SEYMOUR-SHONNARD CORRIDOR STUDY

Prepared by

SMTC

The Syracuse Metropolitan
Transportation Council

For
City of Syracuse

Final Report
August 2008

SEYMOUR-SHONNARD CORRIDOR STUDY

Syracuse Metropolitan Transportation Council

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This document was prepared with financial assistance from the Federal Highway Administration and the Federal Transit Administration of the U.S. Department of Transportation through the New York State Department of Transportation. The Syracuse Metropolitan Transportation Council is solely responsible for its contents.

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1 INTRODUCTION

1.1 Overview

The Syracuse Metropolitan Transportation Council (SMTC) completed the Seymour-Shonnard Corridor Study on behalf of the City of Syracuse as part of the 2007-2008 Unified Planning Work Program (UPWP). The purpose of this project was to determine the feasibility and appropriateness of converting Seymour Street and Shonnard Street, along with a portion of Gifford Street, from one-way to two-way operation. The study area and existing traffic flow are shown on Figure 1.1.

The project included traffic operations analysis and an assessment of the existing roadway conditions to determine the technical feasibility of converting the study area road segments to two-way operation. The study also considered issues such as vehicle speeds, pedestrian and bicycle safety, and adjacent land uses to assess the appropriateness of the proposed operational changes.

A Study Advisory Committee was formed to guide the study. Representatives from the City of Syracuse, New York State Department of Transportation (NYSDOT), Metropolitan Development Association (MDA), Centro, and local emergency services were included on the Study Advisory Committee. In addition, public meetings were held to inform the community about the project and elicit their input.

Based on the analysis of traffic flow and other study area conditions, input from the Study Advisory Committee members, and input from the community, this study recommends the implementation of two-way traffic on Gifford Street between West and Onondaga Streets, Seymour Street between Geddes and Onondaga Streets, and Shonnard Street between Geddes and West Streets. Because the realization of this recommendation will require both significant public outreach and capital investment, it is recommended that the conversion to two-way traffic be phased over time.

1.2 Study Purpose

The purpose of this project was to determine the feasibility and appropriateness of converting Seymour Street and Shonnard Street between Geddes Street and West Onondaga Street from one-way to two-way operation. The project also considered converting the existing one-way portion of Gifford Street, between West Street and West Onondaga Street, to two-way operation. This study was requested by the City of Syracuse.

1.3 Study Process

The first major task in this project was to collect various data relevant to the study. The NYSDOT, the City of Syracuse, and the SMTC completed a series of traffic counts. SMTC also conducted field work to inventory existing physical and operational conditions. These data were then used to evaluate the existing conditions in the study area and the expected conditions for the two-way alternative. Capacity analysis was conducted at nine study area intersections for the AM and PM peak hours under the existing conditions and the expected conditions with two-way traffic operation. The results of the capacity analysis were used along with an accident analysis and a review of other study area characteristics, such as parking regulations and road width, to create a list of advantages and disadvantages for each alternative.

The Study Advisory Committee met with SMTC staff throughout the study to track the study progress and provide input towards the final recommendations. Two public meetings were held during the course of the study: one meeting early-on to introduce the study and one meeting towards the end of the study to present the findings of the technical and qualitative analysis. Final recommendations were made based on the analysis results, input from the Study Advisory Committee, and input from the community members.

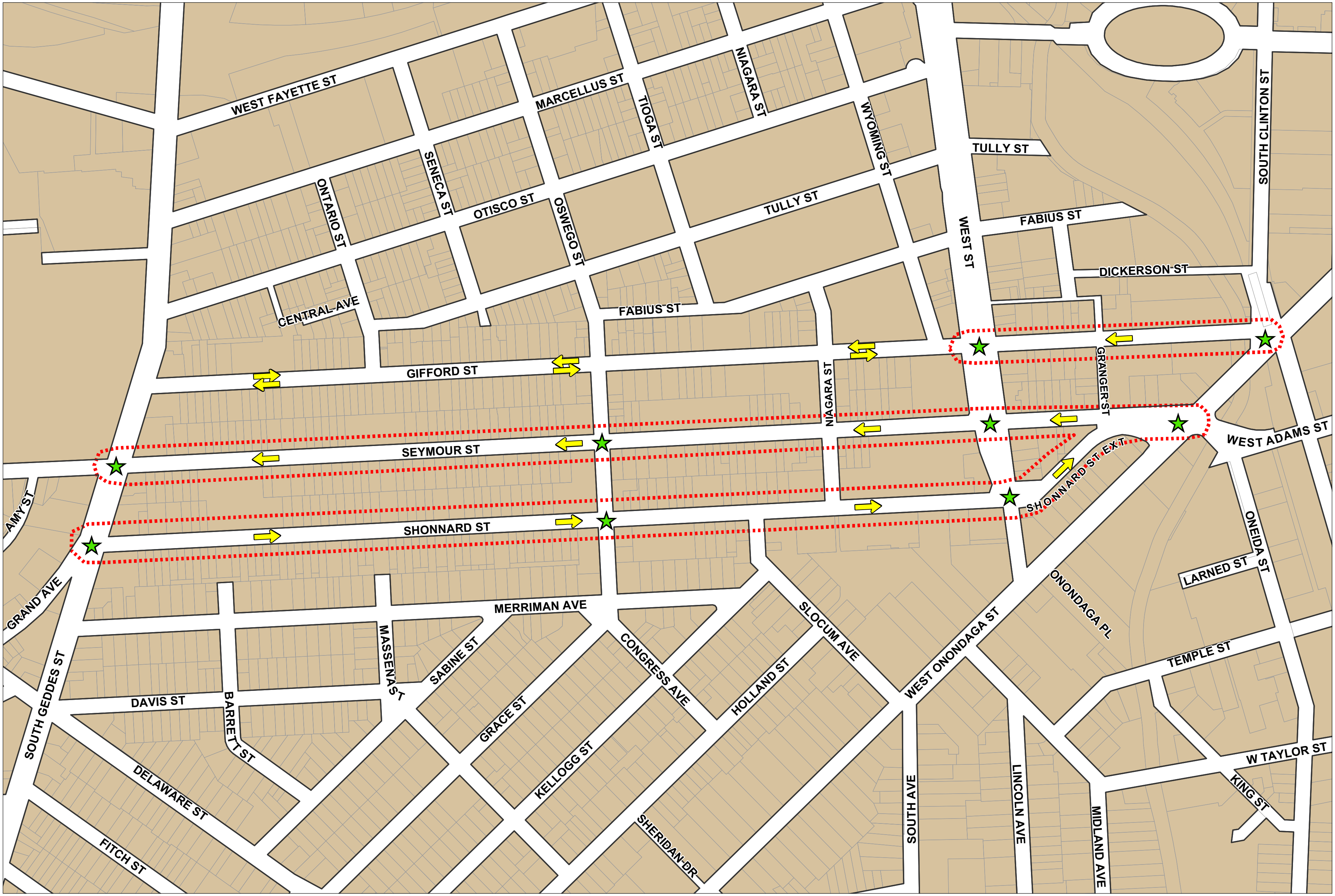
1.4 Public Involvement

Public involvement is vital to any transportation planning project. All SMTC projects include a project-specific public involvement plan. The full plan for the Seymour-Shonnard Corridor Study is included in Appendix A, as are minutes from public meetings and individual comments received by phone and email.

The public outreach for this project included the distribution of an introductory flier, which explained the study purpose and goals and encouraged people to contact the SMTC with questions or comments. This flier was produced in both English and Spanish, as were the subsequent fliers for the public meetings. The SMTC acquired a list of property addresses and property owners' addresses from the City of Syracuse and mailed the introductory flier to all addresses in this dataset; however, a significant number of the fliers were returned due to incorrect addresses. The introductory fliers were also distributed at the local grocery store, Nojaims Market.

Two public meetings were held throughout the course of this study. The first public meeting was held in November 2007. The Department of Community Development assisted with publicity for the public meeting by distributing fliers at neighborhood locations, including Nojaims Market. Fliers were also distributed to students at Seymour Elementary School. Unfortunately, no local residents or property owners attended this meeting. However, the meeting was attended by representatives from Seymour Elementary School, Home Headquarters, the Spanish Action League, and the Syracuse Common Council, as well as the Study Advisory Committee members from the NYSDOT and the City of Syracuse Department of Public Works and Department of Community Development. A roundtable discussion was conducted.

The second public meeting was held in February 2008. Again, the city's Department of Community Development assisted with publicity by distributing fliers in English and Spanish. Approximately 10 people attended, including local residents and representatives of many of the neighborhood-based agencies that attended the first public meeting: Home Headquarters, Spanish Action League, and the Seymour School. In addition, representatives of Vincent House and Syracuse United Neighbors attended the meeting. Results of the technical and qualitative analysis were presented, and attendees were given the opportunity to voice issues, concerns, or support. The recommendations included in this report were developed based on input from this meeting.



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Data Sources: SMTC, SOCPA
Prepared by SMTC, 07/2007

Figure 1.1

Study Area and Existing Traffic Flow

Seymour-Shonnard Corridor Study

This map is for presentation purposes only. The SMTC does not guarantee the accuracy or completeness of this map.

Legend

- Study Intersections
- Existing Traffic Flow
- Study Corridors
- Parcel Boundaries

2 STUDY AREA CHARACTERISTICS

2.1 Physical Characteristics

2.1.1 Existing Traffic Flow

Between South Geddes Street and West Onondaga Street, Seymour Street currently operates as one-way westbound and Shonnard Street currently operates as one-way eastbound. Gifford Street operates as one-way westbound from West Onondaga Street to West Street. Gifford Street operates as two-way between West Street and South Geddes Street.

The major north-south roadways in the area, namely South Geddes Street, West Street, and West Onondaga Street, are all two-way roads. Other north-south roads such as Oswego Street and Niagara Street also carry two-way traffic.

West Street is a major arterial roadway that provides access to Interstate 690. Many commuters traveling on Interstate 690 use West Street to access points in and around downtown Syracuse. Shonnard and Seymour Streets provide a link between West Street and Adams Street, which is a primary route to the University Hill area and destinations at the southern end of downtown.

2.1.2 Road Ownership

West Street, Adams Street, and the portions of Seymour Street and Shonnard Street between West Street and West Onondaga Street are owned by the New York State Department of Transportation. All other roads in and adjacent to the study area are owned by the City of Syracuse. Road ownership in and around the study area is shown on Figure 2.1. Adams Street, together with Seymour Street and Shonnard Street between West Street and West Onondaga Street, are designated as State Arterial Highway 930C.

2.1.3 Functional Classification

The functional classification of roadways in and around the study area is shown on Figure 2.2. Between South Geddes Street and West Street, Seymour Street and Shonnard Street are both classified as major collectors. Seymour Street between West Onondaga Street and West Street is classified as a principal arterial. Shonnard Street between West Street and West Onondaga Street is classified as a local road.

2.1.4 Intersection Control and Geometry

Nine intersections were included in this analysis. The study area intersections are:

- South Geddes Street/Seymour Street
- South Geddes Street/Shonnard Street
- Seymour Street/Oswego Street
- Shonnard Street/Oswego Street
- West Street/Gifford Street
- West Street/Seymour Street
- West Street/Shonnard Street
- West Onondaga Street /Gifford Street/South Clinton Street
- West Onondaga Street/Adams Street

All of these intersections are signalized except for Seymour Street/Oswego Street and Shonnard Street/Oswego Street, which are both controlled by all-way stop signs. Geometry and land configurations at each of these intersections were field-verified by SMTC staff.

All of the traffic signals at the study area intersections are fully-actuated signals except for the two Geddes Street locations. However, the two Geddes Street locations are part of a current project to expand the City of Syracuse's signal interconnect system and are scheduled to be replaced with actuated controllers. The three West Street signals and the West Onondaga Street/Adams Street signal are controlled by the NYSDOT. The remaining signals are controlled by the City of Syracuse. Existing signal timing plans for all of the signals in the study area (including the NYSDOT signals) were received from the City of Syracuse.

2.1.5 Roadway Width

The curb-to-curb pavement width was measured by SMTC at various points along Seymour Street, Shonnard Street, and Gifford Street. The results were as follows:

- Seymour Street has a curb-to-curb pavement width of 29 feet for its entire length between West Street and South Geddes Street. Between West Onondaga Street and West Street, Seymour Street is 37 feet wide.

Upper left: Seymour Street between Oswego Street and Geddes Street
Upper right: Gifford Street between West Onondaga Street and West Street
Lower left: Shonnard Street between Oswego Street and West Street

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Figure 2.1

Road Ownership

Seymour-Shonnard Corridor Study

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Road Ownership

- City of Syracuse
- NYSDOT

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Figure 2.2
Functional Classification
Seymour-Shonnard Corridor Study

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- Shonnard Street is 29 feet wide between South Geddes Street and Oswego Street and widens to 33 feet wide between Oswego Street and West Street.
- Gifford Street is 29 feet wide between South Geddes Street and Oswego Street. Gifford Street increases to 35 feet wide between Oswego Street and West Street. The one-way portion of Gifford Street, from West Street to West Onondaga Street, is 29 feet wide.

2.1.6 Pavement Markings

Generally, there are no pavement markings to delineate lanes or shoulders within the study area, as is typical of residential streets in the city. With the exception of turning lane designations at the West Street/Gifford Street intersection, Gifford Street does not have any pavement markings for its entire length from West Onondaga Street to South Geddes Street. Seymour Street and Shonnard Street do not have pavement markings between West Street and South Geddes Street, with the exception of a left-turn designation on Seymour Street at the South Geddes Street intersection. East of West Street, there are three travel lanes delineated on Seymour Street and on Shonnard Street.

2.1.7 Pedestrian and Bicycle Facilities

Sidewalks are continuous along both sides of Seymour Street, Shonnard Street, and Gifford Street, although sidewalk width and condition varies. There are also two existing mid-block pedestrian paths in the study area. One of these paths is located along the eastern edge of Ward Bakery Park and provides a north-south pedestrian link between Shonnard Street and Merriman Avenue. The other existing path is located about midway between Geddes Street and Oswego Street and provides a north-south pedestrian link between Seymour Street and Shonnard Street. There is also an existing “informal” pathway across several vacant lots between Seymour Street and Gifford Street. Local property owners have proposed constructing a formal path, similar to the existing walkway between Seymour Street and Shonnard Street, at this location. Figure 2.3 indicates the location of the pedestrian paths.

There are no bicycle lanes on any of the study area streets, and Seymour Street, Shonnard Street, and Gifford Street do not have striped shoulders. As a result, bicyclists must ride in the travel lane with vehicular traffic.

2.1.8 Parking Regulations

Odd/even parking is allowed on Seymour Street and Shonnard Street between South Geddes Street and West Street. This means that at any time vehicles should be parked along only one side of the road, making for one parking lane and one travel lane. “No Stopping” signs are posted along Seymour Street between West Street and West Onondaga Street.

On Gifford Street, odd/even parking is permitted between South Geddes Street and West Street. Between West Street and West Onondaga Street, parking is permitted only on the south side of Gifford Street.

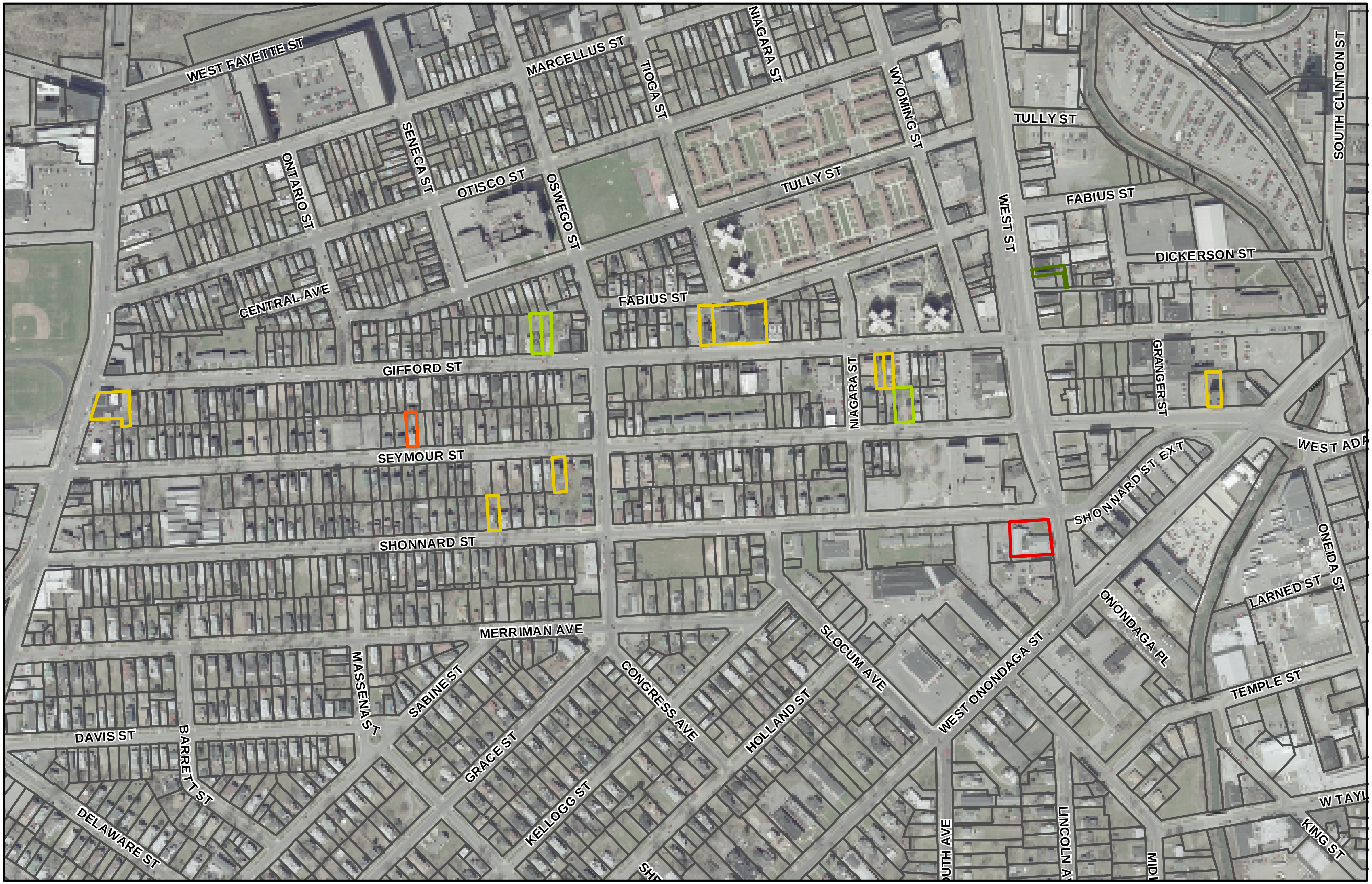
Figure 2.3: Pedestrian Path Locations

Upper left: Shonnard St.- Merriman Ave. path at Ward Bakery Park.
Upper right: Informal path between Seymour St. and Gifford St.
Lower: Seymour St.-Shonnard St. path, from Seymour St. (left), midpoint (center), and from Shonnard St. (right).

2.1.9 Adjacent Land Uses

The most common land use along Seymour, Shonnard, and Gifford Streets is residential. Residences are primarily a mix of single-family and two-family homes. There are two high-rise apartment buildings on Gifford Street and some low-rise apartment buildings scattered throughout the study area. There are also many community facilities in the study area, including Seymour Elementary School, Syracuse Community Health Center West, Huntington Family Center, Westside Learning Center, the Spanish Action League, the Determination Center, SALUD, Shonnard Street Boys and Girls Club, Vincent House, and a cluster of Rescue Mission buildings. Ward Bakery Park, which includes a children’s playground, is located on Shonnard Street between Oswego Street and Niagara Street. There are also a few small pocket parks in the study area.

A review of the City of Syracuse Historic Properties List showed some historic properties in the study area, as shown on Figure 2.4.



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Data Sources: SMTC, SOCPA,
City of Syracuse Historic Properties List
Prepared by SMTC, 07/2007

Figure 2.4

Historic Properties

Seymour-Shonnard Corridor Study

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Designee

- CBD Survey
- City Historic Resource Survey
- SHPO
- SLPB/SHPO
- Ward Survey

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Figure 2.5

Transit Services

Seymour-Shonnard Corridor Study

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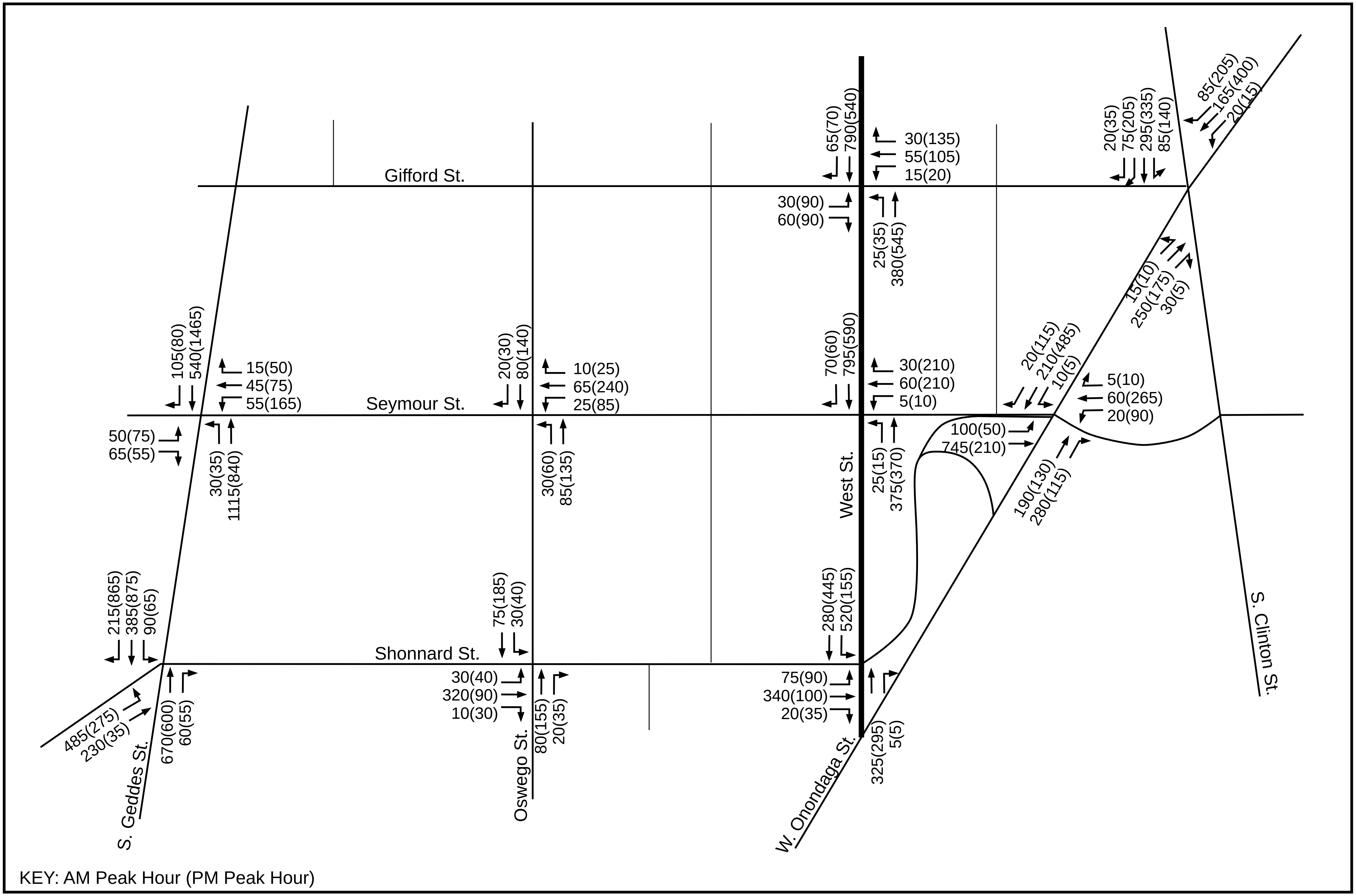

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Figure 2.6

2007 Existing Traffic Volumes

Seymour-Shonnard Corridor Study

Date: 12/2007

N

Not to scale

2.1.10 Transit Service

The streets with Centro service in and around the study area are shown on Figure 2.5. Centro bus routes 64, 164, 66, and 166 travel along Oswego Street, Gifford Street, West Street, and the portion of Shonnard Street from West Street to West Onondaga Street. These routes provide service from the Western Lights shopping plaza to downtown Syracuse, with extensions to St. Camillus (Route 166) and Bellevue Manor (Route 164). Route 64/164 operates every day from early morning through late evening at headways of about 30 minutes to one hour. Route 66/166 operates on weekdays and Saturdays from early morning through early evening at headways of about one hour.

