SW 106th ahs very little traffic, and whet there is comes as cut-through to avoid SW 104th Street. The major issue is that US-1 platooning does not allow good access on right turns, and that when the NB approach at 104th is stopped on red phase, the SW 106th intersection is blocked by the queue.	
WB RT Lane (outbound)	no		
US-1 SB LT Storage	yes		
US-1 NB RT Storage	no		
Signalized	no		
Cycle Time			
NB/SB Through GT		**Possible Recommendations:**	
NB/SB LT GT		The intersection at SW 106th is too close to the intersection of 104th to consider signalization; however, signage and pavement markings may help to increase north-boud drivers awareness to no block the SW 106th intersection, at least in the outside lane of US-1.	
SB RT GT			
EB/WB Through GT			
EB/WB LT GT			

Intersection	SW 110th Street & US-1		
Geometry:		**Land Use:**	
Number of Approaches	3: N, S, E	**NE Corner**	heavy landscape buffer from Toyota dealer
Intersection Angle	right angle	**SE Corner**	Veteran's Wayside Park
EB Lanes (inbound)	1	**Across US-1**	
WB Lanes (outbound)	1	**Pinecrest Major Generators:**	ends at SW 77th Avenue
Parking Lanes	informal on swale north side		all low-density residential
Curb	south side		
Sidewalk	south side		
Swale	north side		
ROW Cross-Sec Width	50' - 60'	**Observations:**	
Operations:		No significant queues noted at intersection approach. Significant cut-through traffic noted using the intersection as an approach to NB US-1 via Veteran's Parkway (SW 79th Avenue).	
East Approach	left, through, right		
WB Thru Lane (outbound)	1	**Issues:**	
WB LT Lane (outbound)	no	This intersection is part of a cut-through route that motivates commuters to use Veteran's Parkway, a residential street on one side with the park on the other, as a by-pass to US-1. At SW 110th Street, the Veteran's Parkway intersection is very close to the US-1 intersection, approximately 60' to 70'. The north side of the swale has been paved on SW110th, and functions as a right-turn lane, but the lane width is sub-standard, and there are no markings. Based on discussions with Village staff, the lane is used by trucks off-loading vehicles to the auto dealership on the other side of the hedge. Neither the trucks, nor cut through traffic is desired by the neighborhood that would prefer that the intersection is closed.	
WB RT Lane (outbound)	no		
US-1 SB LT Storage	yes		
US-1 NB RT Storage	no		
Signalized	no		
Cycle Time			
NB/SB Through GT		**Possible Recommendations:**	
NB/SB LT GT		Based on Village staff input, neighborhood residents want the intersection closed. Closure is unlikely but to be investigated. Truck off-loading can be stopped by restoration of the paved swale with grass, and tree plantings, initially protected by fencing. identification of truck path and other cut-through may suggest locations for roundabouts along SW100th Street east of US-1	
SB RT GT			
EB/WB Through GT			
EB/WB LT GT			

Intersection	SW 112th Street & US-1 - Killian Drive		
Geometry:		**Land Use:**	
Number of Approaches	4: N, S, E, W	**NE Corner**	Veteran's Wayside Park
Intersection Angle	approx 15 deg from right	**SE Corner**	Suniland Shopping Center
EB Lanes (inbound)	1	**Across US-1**	residential beyond Busway
WB Lanes (outbound)	3	**Pinecrest Major Generators:**	ends at Red Road (SW 57th Avenue)
Parking Lanes	no		Pinecrest Library and Community Center - under construction
Curb	yes		
Sidewalk	yes		Pinecrest Gardens
Swale	no		
ROW Cross-Sec Width	60' - 70'	**Observations:**	
Operations:		Observed during AM Peak: through movement westbound queue is long, but clears during green time. LT typically about 2 to 3 in queue, and RT typically about 3 or 4 in queue. The RT lane along SW 112th Street is new: an improvement by the Village. SW 81st Road, running west of Veteran's Wayside Park is a cut-through route to SW 110th Street. The intersection of 81st is close to the US-1 intersection. Cut-through traffic originates here, so it does not cause an operational issue.	
East Approach	left, through, right		
WB Thru Lane (outbound)	1		
WB LT Lane (outbound)	1		
WB RT Lane (outbound)	1		
US-1 SB LT Storage	yes	**Issues:**	
US-1 NB RT Storage	no	The driveways to Suniland Shopping Center are very close to the intersection on the south side of the street, and conflicts were observed by vehicles decelerating to make turn into driveway with turning vehicle from US-1. Because of the longer central queue, some west-bound cars drive in the opposite lane of 112th to access shopping center, also causing dangerous conflict potentials.	
Signalized	yes		
Cycle Time			
NB/SB Through GT			
NB/SB LT GT		**Possible Recommendations:**	
SB RT GT		Reconfigure the driveway access to Suniland Shopping Center to remove inbound driveway near the intersection of SW 112th Street and US-1. Further, consider a median along SW 112th Street near the intersection throat as an LT barrier from SW 112 Street to Suniland Shopping Center.	
EB/WB Through GT			
EB/WB LT GT			

Intersection	SW 117th Street & US-1		
Geometry:		**Land Use:**	
Number of Approaches	3: N, S, E	**NE Corner**	City National Bank, then Commerce Bank
Intersection Angle	right angle	**SE Corner**	Wild Oats
EB Lanes (inbound)	1	**Across US-1**	
WB Lanes (outbound)	1	**Pinecrest Major Generators:**	ends at Palmetto Road (SW 77th Avenue) all low-density residential
Parking Lanes	no		
Curb	yes		
Sidewalk	yes		
Swale	no		
ROW Cross-Sec Width	50'	**Observations:** No significant queues observed. Per City staff input, the right-turn lane of SW 117th Street is frequently blocked by left-turning bank customers.	
Operations:			
East Approach	right turn only		
WB Thru Lane (outbound)	no		
WB LT Lane (outbound)	no		
WB RT Lane (outbound)	1	**Issues:** The driveways to the commercial uses are close to the intersection, although conflicts were not observed. The first driveway to the Wild Oats parking is about 75' from the intersection. It is a two-way driveway. City National Bank has a about 30' from the intersection, and then an exit from its two-lane drive-through window located about 70' from the intersection. The Commerce Bank driveway is a combined two-way drive for the shopping center to the north.	
US-1 SB LT Storage	no		
US-1 NB RT Storage	no		
Signalized	no		
Cycle Time			
NB/SB Through GT		**Possible Recommendations:** Reconfigure the driveway access to remove driveway near the intersection of SW 117th Street and US-1. Bank has driveway access internal to the shopping center as well. Further, consider a median along SW 117th Street near the intersection throat as an LT barrier from SW 117 Street to to commercial uses to reduce conflicts with RT inbound and outbound traffic from / to US-1.	
NB/SB LT GT			
SB RT GT			
EB/WB Through GT			
EB/WB LT GT			

Intersection	SW 120th Street & US-1 - Montgomery Drive		
Geometry:		**Land Use:**	
Number of Approaches	3: N, S, E	**NE Corner**	Westar filling station
Intersection Angle	right angle	**SE Corner**	Citgo filling station
EB Lanes (inbound)	1	**Across US-1**	residential
WB Lanes (outbound)	1	**Pinecrest Major Generators:**	ends at Red Road (SW 57th Avenue) Miami Palmetto Senior High School w.o. SW 77th Bet Shira Synagogue & School w.o. SW 77th St. Louis Catholic Church & Seminary School w.o. 72nd Av. (large lot observed to be 3/4 full on weekday)
Parking Lanes	no		
Curb	no		
Sidewalk	no		
Swale	yes		
ROW Cross-Sec Width	50'	**Observations:** No significant queues observed in am peak. Observations needed for high school let out time, when higher volumes expected through intersection. Perform counts at 2pm to 3pm peak.	
Operations:			
East Approach	left turn, right turn only		
WB Thru Lane (outbound)	1	**Issues:**	
WB LT Lane (outbound)	no	The major issue for this intersection are the additional volumes caused by cut-through traffic via SW 82nd Avenue from Chapman Field Drive. Most NB volume on SW 82nd Avenue was observed to turn left to SW 120th Street to access US-1 NB lanes (right turn). SW 82nd Avenue is approximately 100' back from the intersection with US-1. Gas station drives are close to the US-1 intersection (approx. 30' south side, 50' north side), but conflicts were not observed. Traffic from schools is expected to degrade conditions further. The school population of Miami Palmetto is 3,274, so at least 800 students are driving age. Its district runs from approximately SW 88th St. to SW 134 St., mostly east of US-1 but with some limited areas west of US-1. Bet Shira is a primary and elementary school.	
WB RT Lane (outbound)	no		
US-1 SB LT Storage	yes		
US-1 NB RT Storage	no		
Signalized	no		
Cycle Time			
NB/SB Through GT			
NB/SB LT GT		**Possible Recommendations:** Due to blockage issues, and safety concerns, especially with a large volumes of young, inexperienced student drivers, the intersection of SW 120th Street and US-1 should be considered for signalization. A warrant study is recommended.	
SB RT GT			
EB/WB Through GT			
EB/WB LT GT			

Intersection	SW 124th Street & US-1 - Chapman Field Drive		
Geometry:		**Land Use:**	
Number of Approaches	4: N, S, E, W	**NE Corner**	proposed bank w/ drive-through - not yet approved
Intersection Angle	right angle	**SE Corner**	Evelyn Greer Park
EB Lanes (inbound)	1	**Across US-1**	retail
WB Lanes (outbound)	2	**Pinecrest Major Generators:**	ends at Old Cutler Road Village Plaza Shopping Ctr just west of US-1 Palmetto Elementary School between 74th Av.& 77th Av
Parking Lanes	no		
Curb	north side		
Sidewalk	north side		
Swale	south side		
ROW Cross-Sec Width	70'	**Observations:** Long queues observed in AM peak on westbound approch. Most of the volume is through movements with few left turns and few right turns. The low volume of right turns (to NB US-1) may be unexpected; however most of this movement is using cut-through route via SW 82nd Avenue and SW 120th Street.	
Operations:			
East Approach	left, through, right		
WB Thru Lane (outbound)	1		
WB LT Lane (outbound)	1		
WB RT Lane (outbound)	no	**Issues:** Long queue occurs for westbound through movement, and caused by long cycle time and short green time. Short green time and a long mixed queue for through and right turns may be motivating the 82nd Avenue cut-throughs. This intersection needs to be considered as a pair with the SW 120th Street intersection. The student population at Palmetto Elementary is 579.	
US-1 SB LT Storage	yes		
US-1 NB RT Storage	no		
Signalized	yes		
Cycle Time			
NB/SB Through GT		**Possible Recommendations:** A dedicated right turn lane and / or more green time may help alleviate long queue and cut-through traffic. Storage for both left turns and right turns need to be increased: longer LT lane, and new RT lane. Additional right-of-way width will be required.	
NB/SB LT GT			
SB RT GT			
EB/WB Through GT			
EB/WB LT GT			

Intersection	SW 128th Street & US-1		
Geometry:		**Land Use:**	
Number of Approaches	4: N, S, E, W	**NE Corner**	U-Gas filling station, w/ shopping center behind
Intersection Angle	right angle	**SE Corner**	Suniland Park
EB Lanes (inbound)	1	**Across US-1**	retail with residential behind
WB Lanes (outbound)	2	**Pinecrest Major Generators:**	ends at SW 71st Avenue Palmetto Middle School w.o. SW 74th Av
Parking Lanes	no		
Curb	yes		
Sidewalk	yes		
Swale	no		
ROW Cross-Sec Width	70'	**Observations:** In AM peak, WB right turns to US-1 NB queue beyond the capacity of the pavement space. The right turn storage occurs in outside paved area of wide through lane.	
Operations:			
East Approach	left, through, right		
WB Thru Lane (outbound)	1		
WB LT Lane (outbound)	1		
WB RT Lane (outbound)	no, but very wide thru lane	**Issues:** Primary issue is that right turns exceed storage capacity and many right turns are blocked upstream of intersection by through movements. Per Village staff discussion, the U-Gas station has been sold, and developer is interested in redeveloping site as an office building. There may be opportunities during permitting to integrate right turn lane storage needs with site plan requirements.	
US-1 SB LT Storage	yes		
US-1 NB RT Storage	no		
Signalized	no		
Cycle Time			
NB/SB Through GT		**Possible Recommendations:** Right turn area can be formalized and extended further from the intersection. Dedication from U-Gas site developer should be explored in a manner that does not reduce development capacity of the property.	
NB/SB LT GT			
SB RT GT			
EB/WB Through GT			
EB/WB LT GT			

Intersection	SW 132nd Street & US-1		
Geometry:		**Land Use:**	
Number of Approaches	3: N, S, E	**NE Corner**	Shell filling station
Intersection Angle	right angle	**SE Corner**	Burger King
EB Lanes (inbound)	1	**Across US-1**	back of commercial uses
WB Lanes (outbound)	1	**Pinecrest Major Generators:**	ends at SW 72nd Avenue
Parking Lanes	no		all low-density residential
Curb	no		
Sidewalk	no		
Swale	yes		
ROW Cross-Sec Width	50'	**Observations:**	
Operations:		Primary movement is from WB approach right turn to NB US-1. Queueing occurs in AM peak and midday as well, although queues are not large enough to cause operational problems. Right turns cannot easily clear as this US-1 outside lane is either in 30 - 40 mph saturated flow without sufficient gaps, or it is stopped, and RT movement are still blocked. The distance between this intersection and the signalized 128th Street and US-1 causes US-1 NB queue to block this intersection. This intersection needs new traffic counts. Village staff indicates that there are AM and PM stacking for LT movements that block RT movements.	
East Approach	left turn, right turn only		
WB Thru Lane (outbound)	1 lane RT and LT		
WB LT Lane (outbound)	no		
WB RT Lane (outbound)	no		
US-1 SB LT Storage	yes	**Issues:**	
US-1 NB RT Storage	no	The primary issue is to provide more opportunity for vehicles to turn right onto US-1. This is an operational issue in which operations here are linked to the signalized operations at SW 128th Street and US-1. Alleviation of conditions here requires attention to the 128th St intersection. Additional storage on 132nd Street would alleviate the problem of blocking LT movements.	
Signalized	no		
Cycle Time			
NB/SB Through GT			
NB/SB LT GT		**Possible Recommendations:**	
SB RT GT		The intersection at SW 132nd is too close to the intersection of 128th to consider signalization; however, signage and pavement markings may help to increase north-boud drivers awareness to no block the SW 132nd intersection. In addition, an additional lane to separate LT and RT movements will alleviate some queuing.	
EB/WB Through GT			
EB/WB LT GT			

Intersection	SW 136th Street & US-1 - Howard Drive		
Geometry:		**Land Use:**	
Number of Approaches	4: N, S, E, W	**NE Corner**	major retail: Home Depot, Office Depot
Intersection Angle	right angle	**SE Corner**	Colonial Palms Shopping Center on SE corner
EB Lanes (inbound)	2	**Across US-1**	The Falls mall - major retail
WB Lanes (outbound)	4	**Pinecrest Major Generators:**	ends at Old Cutler Road
Parking Lanes	no		Howard Drive Elementary School w.o. SW 77th
Curb	yes	**Observations:**	
Sidewalk	yes	Observations made during AM peak and midday show queue in all east approach lanes to be in the range of 10 to 15 vehicles; however, all clear during green phases. This is a very high volume / high capacity intersection. Observations confirmed by Village staff input suggest that problems are severe in the PM peak, in which it may take 3 to 5 cycles to clear the intersection from the east approach. In addtion, the shoping center on the SE corner of the intersection has its major access point too close to US-1, and conflicts are caused by LT movements into the shopping center.	
Swale	no		
ROW Cross-Sec Width	80' - 100'		
Operations:			
East Approach	left, through, right		
WB Thru Lane (outbound)	1	**Issues:**	
WB LT Lane (outbound)	2	Operationally this intersection is problematic, as it is a major intersection with regional generators on 3 corners. Green time is optimized; however, bus way requirements cause lost green time and very long cycle times. The intersection is saturated and constrained. The secondary issue is regarding safety on the east approach, where the entrance to the shopping center on the SE corner causes westbound LT conflicts with eastbound traffic, often having just turned from US-1. This shopping center comprises 725,460 sf of retail space, generating approx. 2,358 pm peak trips. The shopping center is not in the Village of Pinecrest. Also of note, Village of Pinecrest staff report that there are plans to redevelop some of Home Depot shopping center outparcels (along US-1) as higher intensity mixed uses. This shopping center currently comprises 182,536 of of retail space, generating approx. 685 trips in the pm peak.	
WB RT Lane (outbound)	1		
US-1 SB LT Storage	yes		
US-1 NB RT Storage	no		
Signalized	yes		
Cycle Time			
NB/SB Through GT			
NB/SB LT GT		**Possible Recommendations:**	
SB RT GT		Explore signal timing improvements that may squeeze more capacity from the intersection, but improvements may be minimal. Safety improvements may be possible on the east approach by reconfiguring access to the shopping center on the SE corner. This n would require coordination with the private owner, and the Village of Palmetto Bay.	
EB/WB Through GT			
EB/WB LT GT			

Appendix B - Automatic Tube Count Data

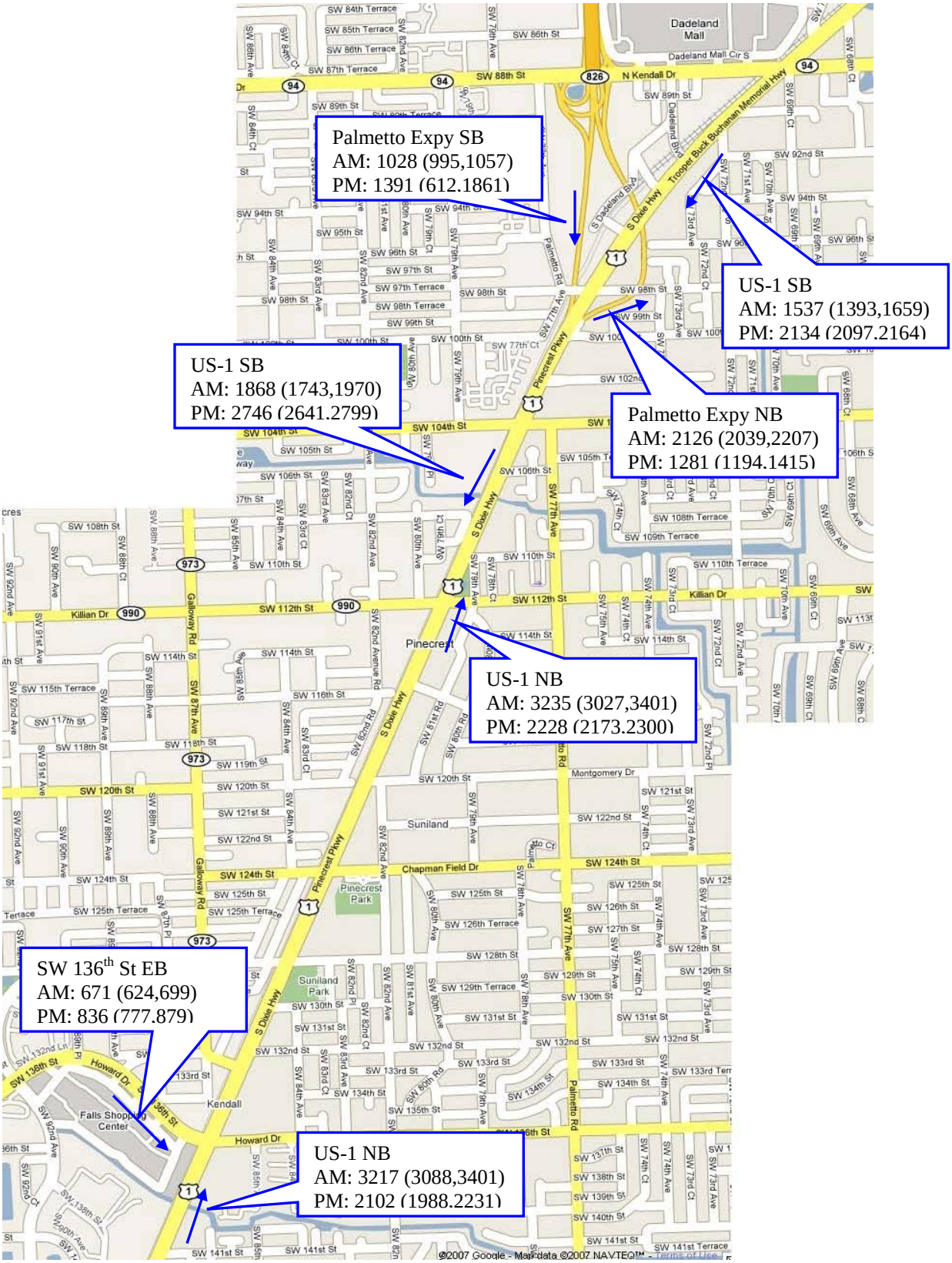

Palmetto Expy SB
AM: 1028 (995,1057)
PM: 1391 (612,1861)
US-1 SB
AM: 1537 (1393,1659)
PM: 2134 (2097,2164)
US-1 SB
AM: 1868 (1743,1970)
PM: 2746 (2641,2799)
Palmetto Expy NB
AM: 2126 (2039,2207)
PM: 1281 (1194,1415)
US-1 NB
AM: 3235 (3027,3401)
PM: 2228 (2173,2300)
SW 136th St EB
AM: 671 (624,699)
PM: 836 (777,879)
US-1 NB
AM: 3217 (3088,3401)
PM: 2102 (1988,2231)
Dadeland Mall
Pinecrest
Suniland
Kendall
Falls Shopping Center
Pinecrest Park
Suniland Park
S Dixie Hwy
Pinecrest Pkwy
Galloway Rd
Killian Dr
Howard Dr
Palmetto Rd
SW 88th St
SW 104th St
SW 112th St
SW 120th St
SW 124th St
SW 136th St
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Table B-1 US-1 SB Just South of 88th St Volume Data

LOCATION: US 1 SB just south of 88th St					
DIRECTION: SB CITY: Miami STATE: Florida					
Start Time	**Tuesday**	**Wednesday**	**Thursday**	**Average**	
12:00 AM	252	267	325	281	
1:00	130	150	161	147	
2:00	84	83	107	91	
3:00	69	77	100	82	
4:00	90	97	99	95	
5:00	161	171	189	173	
6:00	472	478	468	472	
7:00	865	863	870	866	
8:00	1055	1052	1118	1075	
9:00	1100	1067	1229	1132	
10:00	1210	1123	1257	1196	
11:00	**1560**	**1393**	**1659**	**1537**	**AM Peak**
12:00 PM	1805	1553	1854	1737	
1:00	1785	1658	1872	1771	
2:00	1813	1716	1927	1818	
3:00	1940	1834	2045	1939	
4:00	2109	1953	2093	2051	
5:00	**2143**	**2097**	**2164**	**2134**	**PM Peak**
6:00	2108	2077	2121	2102	
7:00	1821	1643	1845	1769	
8:00	1319	1378	1548	1415	
9:00	1001	977	1062	1013	
10:00	653	729	750	710	
11:00	510	504	579	531	
Day Total	26055	24940	27442	26137	
% Weekday Average	99.7%	95.4%	105.0%		

Table B-2 Palmetto Expy SB Ramp West of US 1 Volume Data

LOCATION: Palmetto Expy SB Ramp west of US 1					
DIRECTION: SB CITY: Miami STATE: Florida					
Start Time	**Tuesday**	**Wednesday**	**Thursday**	**Average**	
12:00 AM	245	284	251	260	
1:00	138	132	139	136	
2:00	80	101	93	91	
3:00	64	61	94	73	
4:00	76	87	109	90	
5:00	179	185	172	178	
6:00	313	520	507	446	
7:00	**1057**	995	**1032**	**1028**	**AM Peak**
8:00	1042	**1017**	925	994	
9:00	931	1000	946	959	
10:00	979	896	848	907	
11:00	1019	851	880	916	
12:00 PM	1100	798	**757**	885	
1:00	1188	677	607	824	
2:00	1382	917	635	978	
3:00	1535	896	651	1027	
4:00	1411	1371	671	1151	
5:00	1809	**1703**	648	1386	
6:00	**1861**	1700	612	**1391**	**PM Peak**
7:00	1622	1520	612	1251	
8:00	1090	1033	530	884	
9:00	759	732	355	615	
10:00	606	564	199	456	
11:00	448	478	134	353	
Day Total	20934	18518	12407	17279	
% Weekday Average	121.2%	107.2%	71.8%		

Table B-3 Palmetto Expy NB Ramp east of US 1 Volume data

LOCATION: Palmetto Expy NB Ramp east of US 1					
DIRECTION:NB CITY: Miami STATE: Florida					
Start Time	Tuesday	Wednesday	Thursday	Average	
12:00 AM	122	150	126	132	
1:00	77	73	80	76	
2:00	73	63	55	63	
3:00	92	105	91	96	
4:00	204	215	251	223	
5:00	635	694	684	671	
6:00	1550	1557	1643	1583	
7:00	**2132**	**2039**	**2207**	**2126**	**AM Peak**
8:00	1960	1643	1895	1832	
9:00	1635	1621	1364	1540	
10:00	1295	1461	1331	1362	
11:00	1121	1113	1286	1173	
12:00 PM	1144	1097	1289	1176	
1:00	1170	1015	1246	1143	
2:00	1229	1160	1402	1263	
3:00	1234	**1194**	**1415**	**1281**	**PM Peak**
4:00	**1299**	1100	1329	1242	
5:00	1222	1073	1275	1190	
6:00	960	1006	1092	1019	
7:00	809	850	999	886	
8:00	661	823	886	790	
9:00	625	684	814	707	
10:00	433	452	968	617	
11:00	249	248	331	276	
Day Total	21931	21436	24059	22467	
% Weekday Average	97.6%	95.4%	107.1%		