2.2 Traffic Characteristics

2.2.1 Traffic Volumes

Existing (2007) AM and PM peak hour turning movement counts at the study area intersections are shown on Figure 2.6. Most of the study area intersections experienced peak hours from 7:30 a.m. to 8:30 a.m. and from 4:30 p.m. to 5:30 p.m. Table 2.1 provides a summary of intersection turning movement counts conducted in the study area.

In addition to the turning movement counts, automatic traffic recorders (ATRs) were installed by the NYSDOT on Seymour Street and Shonnard Street to record hourly traffic volumes over a period of several days. ATRs were installed on Seymour Street and Shonnard Street between West Street and West Onondaga Street from April 30, 2007, to May 3, 2007. ATRs were also installed on Seymour Street and Shonnard Street between Oswego Street and West Street from May 5, 2007, to May 11, 2007.

Table 2.1: Inventory of Turning Movement Counts at Study Area Intersections

Intersection	**Day/Date Counted**	**AM Peak Hour (begin)**	**PM Peak Hour (begin)**	**Counted by**
South Geddes Street/ Seymour Street	Thursday 4/19/2007	7:30 a.m.	4:45 p.m.	NYSDOT
South Geddes Street/ Shonnard Street	Wednesday 4/18/2007	7:30 a.m.	4:45 p.m.	NYSDOT
West Street/ Seymour Street	Thursday 4/26/2007	7:30 a.m.	4:30 p.m.	NYSDOT
West Street/ Shonnard Street	Wednesday 4/25/2007	7:45 a.m.	4:00 p.m.	NYSDOT
West Street/Gifford Street	Tuesday 5/22/2007	7:45 a.m.	4:30 p.m.	NYSDOT
Seymour Street/Oswego Street	Thursday 4/26/2007	7:30 a.m.	4:30 p.m.	NYSDOT
West Onondaga / South Clinton /Gifford Streets	Wednesday 5/23/2007	7:45 a.m.	4:30 p.m.	NYSDOT
Shonnard Street/ Oswego Street	Tues., 8/14/07 Thurs., 8/16/07	8:00 a.m.	5:00 p.m.	SMTC
West Onondaga / Seymour / West Adams Streets	Wed, 8/15/07 Wed, 9/5/07	7:30 a.m.	4:30 p.m.	SMTC

Based on the hourly traffic volume data from the ATRs, the peak hour on Seymour Street occured from 4:00 p.m. to 5:00 p.m. with approximately 320 to 380 vehicles per hour. The peak hour on Shonnard Street west of West Street occurred from 7:00 a.m. to 8:00 a.m. with approximately 340 vehicles per hour. The peak hour on Shonnard Street between West Street and West Onondaga Street occurred from 8:00 a.m. to 9:00 a.m. with approximately 900 vehicles per hour.

Hourly traffic volume data for commuter routes generally show a peak during the morning commuter period and another peak during the evening commuter period. However, hourly traffic volume data for Seymour Street and Shonnard Street show a different pattern, as illustrated by Figure 2.7. On Shonnard Street, traffic volumes peak during the morning commuter period and then decrease continuously throughout the remainder of the day without a clear evening peak hour. On Seymour Street, traffic volumes increase steadily throughout the day with no distinct morning peak hour and reach their maximum during the evening commuter period. Since these are both one-way streets, this pattern is logical. Shonnard Street, carrying traffic inbound to downtown, experiences a peak in the morning while Seymour Street, carrying traffic outbound from downtown, experiences a peak in the evening.

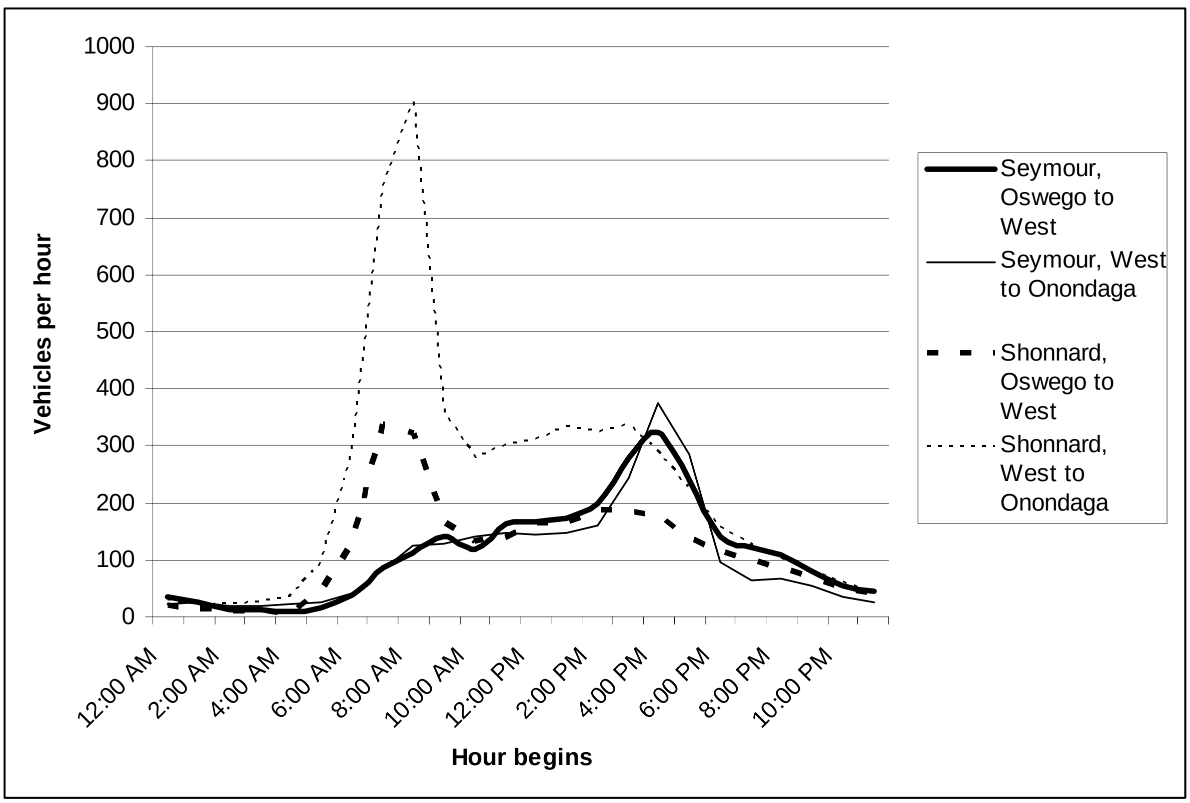

Figure 2.7: Hourly Traffic Volumes in the Study Area

2.2.2 Vehicle Speeds

In addition to the ATRs that were installed by the NYSDOT, the City of Syracuse Department of Public Works conducted hourly traffic volume counts in the study area as well. The counts conducted by the city also recorded vehicle speeds. The city recorded traffic volumes and speeds on Seymour Street between South Geddes Street and Oswego Street and on Shonnard Street between Oswego Street and Niagara Street for a period of approximately ten days beginning on July 9, 2007. As shown on Figure 2.8, most vehicles speeds were in the range of 26 mph to 30 mph. The data indicate that the mean speed on both streets is 27 mph and the median speed on both streets is 28 mph. The 85th percentile speed was found to be 34 mph on Seymour Street and 33 mph on Shonnard Street. The city speed limit of 30 mph applies to both Seymour Street and Shonnard Street. The vehicle speed data indicate that 29% of the vehicles on Seymour Street exceeded 30 mph and 26 % of vehicles on Shonnard Street exceeded 30 mph.

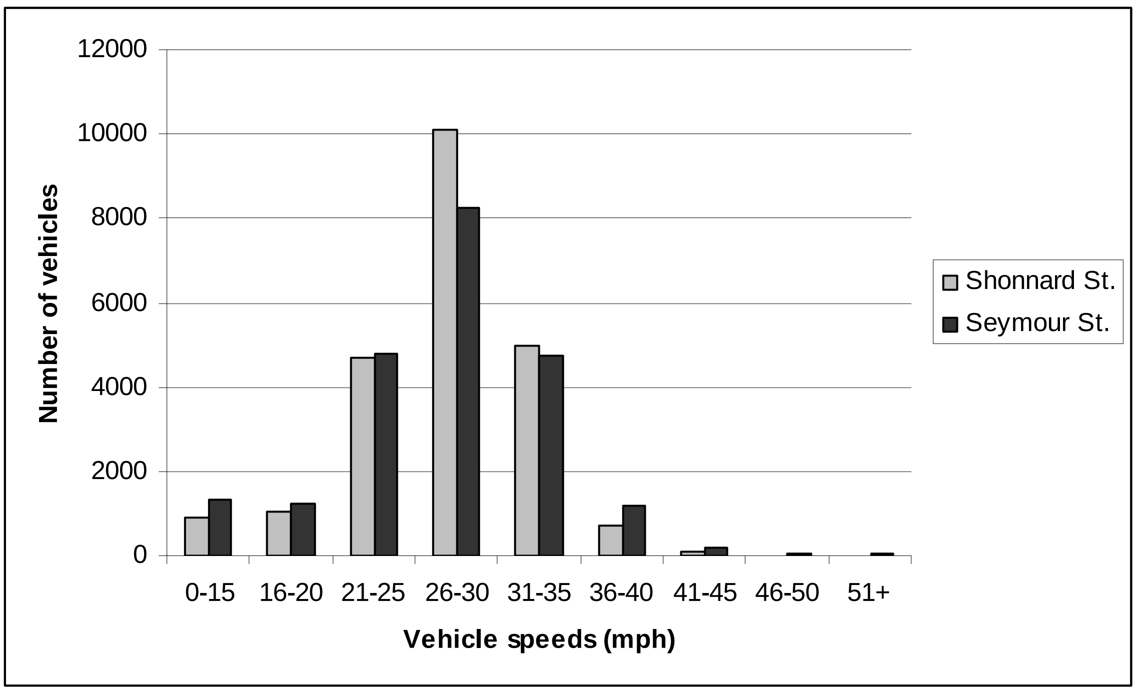

Figure 2.8: Vehicle Speed Data in the Study Area

2.2.3 Pedestrians and Bicyclists

Pedestrians and bicyclists were counted during the intersection turning movement counts discussed above. Pedestrian and bicycle volumes are shown on Figures 2.9 and 2.10, respectively. These volumes represent pedestrians and bicyclists crossing an intersection approach in either direction. Many pedestrians and bicyclists were observed to cross an approach multiple times during the counts, which contributed to rather high pedestrian and bicyclist volumes at some intersections.

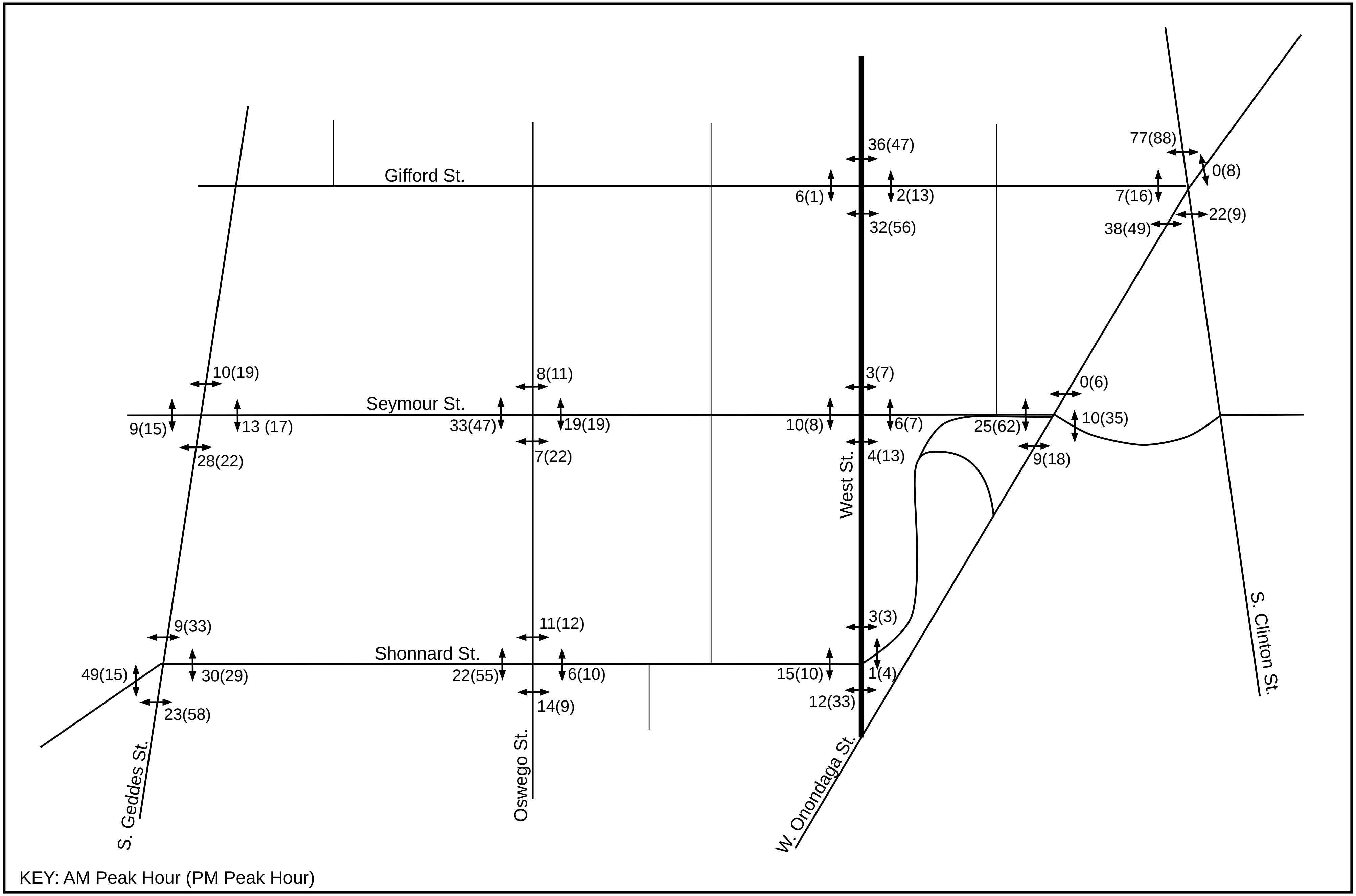

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Figure 2.9

2007 Existing Pedestrian Volumes

Seymour-Shonnard Corridor Study

Date: 12/2007

N

Not to scale

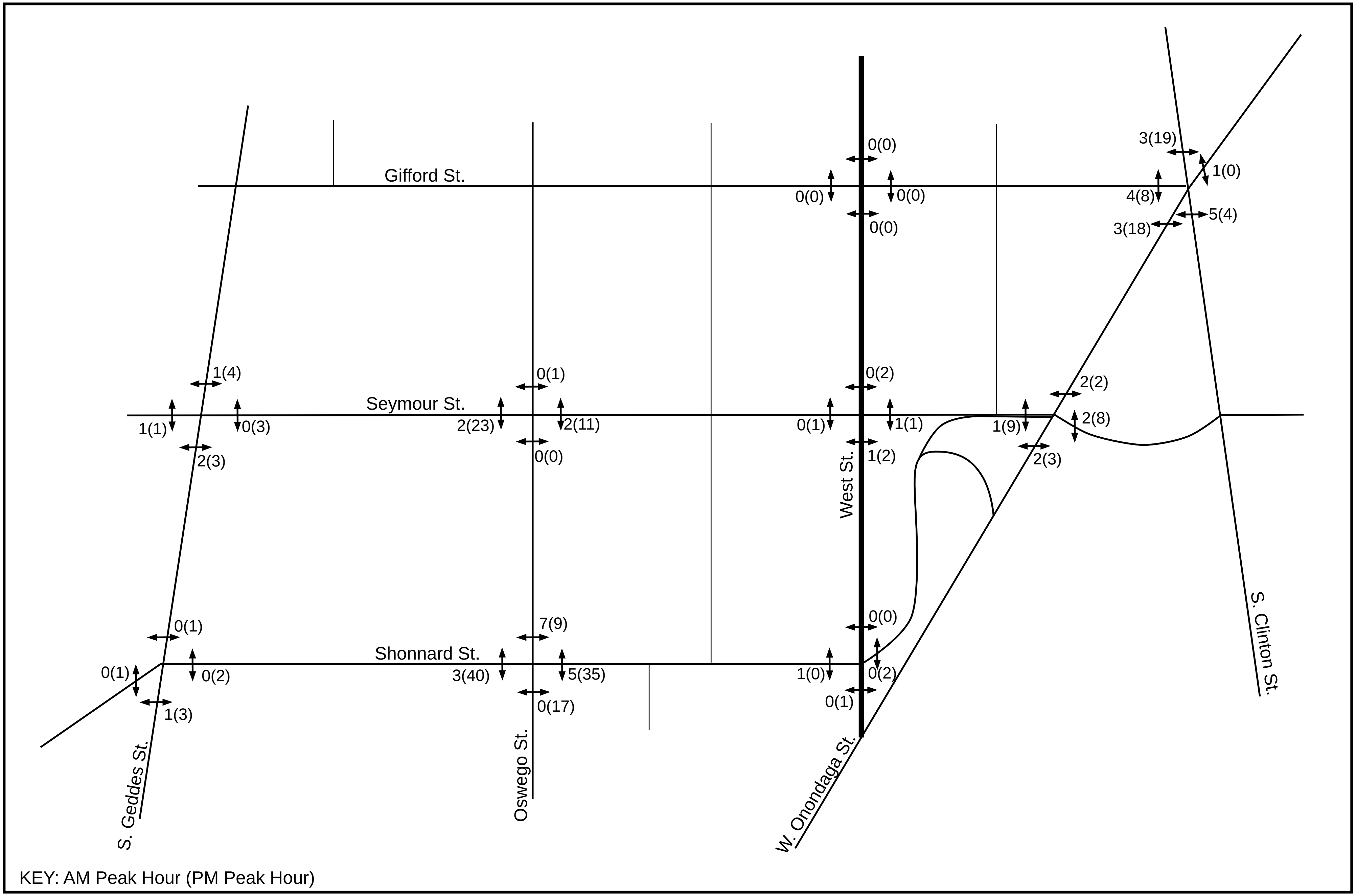

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Figure 2.10
2007 Existing Bicyclist Volumes
Seymour-Shonnard Corridor Study

Date: 12/2007

3 ANALYSIS

3.1 Overview

The analysis portion of this study consisted of:

- a comparison of traffic volumes under the existing conditions and the two-way alternatives;
- intersection capacity analysis at the study area intersections for the existing conditions and the two-way alternatives;
- accident analysis; and
- a qualitative examination of the impact of the proposed traffic flow change on bicycle and pedestrian accommodations, parking, overall neighborhood character, school traffic, and transit.

Intersection capacity analysis compares the actual volume of traffic at an intersection to the maximum volume of traffic that can pass through an intersection within a specified period of time (typically one hour) based on factors such as the number of travel lanes, width of travel lanes, and the type of traffic control (such as a stop sign or a traffic signal). Various software programs are used to automate the capacity analysis procedures described in the Transportation Research Board's *Highway Capacity Manual*. The capacity analysis procedures are used to calculate the amount of "control delay" experienced by drivers at an intersection. Control delay is the time that a driver spends decelerating, stopped, moving up in queue, and accelerating as a result of a traffic signal or stop sign. A letter grade – called a **level of service** (LOS) – is assigned to individual movements and/or a whole intersection based on the average control delay. There are six possible levels of service, from LOS A to LOS F, and each level of service corresponds to a range of delay values. LOS A represents ideal conditions with minimal delay to travelers. LOS F indicates that excessive delay is experienced at an intersection. Generally, LOS D is considered the minimum acceptable level of service.

All capacity analysis was completed using the existing (2007) traffic volumes for the AM and PM peak hours. Three scenarios were analyzed, including the existing conditions and two variations of the two-way traffic alternative, which are described in more detail below. The level of service (LOS) at each of the nine study area intersections was determined using Synchro 6 software.

Two alternatives were considered for traffic flow in the study area:

- **Alternative 1**: Two-way traffic on all of Gifford Street, all of Seymour Street, and the portion of Shonnard Street from Geddes Street to West Street (i.e. Shonnard Street Extension remains one-way).
- **Alternative 2**: Two-way traffic on Seymour Street and Shonnard Street only between Geddes Street and West Street (i.e. Gifford Street, Seymour Street, and Shonnard Street Extension between West Street and Onondaga Street remain one-way).

These alternatives are shown in Figures 3.1 and 3.2

Two-way traffic was not considered for the Shonnard Street Extension (between West Street and Onondaga Street) since this segment is part of the state arterial system and is used by the NYSDOT for detours from I-690.

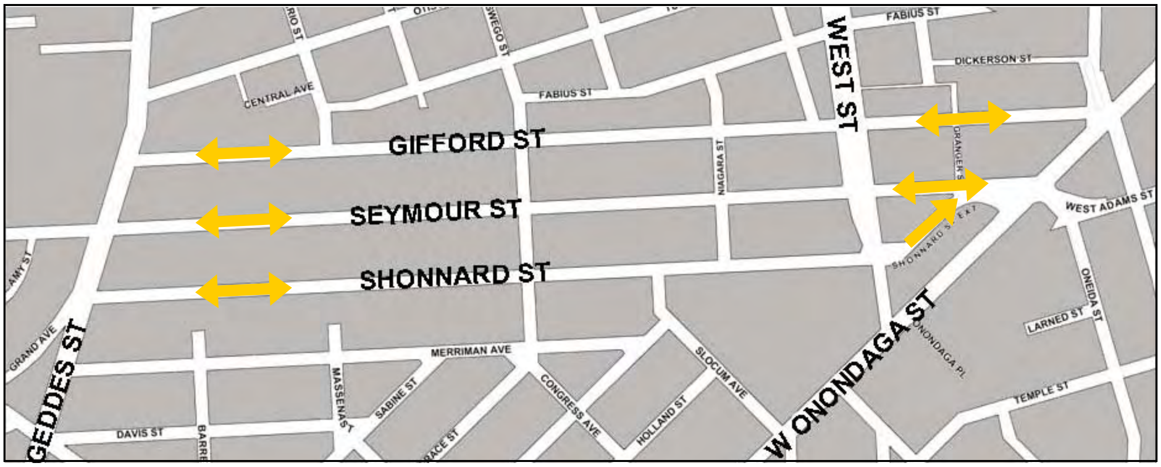


Figure 3.1: Alternative 1

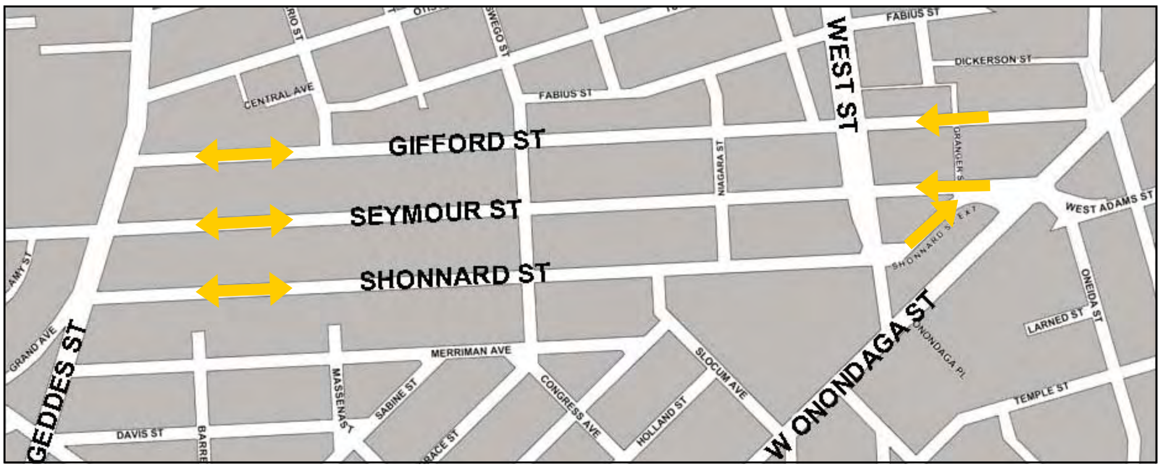


Figure 3.2: Alternative 2

3.2 Existing Capacity Analysis

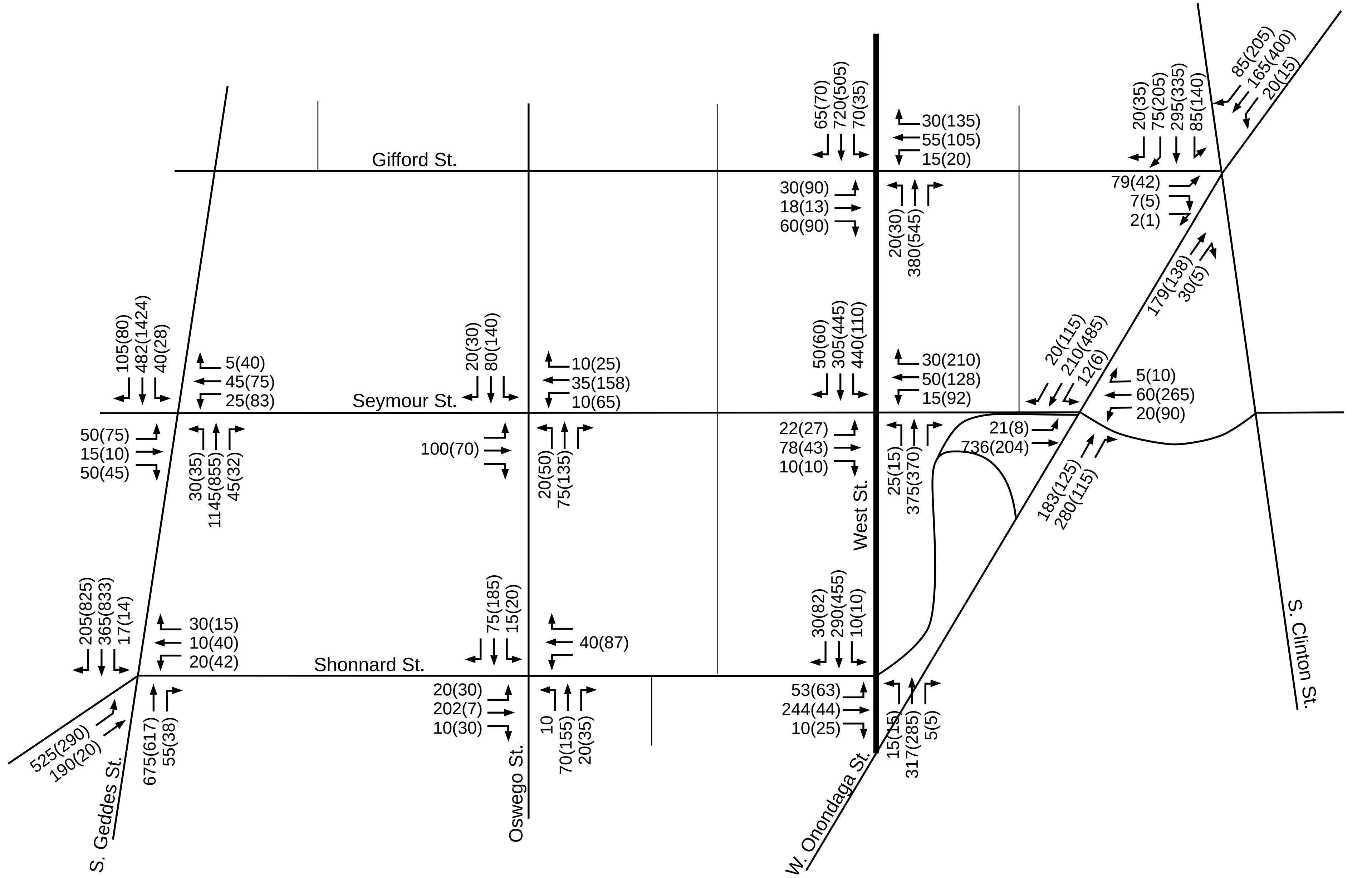
The existing conditions capacity analysis represents the current operating conditions at the nine study area intersections.

As shown in Tables 3.1 and 3.2, all of the study area intersections currently operate at an overall LOS C or better during both peak hours. All lane groups operate at LOS C or better during the AM peak hour. During the PM peak hour, three individual lane groups currently operate at LOS D (Gifford Street eastbound left/through/right at West Street, Clinton Street southbound right-turn at Onondaga Street, West Street southbound left-turn at Shonnard Street) with the remaining lane groups operating at LOS C or better. Overall, the capacity analysis shows good existing operating conditions throughout the study area. The analysis reports from Synchro are included in Appendix B.

3.3 Traffic Volumes for Alternatives

3.3.1 Traffic Reassignment

Traffic volumes for the alternatives were determined based on the existing traffic patterns and the location of destinations in and around the study area. SMTC staff performed a



KEY: AM Peak Hour (PM Peak Hour)

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Figure 3.3

Alternative 1 Traffic Volumes

Seymour-Shonnard Corridor Study

Date: 2/2008

N

Not to scale

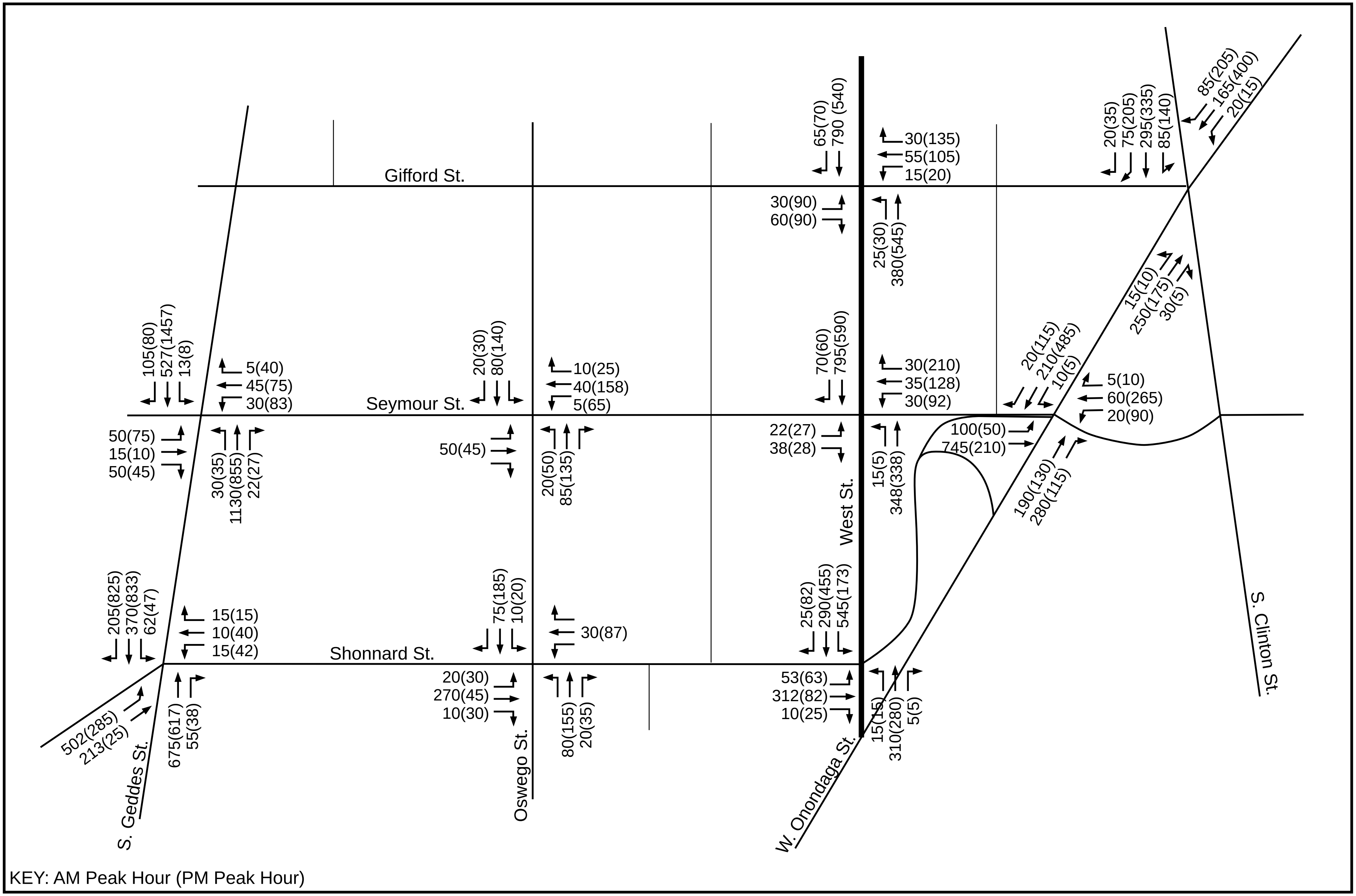

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Figure 3.4
Alternative 2 Traffic Volumes
Seymour-Shonnard Corridor Study

Date: 2/2008

N

Not to scale

manual reassignment of traffic in the study area for each alternative. The following considerations were taken into account while performing the traffic reassignments:

AM Peak Hour:

- The dominant traffic flow through the study area is eastbound on Shonnard Street. Since most of this traffic comes from Grand Avenue, it is likely that much of the traffic will remain on Shonnard Street as this will still be the most direct route to points in the downtown area. This is true for both alternatives.
- Under Alternative 1, some existing southbound left-turns from Geddes Street to Shonnard Street can be expected to divert to Seymour Street or Gifford Street; however, the location of the elementary school on Shonnard Street will limit to some extent the number of drivers that will change their route. An even smaller number of these commuters will divert from Shonnard Street to Seymour Street or Gifford Street under Alternative 2 because Shonnard Street will still provide the most direct access to Adams Street and Onondaga Street.
- The most significant diversion will be existing southbound left-turns from West Street to Shonnard Street under Alternative 1. Almost all of these vehicles can be expected to turn left at Seymour Street rather than Shonnard Street if the entire length of Seymour Street is made two-way. This change will not take place under Alternative 2.

PM Peak Hour:

- Commuters coming from downtown that are destined to West Street (in order to access the Interstate system) will not change their route since neither of the alternatives will create a new westbound link to West Street.
- Some commuters coming from downtown via Adams Street that are going to Grand Avenue or South Geddes Street can be expected to use Shonnard Street instead of Seymour Street under both two-way alternatives.

The resulting traffic volumes for Alternative 1 and Alternative 2 are shown in Figures 3.3 and 3.4, respectively.

During both peak hours for Alternative 1, lane usage would need to be modified at the Gifford Street/Onondaga Street/Clinton Street intersection. Currently, northbound left-turns from Onondaga Street onto Gifford Street are permitted via a slip ramp located prior to the signal, as shown below; left-turns are prohibited from this approach at the signal. If two-way traffic is implemented on Gifford Street, the left-turns from Onondaga Street could no longer use the slip ramp (however, right-turns from Gifford Street eastbound to Onondaga Street southbound could use this slip-ramp under Alternative 1). Based on the turning movement count at this intersection, only 10 to 15 vehicles make this left-turn movement during the peak hours, with about half of these vehicles turning into the Trolley Lot access road and half turning onto Gifford Street westbound. If left-turns are completely prohibited from Onondaga Street northbound, then drivers destined to the Trolley Lot would need to continue north on Onondaga Street into downtown and enter the parking lot from West Jefferson Street in Armory Square. Drivers destined to the segment of Gifford Street between West Street and Onondaga Street would need to adjust their travel route and use the West Street frontage road to make a right turn onto Gifford Street eastbound. Although there might be some initial confusion as drivers adjust their travel patterns, the number of drivers impacted is expected to be small. Figure 3.5 shows lane configurations and turning movements at this intersection under the existing conditions and under Alternative 1.

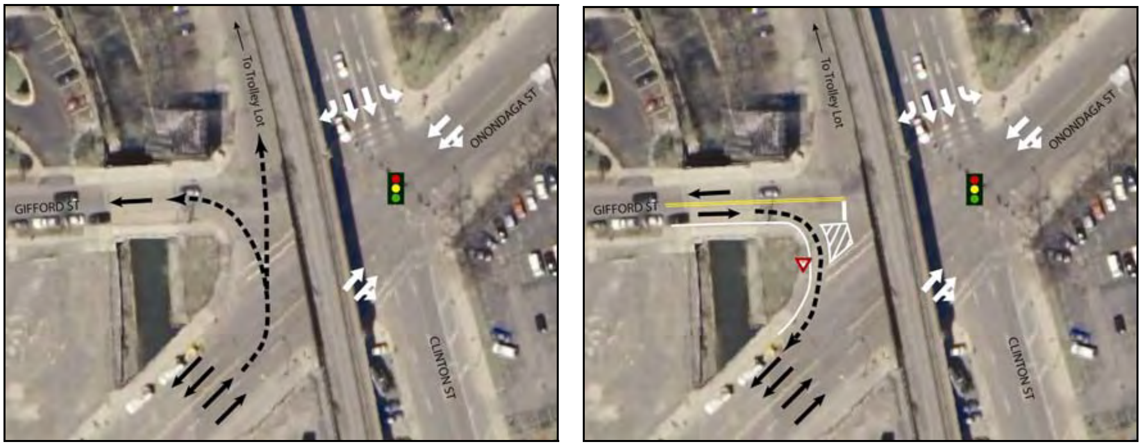

Figure 3.5: Turning Movements at Gifford Street/Onondaga Street/Clinton Street, existing (left) and under Alternative 1 (right)

3.3.2 Traffic Volume Comparison

The total (two-way) expected traffic volumes on Seymour Street and Shonnard Street between Geddes Street and West Street under each alternative were compared to the existing traffic volumes at these same locations. The following conclusions result.

Alternative 1:

- The greatest increase in total traffic for Alternative 1 is expected on Seymour Street during the AM peak hour, with an increase of approximately 50 to 65 %. However, it must be noted that the actual volume increase is approximately 60 to 65 vehicles per hour or, on average, approximately one additional vehicle each minute during the AM peak hour.
- Traffic volumes are also expected to increase slightly on Shonnard Street during the PM peak hour (by approximately 5%, or fewer than 5 vehicles per hour).
- Traffic volumes are expected to decrease on Seymour Street during the PM peak hour (by approximately 10%) and on Shonnard Street during the AM peak hour (by approximately 20%).

Alternative 2:

- Overall, Alternative 2 is expected to have a minimal impact on commuter behavior since the link from West Street to downtown will remain unchanged. Alternative 2 would primarily serve to enhance mobility within the residential neighborhood between Geddes Street and West Street.
- The greatest increase in total traffic for Alternative 2 is expected on Shonnard Street during the PM peak hour, with an increase of approximately 15 to 30%. This percent change results in fewer than 45 additional vehicles per hour.

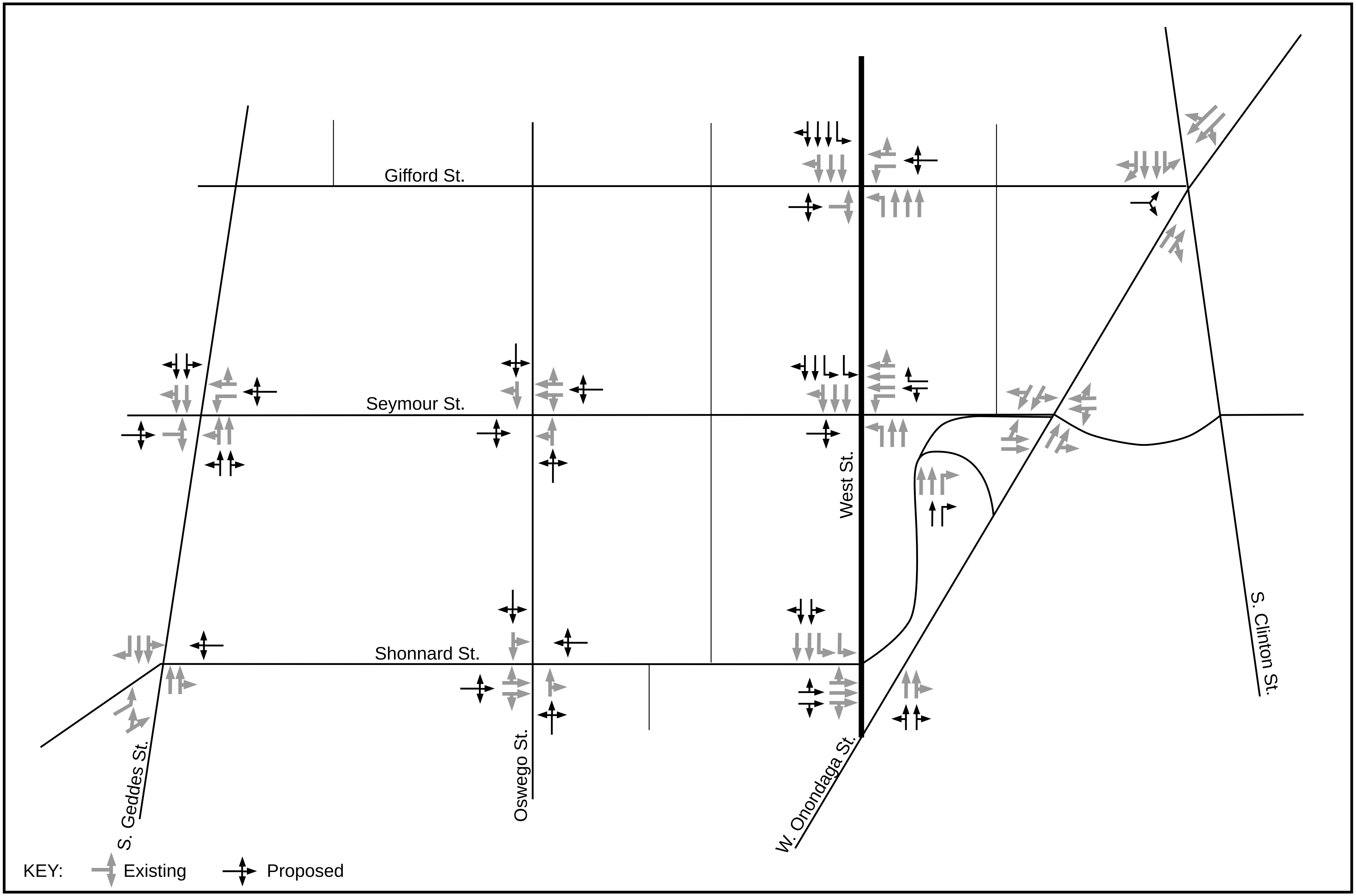

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Figure 3.6

Alternative 1 Lane Configurations

Seymour-Shonnard Corridor Study

Date: 1/2008

N

Not to scale

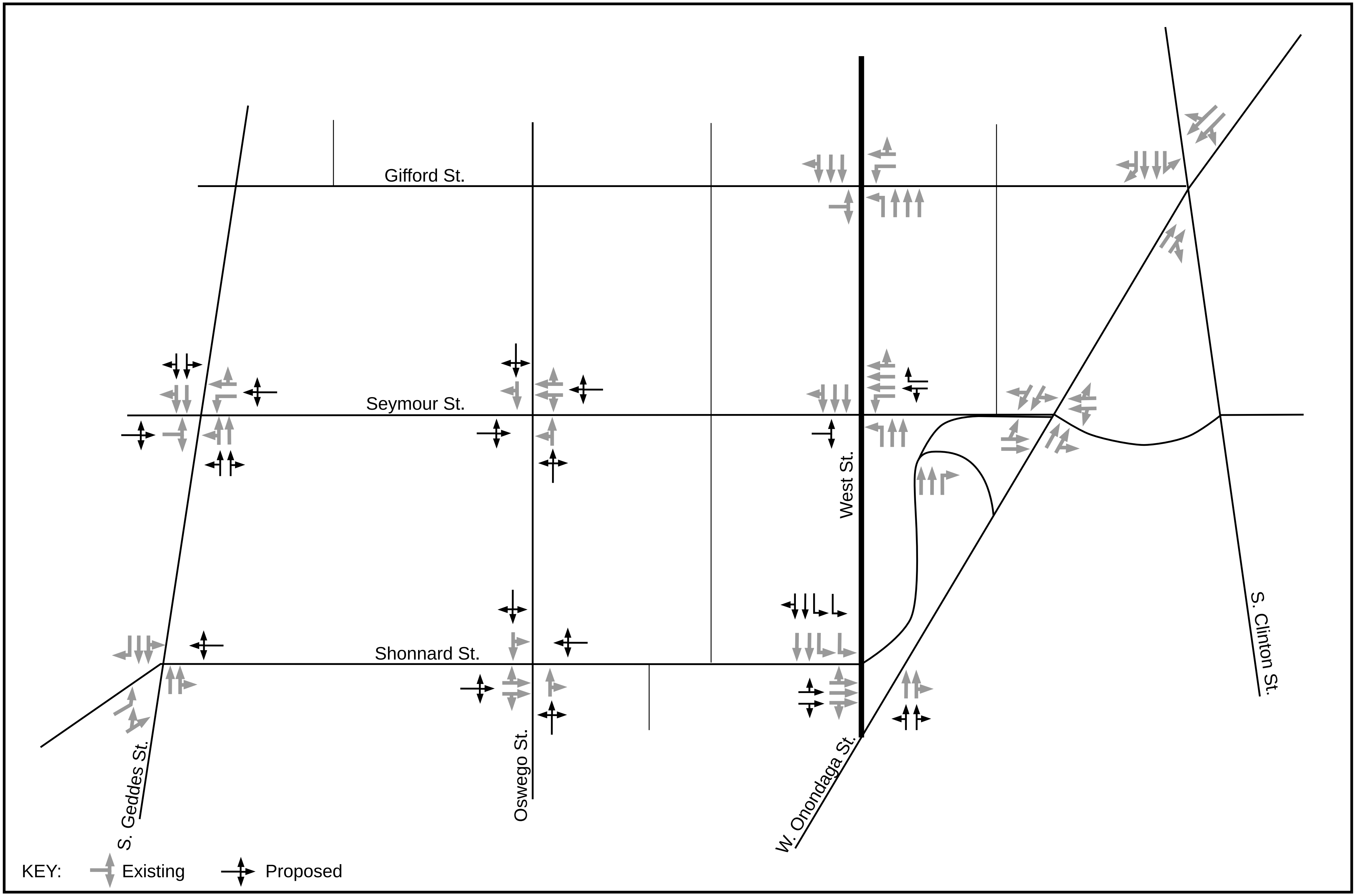

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Figure 3.7
Alternative 2 Lane Configurations
Seymour-Shonnard Corridor Study

Date: 1/2008

N

Not to scale

- Traffic volumes are also expected to increase on Seymour Street during the AM peak hour, although the increase is expected to be approximately 15 percent or less (approximately 15 additional vehicles per hour).
- Traffic volumes are expected to decrease on Seymour Street during the PM peak hour (by approximately 15 percent) and on Shonnard Street during the AM peak hour (by approximately 5 percent).

3.4 Alternatives Capacity Analysis

Tables 3.1 and 3.2 show the capacity analysis results for the two-way alternatives. Lane configurations were modified as necessary to accommodate the change in traffic flow, as shown on Figures 3.6 and 3.7. The proposed lane configurations do not include any modifications that would require pavement widening. Signal timings were optimized in Synchro for each alternative. The analysis reports from Synchro are included in Appendix B.