Table B-4 US-1 SB Just South of 112th St Volume Data

LOCATION: US 1 SB just south of 112th St					
DIRECTION: SB CITY: Miami STATE: Florida					
Start Time	**Tuesday**	**Wednesday**	**Thursday**	**Average**	
12:00 AM	373	438	462	424	
1:00	222	222	248	230	
2:00	145	154	173	157	
3:00	116	131	173	140	
4:00	159	180	195	178	
5:00	320	341	327	329	
6:00	743	828	866	812	
7:00	1302	1274	1349	1308	
8:00	1343	1306	1509	1386	
9:00	1411	1465	1636	1504	
10:00	1608	1538	1810	1652	
11:00	**1891**	**1743**	**1970**	**1868**	**AM Peak**
12:00 PM	2153	1894	2208	2085	
1:00	2236	2022	2260	2172	
2:00	2304	2158	2389	2283	
3:00	2644	2417	2584	2548	
4:00	2624	2649	2786	2686	
5:00	**2799**	2641	**2799**	**2746**	**PM Peak**
6:00	2590	**2666**	2737	2664	
7:00	2458	2366	2383	2402	
8:00	1787	1922	2118	1942	
9:00	1334	1433	1604	1457	
10:00	1001	1062	1284	1115	
11:00	736	816	853	801	
Day Total	34299	33666	36723	34889	
% Weekday Average	98.3%	96.5%	105.3%		

Table B-5 US-1 NB Just North of 124th St Volume Data

LOCATION: US 1 NB just north of 124th St					
DIRECTION:NB CITY: Miami STATE: Florida					
Start Time	**Tuesday**	**Wednesday**	**Thursday**	**Average**	
12:00 AM	195	222	218	211	
1:00	138	110	135	127	
2:00	117	117	101	111	
3:00	176	152	159	162	
4:00	385	396	426	402	
5:00	1444	1488	1399	1443	
6:00	3027	**3277**	**3401**	**3235**	**AM Peak**
7:00	**3115**	3126	3263	3168	
8:00	2742	1662	2575	2326	
9:00	2388	1272	2184	1948	
10:00	2027	2240	2103	2123	
11:00	2066	2012	2223	2100	
12:00 PM	2130	2003	**2301**	2144	
1:00	2200	1939	2221	2120	
2:00	**2211**	**2173**	2300	**2228**	**PM Peak**
3:00	2061	1934	2013	2002	
4:00	1971	1936	1961	1956	
5:00	1970	1816	1939	1908	
6:00	1736	1682	1749	1722	
7:00	1452	1527	1781	1586	
8:00	1182	1377	1496	1351	
9:00	1020	1018	1217	1085	
10:00	719	788	972	826	
11:00	445	450	504	466	
Day Total	36917	34717	38641	36750	
% Weekday Average	100.5%	94.5%	105.1%		

Table B-6 US 1 NB Just North of 144th St Volume Data

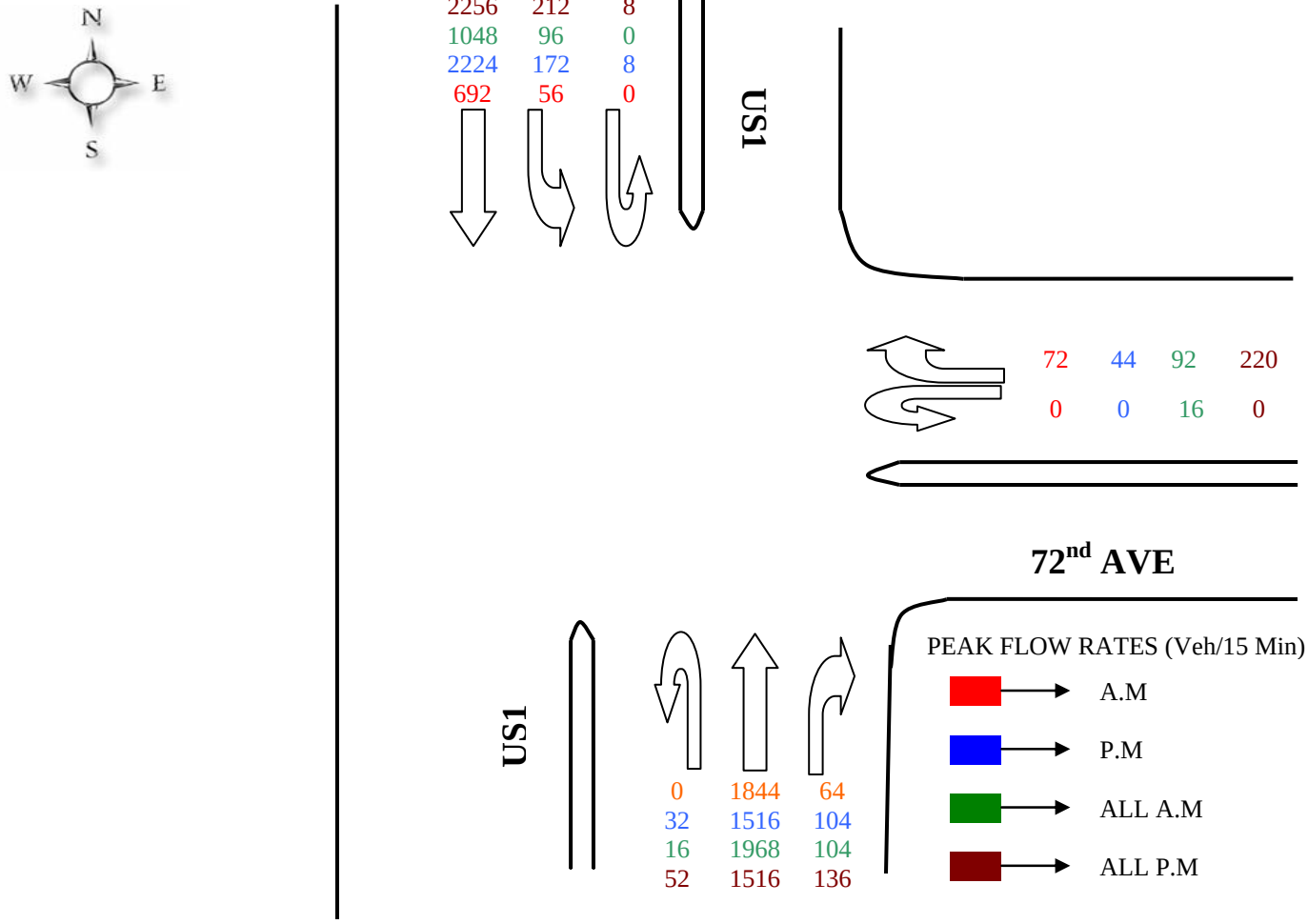
LOCATION: US 1 NB just north of 144th St					
DIRECTION:NB CITY: Miami STATE: Florida					
Start Time	Tuesday	Wednesday	Thursday	Average	
12:00 AM	159	196	232	195	
1:00	130	109	130	123	
2:00	124	118	103	115	
3:00	173	160	156	163	
4:00	410	400	432	414	
5:00	1523	1563	1469	1518	
6:00	**3088**	**3163**	**3401**	**3217**	**AM Peak**
7:00	2919	2894	3098	2970	
8:00	2635	2345	2653	2544	
9:00	2352	1654	2149	2051	
10:00	2069	2021	2176	2088	
11:00	2036	1765	2153	1984	
12:00 PM	**2171**	1833	**2233**	2079	
1:00	2073	1852	2179	2034	
2:00	2089	**1988**	2231	**2102**	**PM Peak**
3:00	1977	1786	1939	1900	
4:00	1820	1843	1916	1859	
5:00	1768	1799	1895	1820	
6:00	1680	1616	1795	1697	
7:00	1399	1431	1641	1490	
8:00	1029	1143	1272	1148	
9:00	933	909	1048	963	
10:00	618	688	808	704	
11:00	409	416	456	427	
Day Total	35584	33692	37565	35605	
% Weekday Average	99.9%	94.6%	105.5%		

Table B-7 136th St EB West of US 1Volume Data

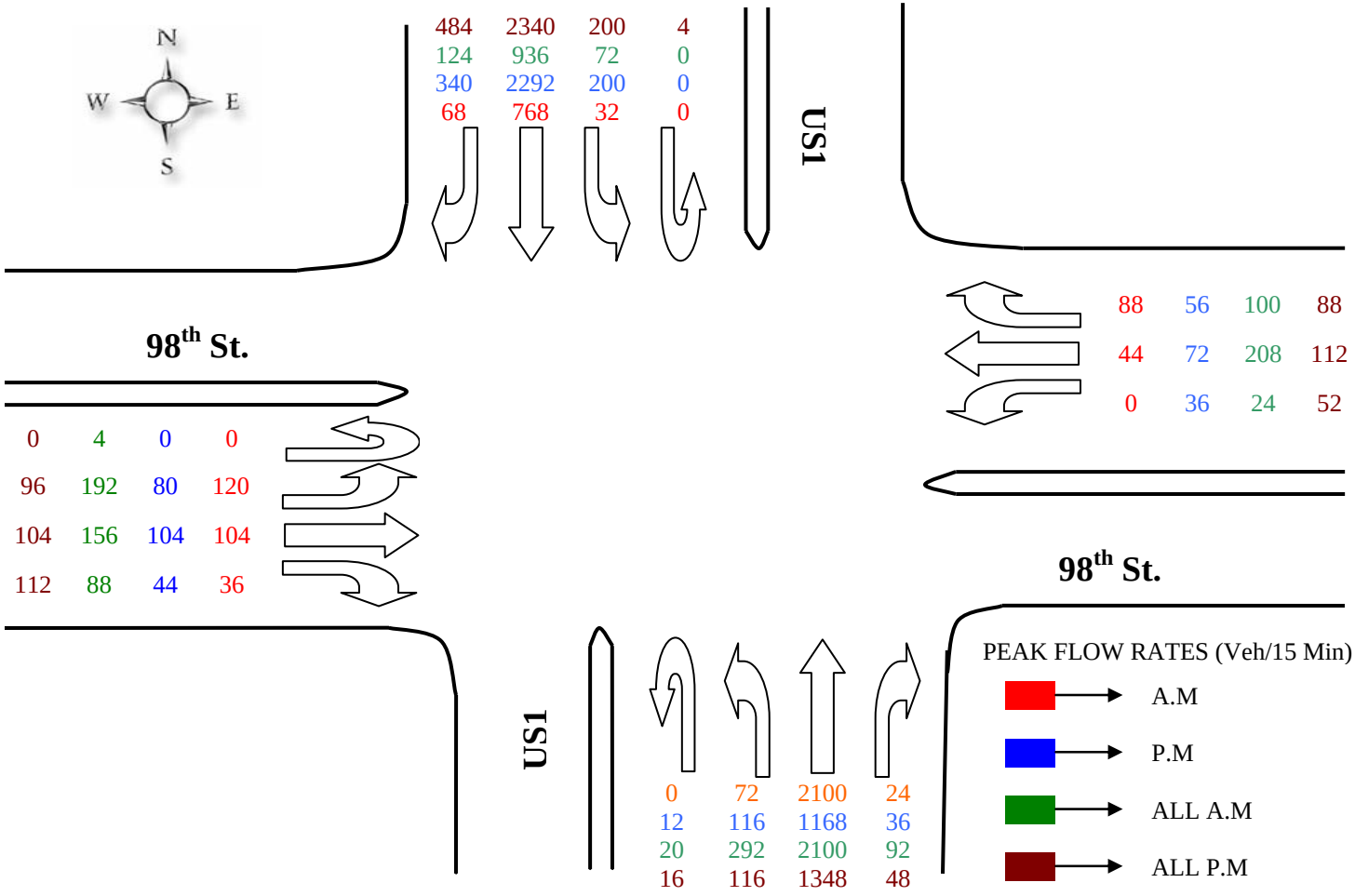
LOCATION: 136th St EB west of US 1					
DIRECTION: EB CITY: Miami STATE: Florida					
Start Time	**Tuesday**	**Wednesday**	**Thursday**	**Average**	
12:00 AM	173	51	68	97	
1:00	32	18	48	32	
2:00	8	11	25	14	
3:00	10	17	15	14	
4:00	21	24	26	23	
5:00	60	60	53	57	
6:00	206	217	245	222	
7:00	548	573	579	566	
8:00	**699**	**624**	692	**671**	**AM Peak**
9:00	528	496	510	511	
10:00	516	466	581	521	
11:00	596	512	**715**	607	
12:00 PM	612	599	813	674	
1:00	787	669	**913**	789	
2:00	832	761	904	832	
3:00	**879**	**777**	854	**836**	**PM Peak**
4:00	787	735	857	793	
5:00	782	761	879	807	
6:00	700	706	781	729	
7:00	663	666	773	700	
8:00	589	579	698	622	
9:00	400	445	518	454	
10:00	249	303	321	291	
11:00	159	152	186	165	
Day Total	10836	10222	12054	11027	
% Weekday Average	98.3%	92.7%	109.3%		