3.4.1 Alternative 1 Analysis Results

The capacity analysis results for Alternative 1 indicate that:

- The two unsignalized intersections will continue to operate at good levels of service with little to no increase in delay during both peak hours.
- Some signalized intersections that currently operate at LOS A or LOS B will experience a degradation in the level of service and an accompanying increase in overall delay; however, all of the signalized intersections will operate at an overall LOS C or better during both peak hours under Alternative 1. The increase in overall delay at signalized intersections is expected to be less than 15 seconds during both peak hours.
- Some existing individual lane groups will operate at LOS D during the PM peak hour (specifically, Geddes Street southbound at Seymour Street and Grand Avenue eastbound at Geddes Street). These groups currently operate at LOS C.
- The increase in delay for most individual lane groups is expected to be 15 seconds or less during both peak hours. A few lane groups will experience increases in delay greater than 15 seconds, with the most significant increase of 22 seconds on the westbound Onondaga Street approach at Clinton Street during the PM peak hour. Many lane groups will actually experience a decrease in delay.
- One new lane group – Shonnard Street westbound at Geddes Street – is expected to operate at LOS D.

3.4.2 Alternative 2 Analysis Results

The capacity analysis results for Alternative 2 indicate that:

- The two unsignalized intersections will continue to operate at good levels of service with little to no increase in delay during both peak hours.
- All of the signalized intersections are expected to continue operating at existing or improved levels of service with the exception of Grand Avenue/Shonnard Street/Geddes Street. This intersection is expected to experience an overall increase in delay of approximately 10 seconds with level of service degrading from LOS B to LOS C during the PM peak hour.

- All of the signalized intersections are expected to operate at an overall LOS C or better during both peak hours.
- Some individual lane groups will experience a degradation in level of service from LOS B or C to LOS D during the PM peak hour (specifically, Grand Avenue eastbound at Geddes Street and Geddes Street southbound right-turn at Shonnard Street/Grand Avenue).
- Most individual lane groups will experience little to no increase in delay. The most significant increase in delay (approximately 24 seconds) is expected for the Geddes Street southbound right-turn to Grand Avenue during the PM peak hour.

Overall, all intersections and individual lane groups will operate at acceptable – LOS D or better – levels of service during both peak hours under Alternative 1 and Alternative 2. Some intersections and lane groups will experience an increase in delay, though generally this increase is expected to be 15 seconds or less. Some intersections are expected to experience a decrease in delay under one or both of the alternatives.

Table 3.1: Signalized Intersection Level of Service Summary

			AM Peak Hour			**PM Peak Hour**		
Intersection-Approach-Lane Group			**Existing**	**Alt 1**	**Alt 2**	**Existing**	**Alt 1**	**Alt 2**
Gifford St./West St.								
Gifford St.	EB	L(T)R	C (28)	C (28)	C (28)	D (37)	C (33)	D (37)
Gifford. St.	WB	L (L)TR	C (24) C (25)	--- C (32)	C (24) C (25)	B (15) B (19)	--- C (35)	B (15) B (19)
West St.	NB	L T	A (4) A (4)	A (2) A (3)	A (4) A (4)	A (6) A (6)	A (7) A (7)	A (6) A (6)
West St.	SB	(L) TR	--- A (5)	A(4) A (5)	--- A (5)	--- A (8)	B(17) B (17)	--- A (8)
Overall			*A (7)*	*A (8)*	*A (7)*	*B (13)*	*B (19)*	*B (13)*
Gifford St./Onondaga St./Clinton St.								
Gifford St.	EB	(LR)	---	B (14)	---	---	B (15)	---
Clinton St.	SB	L T R	C (29) C (30) C (30)	C (29) C (30) C (30)	C (29) C (30) C (30)	C (28) C (28) D (36)	C (29) C (29) D (38)	C (28) C (28) D (37)
Onondaga St.	EB	TR	A (3)	B (11)	A (4)	A (5)	C (22)	A (7)
Onondaga St.	WB	LTR	A (4)	C (23)	A (4)	A (6)	C (28)	A (6)
Overall			*B (15)*	*C (23)*	*B (16)*	*B (17)*	*C (29)*	*B (18)*
Shonnard St. Ext./Onondaga St./ Adams St.								
Shonnard St. Ext.	EB	LT	A (6)	B (11)	A (3)	A (8)	A (6)	A (7)
Adams St.	WB	LTR	A (9)	B (13)	A (9)	A (10)	B (17)	A (9)
Onondaga St.	NB	TR	C (21)	B (15)	C (21)	B (20)	B (13)	B (20)
Onondaga St.	SB	LTR	B (18)	B (12)	B (18)	C (24)	B (10)	C (24)
Overall			*B (12)*	*B (13)*	*B (11)*	*B (17)*	*B (12)*	*B (16)*
Seymour St./West St.								
Seymour St.	EB	(LTR)	---	C (31)	C (31)	---	C (22)	C (26)
Seymour St.	WB	L(T) TR (R)	C (30) C (30)	C (24) C (23)	C (28) C (26)	C (25) C (28)	B (19) B (18)	C (35) C (32)
West St.	NB	L T	A (7) A (7)	B (19) C (24)	A (3) A (4)	A (4) A (4)	B (15) B (17)	A (2) A (2)
West St.	SB	(L) TR	--- A (1)	B (14) A (2)	--- A (2)	--- A (4)	C (21) A (3)	--- A (3)
Overall			*A (5)*	*B (16)*	*A (6)*	*B (11)*	*B (13)*	*B (13)*

Table 3.1, continued: Signalized Intersection Level of Service Summary

Intersection-Approach-Lane Group			AM Peak Hour Existing	AM Peak Hour Alt 1	AM Peak Hour Alt 2	PM Peak Hour Existing	PM Peak Hour Alt 1	PM Peak Hour Alt 2
Seymour St./Geddes St.								
Seymour St.	EB	L(T)R	C (34)	C (34)	C (34)	B (19)	B (19)	C (22)
Seymour St.	WB	L (L)TR	C (34) C (31)	--- C (32)	--- C (32)	C (22) B (18)	--- C (21)	--- C (24)
Geddes St.	NB	LT(R)	A (6)	A (8)	A (8)	C (26)	B (13)	A (9)
Geddes St.	SB	(L)TR	A (5)	A (6)	A (6)	C (29)	D (45)	C (26)
Overall			*A (9)*	*B (11)*	*B (10)*	*C (27)*	*C (31)*	*B (20)*
Grand Ave./Shonnard St./Geddes St.								
Grand Ave.	EB	L LT	B (16) B (16)	C (28) C (29)	C (28) C (29)	C (32) C (33)	D (45) D (48)	D (42) D (43)
Shonnard St.	WB	(LTR)	---	C (34)	C (33)	---	D (41)	C (34)
Geddes St.	NB	TR	C (22)	C (28)	C (29)	A (6)	B (13)	B (13)
Geddes St.	SB	LT R	C (25) C (21)	C (23) C (25)	C (28) C (25)	A (8) B (13)	A (4) C (28)	A (6) D (37)
Overall			*C (21)*	*C (27)*	*C (28)*	*B (12)*	*C (20)*	*C (22)*
Shonnard St./West St.								
Shonnard St.	EB	LTR	C (31)	C (32)	C (31)	C (30)	C (34)	C (34)
West St.	NB	(L)TR	C (25)	A (4)	C (24)	A (9)	A (3)	B (16)
West St.	SB	L (L)T(R)	B (14) A (9)	--- A (2)	B (17) A (3)	D (42) A (1)	--- A (2)	C (26) A (4)
Overall			*B (19)*	*B (12)*	*B (19)*	*B (16)*	*A (8)*	*B (16)*

Table 3.2: Unsignalized Intersection Level of Service Summary

Intersection-Approach-Lane Group			AM Peak Hour Existing	AM Peak Hour 2-way Alt 1	AM Peak Hour 2-way Alt 2	PM Peak Hour Existing	PM Peak Hour 2-way Alt 1	PM Peak Hour 2-way Alt 2
Seymour St./Oswego St.								
Seymour St.	EB	(LTR)	---	A (9)	A (8)	---	A (9)	A (9)
Seymour St.	WB	LTR	A (8)	A (8)	A (8)	B (11)	B (12)	B (12)
Oswego St.	NB	LT(R)	A (9)	A (9)	A (8)	B (11)	B (11)	B (11)
Oswego St.	SB	(L)TR	A (8)	A (9)	A (8)	B (10)	B (10)	A (9)
Shonnard St./Oswego St.								
Shonnard St.	EB	LTR	A (9)	A (10)	B (11)	A (8)	A (9)	A (9)
Shonnard St.	WB	(LTR)	---	A (8)	A (8)	---	A (9)	A (9)
Oswego St.	NB	(L)TR	A (9)	A (9)	A (9)	A (9)	A (9)	A (9)
Oswego St.	SB	LT(R)	A (9)	A (9)	A (9)	B (10)	A (10)	A (10)
Seymour St./Shonnard St. Extension								
Shonnard St. Ext.	EB	R	---	B (14)	---	---	A (9)	---

Key: X (Y) = Level of service (delay, in seconds)
NB, SB, EB, WB = northbound, southbound, eastbound, and westbound approach to intersection
L, T, R = left, through, and right movements.
Note: Movements NOT in parentheses indicate existing turning movements. Movements shown in parentheses indicate future movements under the alternatives.
--- = lane group does not exist under this scenario

3.5 Accident Analysis

Accident data from the NYSDOT's Safety Information Management System were examined for the study area for the latest three-year period available (2004 through 2006). The calculated accident rates for all segments within the study area were found to exceed the statewide averages for similar-type facilities.

The SIMS data indicate that approximately 27 percent of the accidents were classified as property damage only and 73 percent of the accidents were classified as injuries. Figure 3.8 shows the percentage of accidents by type within the study area for the years 2004 through 2006. Right angle collisions made up the largest percentage of the accidents. A high number of accidents were listed as "unable to determine" (either the accident type was not known or the field was left blank on the accident report). The remaining accidents consisted mostly of rear-end and left-turn collisions.

Accident type data were also examined for the existing two-way segment of Gifford Street. The existing two-way segment of Gifford Street was found to have a higher percentage of accidents classified as "unable to determine" and a lower percentage of right angle accidents than the one-way segments in the study area.

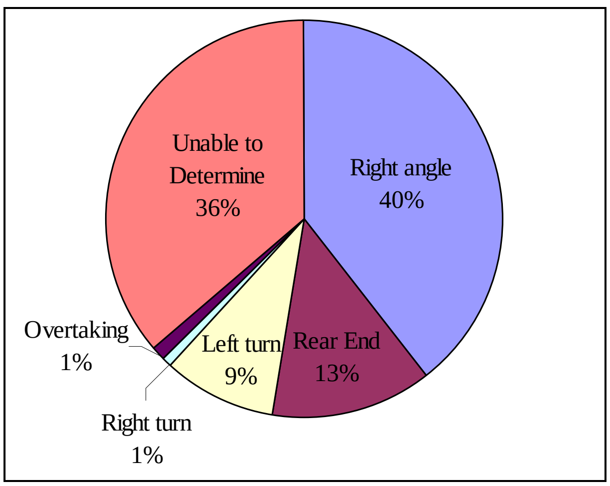

Figure 3.8: Study Area Accidents by Type, 2004-2006

None of the West Street intersections in the study area are included on the NYSDOT's current Priority Investigation Locations (PIL) list. (The remaining streets in the study area are city streets and, therefore, would not be considered for the NYSDOT PIL list.)

3.6 Other Considerations

3.6.1 Pedestrian and Bicycle Considerations

The potential traffic flow change would not impact the existing sidewalks as no road widening is proposed. With two-way traffic, pedestrians will need to be alert for traffic approaching from both directions when crossing the street. Also, bicyclists riding with traffic will have less space on the road with two-way traffic. However, two-way traffic flow would effectively narrow the travel lanes and is expected to have a traffic calming effect. Slower traffic would provide a safer environment for pedestrians and bicyclists.

Community stakeholders raised concerns about the relatively long blocks on Seymour Street, Shonnard Street, and Gifford Street limiting pedestrian mobility in the study area. In particular, the distance from Geddes Street to Oswego Street is significantly greater than most city blocks. As described in Chapter 2, some mid-block pedestrian paths – both formalized and informal – already exist. Two-way traffic is not expected to have an impact on the creation of additional pathways. As the city continues to expand the pedestrian path network in this area, consideration should be given to installing mid-block pedestrian crosswalks to create a safer environment for pedestrians at the endpoints of the pathways.

3.6.2 Parking

As described in Chapter 2, odd/even parking is currently permitted on Seymour Street and Shonnard Street between Geddes Street and West Street. There is no parking permitted on Seymour Street or Shonnard Street between West Street and Onondaga Street. The one-way portion of Gifford Street (from Onondaga Street to West Street) has parking on the south side of the street only.

The minimum existing curb-to-curb pavement width in the study area is 29 feet. This would provide enough space for two 10.5-foot travel lanes (one in each direction) and an 8-foot parking lane (alternating sides for odd/even parking). This is an appropriate cross-section for an urban residential street. Also, it should be noted that the existing two-way portion of Gifford Street (between Geddes Street and West Street) is 29-feet wide and accommodates odd/even on-street parking along with two-way traffic. Under either two-way alternative, parking should be prohibited at an appropriate distance from each intersection on all approaches (i.e. "No Stopping Here to Corner" or similar sign should be posted). This would result in a very minimal decrease in the available on-street parking.

3.6.3 Neighborhood Character

The existing traffic configuration between Geddes Street and West Street is not in keeping with the residential character of the neighborhood. The road feels excessively wide for one or even two travel lanes, which likely contributes to speeding in the study area. The lack of lane markings makes the actual number of travel lanes ambiguous, which is confusing for drivers unfamiliar with the area. In contrast, two-way traffic with on-street parking is typical of residential streets throughout the city and is the situation that drivers tend to expect in a residential neighborhood. Alternative 1 would have the additional benefit of providing a more direct connection to downtown for residents of the study area.

3.6.4 School Traffic

The staff of Seymour Elementary School expressed concerns about pedestrian safety and busing patterns with two-way traffic. As noted above, two-way traffic generally has a traffic calming effect and slower traffic would serve to enhance pedestrian safety in the area. Students, staff, and parents would need to be given adequate notice of any potential traffic flow change. Students would need to be instructed to look for traffic from both directions when crossing the street if two-way traffic was implemented.

School buses currently pick up and drop off students in a pull-off on the north side of Shonnard Street, as illustrated by Figure 3.9. Under the current configuration, students must board and alight from the street-side (south side) of the bus, as opposed to the school-side of the bus. With two-way traffic on Shonnard Street, buses could approach the school from the east and students would be able to board and alight from the school-side of the bus, as shown on Figure 3.9. Similarly, parents dropping off students in the morning would be able to approach from the east on Shonnard Street and the students could exit the vehicle directly in front of the school, without having the cross the street. In the afternoon, parents would be able to approach the school from the west on Seymour Street and students could enter the vehicles directly from the school without needing the cross the street.

If two-way traffic is implemented on Seymour Street and Shonnard Street, the Department of Public Works should work with the staff of Seymour Elementary School to devise a new busing and student pick-up/drop-off plan that ensures student safety. The details of such a plan are beyond the scope of this study; however, based on current observations and the considerations described above it appears that a safe and acceptable plan is achievable.

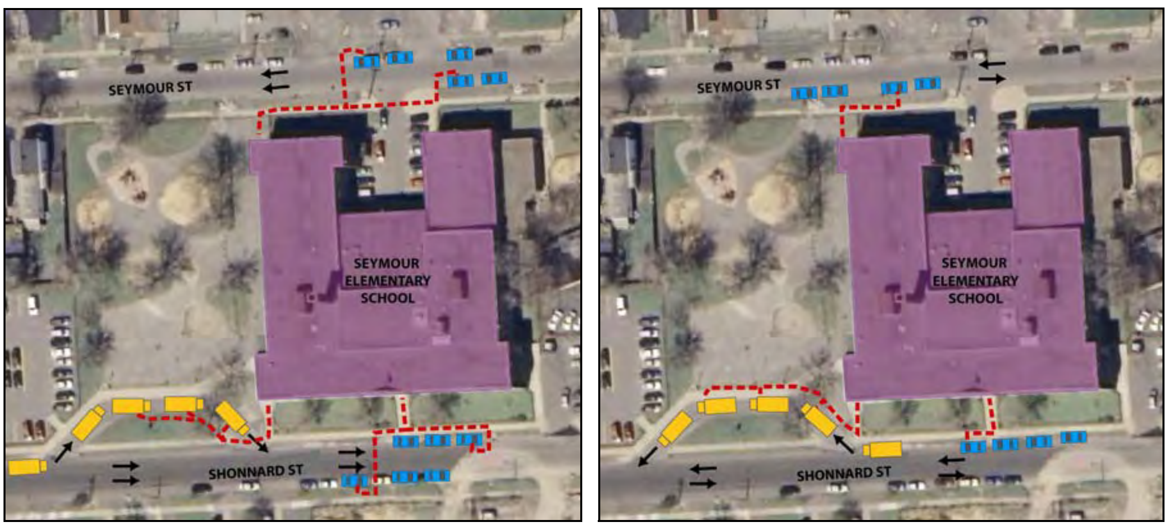

Figure 3.9: School Traffic, existing (left) and with two-way streets (right)

3.6.5 Transit

Passengers must board and alight on different streets when bus routes include one-way streets, which can be confusing, especially for infrequent riders. Two-way streets make bus routes simpler since inbound and outbound stops are located on opposite sides of the same street.

Under either of the two-way alternatives, buses could continue to follow the existing routes. Currently, buses travel eastbound on the Shonnard Street Extension and westbound on Gifford Street (see Figure 2.4). If two-way traffic is implemented along the entire length of Gifford Street (Alternative 1), buses would have the option to use Gifford Street for both the eastbound and westbound trip.

4 RECOMMENDATIONS

4.1 Overview

The recommendations contained in this report are the product of the technical and qualitative analysis described in the previous chapter; input garnered from the community through emails, phone calls, and public meetings; and guidance from the Study Advisory Committee. The recommendations reflect the evaluation in the matrix below.

Table 4.1: Alternatives Evaluation Matrix

<table>
<tr><th></th><th>Existing</th><th>Alternative 1</th><th>Alternative 2</th></tr>
<tr><td>Traffic Volumes</td><td>▪ Seymour peak – PM (app. 350 vehicles/hr.)
▪ Shonnard peak – AM (app. 340 vehicles/hr.) (higher on extension)</td><td>▪ Greatest increase on Seymour during AM (60-65 cars/hr.)</td><td>▪ Greatest increase on Shonnard during PM (<45 cars/hr.)</td></tr>
<tr><td>Intersection Operations</td><td>▪ All at LOS C or better during peaks
▪ Issues with individual lane groups</td><td>▪ Some degradation in LOS
▪ All at LOS C or better during peaks
▪ Issues with individual lane groups</td><td>▪ Same or improved LOS, with one degradation
▪ All at LOS C or better during peaks
▪ Issues with individual lane groups</td></tr>
<tr><td>Accident Analysis</td><td>▪ Rates exceed statewide averages</td><td>▪ Potential traffic calming effect
▪ Potential for reduced driver confusion</td><td>▪ Potential traffic calming effect</td></tr>
<tr><td>Pedestrians & Bikes</td><td>▪ Standard sidewalks
▪ Some mid-block paths, more planned</td><td colspan="2">▪ No impact to sidewalks or paths
▪ Potential traffic calming effect
▪ Potential for conflicts at outset</td></tr>
<tr><td>Parking</td><td>▪ Parking on most streets</td><td colspan="2">▪ Minimal decrease in parking at intersections and in front of Seymour School</td></tr>
<tr><td>Character</td><td>▪ Pattern incongruent with residential neighborhood</td><td>▪ Improved access to homes
▪ Pattern congruent with residential character
▪ Improved connection to downtown</td><td>▪ Improved access to homes
▪ Pattern congruent with residential character</td></tr>
<tr><td>School Traffic</td><td>▪ Students exit and board cars/buses to and from travel lane
▪ Students forced to cross street</td><td colspan="2">▪ Students exit and board cars/buses to and from sidewalk
▪ Simpler, and as intended</td></tr>
<tr><td>Transit</td><td>▪ Different eastbound and westbound routes</td><td>▪ Eastbound and westbound routes on same street</td><td>▪ Different eastbound and westbound routes</td></tr>
<tr><td>Cost</td><td>▪ Not applicable</td><td>▪ High</td><td>▪ Low</td></tr>
<tr><td>Community Response</td><td>▪ Positive and negative reactions</td><td colspan="2">▪ Positive and negative reactions</td></tr>
</table>

The evaluation of the alternatives indicates that a transition to two-way traffic on Seymour Street, Gifford Street, and portions of Shonnard Street is feasible. In addition, the analysis finds significant benefits in this approach. A transition to two-way traffic would involve relatively minor changes in traffic volumes and would not significantly diminish intersection operations. Simultaneously, the conversion should improve access to homes, schools, and other locations in the study area; reduce confusion for unfamiliar drivers; improve transit operations; result in a traffic pattern much more in keeping with residential neighborhoods throughout the City of Syracuse; and improve pedestrian and bike conditions. As a result, this study recommends that the city and NYSDOT coordinate to implement the two-way traffic conversion.

It should be noted that, while support exists in the study area for the two-way change, there is also some significant public concern regarding the two-way concept, especially with regard to safety. For this reason, the recommendations below include not only the capital improvements necessary to safely transition to two-way traffic, but also programmatic efforts which may be just as important. In addition, and because of the significant cost of some of the improvements associated with a two-way change, a phased approach is recommended.

4.2 Phase I: Outreach, Design, and Engineering

This study recommends that, prior to implementing any physical changes on Seymour, Shonnard, or Gifford Streets, several essential programmatic efforts be undertaken:

- *Implement Coordinated Public Education and Outreach Campaign.* The first of these efforts is a coordinated public education and outreach campaign. This campaign should include an educational component which focuses on the benefits of the conversion to two-way traffic. The effort should also include elements simply designed to raise public awareness about the conversion, the timeline, and expected conditions for pedestrians, bicyclists, and drivers. The campaign should be coordinated to include, at minimum, the following components:
  - *Education at local schools.* A program should be developed for use with local school children, particularly those at the Seymour School, to aid teachers and students in the transition to two-way traffic.
  - *Distribution of fliers and other educational materials.* Fliers, notices, or other materials should be distributed to residential and business addresses within the study area to notify them of the two-way conversion. Materials should focus on the conversion's implications for pedestrians, bicyclists, and drivers in the study area. All materials should include graphics and be printed in both English and Spanish.
- *Develop a Busing, Drop-off, and Pick-up Plan.* The city's Department of Public Works should work with the Syracuse City School District and the Seymour School to develop a plan to accommodate bus and car traffic at the Seymour School under a two-way scenario.
- *Increase Police Enforcement.* It is recommended that the City of Syracuse Police Department examine the feasibility of enhanced parking enforcement and traffic monitoring programs in the neighborhood, especially in the area of Gifford Street,

in order to curb parking violations, speeding, and other activity that affects both the function of these streets and the safety of residents, bikers, walkers, and drivers.

- *Conduct Design and Engineering.* The city, in coordination with NYSDOT, should complete traffic engineering and design work for all intersection and road improvements in Phases II and III.

4.3 Phase II: Implementation of Alternative 2

In Phase II, this study recommends the implementation of Alternative 2, including the reconfiguration of traffic on Shonnard and Seymour Streets between Geddes Street and West Street. The conversion should be planned to occur in the summer so as to avoid school traffic. This will allow local drivers to adjust to the traffic flow change before buses and local school children are present in the area.

The physical changes involved in the implementation of Phase II will include:

- The installation of appropriate signs on all affected roadway segments and intersections
- New signal hardware at study area intersections on Geddes and West Streets
- Restriping at affected intersections
- Installation of parking prohibition signs within a standard distance from affected intersections and in front of Seymour School

The city, including the Department of Public Works, Police Department, and Department of Community Development, and the New York State Department of Transportation should work together to plan for the actual transition from one-way to two-way traffic. Police presence will be especially critical on the days surrounding the conversion.

4.4 Phase III: Implementation of Alternative 1

In the long term, this study recommends the implementation of Alternative 1, including the reconfiguration of traffic on Gifford and Seymour Streets between West Street and Onondaga Street.

In addition to requiring new signs, signal hardware, and restriping at intersections, the implementation of Phase III will require some substantial physical modifications to the street network in the study area:

- Particular attention should be paid to the Gifford/Onondaga/Clinton Street intersection, where it is recommended that northbound left turn movements from Onondaga Street to Gifford Street be prohibited. Figure 3.5 shows a concept for this intersection.
- The existing medians on West Street will require modification in order for the street to accommodate new turning movements and predicted traffic volumes. A conceptual diagram of these changes is included in Figure 4.1.
- In addition, the Shonnard Street Extension will require reconfiguration in order to accommodate the flow of eastbound traffic. Figure 4.1 shows a conceptual diagram of these modifications.

As in earlier phases of the project, the city, including the Department of Public Works, Police Department, and Department of Community Development, and NYSDOT should work together to plan for the actual transition from one-way to two-way traffic. The plan should include additional police presence at the affected intersections and streets to ensure that cars and people move safely.

Figure 4.1: Draft Phase III Concept for West Street and Shonnard Street Extension

APPENDIX A

Seymour-Shonnard Corridor Study

Public Involvement Plan

Financial assistance for the preparation of this document was provided, in part, by the U.S. Department of Transportation's Federal Highway and Federal Transit Administrations and the New York State Department of Transportation. The Syracuse Metropolitan Transportation Council (SMTC) is solely responsible for its content.

For further information, contact:

Meghan Vitale, Project Manager
Syracuse Metropolitan Transportation Council
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www.smtcmpo.org

I. Introduction

Engaging the public early and often in the planning process is critical to the success of any transportation plan or program, and is required by numerous state and federal laws. Such legislation underscores the need for public involvement, calling on Metropolitan Planning Organizations (MPO) such as the Syracuse Metropolitan Transportation Council (SMTC) to provide citizens, affected public agencies, businesses, local government, and other interested parties with a reasonable opportunity to comment on transportation plans and programs.

While public participation is mandated, it is also practical. No one organization has a monopoly on good ideas – they often germinate through an open exchange of information. It is the SMTC's intention to promote the shared obligation of the public and decision makers to define the goals and objectives of the **Seymour-Shonnard Corridor Study**, to develop alternatives, and to evaluate the alternatives.

II. Goals

The intent of the Public Involvement Plan (PIP) for the **Seymour-Shonnard Corridor Study** is to:

(1) Create public awareness relative to the study's goals, objectives, and process, as well as publicize the public participation opportunities and activities available throughout the study; and

(2) Involve the public throughout the planning process.

III. Formation of Study Advisory Committee and Interested Stakeholder Group

The PIP includes the formation of two groups to assist the SMTC in the study effort: a Study Advisory Committee (SAC) and a stakeholders group. Selected representatives from the following affected agencies will be invited to participate in this study as SAC members:

- City of Syracuse Department of Community Development
- City of Syracuse Department of Public Works
- Central New York Regional Transportation Authority (CNYRTA)
- New York State Department of Transportation (NYSDOT)
- Appropriate law enforcement representatives
- Appropriate emergency services representatives
- Other SMTC member agencies as appropriate.

The SAC will meet regularly with the SMTC to assist in managing the project. The SAC's role will be to advise the SMTC on the technical content of deliverables and to provide needed input and guidance throughout the project.

It is anticipated that a minimum of four SAC meetings will be held throughout the course of the study. Securing a meeting location (facility), announcing the SAC meetings through mailings, running the SAC meetings (including preparation of agenda, materials, presentations, etc.), and preparing the minutes from each meeting will be the responsibility of the SMTC.

In addition to the SAC, a list of interested stakeholders (a broader group of interested individuals with significant relations and interest in the study area) will be maintained by the SMTC. The SMTC will attempt to obtain a list of property owners and residential addresses within the study area (Seymour and Shonnard Streets between South Geddes Street and West Onondaga Street, plus Gifford Street between West Street and South Clinton Street) from the City and will automatically include those individuals on the stakeholders list. Additional stakeholders will be added based on input from the SAC and the community. The stakeholders will be sent pertinent study information, kept apprised of significant study developments, notified of all public meetings, and encouraged to provide feedback and comment regarding the **Seymour-Shonnard Corridor Study.** If during the course of the study it seems warranted, a "stakeholder workshop" may be held separately to further assist the study in gathering and processing public input.

The SMTC and project sponsors will determine initial representation on the SAC and the stakeholders group. However, the SMTC will actively seek input at its "kick-off meeting" and throughout the course of the study regarding additional individuals who could participate in this planning activity and provide valuable input and perspective.

IV. Meetings and Public Comment

The SMTC will hold public involvement meetings/workshops at specific stages during the study. Securing a meeting location (facility), promoting the event through flyers, mailings and press releases, presenting the public meetings (including preparation of agenda, materials, presentations, etc.) and preparing the minutes of each meeting will be the responsibility of the SMTC. The SMTC will facilitate the translation of meeting notices, flyers, press releases, and other written public communication as well as any visual displays/presentations for public meetings into Spanish. The SMTC will also provide a Spanish-language translator to speak at public meetings.

The first public meeting will provide the opportunity to formally present the study to the public, present an inventory of existing conditions within the study area, introduce the proposed alternatives (one-way versus two-way traffic operation), and seek initial feedback from the public. Citizen input obtained from this meeting will be considered throughout the remaining stages of the study, and will be factored into the final recommendations and report documentation.

The second public meeting will take place after the analysis portion of the project has been completed and preliminary recommendations have been developed with SAC input. At this meeting, the results of the traffic and accident analyses will be presented. This meeting will also include a discussion of the potential impact of each alternative on parking, bicycle and pedestrian facilities, and the general neighborhood character. The preliminary recommendations from the SAC will be presented and the public will be invited to provide input on the analysis results and the recommendations.

Note: All meetings (SAC and public) will be held in a handicapped accessible facility in compliance with the Americans with Disabilities Act. As noted above, Spanish-language translation will be provided for the public outreach materials in this study. The SMTC will make every effort to respond to those who need a sign language interpreter, assistive learning system, or any other accommodations to facilitate the public's participation in the transportation planning process.

To further increase its outreach to the public, the SMTC will be initiating and conducting a variety of public involvement activities:

> **Introductory flyer**: The SMTC will develop a one-page introductory flyer about the study that will serve to introduce the public to the **Seymour-Shonnard Corridor Study**. This flyer will focus on the purpose, goals and objectives of the study. It will seek to educate, inform and encourage feedback and public comment. Additional flyers (to highlight specific study development or publicize public meetings) may be distributed as the study progresses if deemed appropriate.

> **Material distribution at locations within study area**: If deemed necessary (at the discretion of the SAC and/or other appropriate SMTC committees), the SMTC may distribute miscellaneous study-specific information at sites throughout the study area (e.g. schools, community centers, convenience stores, etc.). This information may include one or more of the following: introductory flyer, meeting notice, comment card, and a pre-addressed survey on a particular study issue. It is also the SMTC's intent to work with and encourage other agencies to include this information in their publications or to assist in material distribution.

> **Coordination with existing community organizations**: The SMTC will work to coordinate public outreach activities for this study with existing activities of community groups in the study area, such as Tomorrow's Neighborhoods Today (TNT) Area 2, Syracuse United Neighbors Near-West Side, and the Spanish Action League. The SMTC will seek the assistance of the City of Syracuse Department of Community Development and the community organizations to "get the word out" about the study and help publicize public meetings. The

SMTC will reach out to these community groups early in the study process to inform them of the study and opportunities for public input. If requested, SMTC staff will attend existing community meetings to provide a brief overview of the project. Detailed discussion of the analysis and recommendations will be provided at the study-specific public meetings.

All citizens (especially those who are not able to attend the public meetings or participate in direct contact with the SMTC staff) are encouraged to submit comments to the SMTC at any time. This message will be publicized and made clear throughout the study's project schedule, verbally, and on all study material and publications. The public is also welcome to attend any of the publicized SMTC Executive, Planning and Policy Committee meetings in which the **Seymour-Shonnard Corridor Study** may be on the agenda as a discussion item.

V. Press Releases/Media Coverage

The SMTC will issue news releases (announcing the details of all public meetings) to all major and minor newspapers, television stations, and radio in advance. If necessary, the SMTC will also send additional news releases, or take the initiative to promote media coverage on pertinent developments pertaining to the **Seymour-Shonnard Corridor Study**.

If possible, all media inquiries should be directed to the SMTC staff director or project manager. However, this is not always possible. If you (e.g. SMTC committee members, SAC members, and/or interested stakeholders associated with the study) are interviewed by the media, please limit your comments to your respective agency's opinion or involvement in the study. <u>As for speaking to the media on specific issues and questions regarding the **Seymour-Shonnard Corridor Study**, its progress and development, this is the exclusive responsibility of the SMTC.</u>

VI. SMTC Publications

The SMTC publishes a newsletter, DIRECTIONS, that offers news about its activities and particular studies. This newsletter is distributed to nearly 1,500 individuals, some of whom include the media; local, state, and federal agencies associated with the SMTC; municipal and elected officials; community agencies and representatives; and a large number of interested citizens. It is anticipated that articles on the **Seymour-Shonnard Corridor Study** (e.g. study development issues or the announcement or coverage of a public meeting) will be published in subsequent issues of DIRECTIONS. Should the need arise for the production of a separate newsletter/flyer/report to convey a timely study development the SMTC staff is prepared to perform this additional task. It is also important to note that the mailing list of the SMTC newsletter, DIRECTIONS, will be updated to include all members of the SAC, stakeholders, and others interested or involved in the **Seymour-Shonnard Corridor Study.**

VII. Miscellaneous Public Involvement Efforts

To further its public involvement efforts, the SMTC will be asking the SAC members and interested stakeholders to assist them in better notifying citizens and community groups living and/or working in the study area about the public meetings and the study in general. Such a request is imperative in order to get the "grassroots community" involved. By helping to distribute flyers/announcements and speaking to the members of the community about the **Seymour-Shonnard Corridor Study**, the SAC and interested stakeholders will serve to further promote public involvement in areas (and to individuals) that were not reached through the standard outreach.

Meeting notices and study-specific material previously mentioned may also be posted at libraries, local stores, shopping centers, and/or businesses.

Approved documents, such as the study's Final Report, may be made available at libraries in the vicinity of the study area (including a version translated into Spanish). News releases will be produced to announce the availability of such items, as well as invite written comments to be submitted to the SMTC.

The SMTC web site [www.smtcmpo.org] will also serve as a resource for general information about the SMTC, the **Seymour-Shonnard Corridor Study,** and any final approved reports.

If a certain need arises to get public perception/opinion on a particular topic/issue, surveys may be used at one or more of the public meetings.

VIII. Conclusion

It is important for the SMTC to understand public attitudes and values throughout the **Seymour-Shonnard Corridor Study**, as well as solicit input from affected citizens and community representatives. Through the activities described in this public involvement plan, the SMTC will solicit public input and provide opportunities for the public to develop greater awareness of and active involvement in the project. In a study that has the potential to recommend changes to long-established traffic flow patterns within a neighborhood, public involvement is paramount.

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NEWS RELEASE

FOR IMMEDIATE RELEASE – NOVEMBER 13, 2007
Contact: James D'Agostino, Director
Tel: (315) 422-5716; E-mail: jdagostino@smtcmpo.org

Seymour-Shonnard Corridor Study Public Meeting

SYRACUSE, N.Y. — A public meeting will be held on Wednesday, November 28, 2007, at 6:00 p.m. to discuss the feasibility of converting Seymour Street, Shonnard Street, and a portion of Gifford Street from one-way to two-way operation. The meeting will be held at Seymour Elementary School, 108 Shonnard Street, in Syracuse.

The purpose of the meeting is to inform community members about the **Seymour-Shonnard Corridor Study.** This study is being conducted by the Syracuse Metropolitan Transportation Council (SMTC) at the request of the City of Syracuse. The study will consider many factors, such as traffic operations, vehicle speeds, pedestrian and bicycle safety, and adjacent land uses, to determine whether the proposed traffic flow change is appropriate for this area. The SMTC is in the initial phase of this project and is seeking public input on the proposed traffic flow change prior to starting the technical analysis. The meeting will include a presentation by SMTC staff and provide an opportunity for community members to ask questions about the study.

For additional information about the project or the public meeting, or to ensure accommodation for special needs, please contact the SMTC at (315)422-5716. Spanish-language interpretation will be available at the meeting.

What is the SMTC?

The Syracuse Metropolitan Transportation Council was formed in 1966 as a result of the Federal Aid Highway Act of 1962 and Urban Mass Transportation Act of 1964. Serving as the metropolitan planning organization (MPO) for the Syracuse Metropolitan area, the SMTC provides the forum for cooperative decision making in developing transportation plans and programs for Onondaga County and small portions of Madison and Oswego Counties. The SMTC is comprised of elected and appointed officials, representing local, state and federal governments or agencies having interest in or responsibility for transportation planning and programming.

Log on to the SMTC web site for the latest in transportation planning in the Syracuse Metropolitan Area: www.smtcmpo.org

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Seymour-Shonnard Corridor Study
Public Meeting
November 28, 2007
6:00 p.m.

Draft Meeting Summary

Attendees
Paul Driscoll, Home Headquarters
Libertad Garton, Spanish Action League
Antonio Herrera, Vice Principal, Seymour Elementary School
Patrick Hogan, Syracuse Common Council
Paul Mercurio, City of Syracuse Department of Community Development
Sean Murphy, NYSDOT
Pete O'Connor, City of Syracuse Department of Public Works
Rita Paniagua, Spanish Action League
Marie Perkins, Principal, Seymour Elementary School

SMTC staff
James D'Agostino
Jason Deshaies
Nell Donaldson
Meghan Vitale

Since no members of the general public attended the meeting, SMTC staff conducted a "roundtable" discussion with the group present in lieu of a formal presentation. The following is a summary of the issues that were raised.

School Traffic
Ms. Perkins and Mr. Herrera spoke extensively about their concerns for student safety and school bus traffic around the school. Currently, school staff members direct traffic on Seymour and Shonnard Streets during arrival and dismissal times. Arrival occurs between 7:35 and 7:55 a.m. Dismissal occurs between 2:45 p.m. and 3:15 p.m. There are five buses that pick-up/drop-off students at the school. There is a bus pull-off on Shonnard Street; however, only three or four buses can fit in the pull-off. The buses that do not fit in the pull-off wait on Shonnard Street. Also, many parents drop-off/pick-up their students, which adds to traffic congestion around the school. Parent drop-offs occur on Shonnard Street near the front door of the school (which is the single point-of-entry). Parents are instructed to pick up students on Seymour Street, although many do not follow this rule. There are also large truck deliveries that occur throughout the day in the parking lot between the school and West Street. There are no crossing guards at locations immediately surrounding the school. Total enrollment at the school is approximately 450 students, with approximately 260 walkers. Students that are bused come from all over the City.

Mr. O'Connor suggested the possibility of maintaining one-way traffic just around the school (between Niagara and West Streets) while converting to two-way traffic on the remainder of

Seymour and Shonnard Streets. He also noted that time-based one-way operation has been implemented at other schools in the City (so, for example, Seymour Street could be posted as one-way during arrival and dismissal times but operate as two-way at other times). Mr. O'Connor stated that the DPW will observe the traffic flow around the school during arrival and dismissal times.

Approval Process
Councilor Hogan asked if the proposed traffic flow change would require the approval of the Common Council. Mr. O'Connor indicated that Common Council approval would most likely be required.

Speeds
Mr. O'Connor noted that some residents complained about traffic speeds while DPW workers were installing the traffic counters in the study area. He also noted that two-way operation generally results in lower speeds than one-way operation.

Access to Businesses and Organizations
Mr. Mercurio noted that business owners on Geddes Street have indicated that two-way streets would improve access in the area.

Ms. Paniagua indicated that two-way traffic on Seymour and Shonnard Streets would make it easier for clients to access the Spanish Action League's office.

Pedestrian Traffic
Mr. Driscoll asked whether pedestrian travel would be examined as part of this study. He noted that a group of residents and property owners are trying to build support for an off-street pedestrian network in the neighborhood. There is a need for safe pedestrian walkways between the east-west streets due to the long blocks and lack of north-south cross streets. There is an existing pedestrian walkway between Seymour and Shonnard Streets located about halfway between Geddes and Oswego Streets. Home Headquarters is currently examining a possible new walkway between Gifford Street and Seymour Street.

Attendance at Project Meetings
There was some discussion about additional methods for notifying the public about project meetings. Ms. Paniagua suggested using the Spanish Action League mailing list and possibly conducting a survey. Mr. Mercurio suggested handing out fliers door-to-door at individual residences. Ms. Vitale and Mr. Mercurio noted that approximately 500 fliers were distributed to locations within the study area, such as Nojaim's Market, community centers, and restaurants. Ms. Perkins said that fliers were also sent home with students.

The meeting concluded at 7:00 p.m.

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NEWS RELEASE

FOR IMMEDIATE RELEASE – JANUARY 28, 2008
Contact: James D'Agostino, Director
Tel: (315) 422-5716; E-mail: jdagostino@smtcmpo.org

Seymour-Shonnard Corridor Study Public Meeting

SYRACUSE, N.Y. — A public meeting will be held on Wednesday, February 13, 2008, at 6:30 p.m. to discuss the feasibility of converting Seymour Street, Shonnard Street, and a portion of Gifford Street from one-way to two-way operation. The meeting will be held at Seymour Elementary School, 108 Shonnard Street, in Syracuse.

This is the second public meeting for the **Seymour-Shonnard Corridor Study**. This study is being conducted by the Syracuse Metropolitan Transportation Council (SMTC) at the request of the City of Syracuse. The purpose of the meeting is to review the study purpose, present analysis results, and receive feedback from community members. The analysis considered a variety of factors, including traffic operations, vehicle speeds, pedestrian and bicycle safety, parking, and adjacent land uses. At the meeting, SMTC staff will present the analysis results and answer any questions that community members have about the study.

For additional information about the project or the public meeting, or to ensure accommodation for special needs, please contact the SMTC at (315)422-5716. Spanish-language interpretation will be available at the meeting.

What is the SMTC?

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Seymour-Shonnard Corridor Study
Public Meeting 2
Seymour Elementary School
February 13, 2008
6:30 p.m.

Meeting Summary

Attendees

Julie Bednar, NYSDOT
Isabel Collazo, resident
Paul Driscoll, Home Headquarters
Milton Gomez, resident
Antonio Herrera, Seymour School
Paul Mercurio, City of Syracuse Department of Community Development
Katy O'Connor, Vincent House
Rita Paniagua, Spanish Action League
Marie Perkins, Seymour School
Rich Puchalski, Syracuse United Neighbors
Rob Synakowski, Seymour Elementary School
Kelly Thompson, TVGA

SMTC Staff
Mario Colone
James D'Agostino
Jason Deshaies
Nell Donaldson
Ahmed Ismail

The meeting began with a formal presentation of the technical and qualitative analysis of the alternatives for two-way traffic flow on Seymour, Shonnard, and Gifford Streets. Following the presentation, members of the public commented on the alternatives. Points raised by the public are summarized below.

Process
Several residents raised concerns about the city's decision-making on the West Side in general and the process for this study specifically. Residents argued that decisions are often forced on Syracuse's West Side neighborhoods without adequate concern for residents' perspectives. In this light, residents pointed out that very few community members have participated in the public involvement for this project. Residents also reinforced the importance of looking at a change to two-way traffic in the larger social context of the West Side, including its drug problems, law enforcement issues, and history of relative isolation.

Safety
Several of the attendees' comments revolved around vehicular and pedestrian traffic immediately surrounding Seymour Elementary School. Residents cited concerns for the safety of students – both walking to and from school (during the school day and for after-school programs) as well as boarding/debarking school buses. One resident was particularly concerned about the safety of young children and people with special needs in a two-way scenario. SMTC staff reiterated the potential safety benefits of two-way traffic, including slower speeds, reduced driver confusion, and a more logical school drop-off and pick-up pattern. SMTC staff, with the assistance of the

city, also responded with assurances that prior to any final determination or change there would be a significant public education effort for residents, students, and through traffic, and that the city police would oversee any potential change to ensure that traffic moves safely.

Speeds
Residents also raised concerns about vehicular speeds through the corridor under the two-way alternatives. Two items were noted with regard to speed. First, one resident mentioned that it is dangerous to park on the streets because of the speed of through traffic. Second, residents mentioned that drag racing makes Seymour and Shonnard Streets unsafe. City and SMTC staff responded that, theoretically, converting a 29-foot wide street to a two-way configuration should slow vehicular traffic and discourage drag racing. Staff recognized that additional police presence is also needed to enforce parking regulations and prevent drivers from using the road for unsafe activities.

Relationship to other streets in area
A representative of Syracuse United Neighbors (SUN) representative distributed a statement supporting the change to two-way traffic on Seymour and Shonnard. One reason cited was the improved response time for emergency vehicles under a two-way configuration. The representative also asked the SMTC to consider ways to improve traffic flow and signal timing on S. Geddes Street between Delaware and W. Fayette Streets, the repaving of Shonnard Street between S. Geddes Street and Oswego Street, as well as better parking enforcement by the Syracuse Police Department on Gifford Street. The city noted that both the West Street and Geddes Street corridors are being evaluated for signal timing/traffic flow improvements.

Crime and law enforcement
One citizen clearly expressed his concern with regards to crime and law enforcement in the study area. Echoing earlier statements, he cited the current lack of parking enforcement as a major issue. This resident also mentioned the illegal drug activities in the area and voiced a concern that two-way traffic would facilitate the movement of drugs throughout the neighborhood (as drug dealers would be able to travel both ways on streets). He indicated that drugs are a major problem in the area and that much of the speeding or otherwise unwanted traffic is related to drugs. City representatives pointed out that two-way traffic would facilitate the movement of non-criminal cars through the study area as well, in effect putting eyes on the street. SMTC staff reiterated that drug enforcement and crime prevention are large issues that extend beyond the scope of this study, but acknowledged that they should be addressed through additional police presence and other appropriate mechanisms.

Public meeting notification
One citizen noted that she had not (until that night) received notice of the meeting. SMTC staff explained the various methods that had been used to notify the public of the meeting and acknowledged that different public involvement mechanisms may work better in terms of reaching citizens in the future.

The meeting concluded at 7:35 p.m.

Meghan Vitale

From: Isa Collazo [icollaz1@twcny.rr.com]

Sent: Tuesday, September 25, 2007 10:23 AM

To: Meghan Vitale

Subject: Seymour-Shonnard Corridor Study

To whom it may concern:

I have lived in the west side of the city since I came to Syracuse from Puerto Rico in 1984. In 1994, 10 years later I became a homeowner at 525 Seymour Street. One of the things that I really like from my street is the fact that it is a one way street. I have two children that enjoy riding their bikes along our street because it is safe, knowing that it is only one way. We also have a several of after school programs in this street and I do not consider that making this street or Shonnard Street a two way streets would be safer for our children. Please include me in your mailing list and let me know when the public meetings are going to take place. Thank you for your attention.

Sincerely,
Isabel Collazo
West side resident
315-476-9650

Meghan Vitale

From: Alan_Thornton@rmsyr.org
Sent: Tuesday, September 25, 2007 4:26 PM
To: Meghan Vitale
Subject: Two Way Traffic

Recently I received a flier regarding a study being conducted for whether Seymour, Shonnard, or Gifford Streets should be converted to two way traffic. As the Director of Operations at the Rescue Mission with Gifford Street facilities I have a vested interest in being kept abreast of the studies findings. Please keep me informed regarding upcoming public meetings and opportunities to provide input.

Sincerely,

Alan Thornton

Director of Operations
Rescue Mission Alliance of Syracuse, Inc.
155 Gifford St.
Syracuse, NY 13202
(315) 701-3826

RECEIVED OCT 0 9 2007

Brian & Paula McMahon
2163 Tower Road
Cortland NY 13045

10-5-07

SMTC
126 N. Salina St.
Suite 100
Syracuse NY 13202

We are very much in favor of having all three streets become two way traffic. But most important to us is when traveling eastbound on W. Onondaga St, please allow cars to turn left on to Seymour St.

Sincerely,
Paula McMahon

Brian & Paula McMahon

P.S. We own property at 153 and 139 Seymour St.

Syracuse United Neighbors

SUN

1540 South Salina Street
Syracuse, New York 13205-1149

Phone: 315.476.7475
Fax: 315.476.4523

E-Mail: sun@sunaction.org

Seymour and Shonnard Corridor Study
Public Meeting: Wednesday, February 13, 2008
6:30 pm at Seymour Elementary School

At our neighborhood meeting of February 11, 2008 the Westside Coalition, an affiliate of Syracuse United Neighbors (SUN) voted to support a plan to move Seymour and Shonnard to a two-way streets.