Appendix C - Turning Movement Counts

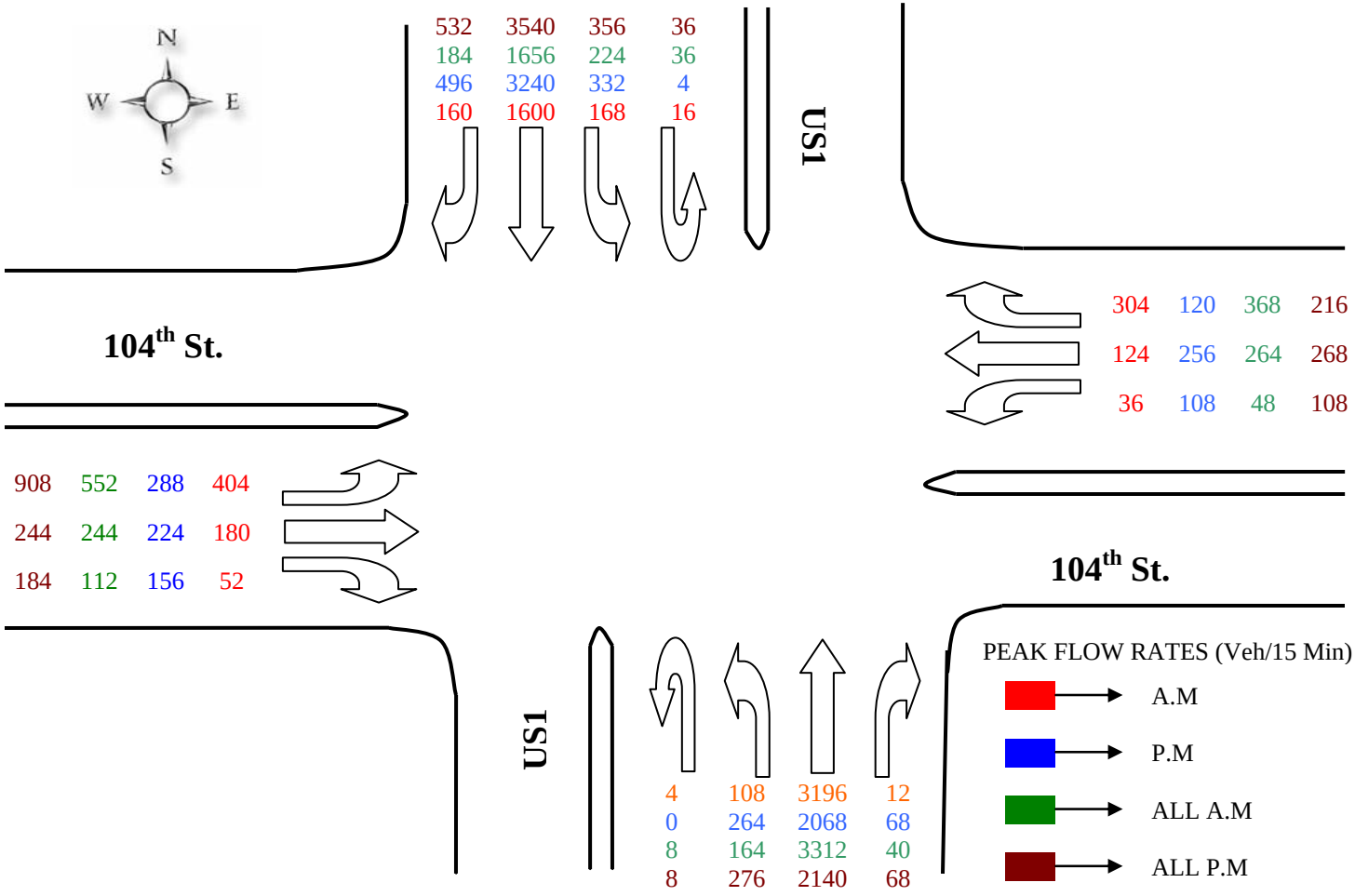
US1 & SW72nd AVE



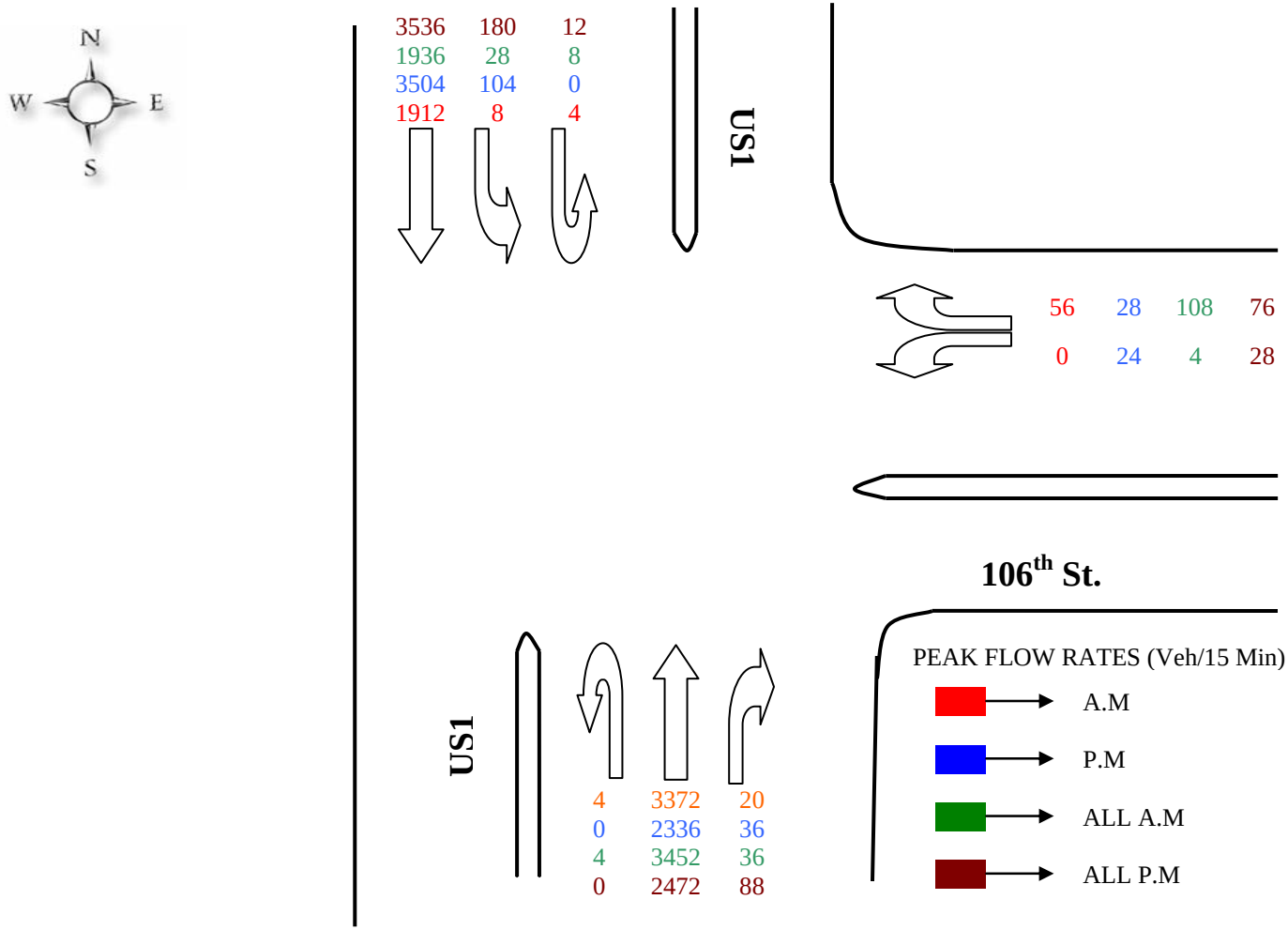
US1 & SW98th St



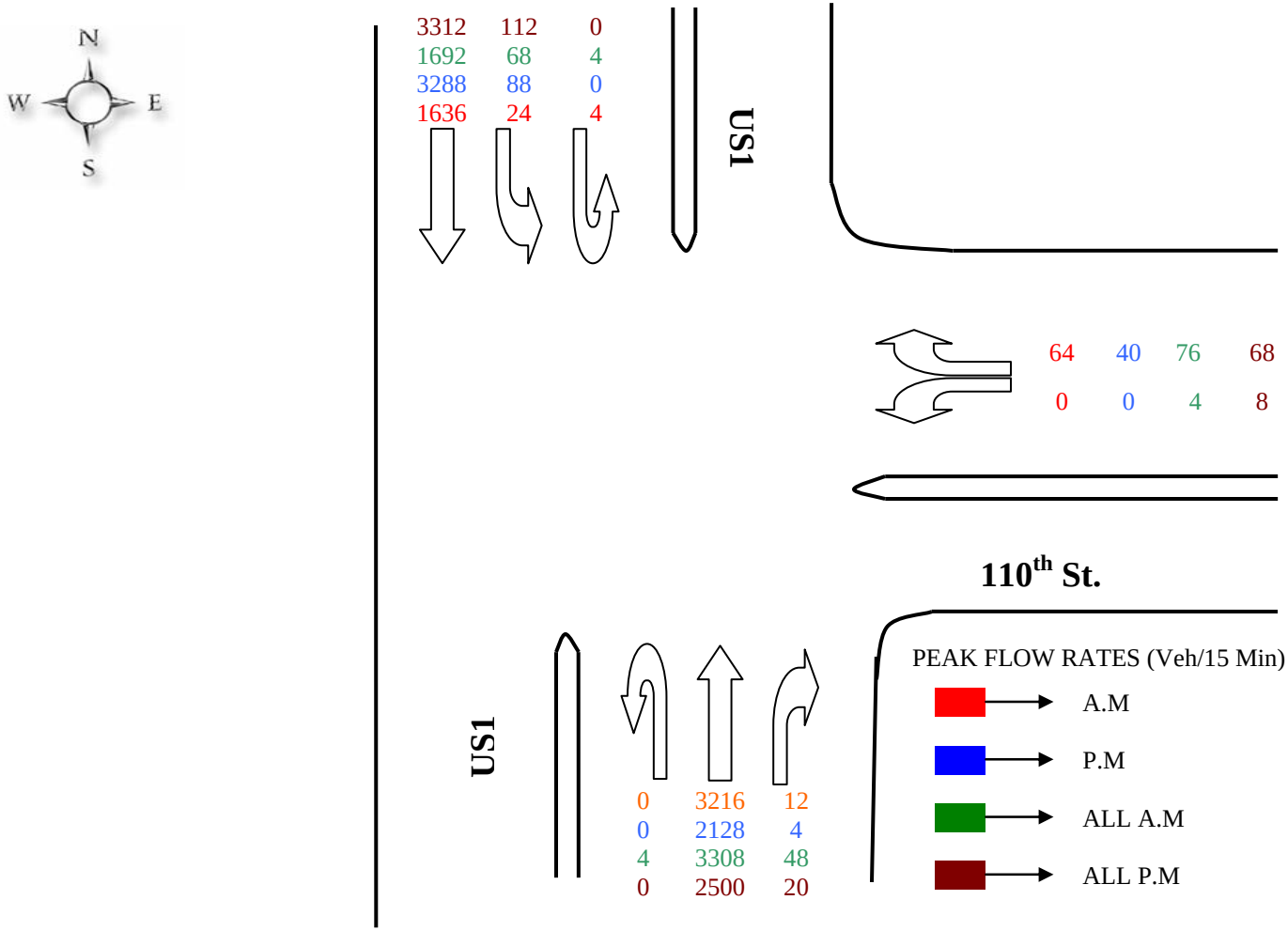
US1 & SW104th St



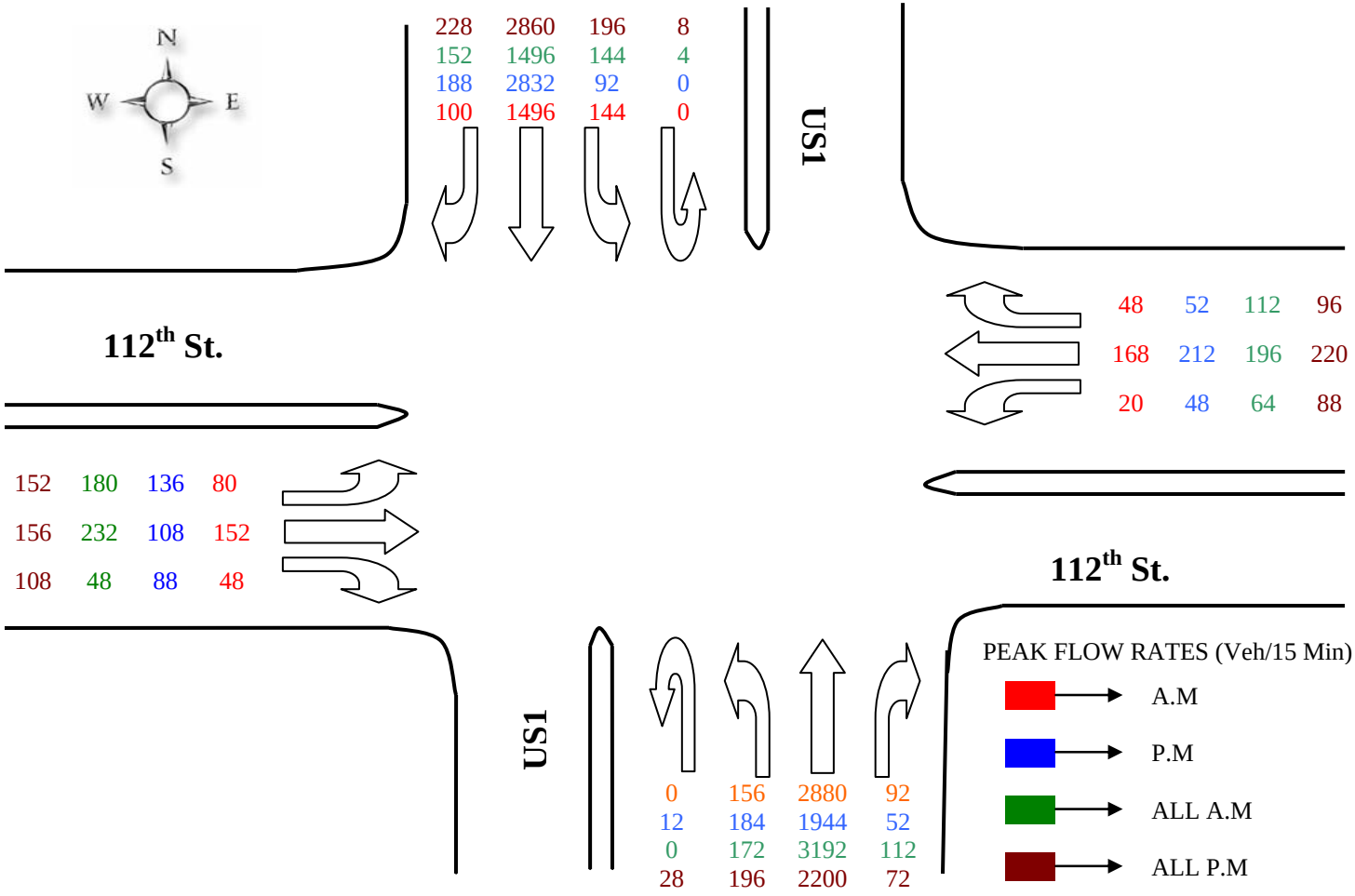
US1 & SW106th St



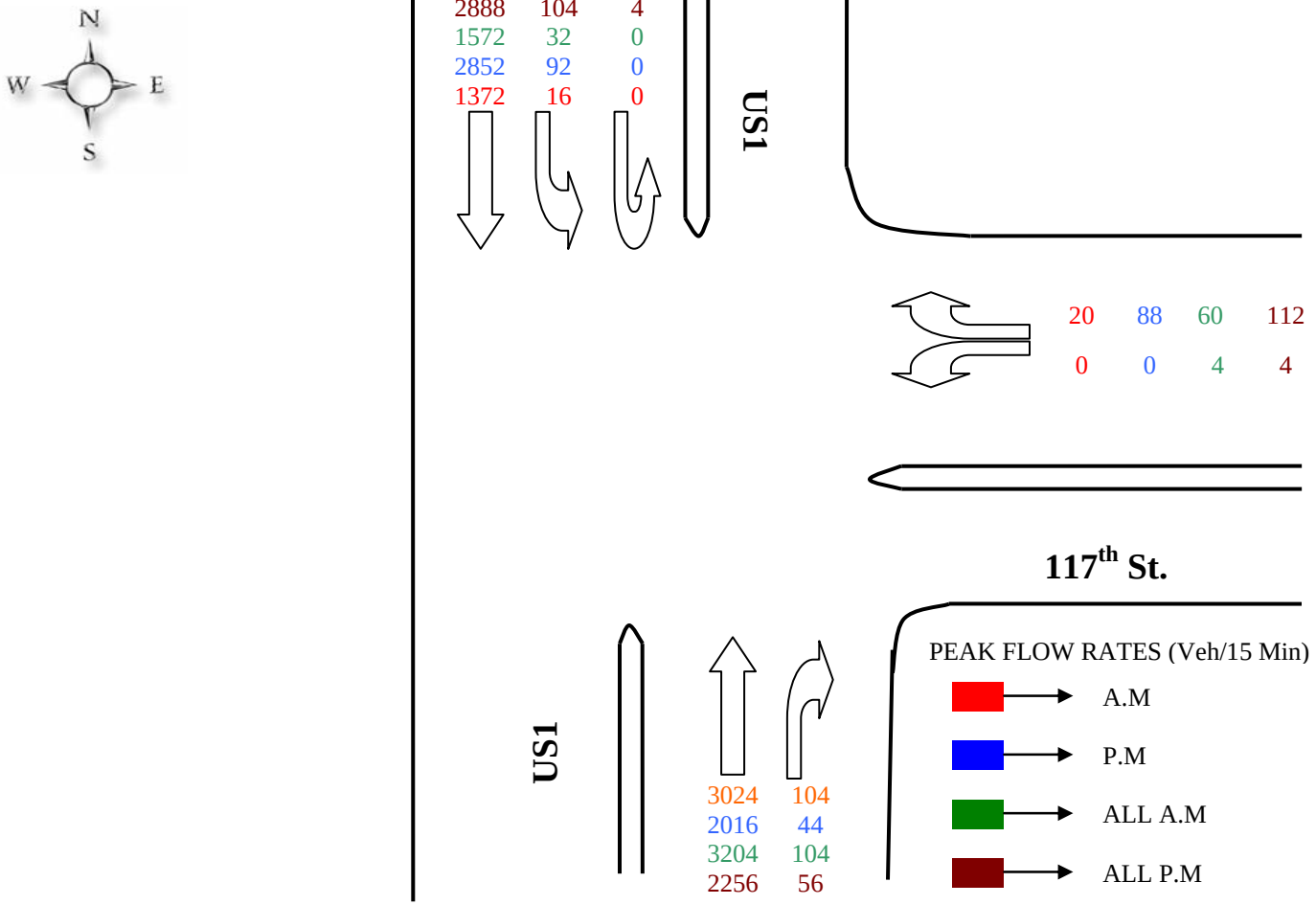
US1 & SW110th St



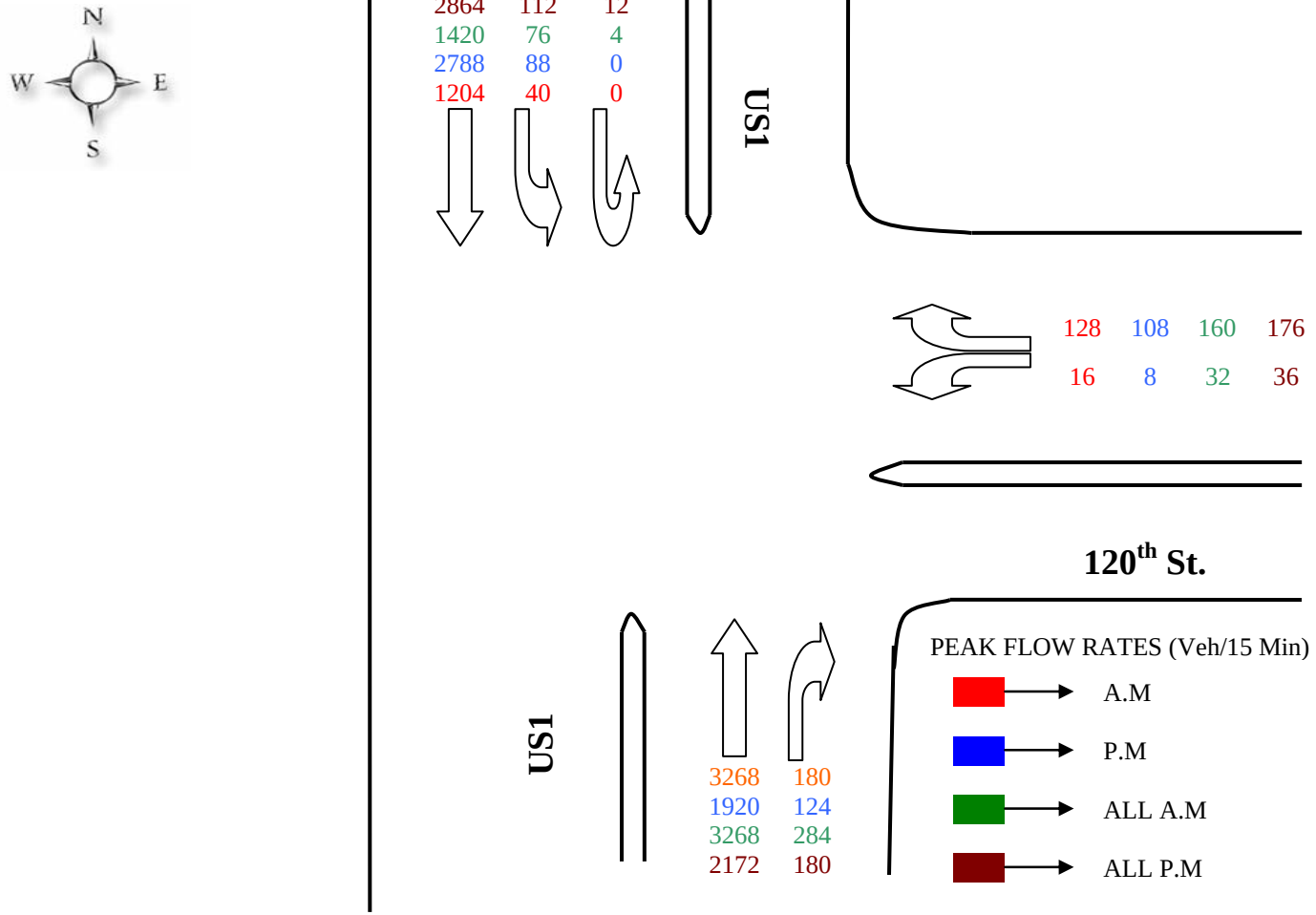
US1 & SW112th St



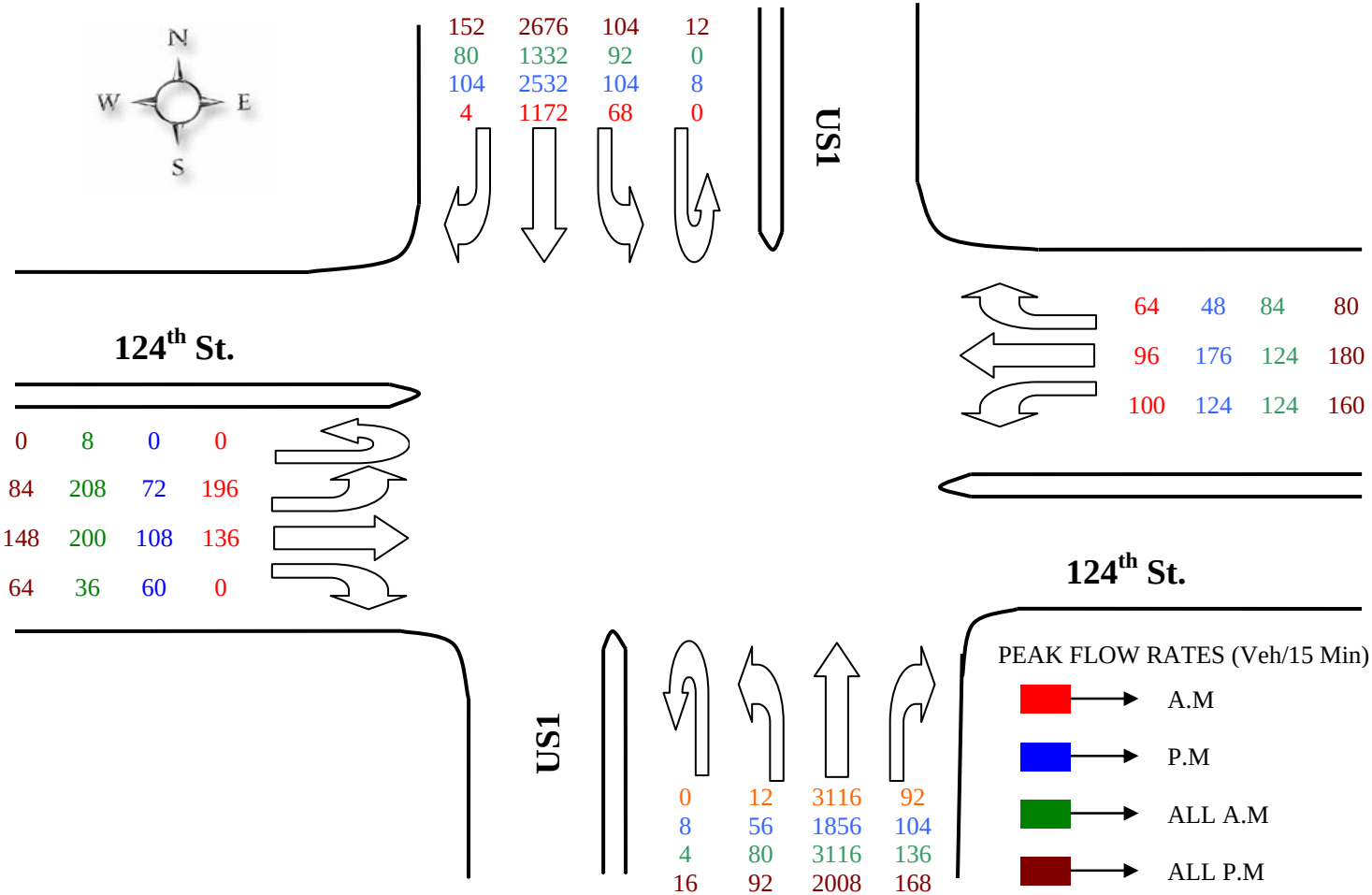
US1 & SW117th St.



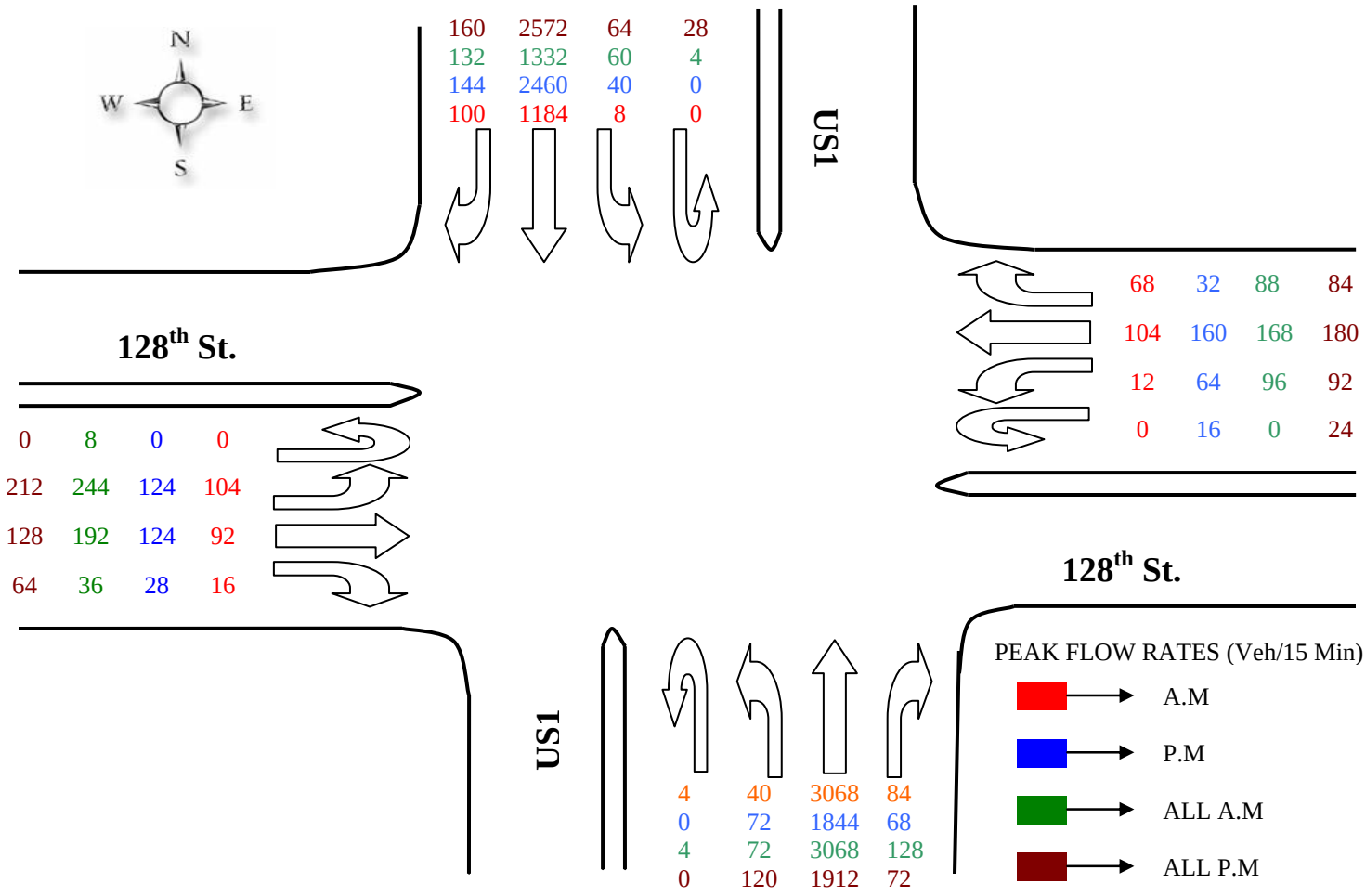
US1 & SW120th St.



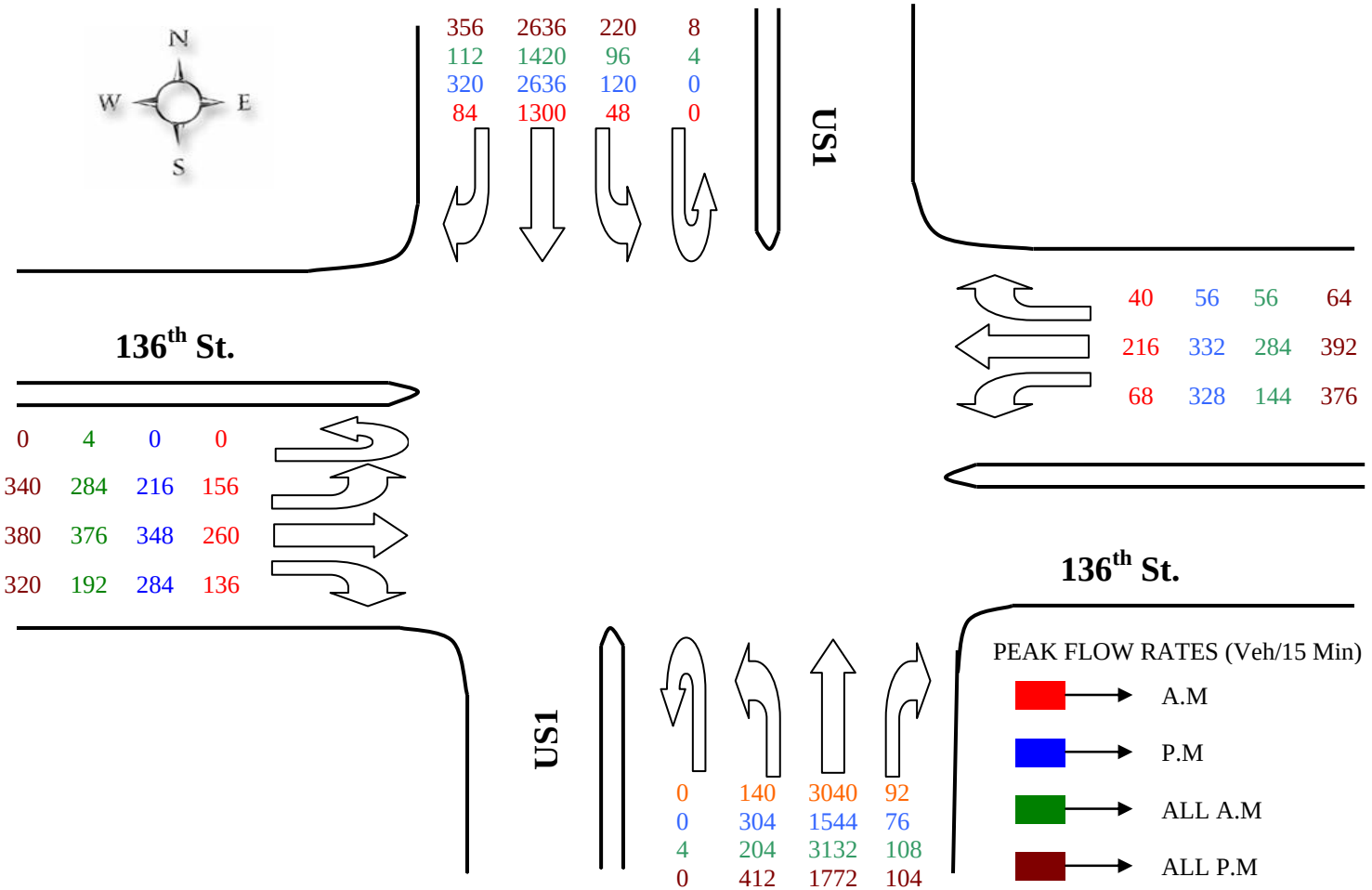
US1 & SW124th St



US1 & SW128th St



US1 & SW136th St



Appendix D - Crash Statistics by Movement and Type

Table D-1 US – 1, 72nd St. Intersection

Approach	Movement	Accident Type						
		Rear End	Head On	Angle	Left Turn	Right Turn	Side swipe	Others
NB	Thru	2		1			1	
	Left Turn			1	2			1
	Right Turn	1						
	Others			1			1	
SB	Thru	5			2			
	Left Turn							
	Right Turn							
	Others						1	
EB	Thru			1				
	Left Turn							1
	Right Turn							
	Others							
WB	Thru							
	Left Turn				1			
	Right Turn							
	Others							
Total		8	0	4	5	0	3	2

Table D-2 US – 1, 98th St. Intersection

Approach	Movement	Accident Type						
		Rear End	Head On	Angle	Left Turn	Right Turn	Side swipe	Others
NB	Thru	17		1			1	1
	Left Turn			2	5		1	1
	Right Turn							
	Others	1		1			2	2
SB	Thru	10	1	2	1			1
	Left Turn				1			
	Right Turn							1
	Others	1					1	1
EB	Thru			1				
	Left Turn			1	3			
	Right Turn							
	Others			1				
WB	Thru	1						
	Left Turn				1			
	Right Turn							
	Others							
Total		30	1	9	11	0	5	7

Table D-3 US – 1, 104th St. Intersection

Approach	Movement	Accident Type						
		Rear End	Head On	Angle	Left Turn	Right Turn	Sides wipe	Others
NB	Thru	17		1			2	
	Left Turn				3			
	Right Turn			1		1	1	
	Others	3					4	2
SB	Thru	25		1	2		2	1
	Left Turn			3	3			
	Right Turn						1	
	Others	5		2			2	3
EB	Thru	1						1
	Left Turn			2			1	
	Right Turn							
	Others	1			1			
WB	Thru	1		1				
	Left Turn				1	1		
	Right Turn	3		1		1		
	Others			1			1	1
Total		56	0	13	10	3	14	8

Table D-4 US – 1, 106th St. Intersection

Approach	Movement	Accident Type						
		Rear End	Head On	Angle	Left Turn	Right Turn	Sides wipe	Others
NB	Thru	12	1					
	Left Turn							
	Right Turn					1		
	Others	1		1			2	
SB	Thru	5						
	Left Turn			1	1			
	Right Turn							
	Others	1		1				
EB	Thru							1
	Left Turn							
	Right Turn							
	Others							
WB	Thru			2	1			1
	Left Turn		1					
	Right Turn							
	Others							
Total		19	2	5	2	1	2	9

Table D-5 US – 1, 110th St. Intersection

Approach	Movement	Accident Type						
		Rear End	Head On	Angle	Left Turn	Right Turn	Sides wipe	Others
NB	Thru	6						2
	Left Turn							
	Right Turn					1		
	Others	1		1			2	
SB	Thru	10						
	Left Turn				1			
	Right Turn							
	Others			1			1	1
EB	Thru							
	Left Turn			1	1			
	Right Turn							
	Others							
WB	Thru							
	Left Turn							
	Right Turn							1
	Others							
Total		17	0	3	2	1	3	4

Table D-6 US – 1, 112th St. Intersection

Approach	Movement	Accident Type						
		Rear End	Head On	Angle	Left Turn	Right Turn	Sides wipe	Others
NB	Thru	19		3				2
	Left Turn	1		1				
	Right Turn							
	Others	1					3	2
SB	Thru	23					2	2
	Left Turn				4			
	Right Turn							
	Others	1					1	
EB	Thru	2		2	1			1
	Left Turn			1	6		1	
	Right Turn							
	Others	1		1				1
WB	Thru	1	1				1	
	Left Turn				2			1
	Right Turn					2		1
	Others			1	1			1
Total		49	1	9	14	2	8	11

Table D-7 US – 1, 117th St. Intersection

Approach	Movement	Accident Type						
		Rear End	Head On	Angle	Left Turn	Right Turn	Sides wipe	Others
NB	Thru	8						
	Left Turn			1	1	1		1
	Right Turn					1	1	
	Others							
SB	Thru	1						
	Left Turn				1			
	Right Turn							
	Others	1						
EB	Thru							
	Left Turn			1	2			
	Right Turn							
	Others							1
WB	Thru						1	1
	Left Turn				1		1	
	Right Turn					1		
	Others			1			1	
Total		10	0	3	5	3	4	3

Table D-8 US – 1, 120th St. Intersection

Approach	Movement	Accident Type						
		Rear End	Head On	Angle	Left Turn	Right Turn	Sides wipe	Others
NB	Thru	6		1			2	1
	Left Turn							
	Right Turn			1				
	Others			1	2			
SB	Thru	5						
	Left Turn				1			1
	Right Turn							
	Others							
EB	Thru							
	Left Turn							
	Right Turn							
	Others							
WB	Thru			4				2
	Left Turn			1	3		1	1
	Right Turn			1				
	Others							
Total		11	0	9	6	0	3	5

Table D-9 US – 1, 124th St. Intersection

Approach	Movement	Accident Type						
		Rear End	Head On	Angle	Left Turn	Right Turn	Sides wipe	Others
NB	Thru	16					1	1
	Left Turn			1	1			
	Right Turn							1
	Others	1		2			4	1
SB	Thru	24	1	2				3
	Left Turn			1	4			1
	Right Turn							
	Others	1		2				
EB	Thru			2				
	Left Turn	1		1				1
	Right Turn							
	Others			1				
WB	Thru							
	Left Turn							
	Right Turn					1		
	Others	1						
Total		44	1	12	5	1	5	8

Table D-10 US – 1, 128th St. Intersection

Approach	Movement	Accident Type						
		Rear End	Head On	Angle	Left Turn	Right Turn	Sides wipe	Others
NB	Thru	18	1	2			2	1
	Left Turn							
	Right Turn					1		
	Others	2					1	2
SB	Thru	12		1				1
	Left Turn				1			1
	Right Turn							
	Others	2						
EB	Thru	1						1
	Left Turn			1	1			
	Right Turn							
	Others							1
WB	Thru	2			1			
	Left Turn							
	Right Turn					1		
	Others	1					1	1
Total		38	1	4	3	2	4	7

Table D-11 US – 1, 132th St. Intersection

Approach	Movement	Accident Type						
		Rear End	Head On	Angle	Left Turn	Right Turn	Sides wipe	Others
NB	Thru	4					1	1
	Left Turn							
	Right Turn					1		
	Others						1	
SB	Thru	11	3	1			2	
	Left Turn			1			1	
	Right Turn				1			
	Others		1				1	1
EB	Thru							
	Left Turn			1				
	Right Turn							
	Others							
WB	Thru				1		1	
	Left Turn		1					1
	Right Turn		1			1		1
	Others		1					1
Total		15	7	3	2	2	7	5

Table D-12 US – 1, 136th St. Intersection

Approach	Movement	Accident Type						
		Rear End	Head On	Angle	Left Turn	Right Turn	Sides wipe	Others
NB	Thru	8	1	3				2
	Left Turn	1			1			
	Right Turn					3		
	Others	3		4			2	
SB	Thru	20		1			1	3
	Left Turn			2	2			
	Right Turn	2				1	1	
	Others	1		2			2	1
EB	Thru	2		1			1	2
	Left Turn			2			1	2
	Right Turn							
	Others						1	
WB	Thru	4	2		1			2
	Left Turn						1	
	Right Turn			1				1
	Others			1		1	2	3
Total		41	3	17	4	5	12	16

Appendix E - Synchro 6 Report Outputs

E1

Synchro 6 Report Output for 2007 AM Peak

Lane Group	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 (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	30		0	260		0	285		0
Storage Lanes	1		1	1		0	1		0	1		0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50		50	50		50	50	
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	
Turning Speed (mph)	15		12	15		12	15		12	15		12
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.91	0.91
Ped Bike Factor												
Frt			0.850		0.941			0.994			0.982	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	1770	1753	0	1770	5055	0	1770	4994	0
Flt Permitted	0.380			0.548			0.226			0.043		
Satd. Flow (perm)	708	1863	1583	1021	1753	0	421	5055	0	80	4994	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			68		21			8			30	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		133			1547			414			1855	
Travel Time (s)		2.6			30.1			8.1			36.1	
Volume (vph)	150	156	68	24	155	100	292	2100	92	72	936	124
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	150	156	68	24	155	100	292	2100	92	72	936	124
Lane Group Flow (vph)	150	156	68	24	255	0	292	2192	0	72	1060	0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effct Green (s)	35.0	35.0	35.0	35.0	35.0		104.2	97.0		101.5	95.4	
Actuated g/C Ratio	0.23	0.23	0.23	0.23	0.23		0.69	0.65		0.68	0.64	
v/c Ratio	0.91	0.36	0.16	0.10	0.60		0.81	0.67		0.59	0.33	
Control Delay	101.5	46.9	16.7	43.9	52.4		33.8	18.3		38.6	12.7	
Queue Delay	0.0	2.1	0.0	0.0	0.0		0.2	0.0		0.0	0.0	
Total Delay	101.5	49.0	16.7	43.9	52.4		34.0	18.3		38.6	12.7	
LOS	F	D	B	D	D		C	B		D	B	
Approach Delay		64.2			51.7			20.1			14.3	
Approach LOS		E			D			C			B	
Queue Length 50th (ft)	139	124	11	18	199		100	490		21	165	
Queue Length 95th (ft)	#268	192	50	44	294		#216	540		#93	193	
Internal Link Dist (ft)		53			1467			334			1775	
Turn Bay Length (ft)				30			260			285		
Base Capacity (vph)	184	484	462	265	471		361	3272		122	3189	
Starvation Cap Reductn	0	212	0	0	0		0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0		2	0		0	9	
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	
Reduced v/c Ratio	0.82	0.57	0.15	0.09	0.54		0.81	0.67		0.59	0.33	

Intersection Summary

Area Type: Other
Cycle Length: 150
Actuated Cycle Length: 150
Offset: 10 (7%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.91
Intersection Signal Delay: 24.5 Intersection LOS: C
Intersection Capacity Utilization 82.5% ICU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations														
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%				0%				0%	
Storage Length (ft)	0		0	150		0		500		0		460		480
Storage Lanes	1		0	1		1		2		0		2		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50		50	50	50	50	50	50		50	50	50	50
Trailing Detector (ft)	0	0		0	0	0	0	0	0		0	0	0	0
Turning Speed (mph)	35		20	20		15	9	15		12	9	15		12
Lane Util. Factor	0.91	0.91	0.95	1.00	0.91	0.91	0.91	0.97	0.91	0.91	0.86	0.97	0.86	1.00
Ped Bike Factor														
Frt		0.972			0.948	0.850			0.998					0.850
Flt Protected	0.950	0.980		0.950				0.950				0.950		
Satd. Flow (prot)	1695	3399	0	1863	3383	1517	0	3433	5075	0	0	3433	6408	1583
Flt Permitted	0.950	0.980		0.950				0.950				0.950		
Satd. Flow (perm)	1695	3399	0	1863	3383	1517	0	3433	5075	0	0	3433	6408	1583
Right Turn on Red			Yes			Yes				Yes				Yes
Satd. Flow (RTOR)		12			39	40			2					68
Headway Factor	*1.00	*1.00	*1.00	*1.00	*1.00	*1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		35			35				35				35	
Link Distance (ft)		122			1790				770				508	
Travel Time (s)		2.4			34.9				15.0				9.9	
Volume (vph)	552	244	112	48	264	368	8	146	3312	40	36	224	1656	184
Confl. Peds. (#/hr)														
Confl. Bikes (#/hr)														
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)														
Mid-Block Traffic (%)		0%			0%				0%				0%	
Adj. Flow (vph)	552	244	112	48	264	368	8	146	3312	40	36	224	1656	184
Lane Group Flow (vph)	298	610	0	48	403	229	0	154	3352	0	0	260	1656	184

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Act Effct Green (s)	24.0	24.0		14.0	14.0	17.0		8.0	101.0			15.0	108.0	129.0
Actuated g/C Ratio	0.14	0.14		0.08	0.08	0.10		0.05	0.59			0.09	0.64	0.76
v/c Ratio	1.25	1.24		0.31	1.28	1.22		0.95	1.11			0.86	0.41	0.15
Control Delay	134.4	131.6		79.4	201.2	178.7		116.2	71.2			101.4	15.6	3.7
Queue Delay	11.5	18.5		0.0	24.4	0.0		0.0	0.0			0.0	0.0	0.2
Total Delay	145.9	150.0		79.4	225.5	178.7		116.2	71.2			101.4	15.6	3.9
LOS	F	F		E	F	F		F	E			F	B	A
Approach Delay		148.7			199.4				73.2				25.2	
Approach LOS		F			F				E				C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 170			
Actuated Cycle Length: 170			
Offset: 2 (1%), Referenced to phase 1:NBSBL and 6:, Start of Green			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.28			
Intersection Signal Delay: 80.6		Intersection LOS: F	
Intersection Capacity Utilization 116.8%		ICU Level of Service H	
Analysis Period (min) 15			
* User Entered Value			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations													
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%				0%	
Storage Length (ft)	0		0	150		350	500		0		380		400
Storage Lanes	1		1	1		1	1		0		1		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	50	50	50		50	50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	0	0
Turning Speed (mph)	35		20	30		15	15		12	9	15		12
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	0.91	1.00	0.91	1.00
Ped Bike Factor													
Frt			0.850			0.850		0.995					0.850
Flt Protected	0.950			0.950			0.950				0.950		
Satd. Flow (prot)	1805	1900	1615	1805	1900	1615	1770	5060	0	0	1770	5085	1583
Flt Permitted	0.950			0.950			0.950				0.041		
Satd. Flow (perm)	1805	1900	1615	1805	1900	1615	1770	5060	0	0	76	5085	1583
Right Turn on Red			Yes			Yes			Yes				Yes
Satd. Flow (RTOR)			47			112		6					94
Headway Factor	*1.00	*1.00	*1.00	*1.00	*1.00	*1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		40			40			35				35	
Link Distance (ft)		129			2096			1306				765	
Travel Time (s)		2.2			35.7			25.4				14.9	
Volume (vph)	180	280	48	64	180	112	154	3192	112	4	123	1496	152
Confl. Peds. (#/hr)													
Confl. Bikes (#/hr)													
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Growth Factor	100%	100%	100%	103%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)													
Mid-Block Traffic (%)		0%			0%			0%				0%	
Adj. Flow (vph)	180	280	48	66	180	112	154	3192	112	4	123	1496	152
Lane Group Flow (vph)	180	280	48	66	180	112	154	3304	0	0	127	1496	152

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Act Effct Green (s)	25.0	25.0	25.0	15.0	15.0	15.0	16.0	105.0			107.0	98.0	127.0
Actuated g/C Ratio	0.15	0.15	0.15	0.09	0.09	0.09	0.09	0.62			0.63	0.58	0.75
v/c Ratio	0.68	1.00	0.17	0.42	1.07	0.46	0.92	1.06			0.92	0.51	0.13
Control Delay	12.8	45.2	1.1	81.8	159.0	17.5	107.1	48.4			90.8	39.5	2.1
Queue Delay	12.7	2.9	11.5	0.0	0.0	0.0	0.0	0.0			0.0	0.0	0.0
Total Delay	25.6	48.1	12.6	81.8	159.0	17.5	107.1	48.4			90.8	39.5	2.1
LOS	C	D	B	F	F	B	F	D			F	D	A
Approach Delay		36.8			100.5			51.0				40.0	
Approach LOS		D			F			D				D	

Intersection Summary

Area Type: Other
Cycle Length: 170
Actuated Cycle Length: 170
Offset: 130 (76%), Referenced to phase 1:NBSBL and 6:, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.07
Intersection Signal Delay: 49.5 Intersection LOS: D
Intersection Capacity Utilization 104.0% ICU Level of Service G
Analysis Period (min) 15
* User Entered Value

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations													
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%				0%			0%	
Storage Length (ft)	0		0	275		25		300		0	320		370
Storage Lanes	1		1	1		1		1		0	1		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	50	50	50	50		50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0		0	0	0
Turning Speed (mph)	50		45	50		45	9	15		12	15		12
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.91	1.00	0.91	0.91	1.00	0.91	1.00
Ped Bike Factor													
Frt			0.850			0.850			0.994				0.850
Flt Protected	0.950			0.950				0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	0	1770	5055	0	1770	5085	1583
Flt Permitted	0.950			0.950				0.950			0.041		
Satd. Flow (perm)	1770	1863	1583	1770	1863	1583	0	1770	5055	0	76	5085	1583
Right Turn on Red			Yes			Yes				Yes			Yes
Satd. Flow (RTOR)			36			32			6				80
Headway Factor	*0.50	*0.50	*0.50	*0.50	*0.50	*0.50	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		40			40				35			35	
Link Distance (ft)		130			1796				1483			1506	
Travel Time (s)		2.2			30.6				28.9			29.3	
Volume (vph)	208	200	36	124	124	84	4	80	3116	136	92	1332	80
Confl. Peds. (#/hr)													
Confl. Bikes (#/hr)													
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Growth Factor	100%	100%	100%	96%	97%	97%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)													
Mid-Block Traffic (%)		0%			0%				0%			0%	
Adj. Flow (vph)	208	200	36	119	120	81	4	80	3116	136	92	1332	80
Lane Group Flow (vph)	208	200	36	119	120	81	0	84	3252	0	92	1332	80

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBL	SBT	SBR
Act Effct Green (s)	25.1	25.1	25.1	16.9	16.9	16.9		13.9	98.1		112.0	98.1	123.2
Actuated g/C Ratio	0.15	0.15	0.15	0.10	0.10	0.10		0.08	0.58		0.66	0.58	0.72
v/c Ratio	0.80	0.73	0.14	0.68	0.65	0.44		0.58	1.11		0.49	0.45	0.07
Control Delay	21.0	16.5	1.3	93.0	90.0	51.1		99.4	64.2		51.8	16.2	2.3
Queue Delay	1.8	3.4	3.5	0.0	0.2	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	22.8	19.9	4.8	93.0	90.2	51.1		99.4	64.2		51.8	16.2	2.3
LOS	C	B	A	F	F	D		F	E		D	B	A
Approach Delay		20.1			81.4				65.1			17.6	
Approach LOS		C			F				E			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 170			
Actuated Cycle Length: 170			
Offset: 66 (39%), Referenced to phase 1:NBSBL and 5:, Start of Green			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.11			
Intersection Signal Delay: 49.7		Intersection LOS: D	
Intersection Capacity Utilization 99.5%		ICU Level of Service F	
Analysis Period (min) 15			
* User Entered Value			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations														
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%				0%				0%	
Storage Length (ft)	0		0	140		0		300		0		240		400
Storage Lanes	1		1	1		0		1		0		1		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50		50	50	50		50	50	50	50
Trailing Detector (ft)	0	0	0	0	0		0	0	0		0	0	0	0
Turning Speed (mph)	30		15	50		45	9	15		12	9	15		12
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.91	1.00	0.91	0.91	0.91	1.00	0.91	1.00
Ped Bike Factor														
Frt			0.850		0.944				0.994					0.850
Flt Protected	0.950			0.950				0.950				0.950		
Satd. Flow (prot)	1770	1863	1583	1805	1794	0	0	1770	5055	0	0	1770	5085	1583
Flt Permitted	0.950			0.950				0.950				0.044		
Satd. Flow (perm)	1770	1863	1583	1805	1794	0	0	1770	5055	0	0	82	5085	1583
Right Turn on Red			Yes			Yes				Yes				Yes
Satd. Flow (RTOR)			35		14				6					132
Headway Factor	*0.50	*0.50	*0.50	*0.50	*0.50	*0.50	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		40			40				35				35	
Link Distance (ft)		128			1912				1434				1483	
Travel Time (s)		2.2			32.6				27.9				28.9	
Volume (vph)	204	192	36	84	148	88	4	72	3068	128	4	60	1332	132
Confl. Peds. (#/hr)														
Confl. Bikes (#/hr)														
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Growth Factor	98%	98%	98%	98%	98%	98%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	0%	0%	0%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)														
Mid-Block Traffic (%)		0%			0%				0%				0%	
Adj. Flow (vph)	200	188	35	82	145	86	4	72	3068	128	4	60	1332	132
Lane Group Flow (vph)	200	188	35	82	231	0	0	76	3196	0	0	64	1332	132

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Act Effct Green (s)	28.0	28.0	28.0	20.0	20.0			15.0	98.0			99.0	91.0	119.0
Actuated g/C Ratio	0.16	0.16	0.16	0.12	0.12			0.09	0.58			0.58	0.54	0.70
v/c Ratio	0.68	0.61	0.12	0.39	1.04			0.49	1.10			0.50	0.49	0.11
Control Delay	12.0	7.8	0.6	75.2	135.4			87.7	76.1			55.2	11.9	0.3
Queue Delay	0.7	1.8	6.1	0.0	1.5			0.0	0.0			0.0	0.0	0.0
Total Delay	12.8	9.6	6.7	75.2	136.9			87.7	76.1			55.2	11.9	0.3
LOS	B	A	A	E	F			F	E			E	B	A
Approach Delay		10.9			120.7				76.4				12.7	
Approach LOS		B			F				E				B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 170			
Actuated Cycle Length: 170			
Offset: 46 (27%), Referenced to phase 1:NBSBL and 6:, Start of Green			
Control Type: Pretimed			
Maximum v/c Ratio: 1.10			
Intersection Signal Delay: 56.3		Intersection LOS: E	
Intersection Capacity Utilization 97.1%		ICU Level of Service F	
Analysis Period (min) 15			
* User Entered Value			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations														
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%				0%				0%	
Storage Length (ft)	0		0	280		0		430		0		390		400
Storage Lanes	2		1	1		0		2		0		2		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50		50	50	50		50	50	50	50
Trailing Detector (ft)	0	0	0	0	0		0	0	0		0	0	0	0
Turning Speed (mph)	15		12	15		12	9	15		12	9	15		12
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	0.95	0.91	0.97	0.91	0.91	0.91	0.97	0.91	1.00
Ped Bike Factor														
Frt			0.850		0.975				0.995					0.850
Flt Protected	0.950			0.950				0.950				0.950		
Satd. Flow (prot)	3433	3539	1583	3433	3451	0	0	3433	5060	0	0	3433	5085	1583
Flt Permitted	0.950			0.950				0.950				0.950		
Satd. Flow (perm)	3433	3539	1583	3433	3451	0	0	3433	5060	0	0	3433	5085	1583
Right Turn on Red			Yes			Yes				Yes				Yes
Satd. Flow (RTOR)			146		11				5					49
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		35			35				35				35	
Link Distance (ft)		118			1966				2720				1215	
Travel Time (s)		2.3			38.3				53.0				23.7	
Volume (vph)	284	376	192	144	284	56	4	204	3132	108	4	96	1420	112
Confl. Peds. (#/hr)														
Confl. Bikes (#/hr)														
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)														
Mid-Block Traffic (%)		0%			0%				0%				0%	
Adj. Flow (vph)	284	376	192	144	284	56	4	204	3132	108	4	96	1420	112
Lane Group Flow (vph)	284	376	192	144	340	0	0	208	3240	0	0	100	1420	112

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Act Effct Green (s)	20.9	20.9	43.8	19.0	19.0			17.2	104.0			10.2	97.0	117.9
Actuated g/C Ratio	0.12	0.12	0.26	0.11	0.11			0.10	0.61			0.06	0.57	0.69
v/c Ratio	0.67	0.86	0.37	0.38	0.86			0.60	1.05			0.49	0.49	0.10
Control Delay	26.3	39.9	2.9	73.2	92.7			81.1	62.3			89.8	26.6	6.1
Queue Delay	17.8	19.2	0.7	0.0	0.1			0.0	0.0			0.0	0.0	0.0
Total Delay	44.2	59.2	3.7	73.2	92.8			81.1	62.3			89.8	26.6	6.1
LOS	D	E	A	E	F			F	E			F	C	A
Approach Delay		41.7			86.9				63.5				29.1	
Approach LOS		D			F				E				C	

Intersection Summary

Area Type: Other
Cycle Length: 170
Actuated Cycle Length: 170
Offset: 0 (0%), Referenced to phase 1:NBSBL and 6:, Start of Green, Master Intersection
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.05
Intersection Signal Delay: 53.6 Intersection LOS: D
Intersection Capacity Utilization 97.3% ICU Level of Service F
Analysis Period (min) 15

E2

Synchro 6 Report Output for 2007 PM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations													
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%				0%	
Storage Length (ft)	0		0	30		0	260		0		285		0
Storage Lanes	1		1	1		0	1		0		1		0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50		50	50		50	50	50	
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	0	
Turning Speed (mph)	15		12	15		12	15		12	9	15		12
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	0.91	1.00	0.91	0.91
Ped Bike Factor													
Frt			0.850		0.934			0.995				0.974	
Flt Protected	0.950			0.950			0.950				0.950		
Satd. Flow (prot)	1770	1863	1583	1770	1740	0	1770	5060	0	0	1770	4953	0
Flt Permitted	0.436			0.630			0.043				0.151		
Satd. Flow (perm)	812	1863	1583	1174	1740	0	80	5060	0	0	281	4953	0
Right Turn on Red			Yes			Yes			Yes				Yes
Satd. Flow (RTOR)			54		26			8				66	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		35			35			35				35	
Link Distance (ft)		123			1547			414				1855	
Travel Time (s)		2.4			30.1			8.1				36.1	
Volume (vph)	95	104	112	52	112	88	116	1348	48	4	200	2340	484
Confl. Peds. (#/hr)													
Confl. Bikes (#/hr)													
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)													
Mid-Block Traffic (%)		0%			0%			0%				0%	
Adj. Flow (vph)	95	104	112	52	112	88	116	1348	48	4	200	2340	484
Lane Group Flow (vph)	95	104	112	52	200	0	116	1396	0	0	204	2824	0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Act Effct Green (s)	22.5	22.5	22.5	22.5	22.5		107.1	96.5			103.9	94.9	
Actuated g/C Ratio	0.16	0.16	0.16	0.16	0.16		0.76	0.69			0.74	0.68	
v/c Ratio	0.73	0.35	0.37	0.28	0.66		0.61	0.40			0.67	0.84	
Control Delay	81.6	51.0	28.1	52.8	57.6		41.2	10.1			19.5	19.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.2	0.0			0.0	0.1	
Total Delay	81.6	51.0	28.1	52.8	57.6		41.4	10.1			19.5	19.9	
LOS	F	D	C	D	E		D	B			B	B	
Approach Delay		52.1			56.6			12.5				19.9	
Approach LOS		D			E			B				B	

Intersection Summary

Area Type: Other
Cycle Length: 140
Actuated Cycle Length: 140
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.84
Intersection Signal Delay: 21.5 Intersection LOS: C
Intersection Capacity Utilization 92.3% ICU Level of Service F
Analysis Period (min) 15

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations														
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%				0%				0%	
Storage Length (ft)	0		0	150		0		500		0		460		480
Storage Lanes	1		0	1		1		2		0		2		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50		50	50	50	50	50	50		50	50	50	50
Trailing Detector (ft)	0	0		0	0	0	0	0	0		0	0	0	0
Turning Speed (mph)	15		12	15		12	9	15		12	9	15		12
Lane Util. Factor	0.91	0.91	0.95	1.00	0.91	0.91	0.91	0.97	0.91	0.91	0.86	0.97	0.86	1.00
Ped Bike Factor														
Frt		0.948				0.850			0.995					0.850
Flt Protected	0.950	0.991		0.950				0.950				0.950		
Satd. Flow (prot)	1610	3185	0	1770	3390	1441	0	3433	5060	0	0	3433	6408	1583
Flt Permitted	0.950	0.991		0.950				0.950				0.950		
Satd. Flow (perm)	1610	3185	0	1770	3390	1441	0	3433	5060	0	0	3433	6408	1583
Right Turn on Red			Yes			Yes				Yes				Yes
Satd. Flow (RTOR)		41				118			4					57
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		35			35				35				35	
Link Distance (ft)		122			1790				770				508	
Travel Time (s)		2.4			34.9				15.0				9.9	
Volume (vph)	350	244	184	108	268	216	8	276	2140	68	36	356	3540	532
Confl. Peds. (#/hr)														
Confl. Bikes (#/hr)														
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Growth Factor	93%	93%	93%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)														
Mid-Block Traffic (%)		0%			0%				0%				0%	
Adj. Flow (vph)	326	227	171	108	268	216	8	276	2140	68	36	356	3540	532
Lane Group Flow (vph)	233	491	0	108	268	216	0	284	2208	0	0	392	3540	532

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Act Effct Green (s)	28.0	28.0		17.8	17.8	20.8		17.2	94.0			24.2	101.0	126.0
Actuated g/C Ratio	0.16	0.16		0.10	0.10	0.12		0.10	0.52			0.13	0.56	0.70
v/c Ratio	0.93	0.93		0.62	0.80	0.80		0.86	0.84			0.85	0.98	0.47
Control Delay	33.5	24.0		93.8	97.3	47.5		104.3	39.9			93.1	50.2	12.2
Queue Delay	1.2	10.4		0.0	0.0	0.0		0.0	0.0			0.0	0.0	7.1
Total Delay	34.7	34.5		93.8	97.3	47.5		104.3	39.9			93.1	50.2	19.3
LOS	C	C		F	F	D		F	D			F	D	B
Approach Delay		34.5			78.5				47.3				50.3	
Approach LOS		C			E				D				D	

Intersection Summary

Area Type: Other
Cycle Length: 180
Actuated Cycle Length: 180
Offset: 101 (56%), Referenced to phase 1:NBSBL and 6:, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.98
Intersection Signal Delay: 50.0 Intersection LOS: D
Intersection Capacity Utilization 96.6% ICU Level of Service F
Analysis Period (min) 15

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations													
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%				0%	
Storage Length (ft)	0		0	150		350	500		0		380		400
Storage Lanes	1		1	1		1	1		0		1		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	50	50	50		50	50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	0	0
Turning Speed (mph)	50		45	50		45	15		12	9	15		12
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	0.91	1.00	0.91	1.00
Ped Bike Factor													
Frt			0.850			0.850		0.995					0.850
Flt Protected	0.950			0.950			0.950				0.950		
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	5060	0	0	1770	5085	1583
Flt Permitted	0.950			0.950			0.950				0.043		
Satd. Flow (perm)	1770	1863	1583	1770	1863	1583	1770	5060	0	0	80	5085	1583
Right Turn on Red			Yes			Yes			Yes				Yes
Satd. Flow (RTOR)			98			91		5					82
Headway Factor	*0.50	*0.50	*0.50	*0.50	*0.50	*0.50	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		45			45			35				35	
Link Distance (ft)		129			2096			1306				765	
Travel Time (s)		2.0			31.8			25.4				14.9	
Volume (vph)	152	141	98	86	210	96	210	2200	72	8	150	2860	228
Confl. Peds. (#/hr)													
Confl. Bikes (#/hr)													
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Growth Factor	100%	100%	100%	95%	95%	95%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)													
Mid-Block Traffic (%)		0%			0%			0%				0%	
Adj. Flow (vph)	152	141	98	82	200	91	210	2200	72	8	150	2860	228
Lane Group Flow (vph)	152	141	98	82	200	91	210	2272	0	0	158	2860	228

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Act Effct Green (s)	25.9	25.9	25.9	17.1	17.1	17.1	19.0	99.0			104.0	92.0	121.9
Actuated g/C Ratio	0.15	0.15	0.15	0.10	0.10	0.10	0.11	0.58			0.61	0.54	0.72
v/c Ratio	0.57	0.50	0.30	0.46	1.06	0.38	1.06	0.77			0.94	1.04	0.20
Control Delay	7.5	6.0	1.6	81.1	153.0	16.8	150.5	15.3			102.4	66.4	5.3
Queue Delay	2.4	3.1	4.9	0.0	0.0	0.0	0.0	0.0			0.0	0.0	0.4
Total Delay	9.9	9.1	6.6	81.1	153.0	16.8	150.5	15.3			102.4	66.4	5.7
LOS	A	A	A	F	F	B	F	B			F	E	A
Approach Delay		8.8			104.0			26.8				63.9	
Approach LOS		A			F			C				E	

Intersection Summary

Area Type: Other
Cycle Length: 170
Actuated Cycle Length: 170
Offset: 35 (21%), Referenced to phase 1:NBSBL and 6:, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.06
Intersection Signal Delay: 48.7 Intersection LOS: D
Intersection Capacity Utilization 99.1% ICU Level of Service F
Analysis Period (min) 15
* User Entered Value