We all know that these streets have been one way for almost 50 years when a major corridor was planned to quickly move traffic to and from downtown and the suburbs. Many feel that the proposal which sat around for years and never moved forward forced out owner-occupied homeowners, invited in absentee owners who brought down our neighborhood. There should be a grass-roots plan to revitalize the housing on these two streets.

> Improved traffic flow and timing of traffic lights on S. Geddes between Delaware and W. Fayette St. should be considered.

> Moving from a one way to a two way street should improve response time emergency vehicles can access these two streets.

> Residents feel that Shonnard Street MUST be re-paved from S. Geddes to Oswego St. This should be done in 2008.

> The Syracuse Police Department MUST enforce odd/even parking to guarantee a non-interruptive flow of traffic. This is a serious problem on Gifford St.

> Residents want to know why this plan is being discussed at this time?

> We understand that SMTC has satisfied Seymour School's safety concerns in allowing the boarding and exiting of pupils from buses. This activity will not interrupt the flow of traffic if we move to two - way streets.

> We would like to hear if there are plans to change the West Street Arterial?

Richard Puchalski

Rich Puchalski, Executive Director

SYRACUSE NY 132
19 MAR 2008 PM 3 T

RECEIVED MAR 20 2008

A Parent of a child
attending Seymour
Dual Language Academy

Syracuse Metropolitan Transportation Council
Attn: Nell Donaldson
126 North Salina Street
100 Clinton Square, Suite 100
SYRACUSE, NY 13202

Thank you for attending the public meeting for the ***Seymour-Shonnard Corridor Study*** on February 13, 2008. Please provide any additional comments in the space below.

Keep Shonnard Street a one-way street!
signed,
A very concerned parent
of a Seymour Dual Language Academy
child

Name (optional)

Address (optional)

Email (optional)

Would you like to be added to the SMTC mailing list? Yes ☐ No ☒

Please return to the SMTC via fax (315-422-7753) or mail
(SMTC, 100 Clinton Square, 126 N. Salina St., Suite 100, Syracuse, N.Y. 13202).
For additional information on the ***Seymour-Shonnard Corridor Study***, please contact Neil Donaldson, Transportation Planner, SMTC, by phone (315-422-5716) or email (ndonaldson@smtcmpo.org).

Maxine Tearney
97 MacDougall Place
Apartment 1
Syr., N.Y 13207

RECEIVED MAR 2 0 20__

SYRACUSE NY
MAR 19
USPS

Syracuse Metropolitan Transportation Council
Attn: Nell Donaldson
126 North Salina Street
100 Clinton Square, Suite 100
SYRACUSE, NY 13202

Thank you for attending the public meeting for the ***Seymour-Shonnard Corridor Study*** on February 13, 2008. Please provide any additional comments in the space below.

Please do not make Shonnard Street a 2-way Street. It would not be safe for our children and families.

It's bad enough that they do not have a well-built playground for the school because the surrounding community has used it for not-so-kind purposes.

Making the street 2-way would only open up the school community wider to other types of dangers.

Keep the street a one-way.

Signed,
A concerned parent.
Maxine

Name (optional) ______

Address (optional) ______

Email (optional) ______

Would you like to be added to the SMTC mailing list? Yes ☐ No ☒

Please return to the SMTC via fax (315-422-7753) or mail (SMTC, 100 Clinton Square, 126 N. Salina St., Suite 100, Syracuse, N.Y. 13202).
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APPENDIX B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	14	15	12	13	11	12	12	12	12
Total Lost time (s)		4.0		4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor		1.00		1.00	1.00		1.00	0.91			0.91	
Frt		0.91		1.00	0.95		1.00	1.00			0.99	
Flt Protected		0.98		0.95	1.00		0.95	1.00			1.00	
Satd. Flow (prot)		1890		1888	1940		1829	4916			5027	
Flt Permitted		0.88		0.69	1.00		0.29	1.00			1.00	
Satd. Flow (perm)		1699		1377	1940		559	4916			5027	
Volume (vph)	30	0	60	15	55	30	25	380	0	0	790	65
Peak-hour factor, PHF	0.89	0.89	0.89	0.98	0.98	0.98	0.92	0.92	0.92	0.93	0.93	0.93
Adj. Flow (vph)	34	0	67	15	56	31	27	413	0	0	849	70
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	101	0	15	87	0	27	413	0	0	919	0
Turn Type	Perm			Perm			Perm					
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2					
Actuated Green, G (s)		15.1		15.1	15.1		54.9	54.9			54.9	
Effective Green, g (s)		16.1		16.1	16.1		55.9	55.9			55.9	
Actuated g/C Ratio		0.20		0.20	0.20		0.70	0.70			0.70	
Clearance Time (s)		5.0		5.0	5.0		5.0	5.0			5.0	
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)		342		277	390		391	3435			3513	
v/s Ratio Prot					0.04			0.08			c0.18	
v/s Ratio Perm		c0.06		0.01			0.05					
v/c Ratio		0.30		0.05	0.22		0.07	0.12			0.26	
Uniform Delay, d1		27.1		25.8	26.7		3.8	4.0			4.4	
Progression Factor		1.00		0.91	0.94		0.83	0.89			1.00	
Incremental Delay, d2		0.5		0.1	0.3		0.3	0.1			0.2	
Delay (s)		27.6		23.5	25.3		3.5	3.6			4.6	
Level of Service		C		C	C		A	A			A	
Approach Delay (s)		27.6			25.0			3.6			4.6	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	7.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.27		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	39.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBL	SBT	SBR	SBR2	NET	NER	SWL	SWT	SWR
Lane Configurations									
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	13	11	12	12	12	12	12	12
Total Lost time (s)	4.0	4.0	4.0		4.0			4.0	
Lane Util. Factor	1.00	0.95	1.00		0.95			0.95	
Frt	1.00	1.00	0.85		0.98			0.95	
Flt Protected	0.95	1.00	1.00		1.00			1.00	
Satd. Flow (prot)	1711	3657	1531		3482			3360	
Flt Permitted	0.95	1.00	1.00		1.00			0.92	
Satd. Flow (perm)	1711	3657	1531		3482			3106	
Volume (vph)	85	295	75	20	250	30	20	165	85
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.86	0.86	0.93	0.93	0.93
Adj. Flow (vph)	94	328	83	22	291	35	22	177	91
RTOR Reduction (vph)	0	0	0	0	6	0	0	0	0
Lane Group Flow (vph)	94	328	105	0	320	0	0	290	0
Turn Type	Perm		Perm				Perm		
Protected Phases		4			2			6	
Permitted Phases	4		4				6		
Actuated Green, G (s)	13.5	13.5	13.5		56.5			56.5	
Effective Green, g (s)	14.5	14.5	14.5		57.5			57.5	
Actuated g/C Ratio	0.18	0.18	0.18		0.72			0.72	
Clearance Time (s)	5.0	5.0	5.0		5.0			5.0	
Vehicle Extension (s)	3.0	3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)	310	663	277		2503			2232	
v/s Ratio Prot		c0.09			0.09				
v/s Ratio Perm	0.05		0.07					c0.09	
v/c Ratio	0.30	0.49	0.38		0.13			0.13	
Uniform Delay, d1	28.4	29.5	28.8		3.5			3.5	
Progression Factor	1.00	1.00	1.00		0.79			1.00	
Incremental Delay, d2	0.6	0.6	0.9		0.1			0.1	
Delay (s)	28.9	30.0	29.7		2.8			3.6	
Level of Service	C	C	C		A			A	
Approach Delay (s)		29.8			2.8			3.6	
Approach LOS		C			A			A	

Intersection Summary			
HCM Average Control Delay	15.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.20		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	33.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	11	12	12	12	12
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		0.95			0.95			0.95			0.95	
Frt		1.00			0.99			0.91			0.99	
Flt Protected		0.99			0.99			1.00			1.00	
Satd. Flow (prot)		3518			3466			3116			3487	
Flt Permitted		0.90			0.80			1.00			0.93	
Satd. Flow (perm)		3177			2793			3116			3237	
Volume (vph)	100	745	0	20	60	5	0	190	280	10	210	20
Peak-hour factor, PHF	0.90	0.90	0.90	0.87	0.87	0.87	0.77	0.77	0.77	0.93	0.93	0.93
Adj. Flow (vph)	111	828	0	23	69	6	0	247	364	11	226	22
RTOR Reduction (vph)	0	0	0	0	3	0	0	91	0	0	9	0
Lane Group Flow (vph)	0	939	0	0	95	0	0	520	0	0	250	0
Turn Type	Perm			Perm						Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8						6		
Actuated Green, G (s)		42.0			42.0			28.0			28.0	
Effective Green, g (s)		43.0			43.0			29.0			29.0	
Actuated g/C Ratio		0.54			0.54			0.36			0.36	
Clearance Time (s)		5.0			5.0			5.0			5.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		1708			1501			1130			1173	
v/s Ratio Prot								c0.17				
v/s Ratio Perm		c0.30			0.03						0.08	
v/c Ratio		0.55			0.06			0.46			0.21	
Uniform Delay, d1		12.1			8.9			19.5			17.6	
Progression Factor		0.37			1.00			1.00			1.01	
Incremental Delay, d2		1.2			0.1			1.3			0.1	
Delay (s)		5.6			8.9			20.9			17.9	
Level of Service		A			A			C			B	
Approach Delay (s)		5.6			8.9			20.9			17.9	
Approach LOS		A			A			C			B	

Intersection Summary			
HCM Average Control Delay	12.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	47.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	9	11	12	13	11	12	12	12	12
Total Lost time (s)				4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor				1.00	0.91		1.00	0.95			0.91	
Frt				1.00	0.95		1.00	1.00			0.99	
Flt Protected				0.95	1.00		0.95	1.00			1.00	
Satd. Flow (prot)				1593	4670		1829	3421			5024	
Flt Permitted				0.95	1.00		0.29	1.00			1.00	
Satd. Flow (perm)				1593	4670		552	3421			5024	
Volume (vph)	0	0	0	5	60	30	25	375	0	0	795	70
Peak-hour factor, PHF	0.63	0.63	0.63	0.88	0.88	0.88	0.85	0.85	0.85	0.91	0.91	0.91
Adj. Flow (vph)	0	0	0	6	68	34	29	441	0	0	874	77
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	6	102	0	29	441	0	0	951	0
Turn Type				Perm			Perm					
Protected Phases					8			2			6	
Permitted Phases				8			2					
Actuated Green, G (s)				9.3	9.3		60.7	60.7			60.7	
Effective Green, g (s)				10.3	10.3		61.7	61.7			61.7	
Actuated g/C Ratio				0.13	0.13		0.77	0.77			0.77	
Clearance Time (s)				5.0	5.0		5.0	5.0			5.0	
Vehicle Extension (s)				3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)				205	601		426	2638			3875	
v/s Ratio Prot					c0.02			0.13			c0.19	
v/s Ratio Perm				0.00			0.05					
v/c Ratio				0.03	0.17		0.07	0.17			0.25	
Uniform Delay, d1				30.5	31.0		2.2	2.4			2.6	
Progression Factor				0.98	0.96		2.81	2.99			0.31	
Incremental Delay, d2				0.1	0.1		0.3	0.1			0.1	
Delay (s)				30.0	29.9		6.5	7.3			0.9	
Level of Service				C	C		A	A			A	
Approach Delay (s)		0.0			29.9			7.3			0.9	
Approach LOS		A			C			A			A	

Intersection Summary			
HCM Average Control Delay	4.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.23		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	42.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	0	0	0	25	65	10	30	85	0	0	80	20
Peak Hour Factor	0.55	0.55	0.55	0.86	0.86	0.86	0.78	0.78	0.78	0.66	0.66	0.66
Hourly flow rate (vph)	0	0	0	29	76	12	38	109	0	0	121	30

Direction, Lane #	WB 1	WB 2	NB 1	SB 1
Volume Total (vph)	67	49	147	152
Volume Left (vph)	29	0	38	0
Volume Right (vph)	0	12	0	30
Hadj (s)	0.25	-0.13	0.09	-0.09
Departure Headway (s)	5.4	5.0	4.5	4.3
Degree Utilization, x	0.10	0.07	0.18	0.18
Capacity (veh/h)	623	672	779	804
Control Delay (s)	7.8	7.2	8.5	8.2
Approach Delay (s)	7.6		8.5	8.2
Approach LOS	A		A	A

Intersection Summary			
Delay	8.1		
HCM Level of Service	A		
Intersection Capacity Utilization	22.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	15	15	12	12	10	12	12	10	12
Total Lost time (s)		4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor		1.00		1.00	1.00			0.95			0.95	
Frt		0.92		1.00	0.96			1.00			0.98	
Flt Protected		0.98		0.95	1.00			1.00			1.00	
Satd. Flow (prot)		1946		1986	2011			3365			3287	
Flt Permitted		0.83		0.59	1.00			0.92			1.00	
Satd. Flow (perm)		1653		1226	2011			3100			3287	
Volume (vph)	50	0	65	55	45	15	30	1115	0	0	540	105
Peak-hour factor, PHF	0.71	0.71	0.71	0.76	0.76	0.76	0.90	0.90	0.90	0.86	0.86	0.86
Adj. Flow (vph)	70	0	92	72	59	20	33	1239	0	0	628	122
RTOR Reduction (vph)	0	52	0	0	14	0	0	0	0	0	18	0
Lane Group Flow (vph)	0	110	0	72	65	0	0	1272	0	0	732	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm			Perm			Perm					
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2					
Actuated Green, G (s)		16.2		16.2	16.2			64.8			64.8	
Effective Green, g (s)		17.6		17.6	17.6			64.4			64.4	
Actuated g/C Ratio		0.20		0.20	0.20			0.72			0.72	
Clearance Time (s)		5.4		5.4	5.4			3.6			3.6	
Lane Grp Cap (vph)		323		240	393			2218			2352	
v/s Ratio Prot					0.03						0.22	
v/s Ratio Perm		c0.07		0.06				c0.41				
v/c Ratio		0.34		0.30	0.17			0.57			0.31	
Uniform Delay, d1		31.2		30.9	30.1			6.2			4.7	
Progression Factor		1.00		1.00	1.00			0.82			1.00	
Incremental Delay, d2		2.8		3.2	0.9			1.0			0.3	
Delay (s)		34.0		34.1	31.0			6.0			5.0	
Level of Service		C		C	C			A			A	
Approach Delay (s)		34.0			32.5			6.0			5.0	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	9.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	72.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	13	12	12	12	12	12	12	12	12	12	11	12
Total Lost time (s)	4.0	4.0						4.0			4.0	4.0
Lane Util. Factor	0.95	0.95						0.95			0.95	1.00
Frt	1.00	1.00						0.99			1.00	0.85
Flt Protected	0.95	0.98						1.00			0.99	1.00
Satd. Flow (prot)	1737	1738						3496			3389	1583
Flt Permitted	0.95	0.98						1.00			0.63	1.00
Satd. Flow (perm)	1737	1738						3496			2145	1583
Volume (vph)	485	230	0	0	0	0	0	670	60	90	385	215
Peak-hour factor, PHF	0.94	0.94	0.94	0.63	0.63	0.63	0.91	0.91	0.91	0.93	0.93	0.93
Adj. Flow (vph)	516	245	0	0	0	0	0	736	66	97	414	231
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	377	384	0	0	0	0	0	802	0	0	511	231
Turn Type	Prot									Perm		Perm
Protected Phases	4							2			6	
Permitted Phases		4								6		6
Actuated Green, G (s)	45.0	45.0						36.0			36.0	36.0
Effective Green, g (s)	45.5	45.5						36.5			36.5	36.5
Actuated g/C Ratio	0.51	0.51						0.41			0.41	0.41
Clearance Time (s)	4.5	4.5						4.5			4.5	4.5
Lane Grp Cap (vph)	878	879						1418			870	642
v/s Ratio Prot	0.22							0.23				
v/s Ratio Perm		c0.22									c0.24	0.15
v/c Ratio	0.43	0.44						0.57			0.59	0.36
Uniform Delay, d1	14.1	14.1						20.6			20.9	18.6
Progression Factor	1.00	1.00						1.00			1.05	1.04
Incremental Delay, d2	1.5	1.6						1.6			2.8	1.5
Delay (s)	15.6	15.7						22.3			24.7	20.9
Level of Service	B	B						C			C	C
Approach Delay (s)		15.6			0.0			22.3			23.5	
Approach LOS		B			A			C			C	

Intersection Summary			
HCM Average Control Delay	20.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	63.2%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	30	320	10	0	0	0	0	80	20	30	75	0
Peak Hour Factor	0.93	0.93	0.93	0.92	0.92	0.92	0.88	0.88	0.88	0.75	0.75	0.75
Hourly flow rate (vph)	32	344	11	0	0	0	0	91	23	40	100	0

Direction, Lane #	EB 1	EB 2	NB 1	SB 1
Volume Total (vph)	204	183	114	140
Volume Left (vph)	32	0	0	40
Volume Right (vph)	0	11	23	0
Hadj (s)	0.11	-0.01	-0.09	0.09
Departure Headway (s)	5.3	5.1	4.9	5.1
Degree Utilization, x	0.30	0.26	0.16	0.20
Capacity (veh/h)	655	675	686	667
Control Delay (s)	9.3	8.8	8.8	9.3
Approach Delay (s)	9.0		8.8	9.3
Approach LOS	A		A	A

Intersection Summary			
Delay	9.1		
HCM Level of Service	A		
Intersection Capacity Utilization	29.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	12	12	12	12	12	12	12	13	12
Total Lost time (s)		4.0						4.0		4.0	4.0	
Lane Util. Factor		0.91						0.95		0.97	0.95	
Frt		0.99						1.00		1.00	1.00	
Flt Protected		0.99						1.00		0.95	1.00	
Satd. Flow (prot)		4840						3531		3433	3657	
Flt Permitted		0.99						1.00		0.95	1.00	
Satd. Flow (perm)		4840						3531		3433	3657	
Volume (vph)	75	340	20	0	0	0	0	325	5	520	280	0
Peak-hour factor, PHF	0.87	0.87	0.87	0.25	0.25	0.25	0.74	0.74	0.74	0.94	0.94	0.94
Adj. Flow (vph)	86	391	23	0	0	0	0	439	7	553	298	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	500	0	0	0	0	0	446	0	553	298	0
Turn Type	Perm									Prot		
Protected Phases		4						2		1	6	
Permitted Phases	4											
Actuated Green, G (s)		13.3						22.0		29.7	56.7	
Effective Green, g (s)		14.3						23.0		30.7	57.7	
Actuated g/C Ratio		0.18						0.29		0.38	0.72	
Clearance Time (s)		5.0						5.0		5.0	5.0	
Vehicle Extension (s)		3.0						3.0		3.0	3.0	
Lane Grp Cap (vph)		865						1015		1317	2638	
v/s Ratio Prot								c0.13		c0.16	0.08	
v/s Ratio Perm		0.10										
v/c Ratio		0.58						0.44		0.42	0.11	
Uniform Delay, d1		30.1						23.2		18.1	3.4	
Progression Factor		1.00						1.00		0.70	0.40	
Incremental Delay, d2		0.9						1.4		1.0	0.1	
Delay (s)		31.0						24.6		13.6	1.4	
Level of Service		C						C		B	A	
Approach Delay (s)		31.0			0.0			24.6			9.4	
Approach LOS		C			A			C			A	

Intersection Summary			
HCM Average Control Delay	19.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	42.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	14	15	12	13	11	12	12	12	12
Total Lost time (s)		4.0		4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor		1.00		1.00	1.00		1.00	0.91			0.91	
Frt		0.93		1.00	0.92		1.00	1.00			0.98	
Flt Protected		0.98		0.95	1.00		0.95	1.00			1.00	
Satd. Flow (prot)		1921		1888	1876		1829	4916			4997	
Flt Permitted		0.55		0.57	1.00		0.37	1.00			1.00	
Satd. Flow (perm)		1091		1135	1876		709	4916			4997	
Volume (vph)	90	0	90	20	105	135	35	545	0	0	540	70
Peak-hour factor, PHF	0.70	0.70	0.70	0.90	0.90	0.90	0.93	0.93	0.93	0.89	0.89	0.89
Adj. Flow (vph)	129	0	129	22	117	150	38	586	0	0	607	79
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	258	0	22	267	0	38	586	0	0	686	0
Turn Type	Perm			Perm			Perm					
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2					
Actuated Green, G (s)		25.0		25.0	25.0		50.0	50.0			50.0	
Effective Green, g (s)		26.0		26.0	26.0		51.0	51.0			51.0	
Actuated g/C Ratio		0.31		0.31	0.31		0.60	0.60			0.60	
Clearance Time (s)		5.0		5.0	5.0		5.0	5.0			5.0	
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)		334		347	574		425	2950			2998	
v/s Ratio Prot					0.14			0.12			c0.14	
v/s Ratio Perm		c0.24		0.02			0.05					
v/c Ratio		0.77		0.06	0.47		0.09	0.20			0.23	
Uniform Delay, d1		26.8		20.9	23.9		7.2	7.7			7.9	
Progression Factor		1.00		0.72	0.78		0.81	0.80			1.00	
Incremental Delay, d2		10.6		0.1	0.6		0.4	0.1			0.2	
Delay (s)		37.4		15.2	19.1		6.2	6.3			8.1	
Level of Service		D		B	B		A	A			A	
Approach Delay (s)		37.4			18.8			6.3			8.1	
Approach LOS		D			B			A			A	

Intersection Summary			
HCM Average Control Delay	13.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	85.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	53.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBL	SBT	SBR	SBR2	NET	NER	SWL	SWT	SWR
Lane Configurations									
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	13	11	12	12	12	12	12	12
Total Lost time (s)	4.0	4.0	4.0		4.0			4.0	
Lane Util. Factor	1.00	0.95	1.00		0.95			0.95	
Frt	1.00	1.00	0.85		1.00			0.95	
Flt Protected	0.95	1.00	1.00		1.00			1.00	
Satd. Flow (prot)	1711	3657	1531		3524			3360	
Flt Permitted	0.95	1.00	1.00		1.00			0.95	
Satd. Flow (perm)	1711	3657	1531		3524			3185	
Volume (vph)	140	335	205	35	175	5	15	400	205
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.86	0.86	0.88	0.88	0.88
Adj. Flow (vph)	146	349	214	36	203	6	17	455	233
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	0
Lane Group Flow (vph)	146	349	250	0	208	0	0	705	0
Turn Type	Perm		Perm				Perm		
Protected Phases		4			2			6	
Permitted Phases	4		4				6		
Actuated Green, G (s)	18.8	18.8	18.8		56.2			56.2	
Effective Green, g (s)	19.8	19.8	19.8		57.2			57.2	
Actuated g/C Ratio	0.23	0.23	0.23		0.67			0.67	
Clearance Time (s)	5.0	5.0	5.0		5.0			5.0	
Vehicle Extension (s)	3.0	3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)	399	852	357		2371			2143	
v/s Ratio Prot		0.10			0.06				
v/s Ratio Perm	0.09		c0.16					c0.22	
v/c Ratio	0.37	0.41	0.70		0.09			0.33	
Uniform Delay, d1	27.3	27.6	29.9		4.8			5.8	
Progression Factor	1.00	1.00	1.00		1.02			1.00	
Incremental Delay, d2	0.6	0.3	6.1		0.1			0.4	
Delay (s)	27.9	28.0	36.0		5.0			6.2	
Level of Service	C	C	D		A			A	
Approach Delay (s)		30.6			5.0			6.2	
Approach LOS		C			A			A	

Intersection Summary			
HCM Average Control Delay	17.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	85.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	42.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	11	12	12	12	12
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		0.95			0.95			0.95			0.95	
Frt		1.00			1.00			0.93			0.97	
Flt Protected		0.99			0.99			1.00			1.00	
Satd. Flow (prot)		3506			3481			3180			3437	
Flt Permitted		0.82			0.79			1.00			0.95	
Satd. Flow (perm)		2901			2791			3180			3276	
Volume (vph)	50	210	0	90	265	10	0	130	115	5	485	115
Peak-hour factor, PHF	0.87	0.87	0.87	0.86	0.86	0.86	0.97	0.97	0.97	0.96	0.96	0.96
Adj. Flow (vph)	57	241	0	105	308	12	0	134	119	5	505	120
RTOR Reduction (vph)	0	0	0	0	3	0	0	78	0	0	24	0
Lane Group Flow (vph)	0	298	0	0	422	0	0	175	0	0	606	0
Turn Type	Perm			Perm						Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8						6		
Actuated Green, G (s)		47.0			47.0			28.0			28.0	
Effective Green, g (s)		48.0			48.0			29.0			29.0	
Actuated g/C Ratio		0.56			0.56			0.34			0.34	
Clearance Time (s)		5.0			5.0			5.0			5.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		1638			1576			1085			1118	
v/s Ratio Prot								0.05				
v/s Ratio Perm		0.10			c0.15						c0.19	
v/c Ratio		0.18			0.27			0.16			0.54	
Uniform Delay, d1		9.0			9.5			19.5			22.6	
Progression Factor		0.89			1.00			1.00			1.03	
Incremental Delay, d2		0.2			0.4			0.3			0.5	
Delay (s)		8.2			9.9			19.8			23.9	
Level of Service		A			A			B			C	
Approach Delay (s)		8.2			9.9			19.8			23.9	
Approach LOS		A			A			B			C	

Intersection Summary			
HCM Average Control Delay	16.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	85.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	48.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	9	11	12	13	11	12	12	12	12
Total Lost time (s)				4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor				1.00	0.91		1.00	0.95			0.91	
Frt				1.00	0.93		1.00	1.00			0.99	
Flt Protected				0.95	1.00		0.95	1.00			1.00	
Satd. Flow (prot)				1593	4547		1829	3421			5015	
Flt Permitted				0.95	1.00		0.33	1.00			1.00	
Satd. Flow (perm)				1593	4547		642	3421			5015	
Volume (vph)	0	0	0	10	210	210	15	370	0	0	590	60
Peak-hour factor, PHF	0.92	0.92	0.92	0.87	0.87	0.87	0.94	0.94	0.94	0.82	0.82	0.82
Adj. Flow (vph)	0	0	0	11	241	241	16	394	0	0	720	73
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	11	482	0	16	394	0	0	793	0
Turn Type				Perm			Perm					
Protected Phases					8			2			6	
Permitted Phases				8			2					
Actuated Green, G (s)				17.4	17.4		57.6	57.6			57.6	
Effective Green, g (s)				18.4	18.4		58.6	58.6			58.6	
Actuated g/C Ratio				0.22	0.22		0.69	0.69			0.69	
Clearance Time (s)				5.0	5.0		5.0	5.0			5.0	
Vehicle Extension (s)				3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)				345	984		443	2358			3457	
v/s Ratio Prot					c0.11			0.12			c0.16	
v/s Ratio Perm				0.01			0.02					
v/c Ratio				0.03	0.49		0.04	0.17			0.23	
Uniform Delay, d1				26.3	29.2		4.2	4.6			4.9	
Progression Factor				0.94	0.94		0.88	0.85			0.72	
Incremental Delay, d2				0.0	0.4		0.1	0.2			0.2	
Delay (s)				24.7	27.7		3.8	4.1			3.6	
Level of Service				C	C		A	A			A	
Approach Delay (s)		0.0			27.7			4.1			3.6	
Approach LOS		A			C			A			A	

Intersection Summary			
HCM Average Control Delay	10.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.29		
Actuated Cycle Length (s)	85.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	34.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	0	0	0	85	240	25	60	135	0	0	140	30
Peak Hour Factor	0.63	0.63	0.63	0.82	0.82	0.82	0.87	0.87	0.87	0.91	0.91	0.91
Hourly flow rate (vph)	0	0	0	104	293	30	69	155	0	0	154	33

Direction, Lane #	WB 1	WB 2	NB 1	SB 1
Volume Total (vph)	250	177	224	187
Volume Left (vph)	104	0	69	0
Volume Right (vph)	0	30	0	33
Hadj (s)	0.24	-0.09	0.10	-0.07
Departure Headway (s)	5.8	5.5	5.4	5.3
Degree Utilization, x	0.41	0.27	0.33	0.27
Capacity (veh/h)	589	625	638	643
Control Delay (s)	11.6	9.3	11.0	10.2
Approach Delay (s)	10.6		11.0	10.2
Approach LOS	B		B	B

Intersection Summary			
Delay	10.6		
HCM Level of Service	B		
Intersection Capacity Utilization	39.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	15	15	12	12	10	12	12	10	12
Total Lost time (s)		4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor		1.00		1.00	1.00			0.95			0.95	
Frt		0.94		1.00	0.94			1.00			0.99	
Flt Protected		0.97		0.95	1.00			1.00			1.00	
Satd. Flow (prot)		1973		1986	1964			3363			3343	
Flt Permitted		0.77		0.68	1.00			0.70			1.00	
Satd. Flow (perm)		1565		1415	1964			2372			3343	
Volume (vph)	75	0	55	165	75	50	35	840	0	0	1465	80
Peak-hour factor, PHF	0.94	0.94	0.94	0.77	0.77	0.77	0.91	0.91	0.91	0.93	0.93	0.93
Adj. Flow (vph)	80	0	59	214	97	65	38	923	0	0	1575	86
RTOR Reduction (vph)	0	12	0	0	29	0	0	0	0	0	5	0
Lane Group Flow (vph)	0	127	0	214	133	0	0	961	0	0	1656	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm			Perm			Perm					
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2					
Actuated Green, G (s)		30.9		30.9	30.9			45.6			45.6	
Effective Green, g (s)		32.0		32.0	32.0			45.0			45.0	
Actuated g/C Ratio		0.38		0.38	0.38			0.53			0.53	
Clearance Time (s)		5.1		5.1	5.1			3.4			3.4	
Lane Grp Cap (vph)		589		533	739			1256			1770	
v/s Ratio Prot					0.07						c0.50	
v/s Ratio Perm		0.08		c0.15				0.41				
v/c Ratio		0.22		0.40	0.18			0.77			0.94	
Uniform Delay, d1		18.0		19.5	17.7			15.8			18.7	
Progression Factor		1.00		1.00	1.00			1.36			1.00	
Incremental Delay, d2		0.8		2.2	0.5			4.2			10.8	
Delay (s)		18.8		21.7	18.3			25.7			29.4	
Level of Service		B		C	B			C			C	
Approach Delay (s)		18.8			20.2			25.7			29.4	
Approach LOS		B			C			C			C	

Intersection Summary			
HCM Average Control Delay	26.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	85.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	75.5%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	13	12	12	12	12	12	12	12	12	12	11	12
Total Lost time (s)	4.0	4.0						4.0			4.0	4.0
Lane Util. Factor	0.95	0.95						0.95			0.95	1.00
Frt	1.00	1.00						0.99			1.00	0.85
Flt Protected	0.95	0.96						1.00			1.00	1.00
Satd. Flow (prot)	1737	1703						3494			3409	1583
Flt Permitted	0.95	0.96						1.00			0.83	1.00
Satd. Flow (perm)	1737	1703						3494			2855	1583
Volume (vph)	275	35	0	0	0	0	0	600	55	65	875	865
Peak-hour factor, PHF	0.89	0.89	0.89	0.48	0.48	0.48	0.80	0.80	0.80	0.97	0.97	0.97
Adj. Flow (vph)	309	39	0	0	0	0	0	750	69	67	902	892
RTOR Reduction (vph)	0	0	0	0	0	0	0	8	0	0	0	0
Lane Group Flow (vph)	172	176	0	0	0	0	0	811	0	0	969	892
Turn Type	Prot									Perm		Perm
Protected Phases	4							2			6	
Permitted Phases		4								6		6
Actuated Green, G (s)	19.0	19.0						58.0			58.0	58.0
Effective Green, g (s)	19.0	19.0						58.0			58.0	58.0
Actuated g/C Ratio	0.22	0.22						0.68			0.68	0.68
Clearance Time (s)	4.0	4.0						4.0			4.0	4.0
Lane Grp Cap (vph)	388	381						2384			1948	1080
v/s Ratio Prot	0.10							0.23				
v/s Ratio Perm		c0.10									0.34	c0.56
v/c Ratio	0.44	0.46						0.34			0.50	0.83
Uniform Delay, d1	28.4	28.6						5.6			6.5	9.8
Progression Factor	1.00	1.00						1.00			1.13	0.95
Incremental Delay, d2	3.6	4.0						0.4			0.5	3.8
Delay (s)	32.1	32.6						6.0			7.8	13.1
Level of Service	C	C						A			A	B
Approach Delay (s)		32.3			0.0			6.0			10.3	
Approach LOS		C			A			A			B	

Intersection Summary			
HCM Average Control Delay	11.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	85.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	62.9%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	40	90	30	0	0	0	0	155	35	40	185	0
Peak Hour Factor	0.88	0.88	0.88	0.92	0.92	0.92	0.91	0.91	0.91	0.90	0.90	0.90
Hourly flow rate (vph)	45	102	34	0	0	0	0	170	38	44	206	0

Direction, Lane #	EB 1	EB 2	NB 1	SB 1
Volume Total (vph)	97	85	209	250
Volume Left (vph)	45	0	0	44
Volume Right (vph)	0	34	38	0
Hadj (s)	0.27	-0.25	-0.08	0.07
Departure Headway (s)	5.9	5.3	4.6	4.7
Degree Utilization, x	0.16	0.13	0.27	0.33
Capacity (veh/h)	573	628	744	730
Control Delay (s)	8.7	7.9	9.3	10.0
Approach Delay (s)	8.4		9.3	10.0
Approach LOS	A		A	B

Intersection Summary			
Delay	9.3		
HCM Level of Service	A		
Intersection Capacity Utilization	36.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	12	12	12	12	12	12	12	13	12
Total Lost time (s)		4.0						4.0		4.0	4.0	
Lane Util. Factor		0.91						0.95		0.97	0.95	
Frt		0.98						1.00		1.00	1.00	
Flt Protected		0.98						1.00		0.95	1.00	
Satd. Flow (prot)		4707						3530		3433	3657	
Flt Permitted		0.98						1.00		0.95	1.00	
Satd. Flow (perm)		4707						3530		3433	3657	
Volume (vph)	90	100	35	0	0	0	0	295	5	155	445	0
Peak-hour factor, PHF	0.67	0.67	0.67	0.92	0.92	0.92	0.83	0.83	0.83	0.92	0.92	0.92
Adj. Flow (vph)	134	149	52	0	0	0	0	355	6	168	484	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	335	0	0	0	0	0	361	0	168	484	0
Turn Type	Perm									Prot		
Protected Phases		4						2		1	6	
Permitted Phases	4											
Actuated Green, G (s)		15.1						47.0		7.9	59.9	
Effective Green, g (s)		16.1						48.0		8.9	60.9	
Actuated g/C Ratio		0.19						0.56		0.10	0.72	
Clearance Time (s)		5.0						5.0		5.0	5.0	
Vehicle Extension (s)		3.0						3.0		3.0	3.0	
Lane Grp Cap (vph)		892						1993		359	2620	
v/s Ratio Prot								0.10		c0.05	c0.13	
v/s Ratio Perm		0.07										
v/c Ratio		0.38						0.18		0.47	0.18	
Uniform Delay, d1		30.1						9.0		35.8	3.9	
Progression Factor		1.00						1.00		1.16	0.11	
Incremental Delay, d2		0.3						0.2		1.0	0.2	
Delay (s)		30.3						9.2		42.4	0.6	
Level of Service		C						A		D	A	
Approach Delay (s)		30.3			0.0			9.2			11.4	
Approach LOS		C			A			A			B	

Intersection Summary			
HCM Average Control Delay	15.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.25		
Actuated Cycle Length (s)	85.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	34.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	14	15	12	13	11	12	12	12	12
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00		1.00	0.91		1.00	0.91	
Frt		0.93			0.96		1.00	1.00		1.00	0.99	
Flt Protected		0.99			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1926			1951		1829	4916		1770	5022	
Flt Permitted		0.90			0.95		0.32	1.00		0.50	1.00	
Satd. Flow (perm)		1752			1869		609	4916		933	5022	
Volume (vph)	30	18	60	15	55	30	20	380	0	70	720	65
Peak-hour factor, PHF	0.89	0.89	0.89	0.98	0.98	0.98	0.92	0.92	0.92	0.93	0.93	0.93
Adj. Flow (vph)	34	20	67	15	56	31	22	413	0	75	774	70
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	121	0	0	102	0	22	413	0	75	844	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		15.2			15.2		54.8	54.8		54.8	54.8	
Effective Green, g (s)		16.2			16.2		55.8	55.8		55.8	55.8	
Actuated g/C Ratio		0.20			0.20		0.70	0.70		0.70	0.70	
Clearance Time (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		355			378		425	3429		651	3503	
v/s Ratio Prot								0.08			c0.17	
v/s Ratio Perm		c0.07			0.05		0.04			0.08		
v/c Ratio		0.34			0.27		0.05	0.12		0.12	0.24	
Uniform Delay, d1		27.3			26.9		3.8	4.0		4.0	4.4	
Progression Factor		1.00			1.17		0.59	0.60		1.00	1.00	
Incremental Delay, d2		0.6			0.4		0.2	0.1		0.4	0.2	
Delay (s)		27.9			31.9		2.4	2.5		4.3	4.6	
Level of Service		C			C		A	A		A	A	
Approach Delay (s)		27.9			31.9			2.5			4.5	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	7.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.26		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	39.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	SBL	SBT	SBR	SBR2	NET	NER	SWL	SWT	SWR
Lane Configurations											
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	11	13	11	12	12	12	12	12	12
Total Lost time (s)	4.0		4.0	4.0	4.0		4.0			4.0	
Lane Util. Factor	1.00		1.00	0.95	1.00		0.95			0.95	
Frt	0.99		1.00	1.00	0.85		0.98			0.95	
Flt Protected	0.96		0.95	1.00	1.00		1.00			1.00	
Satd. Flow (prot)	1762		1711	3657	1531		3463			3360	
Flt Permitted	0.96		0.95	1.00	1.00		1.00			0.92	
Satd. Flow (perm)	1762		1711	3657	1531		3463			3106	
Volume (vph)	79	7	85	295	75	20	179	30	20	165	85
Peak-hour factor, PHF	0.96	0.96	0.90	0.90	0.90	0.90	0.86	0.86	0.93	0.93	0.93
Adj. Flow (vph)	82	7	94	328	83	22	208	35	22	177	91
RTOR Reduction (vph)	0	0	0	0	0	0	17	0	0	0	0
Lane Group Flow (vph)	89	0	94	328	105	0	226	0	0	290	0
Turn Type			Perm		Perm				Perm		
Protected Phases	2			4			6			6	
Permitted Phases			4		4				6		
Actuated Green, G (s)	28.6		13.4	13.4	13.4		23.0			23.0	
Effective Green, g (s)	29.6		14.4	14.4	14.4		24.0			24.0	
Actuated g/C Ratio	0.37		0.18	0.18	0.18		0.30			0.30	
Clearance Time (s)	5.0		5.0	5.0	5.0		5.0			5.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)	652		308	658	276		1039			932	
v/s Ratio Prot	c0.05			c0.09			0.07				
v/s Ratio Perm			0.05		0.07					c0.09	
v/c Ratio	0.14		0.31	0.50	0.38		0.22			0.31	
Uniform Delay, d1	16.7		28.5	29.5	28.9		21.0			21.6	
Progression Factor	0.82		1.00	1.00	1.00		0.51			1.00	
Incremental Delay, d2	0.4		0.6	0.6	0.9		0.4			0.9	
Delay (s)	14.2		29.0	30.1	29.8		11.1			22.5	
Level of Service	B		C	C	C		B			C	
Approach Delay (s)	14.2			29.9			11.1			22.5	
Approach LOS	B			C			B			C	

Intersection Summary			
HCM Average Control Delay	22.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.27		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	40.1%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	11	12	12	12	12
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		0.95			0.95			0.95			0.95	
Frt		1.00			0.99			0.91			0.99	
Flt Protected		1.00			0.99			1.00			1.00	
Satd. Flow (prot)		3534			3466			3111			3486	
Flt Permitted		0.95			0.80			1.00			0.92	
Satd. Flow (perm)		3351			2803			3111			3225	
Volume (vph)	21	736	0	20	60	5	0	183	280	12	210	20
Peak-hour factor, PHF	0.90	0.90	0.90	0.87	0.87	0.87	0.77	0.77	0.77	0.93	0.93	0.93
Adj. Flow (vph)	23	818	0	23	69	6	0	238	364	13	226	22
RTOR Reduction (vph)	0	0	0	0	3	0	0	49	0	0	9	0
Lane Group Flow (vph)	0	841	0	0	95	0	0	553	0	0	252	0
Turn Type	Perm			Perm						Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8						6		
Actuated Green, G (s)		34.0			34.0			36.0			36.0	
Effective Green, g (s)		35.0			35.0			37.0			37.0	
Actuated g/C Ratio		0.44			0.44			0.46			0.46	
Clearance Time (s)		5.0			5.0			5.0			5.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		1466			1226			1439			1492	
v/s Ratio Prot								c0.18				
v/s Ratio Perm		c0.25			0.03						0.08	
v/c Ratio		0.57			0.08			0.38			0.17	
Uniform Delay, d1		16.9			13.1			14.1			12.5	
Progression Factor		0.57			1.00			1.00			0.94	
Incremental Delay, d2		1.6			0.1			0.8			0.1	
Delay (s)		11.3			13.2			14.8			11.8	
Level of Service		B			B			B			B	
Approach Delay (s)		11.3			13.2			14.8			11.8	
Approach LOS		B			B			B			B	

Intersection Summary			
HCM Average Control Delay	12.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	46.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	9	11	12	13	11	12	12	12	12
Total Lost time (s)		4.0			4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00	1.00	1.00	0.95		0.97	0.95	
Frt		0.99			1.00	0.85	1.00	1.00		1.00	0.98	
Flt Protected		0.99			0.99	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1822			1780	1583	1829	3421		3433	3464	
Flt Permitted		0.93			0.93	1.00	0.52	1.00		0.95	1.00	
Satd. Flow (perm)		1706			1669	1583	1004	3421		3433	3464	
Volume (vph)	22	78	10	15	50	30	15	348	0	440	305	50
Peak-hour factor, PHF	0.63	0.63	0.63	0.88	0.88	0.88	0.85	0.85	0.85	0.91	0.91	0.91
Adj. Flow (vph)	35	124	16	17	57	34	18	409	0	484	335	55
RTOR Reduction (vph)	0	6	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	169	0	0	74	34	18	409	0	484	390	0
Turn Type	Perm			Perm		Perm	Perm			Prot		
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8		8	2					
Actuated Green, G (s)		14.1			14.1	14.1	20.0	20.0		30.9	55.9	
Effective Green, g (s)		15.1			15.1	15.1	21.0	21.0		31.9	56.9	
Actuated g/C Ratio		0.19			0.19	0.19	0.26	0.26		0.40	0.71	
Clearance Time (s)		5.0			5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)		3.0			3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		322			315	299	264	898		1369	2464	
v/s Ratio Prot								c0.12		c0.14	0.11	
v/s Ratio Perm		c0.10			0.04	0.02	0.02					
v/c Ratio		0.53			0.23	0.11	0.07	0.46		0.35	0.16	
Uniform Delay, d1		29.2			27.5	26.9	22.2	24.7		16.8	3.8	
Progression Factor		1.00			0.87	0.86	0.83	0.89		0.78	0.59	
Incremental Delay, d2		1.6			0.4	0.2	0.5	1.6		0.7	0.1	
Delay (s)		30.8			24.3	23.3	19.0	23.6		13.8	2.3	
Level of Service		C			C	C	B	C		B	A	
Approach Delay (s)		30.8			24.0			23.4			8.7	
Approach LOS		C			C			C			A	

Intersection Summary			
HCM Average Control Delay	16.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	44.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	0	100	0	10	35	10	20	75	0	0	80	20
Peak Hour Factor	0.55	0.55	0.55	0.86	0.86	0.86	0.78	0.78	0.78	0.66	0.66	0.66
Hourly flow rate (vph)	0	182	0	12	41	12	26	96	0	0	121	30

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	182	64	122	152
Volume Left (vph)	0	12	26	0
Volume Right (vph)	0	12	0	30
Hadj (s)	0.03	-0.04	0.08	-0.09
Departure Headway (s)	4.7	4.8	4.8	4.6
Degree Utilization, x	0.24	0.08	0.16	0.19
Capacity (veh/h)	721	697	709	736
Control Delay (s)	9.1	8.2	8.7	8.7
Approach Delay (s)	9.1	8.2	8.7	8.7
Approach LOS	A	A	A	A

Intersection Summary			
Delay	8.8		
HCM Level of Service	A		
Intersection Capacity Utilization	28.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	15	15	12	12	10	12	12	10	12
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frt		0.94			0.99			0.99			0.97	
Flt Protected		0.98			0.98			1.00			1.00	
Satd. Flow (prot)		1984			2036			3347			3274	
Flt Permitted		0.84			0.88			0.92			0.79	
Satd. Flow (perm)		1696			1812			3092			2601	
Volume (vph)	50	15	50	25	45	5	30	1145	45	40	482	105
Peak-hour factor, PHF	0.71	0.71	0.71	0.76	0.76	0.76	0.90	0.90	0.90	0.86	0.86	0.86
Adj. Flow (vph)	70	21	70	33	59	7	33	1272	50	47	560	122
RTOR Reduction (vph)	0	30	0	0	3	0	0	3	0	0	18	0
Lane Group Flow (vph)	0	131	0	0	96	0	0	1352	0	0	711	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		17.6			17.6			64.8			64.8	
Effective Green, g (s)		19.0			19.0			64.4			64.4	
Actuated g/C Ratio		0.21			0.21			0.70			0.70	
Clearance Time (s)		5.4			5.4			3.6			3.6	
Lane Grp Cap (vph)		353			377			2179			1833	
v/s Ratio Prot												
v/s Ratio Perm		c0.08			0.05			c0.44			0.27	
v/c Ratio		0.37			0.25			0.62			0.39	
Uniform Delay, d1		31.1			30.3			7.1			5.5	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		3.0			1.6			1.3			0.6	
Delay (s)		34.0			31.9			8.4			6.1	
Level of Service		C			C			A			A	
Approach Delay (s)		34.0			31.9			8.4			6.1	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	10.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	91.4	Sum of lost time (s)	8.0
Intersection Capacity Utilization	71.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	13	12	12	12	12	12	12	12	12	12	11	12
Total Lost time (s)	4.0	4.0			4.0			4.0			4.0	4.0
Lane Util. Factor	0.95	0.95			1.00			0.95			0.95	1.00
Frt	1.00	1.00			0.93			0.99			1.00	0.85
Flt Protected	0.95	0.98			0.98			1.00			1.00	1.00
Satd. Flow (prot)	1737	1729			1709			3499			3414	1583
Flt Permitted	0.95	0.98			0.98			1.00			0.91	1.00
Satd. Flow (perm)	1737	1729			1709			3499			3102	1583
Volume (vph)	525	190	0	20	10	30	0	675	55	17	365	205
Peak-hour factor, PHF	0.94	0.94	0.94	0.63	0.63	0.63	0.91	0.91	0.91	0.93	0.93	0.93
Adj. Flow (vph)	559	202	0	32	16	48	0	742	60	18	392	220
RTOR Reduction (vph)	0	0	0	0	40	0	0	0	0	0	0	0
Lane Group Flow (vph)	377	384	0	0	56	0	0	802	0	0	410	220
Turn Type	Split			Split						Perm		Perm
Protected Phases	7	7		8	8			2			6	
Permitted Phases		7								6		6
Actuated Green, G (s)	31.5	31.5			14.5			30.5			30.5	30.5
Effective Green, g (s)	32.0	32.0			15.0			31.0			31.0	31.0
Actuated g/C Ratio	0.36	0.36			0.17			0.34			0.34	0.34
Clearance Time (s)	4.5	4.5			4.5			4.5			4.5	4.5
Lane Grp Cap (vph)	618	615			285			1205			1068	545
v/s Ratio Prot	0.22	c0.22			c0.03			c0.23				
v/s Ratio Perm											0.13	0.14
v/c Ratio	0.61	0.62			0.20			0.67			0.38	0.40
Uniform Delay, d1	23.9	24.0			32.3			25.1			22.3	22.5
Progression Factor	1.00	1.00			1.00			1.00			1.00	1.00
Incremental Delay, d2	4.4	4.7			1.5			2.9			1.0	2.2
Delay (s)	28.3	28.8			33.8			28.0			23.3	24.7
Level of Service	C	C			C			C			C	C
Approach Delay (s)		28.5			33.8			28.0			23.8	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM Average Control Delay	27.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	55.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣			✣			✣			✣	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	20	202	10	0	40	0	10	70	20	15	75	0
Peak Hour Factor	0.93	0.93	0.93	0.92	0.92	0.92	0.88	0.88	0.88	0.75	0.75	0.75
Hourly flow rate (vph)	22	217	11	0	43	0	11	80	23	20	100	0