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations														
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%				0%				0%	
Storage Length (ft)	0		0	275		25		300		0		320		370
Storage Lanes	1		1	1		1		1		0		1		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	50	50	50	50		50	50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0		0	0	0	0
Turning Speed (mph)	50		45	50		45	9	15		12	9	15		12
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.91	1.00	0.91	0.91	0.91	1.00	0.91	1.00
Ped Bike Factor														
Frt			0.850			0.850			0.988					0.850
Flt Protected	0.950			0.950				0.950				0.950		
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	0	1770	5024	0	0	1770	5085	1583
Flt Permitted	0.950			0.950				0.950				0.042		
Satd. Flow (perm)	1770	1863	1583	1770	1863	1583	0	1770	5024	0	0	78	5085	1583
Right Turn on Red			Yes			Yes				Yes				Yes
Satd. Flow (RTOR)			64			23			13					152
Headway Factor	*0.50	*0.50	*0.50	*0.50	*0.50	*0.50	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		35			35				35				35	
Link Distance (ft)		130			1796				1483				1506	
Travel Time (s)		2.5			35.0				28.9				29.3	
Volume (vph)	84	148	64	160	170	80	16	92	2008	168	12	104	2676	152
Confl. Peds. (#/hr)														
Confl. Bikes (#/hr)														
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Growth Factor	97%	97%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)														
Mid-Block Traffic (%)		0%			0%				0%				0%	
Adj. Flow (vph)	81	144	64	160	170	80	16	92	2008	168	12	104	2676	152
Lane Group Flow (vph)	81	144	64	160	170	80	0	108	2176	0	0	116	2676	152

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Act Effct Green (s)	21.0	21.0	21.0	20.0	20.0	20.0		17.0	96.0			113.0	96.0	117.0
Actuated g/C Ratio	0.12	0.12	0.12	0.12	0.12	0.12		0.10	0.56			0.66	0.56	0.69
v/c Ratio	0.37	0.63	0.25	0.77	0.78	0.39		0.61	0.77			0.52	0.93	0.13
Control Delay	6.3	13.1	1.8	96.2	95.9	55.1		81.6	22.2			54.4	21.1	1.5
Queue Delay	3.0	0.6	3.7	0.0	2.7	0.0		0.0	0.0			0.0	0.0	0.0
Total Delay	9.3	13.7	5.5	96.2	98.5	55.1		81.6	22.2			54.4	21.1	1.5
LOS	A	B	A	F	F	E		F	C			D	C	A
Approach Delay		10.7			89.1				25.1				21.4	
Approach LOS		B			F				C				C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 170			
Actuated Cycle Length: 170			
Offset: 99 (58%), Referenced to phase 1:NBSBL, Start of Green			
Control Type: Pretimed			
Maximum v/c Ratio: 0.93			
Intersection Signal Delay: 27.0		Intersection LOS: C	
Intersection Capacity Utilization 87.4%		ICU Level of Service E	
Analysis Period (min) 15			
* User Entered Value			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations													
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%				0%	
Storage Length (ft)	0		0	140		0	300		0		240		400
Storage Lanes	1		1	1		0	1		0		1		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50		50	50		50	50	50	50
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	0	0
Turning Speed (mph)	50		45	50		45	15		12	9	15		12
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	0.91	1.00	0.91	1.00
Ped Bike Factor													
Frt			0.850		0.950			0.995					0.850
Flt Protected	0.950			0.950			0.950				0.950		
Satd. Flow (prot)	1770	1863	1583	1770	1770	0	1770	5060	0	0	1770	5085	1583
Flt Permitted	0.950			0.950			0.950				0.055		
Satd. Flow (perm)	1770	1863	1583	1770	1770	0	1770	5060	0	0	102	5085	1583
Right Turn on Red			Yes			Yes			Yes				Yes
Satd. Flow (RTOR)			60		12			5					160
Headway Factor	*0.50	*0.50	*0.50	*0.50	*0.50	*0.50	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		35			35			35				35	
Link Distance (ft)		128			1912			1426				1483	
Travel Time (s)		2.5			37.2			27.8				28.9	
Volume (vph)	203	120	60	92	170	84	120	1912	72	28	64	2572	160
Confl. Peds. (#/hr)													
Confl. Bikes (#/hr)													
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)													
Mid-Block Traffic (%)		0%			0%			0%				0%	
Adj. Flow (vph)	203	120	60	92	170	84	120	1912	72	28	64	2572	160
Lane Group Flow (vph)	203	120	60	92	254	0	120	1984	0	0	92	2572	160

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Act Effct Green (s)	20.0	20.0	20.0	24.0	24.0		20.0	97.3			102.7	90.0	110.0
Actuated g/C Ratio	0.12	0.12	0.12	0.14	0.14		0.12	0.57			0.60	0.53	0.65
v/c Ratio	0.98	0.55	0.25	0.37	0.98		0.58	0.68			0.49	0.96	0.15
Control Delay	48.6	15.8	2.0	70.9	117.6		82.9	27.0			45.1	18.6	0.2
Queue Delay	5.8	15.8	13.0	0.0	3.5		0.0	0.0			0.0	0.0	0.4
Total Delay	54.4	31.7	15.1	70.9	121.1		82.9	27.0			45.1	18.6	0.6
LOS	D	C	B	E	F		F	C			D	B	A
Approach Delay		41.1			107.8			30.2				18.5	
Approach LOS		D			F			C				B	

Intersection Summary

Area Type: Other
Cycle Length: 170
Actuated Cycle Length: 170
Offset: 126 (74%), Referenced to phase 1:NBSBL and 6:, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.98
Intersection Signal Delay: 29.8 Intersection LOS: C
Intersection Capacity Utilization 95.0% ICU Level of Service F
Analysis Period (min) 15
* User Entered Value

Lane Group	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 (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	280		0	430		0	390		400
Storage Lanes	2		1	1		0	2		0	2		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50		50	50		50	50	50
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	0
Turning Speed (mph)	15		25	15		12	15		12	15		12
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	0.95	0.97	0.91	0.91	0.97	0.91	1.00
Ped Bike Factor												
Frt			0.850		0.979			0.992				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3433	3539	1583	3433	3465	0	3433	5045	0	3433	5085	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3433	3539	1583	3433	3465	0	3433	5045	0	3433	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			135		9			9				9
Headway Factor	1.00	1.00	*1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		118			1572			2574			1215	
Travel Time (s)		2.3			30.6			50.1			23.7	
Volume (vph)	340	380	330	376	392	64	412	1772	104	220	2636	356
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Growth Factor	100%	100%	100%	108%	107%	108%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	340	380	330	406	419	69	412	1772	104	220	2636	356
Lane Group Flow (vph)	340	380	330	406	488	0	412	1876	0	220	2636	356

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effct Green (s)	23.0	23.0	23.0	20.0	20.0		21.0	98.0		13.0	90.0	113.0
Actuated g/C Ratio	0.14	0.14	0.14	0.12	0.12		0.12	0.58		0.08	0.53	0.66
v/c Ratio	0.73	0.79	1.00	1.00	1.17		0.97	0.64		0.84	0.98	0.34
Control Delay	28.3	31.9	81.9	118.8	161.0		109.9	25.4		102.7	51.9	6.9
Queue Delay	15.2	14.9	157.9	0.0	3.6		6.8	0.0		0.0	0.0	2.0
Total Delay	43.5	46.8	239.9	118.8	164.6		116.7	25.4		102.7	51.9	8.9
LOS	D	D	F	F	F		F	C		F	D	A
Approach Delay		106.4			143.8			41.9			50.6	
Approach LOS		F			F			D			D	

Intersection Summary

Area Type: Other
Cycle Length: 170
Actuated Cycle Length: 170
Offset: 0 (0%), Referenced to phase 1:NBSBL and 6:, Start of Green, Master Intersection
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.17
Intersection Signal Delay: 67.0 Intersection LOS: E
Intersection Capacity Utilization 99.5% ICU Level of Service F
Analysis Period (min) 15
* User Entered Value

E3

Synchro 6 Report Output for Projected 2015 AM Peak

Lane Group	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 (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	30		0	260		0	285		0
Storage Lanes	1		1	1		0	1		0	1		0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50		50	50		50	50	
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	
Turning Speed (mph)	15		12	15		12	15		12	15		12
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.91	0.91
Ped Bike Factor												
Frt			0.850		0.941			0.994			0.982	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	1770	1753	0	1770	5055	0	1770	4994	0
Flt Permitted	0.346			0.525			0.203			0.043		
Satd. Flow (perm)	645	1863	1583	978	1753	0	378	5055	0	80	4994	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			74		21			8			30	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		133			1547			414			1855	
Travel Time (s)		2.6			30.1			8.1			36.1	
Volume (vph)	162	169	74	26	168	108	315	2266	100	78	1010	134
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	162	169	74	26	168	108	315	2266	100	78	1010	134
Lane Group Flow (vph)	162	169	74	26	276	0	315	2366	0	78	1144	0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effct Green (s)	39.0	39.0	39.0	39.0	39.0		99.0	94.0		99.0	94.0	
Actuated g/C Ratio	0.26	0.26	0.26	0.26	0.26		0.66	0.63		0.66	0.63	
v/c Ratio	0.96	0.35	0.16	0.10	0.59		1.06	0.75		0.72	0.36	
Control Delay	112.1	45.1	16.3	43.7	50.4		90.4	21.4		54.4	13.5	
Queue Delay	0.0	2.4	0.0	0.0	0.0		3.9	0.0		0.0	0.0	
Total Delay	112.1	47.5	16.3	43.7	50.4		94.3	21.4		54.4	13.5	
LOS	F	D	B	D	D		F	C		D	B	
Approach Delay		67.6			49.9			30.0			16.1	
Approach LOS		E			D			C			B	

Intersection Summary

Area Type: Other
Cycle Length: 150
Actuated Cycle Length: 150
Offset: 10 (7%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.06
Intersection Signal Delay: 30.9 Intersection LOS: C
Intersection Capacity Utilization 88.1% ICU Level of Service E
Analysis Period (min) 15

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations													
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%				0%	
Storage Length (ft)	0		0	150		0	500		0		460		480
Storage Lanes	1		0	1		1	2		0		2		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50		50	50	50	50	50		50	50	50	50
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	0	0
Turning Speed (mph)	35		20	20		15	15		12	9	15		12
Lane Util. Factor	0.91	0.91	0.95	1.00	0.91	0.91	0.97	0.91	0.91	0.86	0.97	0.86	1.00
Ped Bike Factor													
Frt		0.972			0.948	0.850		0.998					0.850
Flt Protected	0.950	0.980		0.950			0.950				0.950		
Satd. Flow (prot)	1695	3399	0	1863	3383	1517	3433	5075	0	0	3433	6408	1583
Flt Permitted	0.950	0.980		0.950			0.950				0.950		
Satd. Flow (perm)	1695	3399	0	1863	3383	1517	3433	5075	0	0	3433	6408	1583
Right Turn on Red			Yes			Yes			Yes				Yes
Satd. Flow (RTOR)		12			39	38		2					64
Headway Factor	*1.00	*1.00	*1.00	*1.00	*1.00	*1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		35			35			35				35	
Link Distance (ft)		122			1790			770				508	
Travel Time (s)		2.4			34.9			15.0				9.9	
Volume (vph)	596	264	121	52	285	397	157	3573	44	39	242	1787	199
Confl. Peds. (#/hr)													
Confl. Bikes (#/hr)													
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)													
Mid-Block Traffic (%)		0%			0%			0%				0%	
Adj. Flow (vph)	596	264	121	52	285	397	157	3573	44	39	242	1787	199
Lane Group Flow (vph)	322	659	0	52	436	246	157	3617	0	0	281	1787	199

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Act Effct Green (s)	24.0	24.0		14.0	14.0	17.0	8.0	101.0			15.0	108.0	129.0
Actuated g/C Ratio	0.14	0.14		0.08	0.08	0.10	0.05	0.59			0.09	0.64	0.76
v/c Ratio	1.35	1.34		0.34	1.39	1.32	0.97	1.20			0.93	0.44	0.16
Control Delay	178.9	176.7		80.2	240.9	217.2	99.5	110.0			111.6	16.1	4.0
Queue Delay	12.7	20.2		0.0	28.8	0.0	0.0	0.0			0.0	0.0	0.3
Total Delay	191.6	197.0		80.2	269.7	217.2	99.5	110.0			111.6	16.1	4.3
LOS	F	F		F	F	F	F	F			F	B	A
Approach Delay		195.2			238.7			109.6				26.9	
Approach LOS		F			F			F				C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 170			
Actuated Cycle Length: 170			
Offset: 2 (1%), Referenced to phase 1:NBSBL and 6:, Start of Green			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.39			
Intersection Signal Delay: 108.5		Intersection LOS: F	
Intersection Capacity Utilization 125.0%		ICU Level of Service H	
Analysis Period (min) 15			
* User Entered Value			

Lane Group	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 (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	150		350	500		0	380		400
Storage Lanes	1		1	1		1	1		0	1		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	50	50	50		50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	0
Turning Speed (mph)	35		20	30		15	15		12	15		12
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.91	1.00
Ped Bike Factor												
Frt			0.850			0.850		0.995				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1900	1615	1805	1900	1615	1770	5060	0	1770	5085	1583
Flt Permitted	0.950			0.950			0.950			0.041		
Satd. Flow (perm)	1805	1900	1615	1805	1900	1615	1770	5060	0	76	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			46			113		6				68
Headway Factor	*1.00	*1.00	*1.00	*1.00	*1.00	*1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		40			40			35			35	
Link Distance (ft)		129			2096			1306			765	
Travel Time (s)		2.2			35.7			25.4			14.9	
Volume (vph)	195	308	52	70	212	121	167	3443	121	133	1614	164
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Growth Factor	100%	100%	100%	103%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	195	308	52	72	212	121	167	3443	121	133	1614	164
Lane Group Flow (vph)	195	308	52	72	212	121	167	3564	0	133	1614	164

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effct Green (s)	25.0	25.0	25.0	15.0	15.0	15.0	16.0	105.0		107.0	98.0	127.0
Actuated g/C Ratio	0.15	0.15	0.15	0.09	0.09	0.09	0.09	0.62		0.63	0.58	0.75
v/c Ratio	0.74	1.10	0.19	0.45	1.26	0.49	1.00	1.14		0.96	0.55	0.14
Control Delay	12.3	68.0	1.0	83.3	214.5	21.0	114.4	84.5		100.7	41.7	3.2
Queue Delay	24.9	4.6	15.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	37.2	72.6	16.0	83.3	214.5	21.0	114.4	84.5		100.7	41.7	3.2
LOS	D	E	B	F	F	C	F	F		F	D	A
Approach Delay		54.9			133.4			85.9			42.5	
Approach LOS		D			F			F			D	

Intersection Summary

Area Type: Other
Cycle Length: 170
Actuated Cycle Length: 170
Offset: 130 (76%), Referenced to phase 1:NBSBL and 6:, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.26
Intersection Signal Delay: 73.6 Intersection LOS: E
Intersection Capacity Utilization 111.9% ICU Level of Service H
Analysis Period (min) 15
* User Entered Value

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations													
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%				0%			0%	
Storage Length (ft)	0		0	275		25		300		0	320		370
Storage Lanes	1		1	1		1		1		0	1		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	50	50	50	50		50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0		0	0	0
Turning Speed (mph)	50		45	50		45	9	15		12	15		12
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.91	1.00	0.91	0.91	1.00	0.91	1.00
Ped Bike Factor													
Frt			0.850			0.850			0.994				0.850
Flt Protected	0.950			0.950				0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	0	1770	5055	0	1770	5085	1583
Flt Permitted	0.950			0.950				0.950			0.041		
Satd. Flow (perm)	1770	1863	1583	1770	1863	1583	0	1770	5055	0	76	5085	1583
Right Turn on Red			Yes			Yes				Yes			Yes
Satd. Flow (RTOR)			39			32			6				87
Headway Factor	*0.50	*0.50	*0.50	*0.50	*0.50	*0.50	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		40			40				35			35	
Link Distance (ft)		130			1796				1483			1506	
Travel Time (s)		2.2			30.6				28.9			29.3	
Volume (vph)	225	216	39	134	134	91	5	87	3361	147	100	1437	87
Confl. Peds. (#/hr)													
Confl. Bikes (#/hr)													
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Growth Factor	100%	100%	100%	96%	97%	97%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)													
Mid-Block Traffic (%)		0%			0%				0%			0%	
Adj. Flow (vph)	225	216	39	129	130	88	5	87	3361	147	100	1437	87
Lane Group Flow (vph)	225	216	39	129	130	88	0	92	3508	0	100	1437	87

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBL	SBT	SBR
Act Effct Green (s)	24.8	24.8	24.8	17.1	17.1	17.1		13.7	98.4		112.1	98.4	123.2
Actuated g/C Ratio	0.15	0.15	0.15	0.10	0.10	0.10		0.08	0.58		0.66	0.58	0.72
v/c Ratio	0.87	0.79	0.15	0.72	0.70	0.47		0.65	1.20		0.53	0.49	0.07
Control Delay	25.8	19.2	1.2	96.8	93.4	53.8		100.0	103.7		57.7	16.4	2.1
Queue Delay	2.8	5.4	4.3	0.0	0.2	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	28.6	24.6	5.5	96.8	93.6	53.8		100.0	103.7		57.7	16.4	2.1
LOS	C	C	A	F	F	D		F	F		E	B	A
Approach Delay		24.9			84.7				103.6			18.2	
Approach LOS		C			F				F			B	

Intersection Summary

Area Type: Other
Cycle Length: 170
Actuated Cycle Length: 170
Offset: 66 (39%), Referenced to phase 1:NBSBL and 5:, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.20
Intersection Signal Delay: 73.3 Intersection LOS: E
Intersection Capacity Utilization 106.4% ICU Level of Service G
Analysis Period (min) 15
* User Entered Value

AM Peak- 2015 Projected Volumes
21: 128th St. & US1 4/1/2008

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations														
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%				0%				0%	
Storage Length (ft)	0		0	140		0		300		0		240		400
Storage Lanes	1		1	1		0		1		0		1		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50		50	50	50		50	50	50	50
Trailing Detector (ft)	0	0	0	0	0		0	0	0		0	0	0	0
Turning Speed (mph)	30		15	50		45	9	15		12	9	15		12
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.91	1.00	0.91	0.91	0.91	1.00	0.91	1.00
Ped Bike Factor														
Frt			0.850		0.944				0.994					0.850
Flt Protected	0.950			0.950				0.950				0.950		
Satd. Flow (prot)	1770	1863	1583	1805	1794	0	0	1770	5055	0	0	1770	5085	1583
Flt Permitted	0.950			0.950				0.950				0.044		
Satd. Flow (perm)	1770	1863	1583	1805	1794	0	0	1770	5055	0	0	82	5085	1583
Right Turn on Red			Yes			Yes				Yes				Yes
Satd. Flow (RTOR)			38		14				6					143
Headway Factor	*0.50	*0.50	*0.50	*0.50	*0.50	*0.50	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		40			40				35				35	
Link Distance (ft)		128			1912				1434				1483	
Travel Time (s)		2.2			32.6				27.9				28.9	
Volume (vph)	221	208	39	91	160	95	5	78	3310	139	5	65	1437	143
Confl. Peds. (#/hr)														
Confl. Bikes (#/hr)														
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Growth Factor	98%	98%	98%	98%	98%	98%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	0%	0%	0%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)														
Mid-Block Traffic (%)		0%			0%				0%				0%	
Adj. Flow (vph)	217	204	38	89	157	93	5	78	3310	139	5	65	1437	143
Lane Group Flow (vph)	217	204	38	89	250	0	0	83	3449	0	0	70	1437	143

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Act Effct Green (s)	28.0	28.0	28.0	20.0	20.0			15.0	98.0			99.0	91.0	119.0
Actuated g/C Ratio	0.16	0.16	0.16	0.12	0.12			0.09	0.58			0.58	0.54	0.70
v/c Ratio	0.74	0.66	0.13	0.42	1.12			0.53	1.18			0.55	0.53	0.12
Control Delay	14.7	11.0	0.9	76.3	157.1			85.7	113.6			58.6	12.9	0.6
Queue Delay	1.1	2.6	7.2	0.0	2.0			0.0	0.0			0.0	0.0	0.0
Total Delay	15.8	13.6	8.1	76.3	159.1			85.7	113.6			58.6	12.9	0.6
LOS	B	B	A	E	F			F	F			E	B	A
Approach Delay		14.2			137.3				112.9				13.7	
Approach LOS		B			F				F				B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 170			
Actuated Cycle Length: 170			
Offset: 46 (27%), Referenced to phase 1:NBSBL and 6:, Start of Green			
Control Type: Pretimed			
Maximum v/c Ratio: 1.18			
Intersection Signal Delay: 79.4		Intersection LOS: E	
Intersection Capacity Utilization 104.9%		ICU Level of Service G	
Analysis Period (min) 15			
* User Entered Value			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations														
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%				0%				0%	
Storage Length (ft)	0		0	280		0		430		0		390		400
Storage Lanes	2		1	1		0		2		0		2		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50		50	50	50		50	50	50	50
Trailing Detector (ft)	0	0	0	0	0		0	0	0		0	0	0	0
Turning Speed (mph)	15		12	15		12	9	15		12	9	15		12
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	0.95	0.91	0.97	0.91	0.91	0.91	0.97	0.91	1.00
Ped Bike Factor														
Frt			0.850		0.975				0.995					0.850
Flt Protected	0.950			0.950				0.950				0.950		
Satd. Flow (prot)	3433	3539	1583	3433	3451	0	0	3433	5060	0	0	3433	5085	1583
Flt Permitted	0.950			0.950				0.950				0.950		
Satd. Flow (perm)	3433	3539	1583	3433	3451	0	0	3433	5060	0	0	3433	5085	1583
Right Turn on Red			Yes			Yes				Yes				Yes
Satd. Flow (RTOR)			142		11				5					38
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		35			35				35				35	
Link Distance (ft)		118			1966				2720				1215	
Travel Time (s)		2.3			38.3				53.0				23.7	
Volume (vph)	307	406	208	156	307	61	5	221	3379	117	5	104	1532	121
Confl. Peds. (#/hr)														
Confl. Bikes (#/hr)														
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)														
Mid-Block Traffic (%)		0%			0%				0%				0%	
Adj. Flow (vph)	307	406	208	156	307	61	5	221	3379	117	5	104	1532	121
Lane Group Flow (vph)	307	406	208	156	368	0	0	226	3496	0	0	109	1532	121

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Act Effct Green (s)	21.0	21.0	21.0	19.0	19.0			17.0	104.0			10.0	97.0	118.0
Actuated g/C Ratio	0.12	0.12	0.12	0.11	0.11			0.10	0.61			0.06	0.57	0.69
v/c Ratio	0.72	0.93	0.65	0.41	0.93			0.66	1.13			0.54	0.53	0.11
Control Delay	28.0	48.7	30.4	73.8	102.4			83.6	94.6			94.3	25.8	5.9
Queue Delay	17.8	15.9	24.4	0.0	0.3			0.0	0.0			0.0	0.0	0.0
Total Delay	45.8	64.6	54.8	73.8	102.7			83.6	94.6			94.3	25.8	5.9
LOS	D	E	D	E	F			F	F			F	C	A
Approach Delay		56.1			94.1				93.9				28.7	
Approach LOS		E			F				F				C	

Intersection Summary

Area Type: Other
Cycle Length: 170
Actuated Cycle Length: 170
Offset: 0 (0%), Referenced to phase 1:NBSBL and 6:, Start of Green, Master Intersection
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.13
Intersection Signal Delay: 72.3 Intersection LOS: E
Intersection Capacity Utilization 103.7% ICU Level of Service G
Analysis Period (min) 15

E4

Synchro 6 Report Output for Projected 2015 PM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations													
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%				0%	
Storage Length (ft)	0		0	30		0	260		0		285		0
Storage Lanes	1		1	1		0	1		0		1		0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50		50	50		50	50	50	
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	0	
Turning Speed (mph)	15		12	15		12	15		12	9	15		12
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	0.91	1.00	0.91	0.91
Ped Bike Factor													
Frt			0.850		0.934			0.995				0.974	
Flt Protected	0.950			0.950			0.950				0.950		
Satd. Flow (prot)	1770	1863	1583	1770	1740	0	1770	5060	0	0	1770	4953	0
Flt Permitted	0.405			0.611			0.043				0.131		
Satd. Flow (perm)	754	1863	1583	1138	1740	0	80	5060	0	0	244	4953	0
Right Turn on Red			Yes			Yes			Yes				Yes
Satd. Flow (RTOR)			51		26			8				66	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		35			35			35				35	
Link Distance (ft)		123			1547			414				1855	
Travel Time (s)		2.4			30.1			8.1				36.1	
Volume (vph)	104	113	121	57	121	95	126	1454	52	5	216	2524	523
Confl. Peds. (#/hr)													
Confl. Bikes (#/hr)													
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)													
Mid-Block Traffic (%)		0%			0%			0%				0%	
Adj. Flow (vph)	104	113	121	57	121	95	126	1454	52	5	216	2524	523
Lane Group Flow (vph)	104	113	121	57	216	0	126	1506	0	0	221	3047	0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Act Effct Green (s)	24.6	24.6	24.6	24.6	24.6		103.7	93.3			103.2	93.0	
Actuated g/C Ratio	0.18	0.18	0.18	0.18	0.18		0.74	0.67			0.74	0.66	
v/c Ratio	0.79	0.35	0.38	0.28	0.66		0.68	0.45			0.76	0.92	
Control Delay	87.7	49.2	29.5	51.5	56.1		48.4	11.7			29.6	25.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.3	0.0			0.0	0.4	
Total Delay	87.7	49.2	29.5	51.5	56.1		48.7	11.7			29.6	26.3	
LOS	F	D	C	D	E		D	B			C	C	
Approach Delay		54.0			55.2			14.6				26.5	
Approach LOS		D			E			B				C	

Intersection Summary

Area Type: Other
Cycle Length: 140
Actuated Cycle Length: 140
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.92
Intersection Signal Delay: 26.1 Intersection LOS: C
Intersection Capacity Utilization 98.7% ICU Level of Service F
Analysis Period (min) 15

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations													
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%				0%	
Storage Length (ft)	0		0	150		0	500		0		460		480
Storage Lanes	1		0	1		1	2		0		2		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50		50	50	50	50	50		50	50	50	50
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	0	0
Turning Speed (mph)	15		12	15		12	15		12	9	15		12
Lane Util. Factor	0.91	0.91	0.95	1.00	0.91	0.91	0.97	0.91	0.91	0.86	0.97	0.86	1.00
Ped Bike Factor													
Frt		0.948				0.850		0.995					0.850
Flt Protected	0.950	0.991		0.950			0.950				0.950		
Satd. Flow (prot)	1610	3185	0	1770	3390	1441	3433	5060	0	0	3433	6408	1583
Flt Permitted	0.950	0.991		0.950			0.950				0.950		
Satd. Flow (perm)	1610	3185	0	1770	3390	1441	3433	5060	0	0	3433	6408	1583
Right Turn on Red			Yes			Yes			Yes				Yes
Satd. Flow (RTOR)		41				111		4					50
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		35			35			35				35	
Link Distance (ft)		122			1790			770				508	
Travel Time (s)		2.4			34.9			15.0				9.9	
Volume (vph)	378	264	199	117	290	233	298	2309	74	39	384	3819	574
Confl. Peds. (#/hr)													
Confl. Bikes (#/hr)													
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Growth Factor	93%	93%	93%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)													
Mid-Block Traffic (%)		0%			0%			0%				0%	
Adj. Flow (vph)	352	246	185	117	290	233	298	2309	74	39	384	3819	574
Lane Group Flow (vph)	252	531	0	117	290	233	298	2383	0	0	423	3819	574

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Act Effct Green (s)	28.0	28.0		18.0	18.0	21.0	17.0	94.0			24.0	101.0	126.0
Actuated g/C Ratio	0.16	0.16		0.10	0.10	0.12	0.09	0.52			0.13	0.56	0.70
v/c Ratio	1.01	1.00		0.66	0.86	0.88	0.92	0.90			0.92	1.06	0.51
Control Delay	44.7	35.4		96.5	102.2	61.4	112.5	44.6			102.8	71.2	12.7
Queue Delay	2.2	22.7		0.0	0.0	0.0	0.0	0.0			0.0	0.0	21.9
Total Delay	47.0	58.1		96.5	102.2	61.4	112.5	44.6			102.8	71.2	34.6
LOS	D	E		F	F	E	F	D			F	E	C
Approach Delay		54.5			86.3			52.1				69.6	
Approach LOS		D			F			D				E	

Intersection Summary

Area Type: Other
Cycle Length: 180
Actuated Cycle Length: 180
Offset: 101 (56%), Referenced to phase 1:NBSBL and 6:, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.06
Intersection Signal Delay: 64.2 Intersection LOS: E
Intersection Capacity Utilization 103.0% ICU Level of Service G
Analysis Period (min) 15

Lane Group	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 (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	150		350	500		0	380		400
Storage Lanes	1		1	1		1	1		0	1		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	50	50	50		50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	0
Turning Speed (mph)	50		45	50		45	15		12	15		12
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.91	1.00
Ped Bike Factor												
Frt			0.850			0.850		0.995				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	5060	0	1770	5085	1583
Flt Permitted	0.950			0.950			0.950			0.043		
Satd. Flow (perm)	1770	1863	1583	1770	1863	1583	1770	5060	0	80	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			106			99		5				66
Headway Factor	*0.50	*0.50	*0.50	*0.50	*0.50	*0.50	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		45			45			35			35	
Link Distance (ft)		129			2096			1306			765	
Travel Time (s)		2.0			31.8			25.4			14.9	
Volume (vph)	164	153	106	93	227	104	227	2373	78	164	3085	246
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Growth Factor	100%	100%	100%	95%	95%	95%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	164	153	106	88	216	99	227	2373	78	164	3085	246
Lane Group Flow (vph)	164	153	106	88	216	99	227	2451	0	164	3085	246

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effct Green (s)	26.0	26.0	26.0	17.0	17.0	17.0	19.0	99.0		104.0	92.0	122.0
Actuated g/C Ratio	0.15	0.15	0.15	0.10	0.10	0.10	0.11	0.58		0.61	0.54	0.72
v/c Ratio	0.61	0.54	0.32	0.50	1.16	0.40	1.15	0.83		0.98	1.12	0.21
Control Delay	10.2	8.6	1.7	82.8	178.9	16.7	172.8	17.8		111.5	96.8	6.2
Queue Delay	3.3	4.2	6.1	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.4
Total Delay	13.5	12.9	7.8	82.8	178.9	16.7	172.8	17.8		111.5	96.8	6.6
LOS	B	B	A	F	F	B	F	B		F	F	A
Approach Delay		11.8			118.1			30.9			91.1	
Approach LOS		B			F			C			F	

Intersection Summary			
Area Type:	Other		
Cycle Length: 170			
Actuated Cycle Length: 170			
Offset: 35 (21%), Referenced to phase 1:NBSBL and 6:, Start of Green			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.16			
Intersection Signal Delay: 64.8		Intersection LOS: E	
Intersection Capacity Utilization 106.0%		ICU Level of Service G	
Analysis Period (min) 15			
* User Entered Value			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations														
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%				0%				0%	
Storage Length (ft)	0		0	275		25		300		0		320		370
Storage Lanes	1		1	1		1		1		0		1		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	50	50	50	50		50	50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0		0	0	0	0
Turning Speed (mph)	50		45	50		45	9	15		12	9	15		12
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.91	1.00	0.91	0.91	0.91	1.00	0.91	1.00
Ped Bike Factor														
Frt			0.850			0.850			0.988					0.850
Flt Protected	0.950			0.950				0.950				0.950		
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	0	1770	5024	0	0	1770	5085	1583
Flt Permitted	0.950			0.950				0.950				0.042		
Satd. Flow (perm)	1770	1863	1583	1770	1863	1583	0	1770	5024	0	0	78	5085	1583
Right Turn on Red			Yes			Yes				Yes				Yes
Satd. Flow (RTOR)			70			23			13					164
Headway Factor	*0.50	*0.50	*0.50	*0.50	*0.50	*0.50	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		35			35				35				35	
Link Distance (ft)		130			1796				1483				1506	
Travel Time (s)		2.5			35.0				28.9				29.3	
Volume (vph)	91	160	70	173	184	87	18	100	2166	182	13	113	2884	164
Confl. Peds. (#/hr)														
Confl. Bikes (#/hr)														
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Growth Factor	97%	97%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)														
Mid-Block Traffic (%)		0%			0%				0%				0%	
Adj. Flow (vph)	88	155	70	173	184	87	18	100	2166	182	13	113	2884	164
Lane Group Flow (vph)	88	155	70	173	184	87	0	118	2348	0	0	126	2884	164

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Act Effct Green (s)	21.0	21.0	21.0	20.0	20.0	20.0		17.0	96.0			113.0	96.0	117.0
Actuated g/C Ratio	0.12	0.12	0.12	0.12	0.12	0.12		0.10	0.56			0.66	0.56	0.69
v/c Ratio	0.40	0.67	0.27	0.83	0.84	0.42		0.67	0.83			0.57	1.00	0.14
Control Delay	8.9	16.8	2.0	103.3	103.2	57.7		82.2	26.2			54.4	26.8	1.5
Queue Delay	3.3	0.6	4.3	0.0	5.7	0.0		0.0	0.0			0.0	0.0	0.0
Total Delay	12.2	17.4	6.4	103.3	108.9	57.7		82.2	26.2			54.4	26.8	1.5
LOS	B	B	A	F	F	E		F	C			D	C	A
Approach Delay		13.5			96.7				28.9				26.6	
Approach LOS		B			F				C				C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 170			
Actuated Cycle Length: 170			
Offset: 99 (58%), Referenced to phase 1:NBSBL, Start of Green			
Control Type: Pretimed			
Maximum v/c Ratio: 1.00			
Intersection Signal Delay: 31.7		Intersection LOS: C	
Intersection Capacity Utilization 93.3%		ICU Level of Service F	
Analysis Period (min) 15			
* User Entered Value			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations													
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%				0%	
Storage Length (ft)	0		0	140		0	300		0		240		400
Storage Lanes	1		1	1		0	1		0		1		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50		50	50		50	50	50	50
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	0	0
Turning Speed (mph)	50		45	50		45	15		12	9	15		12
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	0.91	1.00	0.91	1.00
Ped Bike Factor													
Frt			0.850		0.948			0.995					0.850
Flt Protected	0.950			0.950			0.950				0.950		
Satd. Flow (prot)	1770	1863	1583	1770	1766	0	1770	5060	0	0	1770	5085	1583
Flt Permitted	0.950			0.950			0.950				0.044		
Satd. Flow (perm)	1770	1863	1583	1770	1766	0	1770	5060	0	0	82	5085	1583
Right Turn on Red			Yes			Yes			Yes				Yes
Satd. Flow (RTOR)			65		13			5					173
Headway Factor	*0.50	*0.50	*0.50	*0.50	*0.50	*0.50	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		35			35			35				35	
Link Distance (ft)		128			1912			1426				1483	
Travel Time (s)		2.5			37.2			27.8				28.9	
Volume (vph)	217	130	65	100	173	91	130	2063	78	31	70	2775	173
Confl. Peds. (#/hr)													
Confl. Bikes (#/hr)													
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)													
Mid-Block Traffic (%)		0%			0%			0%				0%	
Adj. Flow (vph)	217	130	65	100	173	91	130	2063	78	31	70	2775	173
Lane Group Flow (vph)	217	130	65	100	264	0	130	2141	0	0	101	2775	173

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Act Effct Green (s)	20.0	20.0	20.0	24.0	24.0		20.0	97.2			102.8	90.0	110.0
Actuated g/C Ratio	0.12	0.12	0.12	0.14	0.14		0.12	0.57			0.60	0.53	0.65
v/c Ratio	1.04	0.59	0.27	0.40	1.02		0.62	0.74			0.57	1.03	0.16
Control Delay	61.4	16.7	1.9	71.8	126.0		85.5	29.0			57.4	34.2	0.2
Queue Delay	8.5	20.3	15.3	0.0	5.9		0.0	0.0			0.0	0.0	0.5
Total Delay	69.9	37.0	17.2	71.8	131.8		85.5	29.0			57.4	34.2	0.7
LOS	E	D	B	E	F		F	C			E	C	A
Approach Delay		51.2			115.3			32.2				33.1	
Approach LOS		D			F			C				C	

Intersection Summary

Area Type: Other
Cycle Length: 170
Actuated Cycle Length: 170
Offset: 126 (74%), Referenced to phase 1:NBSBL and 6:, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.04
Intersection Signal Delay: 38.9 Intersection LOS: D
Intersection Capacity Utilization 100.8% ICU Level of Service G
Analysis Period (min) 15
* User Entered Value

Lane Group	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 (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	280		0	430		0	390		400
Storage Lanes	2		1	1		0	2		0	2		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50		50	50		50	50	50
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	0
Turning Speed (mph)	15		25	15		12	15		12	15		12
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	0.95	0.97	0.91	0.91	0.97	0.91	1.00
Ped Bike Factor												
Frt			0.850		0.978			0.992				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3433	3539	1583	3433	3461	0	3433	5045	0	3433	5085	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3433	3539	1583	3433	3461	0	3433	5045	0	3433	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			134		9			9				6
Headway Factor	1.00	1.00	*1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		118			1572			2574			1215	
Travel Time (s)		2.3			30.6			50.1			23.7	
Volume (vph)	367	410	346	406	423	70	445	1912	113	238	2844	384
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Growth Factor	100%	100%	100%	108%	107%	108%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	367	410	346	438	453	76	445	1912	113	238	2844	384
Lane Group Flow (vph)	367	410	346	438	529	0	445	2025	0	238	2844	384

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effct Green (s)	23.0	23.0	23.0	20.0	20.0		21.0	98.0		13.0	90.0	113.0
Actuated g/C Ratio	0.14	0.14	0.14	0.12	0.12		0.12	0.58		0.08	0.53	0.66
v/c Ratio	0.79	0.86	1.05	1.08	1.27		1.05	0.70		0.90	1.06	0.36
Control Delay	30.5	35.8	94.7	136.3	196.3		126.3	26.9		112.1	73.2	7.3
Queue Delay	29.3	30.8	184.4	0.0	5.5		36.3	0.0		0.0	0.0	2.6
Total Delay	59.7	66.6	279.1	136.3	201.8		162.6	26.9		112.1	73.2	9.9
LOS	E	E	F	F	F		F	C		F	E	A
Approach Delay		129.8			172.1			51.4			68.9	
Approach LOS		F			F			D			E	

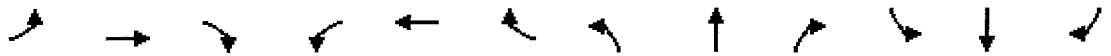
Intersection Summary

Area Type: Other
Cycle Length: 170
Actuated Cycle Length: 170
Offset: 0 (0%), Referenced to phase 1:NBSBL and 6:, Start of Green, Master Intersection
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.27
Intersection Signal Delay: 84.5 Intersection LOS: F
Intersection Capacity Utilization 106.4% ICU Level of Service G
Analysis Period (min) 15
* User Entered Value

E5

Synchro 6 Report Output for 2007 AM Peak Improvement

Lane Group	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 (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		35	260		0	285		0
Storage Lanes	1		1	1		1	1		0	1		0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	50	50	50		50	50	
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	
Turning Speed (mph)	15		12	15		12	15		12	15		12
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.91	0.91
Ped Bike Factor												
Frt			0.850			0.850		0.994			0.982	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	5055	0	1770	4994	0
Flt Permitted	0.950			0.950			0.226			0.043		
Satd. Flow (perm)	1770	1863	1583	1770	1863	1583	421	5055	0	80	4994	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			68			41		8			30	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		133			1547			414			1855	
Travel Time (s)		2.6			30.1			8.1			36.1	
Volume (vph)	150	156	68	24	155	100	292	2100	92	72	936	124
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	150	156	68	24	155	100	292	2100	92	72	936	124
Lane Group Flow (vph)	150	156	68	24	155	100	292	2192	0	72	1060	0



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effct Green (s)	16.2	24.3	24.3	11.3	15.5	15.5	103.1	95.3		101.2	94.3	
Actuated g/C Ratio	0.11	0.16	0.16	0.08	0.10	0.10	0.69	0.64		0.67	0.63	
v/c Ratio	0.79	0.52	0.22	0.18	0.81	0.50	0.81	0.68		0.54	0.34	
Control Delay	88.8	63.8	18.2	65.8	95.1	47.1	30.2	19.1		34.4	13.1	
Queue Delay	0.0	0.1	0.0	0.0	0.0	0.0	3.2	0.0		0.0	0.0	
Total Delay	88.8	63.8	18.2	65.8	95.1	47.1	33.4	19.1		34.4	13.1	
LOS	F	E	B	E	F	D	C	B		C	B	
Approach Delay		65.6			75.4			20.8			14.4	
Approach LOS		E			E			C			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 150			
Actuated Cycle Length: 150			
Offset: 10 (7%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.81			
Intersection Signal Delay: 26.6		Intersection LOS: C	
Intersection Capacity Utilization 76.4%		ICU Level of Service D	
Analysis Period (min) 15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations														
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%				0%				0%	
Storage Length (ft)	0		0	150		0		500		0		460		480
Storage Lanes	2		0	1		2		2		0		2		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50		50	50	50	50	50	50		50	50	50	50
Trailing Detector (ft)	0	0		0	0	0	0	0	0		0	0	0	0
Turning Speed (mph)	35		20	20		15	9	15		12	9	15		12
Lane Util. Factor	0.86	0.86	0.95	1.00	0.95	0.88	0.91	0.97	0.91	0.91	0.86	0.97	0.86	1.00
Ped Bike Factor														
Frt		0.964				0.850			0.998					0.850
Flt Protected	0.950	0.989		0.950				0.950				0.950		
Satd. Flow (prot)	3268	3280	0	1900	3800	2992	0	3433	5075	0	0	3433	6408	1583
Flt Permitted	0.950	0.989		0.950				0.950				0.950		
Satd. Flow (perm)	3268	3280	0	1900	3800	2992	0	3433	5075	0	0	3433	6408	1583
Right Turn on Red			Yes			Yes				Yes				Yes
Satd. Flow (RTOR)		18				71			2					68
Headway Factor	*1.00	*1.00	*1.00	*1.00	*1.00	*1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		35			35				35				35	
Link Distance (ft)		122			1790				770				508	
Travel Time (s)		2.4			34.9				15.0				9.9	
Volume (vph)	552	244	112	48	264	368	8	146	3312	40	36	224	1656	184
Confl. Peds. (#/hr)														
Confl. Bikes (#/hr)														
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)														
Mid-Block Traffic (%)		0%			0%				0%				0%	
Adj. Flow (vph)	552	244	112	48	264	368	8	146	3312	40	36	224	1656	184
Lane Group Flow (vph)	446	462	0	48	264	368	0	154	3352	0	0	260	1656	184

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Act Effct Green (s)	24.0	24.0		14.0	14.0	17.0		8.0	101.0			15.0	108.0	129.0
Actuated g/C Ratio	0.14	0.14		0.08	0.08	0.10		0.05	0.59			0.09	0.64	0.76
v/c Ratio	0.97	0.96		0.31	0.84	1.01		0.95	1.11			0.86	0.41	0.15
Control Delay	20.8	19.9		79.1	99.6	100.2		113.0	71.4			101.4	15.6	3.7
Queue Delay	6.4	9.7		0.0	0.0	0.0		0.0	0.0			0.0	0.0	0.2
Total Delay	27.2	29.6		79.1	99.6	100.2		113.0	71.4			101.4	15.6	3.9
LOS	C	C		E	F	F		F	E			F	B	A
Approach Delay		28.4			98.5				73.3				25.2	
Approach LOS		C			F				E				C	

Intersection Summary

Area Type: Other
Cycle Length: 170
Actuated Cycle Length: 170
Offset: 2 (1%), Referenced to phase 1:NBSBL and 6:, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.11
Intersection Signal Delay: 56.0 Intersection LOS: E
Intersection Capacity Utilization 110.4% ICU Level of Service H
Analysis Period (min) 15
* User Entered Value

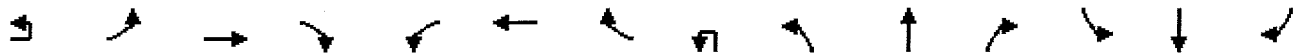
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations													
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%				0%	
Storage Length (ft)	0		0	150		0	500		0		380		400
Storage Lanes	0		1	1		0	2		0		1		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50		50	50		50	50	50	50
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	0	0
Turning Speed (mph)	50		45	50		45	15		12	9	15		12
Lane Util. Factor	0.95	0.95	1.00	1.00	0.95	0.95	0.97	0.91	0.91	0.91	1.00	0.91	1.00
Ped Bike Factor													
Frt			0.850		0.942			0.995					0.850
Flt Protected		0.981		0.950			0.950				0.950		
Satd. Flow (prot)	0	3472	1583	1770	3334	0	3433	5060	0	0	1770	5085	1583
Flt Permitted		0.981		0.950			0.950				0.041		
Satd. Flow (perm)	0	3472	1583	1770	3334	0	3433	5060	0	0	76	5085	1583
Right Turn on Red			Yes			Yes			Yes				Yes
Satd. Flow (RTOR)			48		62			6					94
Headway Factor	*0.50	*0.50	*0.50	*0.50	*0.50	*0.50	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		40			40			35				35	
Link Distance (ft)		129			680			1306				765	
Travel Time (s)		2.2			11.6			25.4				14.9	
Volume (vph)	180	280	48	64	180	112	154	3192	112	4	123	1496	152
Confl. Peds. (#/hr)													
Confl. Bikes (#/hr)													
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Growth Factor	100%	100%	100%	103%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)													
Mid-Block Traffic (%)		0%			0%			0%				0%	
Adj. Flow (vph)	180	280	48	66	180	112	154	3192	112	4	123	1496	152
Lane Group Flow (vph)	0	460	48	66	292	0	154	3304	0	0	127	1496	152

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Act Effct Green (s)		25.0	25.0	14.9	14.9		16.1	105.0			107.1	98.0	127.0
Actuated g/C Ratio		0.15	0.15	0.09	0.09		0.09	0.62			0.63	0.58	0.75
v/c Ratio		0.90	0.18	0.43	0.84		0.47	1.06			0.91	0.51	0.13
Control Delay		17.3	1.0	82.5	80.1		80.9	48.0			89.7	39.5	2.1
Queue Delay		9.7	12.1	0.0	1.2		0.0	0.0			0.0	0.0	0.0
Total Delay		27.0	13.1	82.5	81.3		80.9	48.0			89.7	39.5	2.1
LOS		C	B	F	F		F	D			F	D	A
Approach Delay		25.7			81.5			49.5				39.9	
Approach LOS		C			F			D				D	

Intersection Summary

Area Type: Other
Cycle Length: 170
Actuated Cycle Length: 170
Offset: 130 (76%), Referenced to phase 1:NBSBL and 6:, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.06
Intersection Signal Delay: 46.6 Intersection LOS: D
Intersection Capacity Utilization 106.1% ICU Level of Service G
Analysis Period (min) 15
* User Entered Value

Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations														
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)			0%			0%				0%			0%	
Storage Length (ft)		0		0	275		250		300		0	320		370
Storage Lanes		1		1	1		1		1		0	1		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	50	50	50	50	50		50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0		0	0	0
Turning Speed (mph)	25	50		45	50		45	9	15		12	15		12
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	1.00	0.91	0.91	1.00	0.91	1.00
Ped Bike Factor														
Frt				0.850			0.850			0.994				0.850
Flt Protected		0.950			0.950				0.950			0.950		
Satd. Flow (prot)	0	1770	1863	1583	1770	1863	1583	0	1770	5055	0	1770	5085	1583
Flt Permitted		0.680			0.950				0.950			0.041		
Satd. Flow (perm)	0	1267	1863	1583	1770	1863	1583	0	1770	5055	0	76	5085	1583
Right Turn on Red				Yes			Yes				Yes			Yes
Satd. Flow (RTOR)				36			81			6				80
Headway Factor	*0.50	*0.50	*0.50	*0.50	*0.50	*0.50	*0.50	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)			40			40				35			35	
Link Distance (ft)			130			1796				1483			1506	
Travel Time (s)			2.2			30.6				28.9			29.3	
Volume (vph)	8	208	200	36	124	124	84	4	80	3116	136	92	1332	80
Confl. Peds. (#/hr)														
Confl. Bikes (#/hr)														
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Growth Factor	100%	100%	100%	100%	96%	97%	97%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)														
Mid-Block Traffic (%)			0%			0%				0%			0%	
Adj. Flow (vph)	8	208	200	36	119	120	81	4	80	3116	136	92	1332	80
Lane Group Flow (vph)	0	216	200	36	119	120	81	0	84	3252	0	92	1332	80

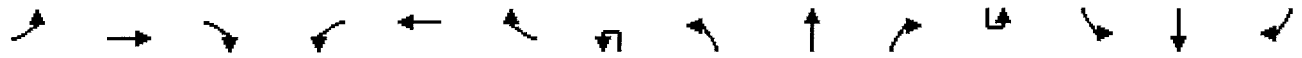


Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBL	SBT	SBR
Act Effct Green (s)		25.1	25.1	25.1	16.9	16.9	16.9		13.2	98.8		112.0	98.8	123.8
Actuated g/C Ratio		0.15	0.15	0.15	0.10	0.10	0.10		0.08	0.58		0.66	0.58	0.73
v/c Ratio		1.16	0.73	0.14	0.68	0.65	0.35		0.61	1.11		0.51	0.45	0.07
Control Delay		114.5	16.5	1.3	93.0	90.0	17.1		100.4	59.7		52.7	15.8	2.3
Queue Delay		0.0	3.4	3.5	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay		114.5	19.9	4.8	93.0	90.0	17.1		100.4	59.7		52.7	15.8	2.3
LOS		F	B	A	F	F	B		F	E		D	B	A
Approach Delay			63.9			72.7				60.7			17.3	
Approach LOS			E			E				E			B	

Intersection Summary

Area Type: Other
Cycle Length: 170
Actuated Cycle Length: 170
Offset: 66 (39%), Referenced to phase 1:NBSBL and 5:, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.16
Intersection Signal Delay: 50.0 Intersection LOS: D
Intersection Capacity Utilization 100.0% ICU Level of Service F
Analysis Period (min) 15
* User Entered Value

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations														
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%				0%				0%	
Storage Length (ft)	0		0	140		200		300		0		300		400
Storage Lanes	1		1	1		1		1		0		1		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	50	50	50	50		50	50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0		0	0	0	0
Turning Speed (mph)	30		15	50		45	9	15		12	9	15		12
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.91	1.00	0.91	0.91	0.91	1.00	0.91	1.00
Ped Bike Factor														
Frt			0.850			0.850			0.994					0.850
Flt Protected	0.950			0.950				0.950				0.950		
Satd. Flow (prot)	1770	1863	1583	1805	1900	1615	0	1770	5055	0	0	1770	5085	1583
Flt Permitted	0.950			0.950				0.950				0.044		
Satd. Flow (perm)	1770	1863	1583	1805	1900	1615	0	1770	5055	0	0	82	5085	1583
Right Turn on Red			Yes			Yes				Yes				Yes
Satd. Flow (RTOR)			35			86			6					132
Headway Factor	*0.50	*0.50	*0.50	*0.50	*0.50	*0.50	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		40			40				35				35	
Link Distance (ft)		128			1912				1434				1483	
Travel Time (s)		2.2			32.6				27.9				28.9	
Volume (vph)	204	192	36	84	148	88	4	72	3068	128	4	60	1332	132
Confl. Peds. (#/hr)														
Confl. Bikes (#/hr)														
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Growth Factor	98%	98%	98%	98%	98%	98%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	0%	0%	0%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)														
Mid-Block Traffic (%)		0%			0%				0%				0%	
Adj. Flow (vph)	200	188	35	82	145	86	4	72	3068	128	4	60	1332	132
Lane Group Flow (vph)	200	188	35	82	145	86	0	76	3196	0	0	64	1332	132



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Act Effct Green (s)	28.0	28.0	28.0	20.0	20.0	20.0		15.0	98.0			99.0	91.0	119.0
Actuated g/C Ratio	0.16	0.16	0.16	0.12	0.12	0.12		0.09	0.58			0.58	0.54	0.70
v/c Ratio	0.68	0.61	0.12	0.39	0.65	0.32		0.49	1.10			0.50	0.49	0.11
Control Delay	12.0	7.8	0.6	75.2	85.9	15.4		90.0	75.9			55.2	11.9	0.3
Queue Delay	0.7	1.8	6.1	0.0	0.0	0.0		0.0	0.0			0.0	0.0	0.0
Total Delay	12.8	9.6	6.7	75.2	85.9	15.4		90.0	75.9			55.2	11.9	0.3
LOS	B	A	A	E	F	B		F	E			E	B	A
Approach Delay		10.9			63.8				76.2				12.7	
Approach LOS		B			E				E				B	

Intersection Summary

Area Type: Other
Cycle Length: 170
Actuated Cycle Length: 170
Offset: 46 (27%), Referenced to phase 1:NBSBL and 6:, Start of Green
Control Type: Pretimed
Maximum v/c Ratio: 1.10
Intersection Signal Delay: 53.0 Intersection LOS: D
Intersection Capacity Utilization 91.9% ICU Level of Service F
Analysis Period (min) 15
* User Entered Value

Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations															
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)			0%			0%				0%				0%	
Storage Length (ft)		0		0	280		150		430		0		390		400
Storage Lanes		2		1	1		1		2		0		2		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	50	50	50	50	50		50	50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0		0	0	0	0
Turning Speed (mph)	9	15		12	15		12	9	15		12	9	15		12
Lane Util. Factor	0.95	0.97	0.95	1.00	0.97	0.91	0.91	0.91	0.97	0.91	0.91	0.91	0.97	0.91	1.00
Ped Bike Factor															
Frt				0.850			0.850			0.995					0.850
Flt Protected		0.950			0.950				0.950				0.950		
Satd. Flow (prot)	0	3433	3539	1583	3433	3390	1441	0	3433	5060	0	0	3433	5085	1583
Flt Permitted		0.571			0.950				0.950				0.950		
Satd. Flow (perm)	0	2063	3539	1583	3433	3390	1441	0	3433	5060	0	0	3433	5085	1583
Right Turn on Red				Yes			Yes				Yes				Yes
Satd. Flow (RTOR)				38			56			5					49
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)			35			35				35				35	
Link Distance (ft)			118			1997				602				1215	
Travel Time (s)			2.3			38.9				11.7				23.7	
Volume (vph)	4	284	376	192	144	284	56	4	204	3132	108	4	96	1420	112
Confl. Peds. (#/hr)															
Confl. Bikes (#/hr)															
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)															
Mid-Block Traffic (%)			0%			0%				0%				0%	
Adj. Flow (vph)	4	284	376	192	144	284	56	4	204	3132	108	4	96	1420	112
Lane Group Flow (vph)	0	288	376	192	144	284	56	0	208	3240	0	0	100	1420	112

Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Act Effct Green (s)		21.5	21.5	65.0	18.5	18.5	18.5		17.0	104.0			10.0	97.0	118.5
Actuated g/C Ratio		0.13	0.13	0.38	0.11	0.11	0.11		0.10	0.61			0.06	0.57	0.70
v/c Ratio		1.10	0.84	0.31	0.39	0.77	0.27		0.61	1.05			0.50	0.49	0.10
Control Delay		122.5	53.5	2.0	73.6	88.2	18.4		81.4	62.3			84.4	27.6	4.9
Queue Delay		110.4	162.0	0.8	0.0	0.0	0.0		0.0	0.0			0.0	0.0	0.0
Total Delay		232.9	215.5	2.8	73.6	88.2	18.4		81.4	62.3			84.4	27.6	5.0
LOS		F	F	A	E	F	B		F	E			F	C	A
Approach Delay			173.6			75.8				63.5				29.5	
Approach LOS			F			E				E				C	

Intersection Summary

Area Type: Other
Cycle Length: 170
Actuated Cycle Length: 170
Offset: 0 (0%), Referenced to phase 1:NBSBL and 6:, Start of Green, Master Intersection
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.10
Intersection Signal Delay: 70.5 Intersection LOS: E
Intersection Capacity Utilization 96.2% ICU Level of Service F
Analysis Period (min) 15

E6

Synchro 6 Report Output for 2007 PM Peak Improvement

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations													
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%				0%	
Storage Length (ft)	0		0	0		35	260		0		285		0
Storage Lanes	1		1	1		1	1		0		1		0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	50	50	50		50	50	50	
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	0	
Turning Speed (mph)	15		12	15		12	15		12	9	15		12
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	0.91	1.00	0.91	0.91
Ped Bike Factor													
Frt			0.850			0.850		0.995				0.974	
Flt Protected	0.950			0.950			0.950				0.950		
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	5060	0	0	1770	4953	0
Flt Permitted	0.950			0.950			0.043				0.151		
Satd. Flow (perm)	1770	1863	1583	1770	1863	1583	80	5060	0	0	281	4953	0
Right Turn on Red			Yes			Yes			Yes				Yes
Satd. Flow (RTOR)			110			54		8				66	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		35			35			35				35	
Link Distance (ft)		123			1547			414				1855	
Travel Time (s)		2.4			30.1			8.1				36.1	
Volume (vph)	96	104	112	52	112	88	116	1348	48	4	200	2340	484
Confl. Peds. (#/hr)													
Confl. Bikes (#/hr)													
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)													
Mid-Block Traffic (%)		0%			0%			0%				0%	
Adj. Flow (vph)	96	104	112	52	112	88	116	1348	48	4	200	2340	484
Lane Group Flow (vph)	96	104	112	52	112	88	116	1396	0	0	204	2824	0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Act Effct Green (s)	11.5	14.9	14.9	11.8	13.2	13.2	99.9	92.8			98.6	92.2	
Actuated g/C Ratio	0.08	0.11	0.11	0.08	0.09	0.09	0.71	0.66			0.70	0.66	
v/c Ratio	0.66	0.53	0.42	0.35	0.64	0.44	0.81	0.42			0.76	0.86	
Control Delay	80.6	68.0	19.4	65.8	77.5	33.6	66.7	11.5			28.9	22.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	2.2	0.0			0.0	0.3	
Total Delay	80.6	68.0	19.4	65.8	77.5	33.6	68.9	11.5			28.9	22.2	
LOS	F	E	B	E	E	C	E	B			C	C	
Approach Delay		54.4			59.8			15.9				22.7	
Approach LOS		D			E			B				C	

Intersection Summary

Area Type: Other
Cycle Length: 140
Actuated Cycle Length: 140
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.86
Intersection Signal Delay: 24.4 Intersection LOS: C
Intersection Capacity Utilization 86.0% ICU Level of Service E
Analysis Period (min) 15

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations														
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%				0%				0%	
Storage Length (ft)	0		0	150		0		500		0		460		480
Storage Lanes	2		0	1		2		2		0		2		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50		50	50	50	50	50	50		50	50	50	50
Trailing Detector (ft)	0	0		0	0	0	0	0	0		0	0	0	0
Turning Speed (mph)	15		12	15		12	9	15		12	9	15		12
Lane Util. Factor	0.86	0.86	0.95	1.00	0.95	0.88	0.91	0.97	0.91	0.91	0.86	0.97	0.86	1.00
Ped Bike Factor														
Frt		0.936				0.850			0.995					0.850
Flt Protected	0.950			0.950				0.950				0.950		
Satd. Flow (prot)	3044	2999	0	1770	3539	2787	0	3433	5060	0	0	3433	6408	1583
Flt Permitted	0.950			0.950				0.950				0.950		
Satd. Flow (perm)	3044	2999	0	1770	3539	2787	0	3433	5060	0	0	3433	6408	1583
Right Turn on Red			Yes			Yes				Yes				Yes
Satd. Flow (RTOR)		68				208			4					57
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		35			35				35				35	
Link Distance (ft)		122			1790				770				508	
Travel Time (s)		2.4			34.9				15.0				9.9	
Volume (vph)	350	244	184	108	268	216	8	276	2140	68	36	356	3540	532
Confl. Peds. (#/hr)														
Confl. Bikes (#/hr)														
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Growth Factor	93%	93%	93%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)														
Mid-Block Traffic (%)		0%			0%				0%				0%	
Adj. Flow (vph)	326	227	171	108	268	216	8	276	2140	68	36	356	3540	532
Lane Group Flow (vph)	326	398	0	108	268	216	0	284	2208	0	0	392	3540	532

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Act Effct Green (s)	28.0	28.0		17.6	17.6	20.6		17.4	94.0			24.4	101.0	126.0
Actuated g/C Ratio	0.16	0.16		0.10	0.10	0.11		0.10	0.52			0.14	0.56	0.70
v/c Ratio	0.69	0.76		0.62	0.77	0.43		0.86	0.84			0.84	0.98	0.47
Control Delay	7.4	11.8		94.2	94.6	9.7		103.3	39.9			92.6	50.2	12.2
Queue Delay	1.1	2.9		0.0	0.0	0.0		0.0	0.0			0.0	0.0	7.1
Total Delay	8.5	14.8		94.2	94.6	9.7		103.3	39.9			92.6	50.2	19.3
LOS	A	B		F	F	A		F	D			F	D	B
Approach Delay		12.0			63.6				47.1				50.2	
Approach LOS		B			E				D				D	

Intersection Summary

Area Type: Other
Cycle Length: 180
Actuated Cycle Length: 180
Offset: 101 (56%), Referenced to phase 1:NBSBL and 6:, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.98
Intersection Signal Delay: 46.9 Intersection LOS: D
Intersection Capacity Utilization 90.7% ICU Level of Service E
Analysis Period (min) 15

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations													
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%				0%	
Storage Length (ft)	0		0	150		0	500		0		380		400
Storage Lanes	0		1	1		0	2		0		1		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50		50	50		50	50	50	50
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	0	0
Turning Speed (mph)	50		45	50		45	15		12	9	15		12
Lane Util. Factor	0.95	0.95	1.00	1.00	0.95	0.95	0.97	0.91	0.91	0.91	1.00	0.91	1.00
Ped Bike Factor													
Frt			0.850		0.953			0.995					0.850
Flt Protected		0.975		0.950			0.950				0.950		
Satd. Flow (prot)	0	3451	1583	1770	3373	0	3433	5060	0	0	1770	5085	1583
Flt Permitted		0.975		0.950			0.950				0.043		
Satd. Flow (perm)	0	3451	1583	1770	3373	0	3433	5060	0	0	80	5085	1583
Right Turn on Red			Yes			Yes			Yes				Yes
Satd. Flow (RTOR)			98		35			5					82
Headway Factor	*0.50	*0.50	*0.50	*0.50	*0.50	*0.50	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		45			45			35				35	
Link Distance (ft)		129			710			1306				765	
Travel Time (s)		2.0			10.8			25.4				14.9	
Volume (vph)	152	141	98	86	210	96	210	2200	72	8	150	2860	228
Confl. Peds. (#/hr)													
Confl. Bikes (#/hr)													
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Growth Factor	100%	100%	100%	95%	95%	95%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)													
Mid-Block Traffic (%)		0%			0%			0%				0%	
Adj. Flow (vph)	152	141	98	82	200	91	210	2200	72	8	150	2860	228
Lane Group Flow (vph)	0	293	98	82	291	0	210	2272	0	0	158	2860	228

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Act Effct Green (s)		25.9	25.9	16.7	16.7		19.4	99.0			104.4	92.0	121.9
Actuated g/C Ratio		0.15	0.15	0.10	0.10		0.11	0.58			0.61	0.54	0.72
v/c Ratio		0.56	0.30	0.47	0.80		0.54	0.77			0.92	1.04	0.20
Control Delay		4.7	1.6	81.9	82.7		85.2	15.7			96.6	66.4	5.3
Queue Delay		1.6	4.9	0.0	1.0		0.0	0.0			0.0	0.0	0.4
Total Delay		6.3	6.6	81.9	83.7		85.2	15.7			96.6	66.4	5.7
LOS		A	A	F	F		F	B			F	E	A
Approach Delay		6.4			83.4			21.6				63.6	
Approach LOS		A			F			C				E	

Intersection Summary

Area Type: Other
Cycle Length: 170
Actuated Cycle Length: 170
Offset: 35 (21%), Referenced to phase 1:NBSBL and 6:, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.04
Intersection Signal Delay: 45.2 Intersection LOS: D
Intersection Capacity Utilization 91.4% ICU Level of Service F
Analysis Period (min) 15
* User Entered Value

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations														
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%				0%				0%	
Storage Length (ft)	0		0	275		250		300		0		320		370
Storage Lanes	1		1	1		1		1		0		1		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	50	50	50	50		50	50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0		0	0	0	0
Turning Speed (mph)	50		45	50		45	9	15		12	9	15		12
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.91	1.00	0.91	0.91	0.91	1.00	0.91	1.00
Ped Bike Factor														
Frt			0.850			0.850			0.988					0.850
Flt Protected	0.950			0.950				0.950				0.950		
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	0	1770	5024	0	0	1770	5085	1583
Flt Permitted	0.950			0.950				0.950				0.042		
Satd. Flow (perm)	1770	1863	1583	1770	1863	1583	0	1770	5024	0	0	78	5085	1583
Right Turn on Red			Yes			Yes				Yes				Yes
Satd. Flow (RTOR)			64			80			13					152
Headway Factor	*0.50	*0.50	*0.50	*0.50	*0.50	*0.50	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		35			35				35				35	
Link Distance (ft)		130			1796				1483				1506	
Travel Time (s)		2.5			35.0				28.9				29.3	
Volume (vph)	84	148	64	160	170	80	16	92	2008	168	12	104	2676	152
Confl. Peds. (#/hr)														
Confl. Bikes (#/hr)														
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Growth Factor	97%	97%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)														
Mid-Block Traffic (%)		0%			0%				0%				0%	
Adj. Flow (vph)	81	144	64	160	170	80	16	92	2008	168	12	104	2676	152
Lane Group Flow (vph)	81	144	64	160	170	80	0	108	2176	0	0	116	2676	152

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Act Effct Green (s)	21.0	21.0	21.0	20.0	20.0	20.0		17.0	96.0			113.0	96.0	117.0
Actuated g/C Ratio	0.12	0.12	0.12	0.12	0.12	0.12		0.10	0.56			0.66	0.56	0.69
v/c Ratio	0.37	0.63	0.25	0.77	0.78	0.31		0.61	0.77			0.52	0.93	0.13
Control Delay	6.3	13.1	1.8	96.2	95.9	15.9		82.4	22.4			54.4	21.1	1.5
Queue Delay	3.0	0.6	3.7	0.0	2.7	0.0		0.0	0.0			0.0	0.0	0.0
Total Delay	9.3	13.7	5.5	96.2	98.5	15.9		82.4	22.4			54.4	21.1	1.5
LOS	A	B	A	F	F	B		F	C			D	C	A
Approach Delay		10.7			81.5				25.2				21.4	
Approach LOS		B			F				C				C	

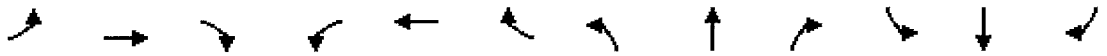
Intersection Summary			
Area Type:	Other		
Cycle Length: 170			
Actuated Cycle Length: 170			
Offset: 99 (58%), Referenced to phase 1:NBSBL, Start of Green			
Control Type: Pretimed			
Maximum v/c Ratio: 0.93			
Intersection Signal Delay: 26.5		Intersection LOS: C	
Intersection Capacity Utilization 87.4%		ICU Level of Service E	
Analysis Period (min) 15			
* User Entered Value			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations													
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%				0%	
Storage Length (ft)	0		0	140		150	300		0		300		400
Storage Lanes	1		1	1		1	1		0		1		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	50	50	50		50	50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	0	0
Turning Speed (mph)	50		45	50		45	15		12	9	15		12
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	0.91	1.00	0.91	1.00
Ped Bike Factor													
Frt			0.850			0.850		0.995					0.850
Flt Protected	0.950			0.950			0.950				0.950		
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	5060	0	0	1770	5085	1583
Flt Permitted	0.950			0.950			0.950				0.055		
Satd. Flow (perm)	1770	1863	1583	1770	1863	1583	1770	5060	0	0	102	5085	1583
Right Turn on Red			Yes			Yes			Yes				Yes
Satd. Flow (RTOR)			60			84		5					160
Headway Factor	*0.50	*0.50	*0.50	*0.50	*0.50	*0.50	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		35			35			35				35	
Link Distance (ft)		128			1912			1426				1483	
Travel Time (s)		2.5			37.2			27.8				28.9	
Volume (vph)	203	120	60	92	170	84	120	1912	72	28	64	2572	160
Confl. Peds. (#/hr)													
Confl. Bikes (#/hr)													
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)													
Mid-Block Traffic (%)		0%			0%			0%				0%	
Adj. Flow (vph)	203	120	60	92	170	84	120	1912	72	28	64	2572	160
Lane Group Flow (vph)	203	120	60	92	170	84	120	1984	0	0	92	2572	160

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Act Effct Green (s)	21.0	21.0	21.0	21.9	21.9	21.9	21.1	97.3			103.7	90.0	111.0
Actuated g/C Ratio	0.12	0.12	0.12	0.13	0.13	0.13	0.12	0.57			0.61	0.53	0.65
v/c Ratio	0.93	0.52	0.24	0.40	0.71	0.30	0.55	0.68			0.47	0.96	0.15
Control Delay	44.3	15.8	2.2	72.8	87.0	14.5	80.8	27.0			44.5	18.6	0.2
Queue Delay	3.6	8.9	8.5	0.0	0.0	0.0	0.0	0.0			0.0	0.0	0.4
Total Delay	48.0	24.8	10.7	72.8	87.0	14.5	80.8	27.0			44.5	18.6	0.6
LOS	D	C	B	E	F	B	F	C			D	B	A
Approach Delay		34.9			65.6			30.1				18.4	
Approach LOS		C			E			C				B	

Intersection Summary

Area Type: Other
Cycle Length: 170
Actuated Cycle Length: 170
Offset: 126 (74%), Referenced to phase 1:NBSBL and 6:, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.96
Intersection Signal Delay: 26.8 Intersection LOS: C
Intersection Capacity Utilization 89.9% ICU Level of Service E
Analysis Period (min) 15
* User Entered Value



Lane Group	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 (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	280		200	430		0	390		400
Storage Lanes	2		1	1		0	2		0	2		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50		50	50		50	50	50
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	0
Turning Speed (mph)	15		25	30		12	15		12	15		12
Lane Util. Factor	0.97	0.95	1.00	0.97	0.91	0.91	0.97	0.91	0.91	0.97	0.91	1.00
Ped Bike Factor												
Frt			0.850		0.979			0.992				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3433	3539	1583	3433	4979	0	3433	5045	0	3433	5085	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3433	3539	1583	3433	4979	0	3433	5045	0	3433	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			1		15			9				9
Headway Factor	1.00	1.00	*1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		118			1934			2583			1215	
Travel Time (s)		2.3			37.7			50.3			23.7	
Volume (vph)	340	380	320	376	392	64	412	1772	104	220	2636	356
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Growth Factor	100%	100%	100%	108%	107%	108%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	340	380	320	406	419	69	412	1772	104	220	2636	356
Lane Group Flow (vph)	340	380	320	406	488	0	412	1876	0	220	2636	356

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effct Green (s)	22.2	22.2	72.0	20.0	20.0		21.8	98.0		13.8	90.0	112.2
Actuated g/C Ratio	0.13	0.13	0.42	0.12	0.12		0.13	0.58		0.08	0.53	0.66
v/c Ratio	0.76	0.82	0.48	1.00	0.81		0.93	0.64		0.79	0.98	0.34
Control Delay	49.7	54.1	6.6	118.8	82.6		101.3	25.4		96.0	51.9	7.1
Queue Delay	174.0	181.3	0.1	0.0	0.2		0.0	0.0		0.0	0.0	1.1
Total Delay	223.7	235.4	6.7	118.8	82.8		101.3	25.4		96.0	51.9	8.1
LOS	F	F	A	F	F		F	C		F	D	A
Approach Delay		161.2			99.1			39.1			50.1	
Approach LOS		F			F			D			D	

Intersection Summary

Area Type: Other
Cycle Length: 170
Actuated Cycle Length: 170
Offset: 0 (0%), Referenced to phase 1:NBSBL and 6:, Start of Green, Master Intersection
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.00
Intersection Signal Delay: 68.1 Intersection LOS: E
Intersection Capacity Utilization 98.1% ICU Level of Service F
Analysis Period (min) 15
* User Entered Value

E7

Synchro 6 Report Output for Projected 2015 AM Peak Improvement

Lane Group	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 (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		125	260		0	285		0
Storage Lanes	1		1	1		1	1		0	1		0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	50	50	50		50	50	
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	
Turning Speed (mph)	15		12	15		12	15		12	15		12
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.91	0.91
Ped Bike Factor												
Frt			0.850			0.850		0.994			0.982	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	5055	0	1770	4994	0
Flt Permitted	0.950			0.950			0.203			0.043		
Satd. Flow (perm)	1770	1863	1583	1770	1863	1583	378	5055	0	80	4994	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			74			95		8			30	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		133			1547			414			1855	
Travel Time (s)		2.6			30.1			8.1			36.1	
Volume (vph)	162	169	74	26	168	108	315	2266	100	78	1010	134
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	162	169	74	26	168	108	315	2266	100	78	1010	134
Lane Group Flow (vph)	162	169	74	26	168	108	315	2366	0	78	1144	0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effct Green (s)	16.2	24.2	24.2	11.4	15.4	15.4	103.1	94.6		101.8	94.0	
Actuated g/C Ratio	0.11	0.16	0.16	0.08	0.10	0.10	0.69	0.63		0.68	0.63	
v/c Ratio	0.84	0.56	0.23	0.19	0.88	0.44	0.93	0.74		0.55	0.36	
Control Delay	96.5	65.4	18.1	66.2	105.8	20.9	48.6	21.1		35.3	13.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	16.4	0.0		0.0	0.0	
Total Delay	96.5	65.4	18.1	66.2	105.8	20.9	65.0	21.1		35.3	13.5	
LOS	F	E	B	E	F	C	E	C		D	B	
Approach Delay		69.2			72.0			26.2			14.9	
Approach LOS		E			E			C			B	

Intersection Summary

Area Type: Other
Cycle Length: 150
Actuated Cycle Length: 150
Offset: 10 (7%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.93
Intersection Signal Delay: 30.0 Intersection LOS: C
Intersection Capacity Utilization 81.5% ICU Level of Service D
Analysis Period (min) 15

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations													
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%				0%	
Storage Length (ft)	0		0	150		0	500		0		460		480
Storage Lanes	2		1	1		2	2		0		2		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	50	50	50		50	50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	0	0
Turning Speed (mph)	35		20	20		15	15		12	9	15		12
Lane Util. Factor	0.86	0.86	1.00	1.00	0.95	0.88	0.97	0.91	0.91	0.86	0.97	0.86	1.00
Ped Bike Factor													
Frt			0.850			0.850		0.998					0.850
Flt Protected	0.950	0.980		0.950			0.950				0.950		
Satd. Flow (prot)	3268	3371	1700	1900	3800	2992	3433	5075	0	0	3433	6408	1583
Flt Permitted	0.950	0.980		0.950			0.950				0.950		
Satd. Flow (perm)	3268	3371	1700	1900	3800	2992	3433	5075	0	0	3433	6408	1583
Right Turn on Red			Yes			Yes			Yes				Yes
Satd. Flow (RTOR)			121			49		2					170
Headway Factor	*1.00	*1.00	*1.00	*1.00	*1.00	*1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		35			35			35				35	
Link Distance (ft)		122			1790			770				508	
Travel Time (s)		2.4			34.9			15.0				9.9	
Volume (vph)	596	264	121	52	285	397	157	3573	44	39	242	1787	199
Confl. Peds. (#/hr)													
Confl. Bikes (#/hr)													
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)													
Mid-Block Traffic (%)		0%			0%			0%				0%	
Adj. Flow (vph)	596	264	121	52	285	397	157	3573	44	39	242	1787	199
Lane Group Flow (vph)	419	441	121	52	285	397	157	3617	0	0	281	1787	199

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Act Effct Green (s)	24.0	24.0	24.0	14.0	14.0	19.0	6.0	101.0			15.0	110.0	129.0
Actuated g/C Ratio	0.14	0.14	0.14	0.08	0.08	0.11	0.04	0.59			0.09	0.65	0.76
v/c Ratio	0.91	0.93	0.35	0.33	0.91	1.05	1.30	1.20			0.93	0.43	0.16
Control Delay	17.9	18.8	1.1	79.9	108.6	113.2	199.6	109.1			111.6	15.1	1.4
Queue Delay	28.6	29.3	24.4	0.0	3.0	0.0	29.2	0.0			0.0	0.0	0.2
Total Delay	46.5	48.1	25.5	79.9	111.6	113.2	228.8	109.1			111.6	15.1	1.5
LOS	D	D	C	E	F	F	F	F			F	B	A
Approach Delay		44.6			110.2			114.0				25.9	
Approach LOS		D			F			F				C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 170			
Actuated Cycle Length: 170			
Offset: 2 (1%), Referenced to phase 1:NBSBL and 6:, Start of Green			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.30			
Intersection Signal Delay: 79.1		Intersection LOS: E	
Intersection Capacity Utilization 116.3%		ICU Level of Service H	
Analysis Period (min) 15			
* User Entered Value			

Lane Group	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 (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	150		300	500		0	380		400
Storage Lanes	0		1	1		1	2		0	1		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	50	50	50		50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	0
Turning Speed (mph)	50		45	50		45	15		12	15		12
Lane Util. Factor	0.95	0.95	1.00	1.00	0.95	1.00	0.97	0.91	0.91	1.00	0.91	1.00
Ped Bike Factor												
Frt			0.850			0.850		0.995				0.850
Flt Protected		0.981		0.950			0.950			0.950		
Satd. Flow (prot)	0	3472	1583	1770	3539	1583	3433	5060	0	1770	5085	1583
Flt Permitted		0.981		0.950			0.950			0.041		
Satd. Flow (perm)	0	3472	1583	1770	3539	1583	3433	5060	0	76	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			52			121		5				75
Headway Factor	*0.50	*0.50	*0.50	*0.50	*0.50	*0.50	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		40			40			35			35	
Link Distance (ft)		129			680			1306			765	
Travel Time (s)		2.2			11.6			25.4			14.9	
Volume (vph)	195	308	52	70	212	121	167	3443	121	133	1614	164
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Growth Factor	100%	100%	100%	103%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	195	308	52	72	212	121	167	3443	121	133	1614	164
Lane Group Flow (vph)	0	503	52	72	212	121	167	3564	0	133	1614	164

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effct Green (s)		25.0	25.0	14.7	14.7	14.7	15.2	99.1		114.3	99.1	128.1
Actuated g/C Ratio		0.15	0.15	0.09	0.09	0.09	0.09	0.58		0.67	0.58	0.75
v/c Ratio		0.98	0.19	0.47	0.70	0.49	0.54	1.21		0.66	0.54	0.14
Control Delay		42.5	1.0	84.6	88.1	18.0	80.8	117.0		48.3	37.6	2.9
Queue Delay		0.8	6.2	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay		43.4	7.2	84.6	88.1	18.0	80.8	117.0		48.3	37.6	2.9
LOS		D	A	F	F	B	F	F		D	D	A
Approach Delay		40.0			66.5			115.4			35.3	
Approach LOS		D			E			F			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 170			
Actuated Cycle Length: 170			
Offset: 130 (76%), Referenced to phase 1:NBSBL and 6:, Start of Green			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.21			
Intersection Signal Delay: 82.9		Intersection LOS: F	
Intersection Capacity Utilization 110.0%		ICU Level of Service H	
Analysis Period (min) 15			
* User Entered Value			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations													
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%				0%			0%	
Storage Length (ft)	0		0	275		250		300		0	320		370
Storage Lanes	1		1	1		1		1		0	1		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	50	50	50	50		50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0		0	0	0
Turning Speed (mph)	50		45	50		45	9	15		12	15		12
Lane Util. Factor	0.95	0.95	1.00	0.91	0.91	1.00	0.91	1.00	0.91	0.91	1.00	0.91	1.00
Ped Bike Factor													
Frt			0.850			0.850			0.994				0.850
Flt Protected	0.950	0.998		0.950	0.987			0.950			0.950		
Satd. Flow (prot)	1681	1766	1583	1610	3346	1583	0	1770	5055	0	1770	5085	1583
Flt Permitted	0.950	0.998		0.950	0.987			0.950			0.041		
Satd. Flow (perm)	1681	1766	1583	1610	3346	1583	0	1770	5055	0	76	5085	1583
Right Turn on Red			Yes			Yes				Yes			Yes
Satd. Flow (RTOR)			39			88			6				87
Headway Factor	*0.50	*0.50	*0.50	*0.50	*0.50	*0.50	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		40			40				35			35	
Link Distance (ft)		130			1796				1483			1506	
Travel Time (s)		2.2			30.6				28.9			29.3	
Volume (vph)	225	216	39	134	134	91	5	87	3361	147	100	1437	87
Confl. Peds. (#/hr)													
Confl. Bikes (#/hr)													
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Growth Factor	100%	100%	100%	96%	97%	97%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)													
Mid-Block Traffic (%)		0%			0%				0%			0%	
Adj. Flow (vph)	225	216	39	129	130	88	5	87	3361	147	100	1437	87
Lane Group Flow (vph)	215	226	39	83	176	88	0	92	3508	0	100	1437	87

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBL	SBT	SBR
Act Effct Green (s)	25.1	25.1	25.1	15.8	15.8	15.8		14.8	98.3		113.1	98.3	123.4
Actuated g/C Ratio	0.15	0.15	0.15	0.09	0.09	0.09		0.09	0.58		0.67	0.58	0.73
v/c Ratio	0.87	0.87	0.15	0.56	0.57	0.39		0.60	1.20		0.50	0.49	0.07
Control Delay	38.5	37.5	0.9	87.8	80.9	17.4		100.1	103.6		53.3	16.3	2.2
Queue Delay	0.0	0.0	3.1	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	38.5	37.5	4.0	87.8	80.9	17.4		100.1	103.6		53.3	16.3	2.2
LOS	D	D	A	F	F	B		F	F		D	B	A
Approach Delay		35.2			66.4				103.5			17.8	
Approach LOS		D			E				F			B	

Intersection Summary

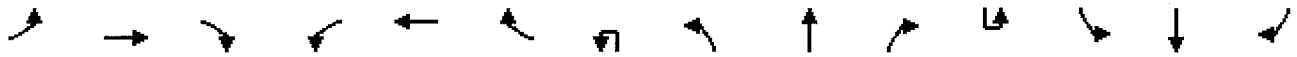
Area Type: Other
Cycle Length: 170
Actuated Cycle Length: 170
Offset: 66 (39%), Referenced to phase 1:NBSBL and 5:, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.20
Intersection Signal Delay: 73.0 Intersection LOS: E
Intersection Capacity Utilization 104.5% ICU Level of Service G
Analysis Period (min) 15
* User Entered Value

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations														
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%				0%				0%	
Storage Length (ft)	0		0	140		200		300		0		300		400
Storage Lanes	1		0	1		1		1		0		1		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50		50	50	50	50	50	50		50	50	50	50
Trailing Detector (ft)	0	0		0	0	0	0	0	0		0	0	0	0
Turning Speed (mph)	30		15	50		45	9	15		12	9	15		12
Lane Util. Factor	0.91	0.91	0.95	1.00	1.00	1.00	0.91	1.00	0.91	0.91	0.91	1.00	0.91	1.00
Ped Bike Factor														
Frt		0.982				0.850			0.992					0.850
Flt Protected	0.950	0.989		0.950				0.950				0.950		
Satd. Flow (prot)	1610	3293	0	1805	1900	1615	0	1770	5045	0	0	1770	5085	1583
Flt Permitted	0.950	0.989		0.950				0.950				0.044		
Satd. Flow (perm)	1610	3293	0	1805	1900	1615	0	1770	5045	0	0	82	5085	1583
Right Turn on Red			Yes			Yes				Yes				Yes
Satd. Flow (RTOR)		7				93			9					143
Headway Factor	*0.50	*0.50	*0.50	*0.50	*0.50	*0.50	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		40			40				35				35	
Link Distance (ft)		128			1912				1434				1483	
Travel Time (s)		2.2			32.6				27.9				28.9	
Volume (vph)	221	208	39	91	160	95	5	78	3310	193	5	65	1437	143
Confl. Peds. (#/hr)														
Confl. Bikes (#/hr)														
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Growth Factor	98%	98%	98%	98%	98%	98%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	0%	0%	0%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)														
Mid-Block Traffic (%)		0%			0%				0%				0%	
Adj. Flow (vph)	217	204	38	89	157	93	5	78	3310	193	5	65	1437	143
Lane Group Flow (vph)	149	310	0	89	157	93	0	83	3503	0	0	70	1437	143

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Act Effct Green (s)	28.0	28.0		20.0	20.0	20.0		15.0	98.0			99.0	91.0	119.0
Actuated g/C Ratio	0.16	0.16		0.12	0.12	0.12		0.09	0.58			0.58	0.54	0.70
v/c Ratio	0.56	0.57		0.42	0.70	0.34		0.53	1.20			0.55	0.53	0.12
Control Delay	9.7	4.6		76.3	89.4	15.2		87.7	123.0			58.1	14.3	0.5
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0	0.0			0.0	0.0	0.0
Total Delay	9.7	4.7		76.3	89.4	15.2		87.7	123.0			58.1	14.3	0.6
LOS	A	A		E	F	B		F	F			E	B	A
Approach Delay		6.3			65.6				122.2				15.0	
Approach LOS		A			E				F				B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 170			
Actuated Cycle Length: 170			
Offset: 46 (27%), Referenced to phase 1:NBSBL and 6:, Start of Green			
Control Type: Pretimed			
Maximum v/c Ratio: 1.20			
Intersection Signal Delay: 80.9		Intersection LOS: F	
Intersection Capacity Utilization 96.0%		ICU Level of Service F	
Analysis Period (min) 15			
* User Entered Value			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations														
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%				0%				0%	
Storage Length (ft)	0		0	280		150		430		0		390		400
Storage Lanes	2		1	1		0		2		0		2		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50		50	50	50		50	50	50	50
Trailing Detector (ft)	0	0	0	0	0		0	0	0		0	0	0	0
Turning Speed (mph)	15		12	15		12	9	15		12	9	15		12
Lane Util. Factor	0.97	0.95	1.00	0.97	0.91	0.91	0.91	0.97	0.91	0.91	0.91	0.97	0.91	1.00
Ped Bike Factor														
Frt			0.850		0.975				0.995					0.850
Flt Protected	0.950			0.950				0.950				0.950		
Satd. Flow (prot)	3433	3539	1583	3433	4958	0	0	3433	5060	0	0	3433	5085	1583
Flt Permitted	0.950			0.950				0.950				0.950		
Satd. Flow (perm)	3433	3539	1583	3433	4958	0	0	3433	5060	0	0	3433	5085	1583
Right Turn on Red			Yes			Yes				Yes				Yes
Satd. Flow (RTOR)			29		20				5					37
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		35			35				35				35	
Link Distance (ft)		118			1997				602				1215	
Travel Time (s)		2.3			38.9				11.7				23.7	
Volume (vph)	307	406	208	156	307	61	5	221	3379	117	5	104	1532	121
Confl. Peds. (#/hr)														
Confl. Bikes (#/hr)														
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)														
Mid-Block Traffic (%)		0%			0%				0%				0%	
Adj. Flow (vph)	307	406	208	156	307	61	5	221	3379	117	5	104	1532	121
Lane Group Flow (vph)	307	406	208	156	368	0	0	226	3496	0	0	109	1532	121



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Act Effct Green (s)	21.7	21.7	65.0	18.0	18.0			17.4	104.0			10.4	97.0	118.7
Actuated g/C Ratio	0.13	0.13	0.38	0.11	0.11			0.10	0.61			0.06	0.57	0.70
v/c Ratio	0.70	0.90	0.33	0.43	0.68			0.65	1.13			0.52	0.53	0.11
Control Delay	43.3	60.1	2.3	74.9	75.9			82.7	94.6			87.5	27.5	5.2
Queue Delay	127.8	158.6	0.6	0.0	0.0			0.0	0.0			0.0	0.0	0.0
Total Delay	171.1	218.7	3.0	74.9	75.9			82.7	94.6			87.5	27.5	5.2
LOS	F	F	A	E	E			F	F			F	C	A
Approach Delay		154.1			75.6				93.9				29.7	
Approach LOS		F			E				F				C	

Intersection Summary

Area Type: Other
Cycle Length: 170
Actuated Cycle Length: 170
Offset: 0 (0%), Referenced to phase 1:NBSBL and 6:, Start of Green, Master Intersection
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.13
Intersection Signal Delay: 84.2 Intersection LOS: F
Intersection Capacity Utilization 100.6% ICU Level of Service G
Analysis Period (min) 15

E8

Synchro 6 Report Output for Projected 2015 PM Peak Improvement

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations													
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%				0%	
Storage Length (ft)	0		0	0		125	260		0		285		0
Storage Lanes	1		1	1		1	1		0		1		0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	50	50	50		50	50	50	
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	0	
Turning Speed (mph)	15		12	15		12	15		12	9	15		12
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	0.91	1.00	0.91	0.91
Ped Bike Factor													
Frt			0.850			0.850		0.995				0.974	
Flt Protected	0.950			0.950			0.950				0.950		
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	5060	0	0	1770	4953	0
Flt Permitted	0.950			0.950			0.043				0.131		
Satd. Flow (perm)	1770	1863	1583	1770	1863	1583	80	5060	0	0	244	4953	0
Right Turn on Red			Yes			Yes			Yes				Yes
Satd. Flow (RTOR)			104			95		8				66	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		35			35			35				35	
Link Distance (ft)		123			1547			414				1855	
Travel Time (s)		2.4			30.1			8.1				36.1	
Volume (vph)	104	113	121	57	121	95	126	1454	52	5	216	2524	523
Confl. Peds. (#/hr)													
Confl. Bikes (#/hr)													
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)													
Mid-Block Traffic (%)		0%			0%			0%				0%	
Adj. Flow (vph)	104	113	121	57	121	95	126	1454	52	5	216	2524	523
Lane Group Flow (vph)	104	113	121	57	121	95	126	1506	0	0	221	3047	0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Act Effct Green (s)	11.8	15.1	15.1	12.2	13.5	13.5	98.7	92.0			98.7	92.0	
Actuated g/C Ratio	0.08	0.11	0.11	0.09	0.10	0.10	0.70	0.66			0.70	0.66	
v/c Ratio	0.70	0.56	0.46	0.37	0.67	0.40	0.91	0.45			0.90	0.93	
Control Delay	83.4	69.3	23.0	66.3	79.8	15.9	87.8	12.2			50.6	27.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	6.4	0.0			0.0	1.4	
Total Delay	83.4	69.3	23.0	66.3	79.8	15.9	94.1	12.2			50.6	28.5	
LOS	F	E	C	E	E	B	F	B			D	C	
Approach Delay		57.1			54.8			18.5				30.0	
Approach LOS		E			D			B				C	

Intersection Summary

Area Type: Other
Cycle Length: 140
Actuated Cycle Length: 140
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.93
Intersection Signal Delay: 29.5 Intersection LOS: C
Intersection Capacity Utilization 92.9% ICU Level of Service F
Analysis Period (min) 15

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations													
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%				0%	
Storage Length (ft)	0		0	150		0	500		0		460		480
Storage Lanes	2		1	1		2	2		0		2		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	50	50	50		50	50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	0	0
Turning Speed (mph)	15		12	15		12	15		12	9	15		12
Lane Util. Factor	0.86	0.86	1.00	1.00	0.95	0.88	0.97	0.91	0.91	0.86	0.97	0.86	1.00
Ped Bike Factor													
Frt			0.850			0.850		0.995					0.850
Flt Protected	0.950	0.990		0.950			0.950				0.950		
Satd. Flow (prot)	3044	3172	1583	1770	3539	2787	3433	5060	0	0	3433	6408	1583
Flt Permitted	0.950	0.990		0.950			0.950				0.950		
Satd. Flow (perm)	3044	3172	1583	1770	3539	2787	3433	5060	0	0	3433	6408	1583
Right Turn on Red			Yes			Yes			Yes				Yes
Satd. Flow (RTOR)			185			196		4					50
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		35			35			35				35	
Link Distance (ft)		122			1790			770				508	
Travel Time (s)		2.4			34.9			15.0				9.9	
Volume (vph)	378	264	199	117	290	233	298	2309	74	39	384	3819	574
Confl. Peds. (#/hr)													
Confl. Bikes (#/hr)													
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Growth Factor	93%	93%	93%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)													
Mid-Block Traffic (%)		0%			0%			0%				0%	
Adj. Flow (vph)	352	246	185	117	290	233	298	2309	74	39	384	3819	574
Lane Group Flow (vph)	292	306	185	117	290	233	298	2383	0	0	423	3819	574

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Act Effct Green (s)	28.0	28.0	28.0	17.9	17.9	20.9	17.1	94.0			24.1	101.0	126.0
Actuated g/C Ratio	0.16	0.16	0.16	0.10	0.10	0.12	0.10	0.52			0.13	0.56	0.70
v/c Ratio	0.62	0.62	0.46	0.66	0.82	0.47	0.91	0.90			0.92	1.06	0.51
Control Delay	6.3	6.3	3.5	96.9	98.4	14.0	111.4	44.6			102.1	71.2	12.7
Queue Delay	2.0	2.1	5.7	0.0	0.0	0.0	0.0	0.0			0.0	0.0	21.9
Total Delay	8.3	8.3	9.2	96.9	98.4	14.0	111.4	44.6			102.1	71.2	34.6
LOS	A	A	A	F	F	B	F	D			F	E	C
Approach Delay		8.5			67.4			52.0				69.5	
Approach LOS		A			E			D				E	

Intersection Summary

Area Type: Other
Cycle Length: 180
Actuated Cycle Length: 180
Offset: 101 (56%), Referenced to phase 1:NBSBL and 6:, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.06
Intersection Signal Delay: 58.7 Intersection LOS: E
Intersection Capacity Utilization 93.7% ICU Level of Service F
Analysis Period (min) 15

Lane Group	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 (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	150		300	500		0	380		400
Storage Lanes	0		1	1		1	2		0	1		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	50	50	50		50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	0
Turning Speed (mph)	50		45	50		45	15		12	15		12
Lane Util. Factor	0.95	0.95	1.00	1.00	0.95	1.00	0.97	0.91	0.91	1.00	0.91	1.00
Ped Bike Factor												
Frt			0.850			0.850		0.995				0.850
Flt Protected		0.975		0.950			0.950			0.950		
Satd. Flow (prot)	0	3451	1583	1770	3539	1583	3433	5060	0	1770	5085	1583
Flt Permitted		0.975		0.950			0.950			0.043		
Satd. Flow (perm)	0	3451	1583	1770	3539	1583	3433	5060	0	80	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			106			99		4				71
Headway Factor	*0.50	*0.50	*0.50	*0.50	*0.50	*0.50	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		45			45			35			35	
Link Distance (ft)		129			710			1306			765	
Travel Time (s)		2.0			10.8			25.4			14.9	
Volume (vph)	164	153	106	93	227	104	227	2373	78	164	3085	246
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Growth Factor	100%	100%	100%	95%	95%	95%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	164	153	106	88	216	99	227	2373	78	164	3085	246
Lane Group Flow (vph)	0	317	106	88	216	99	227	2451	0	164	3085	246

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effct Green (s)		26.0	26.0	17.3	17.3	17.3	18.0	92.7		110.7	92.7	122.7
Actuated g/C Ratio		0.15	0.15	0.10	0.10	0.10	0.11	0.55		0.65	0.55	0.72
v/c Ratio		0.60	0.32	0.49	0.60	0.40	0.62	0.89		0.71	1.11	0.21
Control Delay		6.7	2.1	81.1	80.0	16.1	93.8	23.8		61.4	93.2	5.9
Queue Delay		0.0	1.7	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.4
Total Delay		6.7	3.8	81.1	80.0	16.1	93.8	23.8		61.4	93.2	6.3
LOS		A	A	F	E	B	F	C		E	F	A
Approach Delay		6.0			64.5			29.7			85.6	
Approach LOS		A			E			C			F	

Intersection Summary

Area Type: Other
Cycle Length: 170
Actuated Cycle Length: 170
Offset: 35 (21%), Referenced to phase 1:NBSBL and 6:, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.11
Intersection Signal Delay: 58.2 Intersection LOS: E
Intersection Capacity Utilization 94.5% ICU Level of Service F
Analysis Period (min) 15
* User Entered Value

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations														
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%				0%				0%	
Storage Length (ft)	0		0	275		250		300		0		320		370
Storage Lanes	1		1	1		1		1		0		1		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	50	50	50	50		50	50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0		0	0	0	0
Turning Speed (mph)	50		45	50		45	9	15		12	9	15		12
Lane Util. Factor	0.95	0.95	1.00	0.91	0.91	1.00	0.91	1.00	0.91	0.91	0.91	1.00	0.91	1.00
Ped Bike Factor														
Frt			0.850			0.850			0.988					0.850
Flt Protected	0.950			0.950	0.988			0.950				0.950		
Satd. Flow (prot)	1681	1770	1583	1610	3350	1583	0	1770	5024	0	0	1770	5085	1583
Flt Permitted	0.950			0.950	0.988			0.950				0.042		
Satd. Flow (perm)	1681	1770	1583	1610	3350	1583	0	1770	5024	0	0	78	5085	1583
Right Turn on Red			Yes			Yes				Yes				Yes
Satd. Flow (RTOR)			70			87			13					164
Headway Factor	*0.50	*0.50	*0.50	*0.50	*0.50	*0.50	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		35			35				35				35	
Link Distance (ft)		130			1796				1483				1506	
Travel Time (s)		2.5			35.0				28.9				29.3	
Volume (vph)	91	160	70	173	184	87	18	100	2166	182	13	113	2887	164
Confl. Peds. (#/hr)														
Confl. Bikes (#/hr)														
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Growth Factor	97%	97%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)														
Mid-Block Traffic (%)		0%			0%				0%				0%	
Adj. Flow (vph)	88	155	70	173	184	87	18	100	2166	182	13	113	2887	164
Lane Group Flow (vph)	88	155	70	115	242	87	0	118	2348	0	0	126	2887	164

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Act Effct Green (s)	21.0	21.0	21.0	20.0	20.0	20.0		17.0	96.0			113.0	96.0	117.0
Actuated g/C Ratio	0.12	0.12	0.12	0.12	0.12	0.12		0.10	0.56			0.66	0.56	0.69
v/c Ratio	0.42	0.71	0.27	0.61	0.61	0.33		0.67	0.83			0.57	1.01	0.14
Control Delay	7.7	25.2	2.3	85.8	78.7	15.6		83.6	26.5			55.8	24.8	1.2
Queue Delay	0.5	0.0	1.7	0.0	0.0	0.0		0.0	0.0			0.0	0.0	0.0
Total Delay	8.2	25.2	4.0	85.8	78.7	15.6		83.6	26.5			55.8	24.8	1.2
LOS	A	C	A	F	E	B		F	C			E	C	A
Approach Delay		15.7			68.2				29.2				24.8	
Approach LOS		B			E				C				C	

Intersection Summary

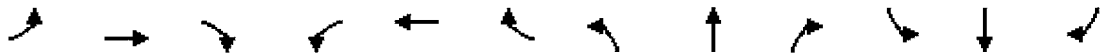
Area Type: Other
Cycle Length: 170
Actuated Cycle Length: 170
Offset: 99 (58%), Referenced to phase 1:NBSBL, Start of Green
Control Type: Pretimed
Maximum v/c Ratio: 1.01
Intersection Signal Delay: 29.1 Intersection LOS: C
Intersection Capacity Utilization 90.6% ICU Level of Service E
Analysis Period (min) 15
* User Entered Value

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations													
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%				0%	
Storage Length (ft)	0		0	140		150	300		0		300		400
Storage Lanes	1		0	1		1	1		0		1		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50		50	50	50	50	50		50	50	50	50
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	0	0
Turning Speed (mph)	50		45	50		45	15		12	9	15		12
Lane Util. Factor	0.91	0.91	0.95	1.00	1.00	1.00	1.00	0.91	0.91	0.91	1.00	0.91	1.00
Ped Bike Factor													
Frt		0.965				0.850		0.995					0.850
Flt Protected	0.950	0.985		0.950			0.950				0.950		
Satd. Flow (prot)	1610	3222	0	1770	1863	1583	1770	5060	0	0	1770	5085	1583
Flt Permitted	0.950	0.985		0.950			0.950				0.044		
Satd. Flow (perm)	1610	3222	0	1770	1863	1583	1770	5060	0	0	82	5085	1583
Right Turn on Red			Yes			Yes			Yes				Yes
Satd. Flow (RTOR)		18				91		5					173
Headway Factor	*0.50	*0.50	*0.50	*0.50	*0.50	*0.50	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		35			35			35				35	
Link Distance (ft)		128			1912			1426				1483	
Travel Time (s)		2.5			37.2			27.8				28.9	
Volume (vph)	217	130	65	100	173	91	130	2063	78	31	70	2775	173
Confl. Peds. (#/hr)													
Confl. Bikes (#/hr)													
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)													
Mid-Block Traffic (%)		0%			0%			0%				0%	
Adj. Flow (vph)	217	130	65	100	173	91	130	2063	78	31	70	2775	173
Lane Group Flow (vph)	133	279	0	100	173	91	130	2141	0	0	101	2775	173

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Act Effct Green (s)	20.9	20.9		21.9	21.9	21.9	21.2	97.2			104.0	90.0	110.9
Actuated g/C Ratio	0.12	0.12		0.13	0.13	0.13	0.12	0.57			0.61	0.53	0.65
v/c Ratio	0.67	0.68		0.44	0.72	0.32	0.59	0.74			0.53	1.03	0.16
Control Delay	21.2	11.4		73.9	87.8	14.2	82.8	29.0			57.0	34.6	0.2
Queue Delay	0.3	0.7		0.0	0.0	0.0	0.0	0.0			0.0	0.0	0.5
Total Delay	21.6	12.1		73.9	87.8	14.2	82.8	29.0			57.0	34.6	0.6
LOS	C	B		E	F	B	F	C			E	C	A
Approach Delay		15.1			65.6			32.0				33.5	
Approach LOS		B			E			C				C	

Intersection Summary

Area Type: Other
Cycle Length: 170
Actuated Cycle Length: 170
Offset: 126 (74%), Referenced to phase 1:NBSBL and 6:, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.03
Intersection Signal Delay: 33.6 Intersection LOS: C
Intersection Capacity Utilization 91.2% ICU Level of Service F
Analysis Period (min) 15
* User Entered Value



Lane Group	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 (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	280		200	430		0	390		400
Storage Lanes	2		1	1		0	2		0	2		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50		50	50		50	50	50
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	0
Turning Speed (mph)	15		25	30		12	15		12	15		12
Lane Util. Factor	0.97	0.95	1.00	0.81	0.81	0.91	0.97	0.91	0.91	0.97	0.91	1.00
Ped Bike Factor												
Frt			0.850		0.981			0.992				0.850
Flt Protected	0.950			0.950	0.995		0.950			0.950		
Satd. Flow (prot)	3433	3539	1583	2867	4418	0	3433	5045	0	3433	5085	1583
Flt Permitted	0.950			0.950	0.995		0.950			0.950		
Satd. Flow (perm)	3433	3539	1583	2867	4418	0	3433	5045	0	3433	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			2		11			9				6
Headway Factor	1.00	1.00	*1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		118			1934			2583			1215	
Travel Time (s)		2.3			37.7			50.3			23.7	
Volume (vph)	367	410	346	406	423	70	445	1912	113	238	2844	384
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Growth Factor	100%	100%	100%	108%	107%	108%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	367	410	346	438	453	76	445	1912	113	238	2844	384
Lane Group Flow (vph)	367	410	346	375	592	0	445	2025	0	238	2844	384

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effct Green (s)	23.0	23.0	48.0	20.0	20.0		21.0	98.0		13.0	90.0	113.0
Actuated g/C Ratio	0.14	0.14	0.28	0.12	0.12		0.12	0.58		0.08	0.53	0.66
v/c Ratio	0.79	0.86	0.77	1.11	1.12		1.05	0.70		0.90	1.06	0.36
Control Delay	42.3	46.8	18.6	148.1	139.9		126.3	26.9		112.1	73.2	7.3
Queue Delay	32.0	35.4	0.0	0.0	3.5		0.0	0.0		0.0	0.0	1.6
Total Delay	74.3	82.2	18.6	148.1	143.4		126.3	26.9		112.1	73.2	8.9
LOS	E	F	B	F	F		F	C		F	E	A
Approach Delay		60.0			145.2			44.8			68.8	
Approach LOS		E			F			D			E	

Intersection Summary

Area Type: Other
Cycle Length: 170
Actuated Cycle Length: 170
Offset: 0 (0%), Referenced to phase 1:NBSBL and 6:, Start of Green, Master Intersection
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.12
Intersection Signal Delay: 69.4 Intersection LOS: E
Intersection Capacity Utilization 103.9% ICU Level of Service G
Analysis Period (min) 15
* User Entered Value