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	249	43	114	120
Volume Left (vph)	22	0	11	20
Volume Right (vph)	11	0	23	0
Hadj (s)	0.03	0.03	-0.07	0.07
Departure Headway (s)	4.6	4.8	4.7	4.8
Degree Utilization, x	0.32	0.06	0.15	0.16
Capacity (veh/h)	748	690	714	694
Control Delay (s)	9.7	8.1	8.5	8.7
Approach Delay (s)	9.7	8.1	8.5	8.7
Approach LOS	A	A	A	A

Intersection Summary			
Delay	9.1		
HCM Level of Service	A		
Intersection Capacity Utilization	33.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	12	12	12	12	12	12	12	13	12
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						0.95			0.95	
Frt		1.00						1.00			0.99	
Flt Protected		0.99						1.00			1.00	
Satd. Flow (prot)		3376						3523			3602	
Flt Permitted		0.99						0.93			0.94	
Satd. Flow (perm)		3376						3298			3395	
Volume (vph)	53	244	10	0	0	0	15	317	5	10	290	30
Peak-hour factor, PHF	0.87	0.87	0.87	0.25	0.25	0.25	0.74	0.74	0.74	0.94	0.94	0.94
Adj. Flow (vph)	61	280	11	0	0	0	20	428	7	11	309	32
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	5	0
Lane Group Flow (vph)	0	352	0	0	0	0	0	455	0	0	347	0
Turn Type	Perm						Perm			Perm		
Protected Phases		4						2			6	
Permitted Phases	4						2			6		
Actuated Green, G (s)		13.1						56.9			56.9	
Effective Green, g (s)		14.1						57.9			57.9	
Actuated g/C Ratio		0.18						0.72			0.72	
Clearance Time (s)		5.0						5.0			5.0	
Vehicle Extension (s)		3.0						3.0			3.0	
Lane Grp Cap (vph)		595						2387			2457	
v/s Ratio Prot												
v/s Ratio Perm		0.10						c0.14			0.10	
v/c Ratio		0.59						0.19			0.14	
Uniform Delay, d1		30.3						3.5			3.4	
Progression Factor		1.00						1.00			0.58	
Incremental Delay, d2		1.6						0.2			0.1	
Delay (s)		31.9						3.7			2.1	
Level of Service		C						A			A	
Approach Delay (s)		31.9			0.0			3.7			2.1	
Approach LOS		C			A			A			A	

Intersection Summary			
HCM Average Control Delay	11.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.27		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	35.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NEL	NER
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	518	0	0	80	0	259
Peak Hour Factor	0.90	0.90	0.87	0.87	0.90	0.90
Hourly flow rate (vph)	576	0	0	92	0	288
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)	553			306		
pX, platoon unblocked						
vC, conflicting volume			576		622	288
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			576		622	288
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	59
cM capacity (veh/h)			994		419	709

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NE 1
Volume Total	288	288	46	46	288
Volume Left	0	0	0	0	0
Volume Right	0	0	0	0	288
cSH	1700	1700	1700	1700	709
Volume to Capacity	0.17	0.17	0.03	0.03	0.41
Queue Length 95th (ft)	0	0	0	0	49
Control Delay (s)	0.0	0.0	0.0	0.0	13.5
Lane LOS					B
Approach Delay (s)	0.0		0.0		13.5
Approach LOS					B

Intersection Summary			
Average Delay	4.1		
Intersection Capacity Utilization	37.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	14	15	12	13	11	12	12	12	12
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00		1.00	0.91		1.00	0.91	
Frt		0.94			0.93		1.00	1.00		1.00	0.98	
Flt Protected		0.98			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1933			1898		1829	4916		1770	4992	
Flt Permitted		0.98			1.00		0.35	1.00		0.39	1.00	
Satd. Flow (perm)		1933			1898		682	4916		720	4992	
Volume (vph)	90	13	90	20	105	135	30	545	0	35	505	70
Peak-hour factor, PHF	0.70	0.70	0.70	0.90	0.90	0.90	0.93	0.93	0.93	0.89	0.89	0.89
Adj. Flow (vph)	129	19	129	22	117	150	32	586	0	39	567	79
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	277	0	0	289	0	32	586	0	39	646	0
Turn Type	Split			Split			Perm			Perm		
Protected Phases	4	4		8	8			2			6	
Permitted Phases							2			6		
Actuated Green, G (s)		17.9			18.3		33.8	33.8		33.8	33.8	
Effective Green, g (s)		18.9			19.3		34.8	34.8		34.8	34.8	
Actuated g/C Ratio		0.22			0.23		0.41	0.41		0.41	0.41	
Clearance Time (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		430			431		279	2013		295	2044	
v/s Ratio Prot		c0.14			c0.15			0.12			c0.13	
v/s Ratio Perm							0.05			0.05		
v/c Ratio		0.64			0.67		0.11	0.29		0.13	0.32	
Uniform Delay, d1		30.0			30.0		15.6	16.8		15.7	17.0	
Progression Factor		1.00			1.02		0.40	0.38		1.00	1.00	
Incremental Delay, d2		3.3			3.9		0.8	0.3		0.9	0.4	
Delay (s)		33.3			34.6		7.0	6.7		16.6	17.4	
Level of Service		C			C		A	A		B	B	
Approach Delay (s)		33.3			34.6			6.7			17.4	
Approach LOS		C			C			A			B	

Intersection Summary			
HCM Average Control Delay	18.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	85.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	54.1%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	SBL	SBT	SBR	SBR2	NET	NER	SWL	SWT	SWR
Lane Configurations											
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	11	13	11	12	12	12	12	12	12
Total Lost time (s)	4.0		4.0	4.0	4.0		4.0			4.0	
Lane Util. Factor	1.00		1.00	0.95	1.00		0.95			0.95	
Frt	0.99		1.00	1.00	0.85		0.99			0.95	
Flt Protected	0.96		0.95	1.00	1.00		1.00			1.00	
Satd. Flow (prot)	1759		1711	3657	1531		3520			3360	
Flt Permitted	0.96		0.95	1.00	1.00		1.00			0.95	
Satd. Flow (perm)	1759		1711	3657	1531		3520			3184	
Volume (vph)	42	5	140	335	205	35	138	5	15	400	205
Peak-hour factor, PHF	0.92	0.92	0.96	0.96	0.96	0.96	0.86	0.86	0.88	0.88	0.88
Adj. Flow (vph)	46	5	146	349	214	36	160	6	17	455	233
RTOR Reduction (vph)	0	0	0	0	0	0	3	0	0	0	0
Lane Group Flow (vph)	51	0	146	349	250	0	163	0	0	705	0
Turn Type			Perm		Perm				Perm		
Protected Phases	2			4			6			6	
Permitted Phases			4		4				6		
Actuated Green, G (s)	25.0		18.0	18.0	18.0		27.0			27.0	
Effective Green, g (s)	26.0		19.0	19.0	19.0		28.0			28.0	
Actuated g/C Ratio	0.31		0.22	0.22	0.22		0.33			0.33	
Clearance Time (s)	5.0		5.0	5.0	5.0		5.0			5.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)	538		382	817	342		1160			1049	
v/s Ratio Prot	c0.03			0.10			0.05				
v/s Ratio Perm			0.09		c0.16					c0.22	
v/c Ratio	0.09		0.38	0.43	0.73		0.14			0.67	
Uniform Delay, d1	21.1		28.0	28.3	30.6		20.0			24.5	
Progression Factor	0.67		1.00	1.00	1.00		1.06			1.00	
Incremental Delay, d2	0.3		0.6	0.4	7.8		0.3			3.4	
Delay (s)	14.5		28.7	28.7	38.4		21.5			28.0	
Level of Service	B		C	C	D		C			C	
Approach Delay (s)	14.5			32.0			21.5			28.0	
Approach LOS	B			C			C			C	

Intersection Summary			
HCM Average Control Delay	28.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	85.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	48.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	11	12	12	12	12
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		0.95			0.95			0.95			0.95	
Frt		1.00			1.00			0.93			0.97	
Flt Protected		1.00			0.99			1.00			1.00	
Satd. Flow (prot)		3533			3481			3175			3437	
Flt Permitted		0.94			0.80			1.00			0.95	
Satd. Flow (perm)		3323			2836			3175			3275	
Volume (vph)	8	204	0	90	265	10	0	125	115	6	485	115
Peak-hour factor, PHF	0.87	0.87	0.87	0.86	0.86	0.86	0.97	0.97	0.97	0.96	0.96	0.96
Adj. Flow (vph)	9	234	0	105	308	12	0	129	119	6	505	120
RTOR Reduction (vph)	0	0	0	0	2	0	0	63	0	0	24	0
Lane Group Flow (vph)	0	243	0	0	423	0	0	185	0	0	607	0
Turn Type	Perm			Perm						Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8						6		
Actuated Green, G (s)		36.0			36.0			39.0			39.0	
Effective Green, g (s)		37.0			37.0			40.0			40.0	
Actuated g/C Ratio		0.44			0.44			0.47			0.47	
Clearance Time (s)		5.0			5.0			5.0			5.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		1446			1234			1494			1541	
v/s Ratio Prot								0.06				
v/s Ratio Perm		0.07			c0.15						c0.19	
v/c Ratio		0.17			0.34			0.12			0.39	
Uniform Delay, d1		14.6			15.9			12.6			14.6	
Progression Factor		0.40			1.00			1.00			0.68	
Incremental Delay, d2		0.3			0.8			0.2			0.2	
Delay (s)		6.1			16.7			12.8			10.1	
Level of Service		A			B			B			B	
Approach Delay (s)		6.1			16.7			12.8			10.1	
Approach LOS		A			B			B			B	

Intersection Summary			
HCM Average Control Delay	11.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	85.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	47.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	9	11	12	13	11	12	12	12	12
Total Lost time (s)		4.0			4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00	1.00	1.00	0.95		0.97	0.95	
Frt		0.98			1.00	0.85	1.00	1.00		1.00	0.98	
Flt Protected		0.98			0.98	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1801			1764	1583	1829	3421		3433	3476	
Flt Permitted		0.86			0.85	1.00	0.37	1.00		0.95	1.00	
Satd. Flow (perm)		1575			1523	1583	714	3421		3433	3476	
Volume (vph)	27	43	10	92	128	210	5	338	0	110	445	60
Peak-hour factor, PHF	0.92	0.92	0.92	0.87	0.87	0.87	0.94	0.94	0.94	0.82	0.82	0.82
Adj. Flow (vph)	29	47	11	106	147	241	5	360	0	134	543	73
RTOR Reduction (vph)	0	7	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	80	0	0	253	241	5	360	0	134	616	0
Turn Type	Perm			Perm		Perm	Perm			Prot		
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8		8	2					
Actuated Green, G (s)		24.5			24.5	24.5	28.5	28.5		17.0	50.5	
Effective Green, g (s)		25.5			25.5	25.5	29.5	29.5		18.0	51.5	
Actuated g/C Ratio		0.30			0.30	0.30	0.35	0.35		0.21	0.61	
Clearance Time (s)		5.0			5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)		3.0			3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		473			457	475	248	1187		727	2106	
v/s Ratio Prot								0.11		0.04	c0.18	
v/s Ratio Perm		0.05			c0.17	0.15	0.01					
v/c Ratio		0.17			0.55	0.51	0.02	0.30		0.18	0.29	
Uniform Delay, d1		21.9			25.0	24.6	18.2	20.3		27.5	8.0	
Progression Factor		1.00			0.71	0.71	0.82	0.82		0.75	0.33	
Incremental Delay, d2		0.2			1.4	0.8	0.1	0.7		0.1	0.3	
Delay (s)		22.1			19.1	18.3	15.0	17.3		20.8	3.0	
Level of Service		C			B	B	B	B		C	A	
Approach Delay (s)		22.1			18.7			17.2			6.2	
Approach LOS		C			B			B			A	

Intersection Summary			
HCM Average Control Delay	13.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.38		
Actuated Cycle Length (s)	85.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	47.1%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣			✣			✣			✣	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	0	70	0	65	158	25	50	135	0	0	140	30
Peak Hour Factor	0.63	0.63	0.63	0.82	0.82	0.82	0.87	0.87	0.87	0.91	0.91	0.91
Hourly flow rate (vph)	0	111	0	79	193	30	57	155	0	0	154	33

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	111	302	213	187
Volume Left (vph)	0	79	57	0
Volume Right (vph)	0	30	0	33
Hadj (s)	0.03	0.03	0.09	-0.07
Departure Headway (s)	5.5	5.2	5.4	5.3
Degree Utilization, x	0.17	0.44	0.32	0.28
Capacity (veh/h)	582	647	605	618
Control Delay (s)	9.7	12.2	11.0	10.3
Approach Delay (s)	9.7	12.2	11.0	10.3
Approach LOS	A	B	B	B

Intersection Summary			
Delay	11.1		
HCM Level of Service	B		
Intersection Capacity Utilization	49.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	15	15	12	12	10	12	12	10	12
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frt		0.95			0.97			0.99			0.99	
Flt Protected		0.97			0.98			1.00			1.00	
Satd. Flow (prot)		1996			1991			3346			3340	
Flt Permitted		0.74			0.83			0.71			0.92	
Satd. Flow (perm)		1522			1683			2377			3076	
Volume (vph)	75	10	45	83	75	40	35	855	32	28	1424	80
Peak-hour factor, PHF	0.94	0.94	0.94	0.77	0.77	0.77	0.91	0.91	0.91	0.93	0.93	0.93
Adj. Flow (vph)	80	11	48	108	97	52	38	940	35	30	1531	86
RTOR Reduction (vph)	0	13	0	0	11	0	0	3	0	0	5	0
Lane Group Flow (vph)	0	126	0	0	246	0	0	1010	0	0	1642	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		30.6			30.6			45.4			45.4	
Effective Green, g (s)		32.0			32.0			45.0			45.0	
Actuated g/C Ratio		0.38			0.38			0.53			0.53	
Clearance Time (s)		5.4			5.4			3.6			3.6	
Lane Grp Cap (vph)		573			634			1258			1628	
v/s Ratio Prot												
v/s Ratio Perm		0.08			c0.15			0.42			c0.53	
v/c Ratio		0.22			0.39			0.80			1.01	
Uniform Delay, d1		18.0			19.4			16.4			20.0	
Progression Factor		1.00			1.00			0.52			1.00	
Incremental Delay, d2		0.9			1.8			4.8			24.5	
Delay (s)		18.9			21.1			13.3			44.5	
Level of Service		B			C			B			D	
Approach Delay (s)		18.9			21.1			13.3			44.5	
Approach LOS		B			C			B			D	

Intersection Summary			
HCM Average Control Delay	31.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	85.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	80.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	13	12	12	12	12	12	12	12	12	12	11	12
Total Lost time (s)	4.0	4.0			4.0			4.0			4.0	4.0
Lane Util. Factor	0.95	0.95			1.00			0.95			0.95	1.00
Frt	1.00	1.00			0.98			0.99			1.00	0.85
Flt Protected	0.95	0.96			0.98			1.00			1.00	1.00
Satd. Flow (prot)	1737	1695			1785			3508			3419	1583
Flt Permitted	0.95	0.96			0.98			1.00			0.94	1.00
Satd. Flow (perm)	1737	1695			1785			3508			3212	1583
Volume (vph)	290	20	0	42	40	15	0	617	38	14	833	825
Peak-hour factor, PHF	0.89	0.89	0.89	0.48	0.48	0.48	0.80	0.80	0.80	0.97	0.97	0.97
Adj. Flow (vph)	326	22	0	88	83	31	0	771	48	14	859	851
RTOR Reduction (vph)	0	0	0	0	7	0	0	0	0	0	0	0
Lane Group Flow (vph)	172	176	0	0	195	0	0	819	0	0	873	851
Turn Type	Split			Split						Perm		Perm
Protected Phases	7	7		8	8			2			6	
Permitted Phases		7								6		6
Actuated Green, G (s)	12.5	12.5			14.5			44.5			44.5	44.5
Effective Green, g (s)	13.0	13.0			15.0			45.0			45.0	45.0
Actuated g/C Ratio	0.15	0.15			0.18			0.53			0.53	0.53
Clearance Time (s)	4.5	4.5			4.5			4.5			4.5	4.5
Lane Grp Cap (vph)	266	259			315			1857			1700	838
v/s Ratio Prot	0.10	c0.10			c0.11			0.23				
v/s Ratio Perm											0.27	c0.54
v/c Ratio	0.65	0.68			0.62			0.44			0.51	1.02
Uniform Delay, d1	33.8	34.0			32.4			12.3			12.9	20.0
Progression Factor	1.00	1.00			1.00			1.00			0.25	0.26
Incremental Delay, d2	11.5	13.5			8.8			0.8			0.4	22.8
Delay (s)	45.4	47.5			41.1			13.0			3.6	27.9
Level of Service	D	D			D			B			A	C
Approach Delay (s)		46.5			41.1			13.0			15.6	
Approach LOS		D			D			B			B	

Intersection Summary			
HCM Average Control Delay	20.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	85.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	63.1%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥			✥			✥			✥	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	30	7	30	0	87	0	0	155	35	20	185	0
Peak Hour Factor	0.88	0.88	0.88	0.92	0.92	0.92	0.91	0.91	0.91	0.90	0.90	0.90
Hourly flow rate (vph)	34	8	34	0	95	0	0	170	38	22	206	0

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	76	95	209	228
Volume Left (vph)	34	0	0	22
Volume Right (vph)	34	0	38	0
Hadj (s)	-0.15	0.03	-0.08	0.05
Departure Headway (s)	4.9	5.1	4.5	4.6
Degree Utilization, x	0.10	0.13	0.26	0.29
Capacity (veh/h)	657	643	755	737
Control Delay (s)	8.5	8.9	9.2	9.6
Approach Delay (s)	8.5	8.9	9.2	9.6
Approach LOS	A	A	A	A

Intersection Summary			
Delay	9.2		
HCM Level of Service	A		
Intersection Capacity Utilization	41.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	12	12	12	12	12	12	12	13	12
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						0.95			0.95	
Frt		0.97						1.00			0.98	
Flt Protected		0.98						1.00			1.00	
Satd. Flow (prot)		3247						3522			3572	
Flt Permitted		0.98						0.92			0.95	
Satd. Flow (perm)		3247						3251			3389	
Volume (vph)	63	44	25	0	0	0	15	285	5	10	455	82
Peak-hour factor, PHF	0.67	0.67	0.67	0.92	0.92	0.92	0.83	0.83	0.83	0.92	0.92	0.92
Adj. Flow (vph)	94	66	37	0	0	0	18	343	6	11	495	89
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	7	0
Lane Group Flow (vph)	0	197	0	0	0	0	0	367	0	0	588	0
Turn Type	Perm						Perm			Perm		
Protected Phases		4						2			6	
Permitted Phases	4						2			6		
Actuated Green, G (s)		11.0						64.0			64.0	
Effective Green, g (s)		12.0						65.0			65.0	
Actuated g/C Ratio		0.14						0.76			0.76	
Clearance Time (s)		5.0						5.0			5.0	
Vehicle Extension (s)		3.0						3.0			3.0	
Lane Grp Cap (vph)		458						2486			2592	
v/s Ratio Prot												
v/s Ratio Perm		0.06						0.11			c0.17	
v/c Ratio		0.43						0.15			0.23	
Uniform Delay, d1		33.4						2.7			2.8	
Progression Factor		1.00						1.00			0.64	
Incremental Delay, d2		0.7						0.1			0.2	
Delay (s)		34.0						2.8			2.0	
Level of Service		C						A			A	
Approach Delay (s)		34.0			0.0			2.8			2.0	
Approach LOS		C			A			A			A	

Intersection Summary			
HCM Average Control Delay	7.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.26		
Actuated Cycle Length (s)	85.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	33.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NEL	NER
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	153	0	0	380	0	59
Peak Hour Factor	0.87	0.87	0.86	0.86	0.87	0.87
Hourly flow rate (vph)	176	0	0	442	0	68
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)	553			306		
pX, platoon unblocked					0.97	
vC, conflicting volume			176		397	88
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			176		344	88
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	93
cM capacity (veh/h)			1398		606	953

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NE 1
Volume Total	88	88	221	221	68
Volume Left	0	0	0	0	0
Volume Right	0	0	0	0	68
cSH	1700	1700	1700	1700	953
Volume to Capacity	0.05	0.05	0.13	0.13	0.07
Queue Length 95th (ft)	0	0	0	0	6
Control Delay (s)	0.0	0.0	0.0	0.0	9.1
Lane LOS					A
Approach Delay (s)	0.0		0.0		9.1
Approach LOS					A

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	14.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	14	15	12	13	11	12	12	12	12
Total Lost time (s)		4.0		4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor		1.00		1.00	1.00		1.00	0.91			0.91	
Frt		0.91		1.00	0.95		1.00	1.00			0.99	
Flt Protected		0.98		0.95	1.00		0.95	1.00			1.00	
Satd. Flow (prot)		1890		1888	1940		1829	4916			5027	
Flt Permitted		0.88		0.69	1.00		0.29	1.00			1.00	
Satd. Flow (perm)		1699		1377	1940		559	4916			5027	
Volume (vph)	30	0	60	15	55	30	25	380	0	0	790	65
Peak-hour factor, PHF	0.89	0.89	0.89	0.98	0.98	0.98	0.92	0.92	0.92	0.93	0.93	0.93
Adj. Flow (vph)	34	0	67	15	56	31	27	413	0	0	849	70
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	101	0	15	87	0	27	413	0	0	919	0
Turn Type	Perm			Perm			Perm					
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2					
Actuated Green, G (s)		15.1		15.1	15.1		54.9	54.9			54.9	
Effective Green, g (s)		16.1		16.1	16.1		55.9	55.9			55.9	
Actuated g/C Ratio		0.20		0.20	0.20		0.70	0.70			0.70	
Clearance Time (s)		5.0		5.0	5.0		5.0	5.0			5.0	
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)		342		277	390		391	3435			3513	
v/s Ratio Prot					0.04			0.08			c0.18	
v/s Ratio Perm		c0.06		0.01			0.05					
v/c Ratio		0.30		0.05	0.22		0.07	0.12			0.26	
Uniform Delay, d1		27.1		25.8	26.7		3.8	4.0			4.4	
Progression Factor		1.00		0.91	0.94		0.85	0.90			1.00	
Incremental Delay, d2		0.5		0.1	0.3		0.3	0.1			0.2	
Delay (s)		27.6		23.5	25.3		3.6	3.6			4.6	
Level of Service		C		C	C		A	A			A	
Approach Delay (s)		27.6			25.0			3.6			4.6	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	7.2	HCM Level of Service	A
HCM Volume to Capacity ratio	0.27		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	39.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBL	SBT	SBR	SBR2	NET	NER	SWL	SWT	SWR
Lane Configurations									
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	13	11	12	12	12	12	12	12
Total Lost time (s)	4.0	4.0	4.0		4.0			4.0	
Lane Util. Factor	1.00	0.95	1.00		0.95			0.95	
Frt	1.00	1.00	0.85		0.98			0.95	
Flt Protected	0.95	1.00	1.00		1.00			1.00	
Satd. Flow (prot)	1711	3657	1531		3482			3360	
Flt Permitted	0.95	1.00	1.00		1.00			0.92	
Satd. Flow (perm)	1711	3657	1531		3482			3106	
Volume (vph)	85	295	75	20	250	30	20	165	85
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.86	0.86	0.93	0.93	0.93
Adj. Flow (vph)	94	328	83	22	291	35	22	177	91
RTOR Reduction (vph)	0	0	0	0	6	0	0	0	0
Lane Group Flow (vph)	94	328	105	0	320	0	0	290	0
Turn Type	Perm		Perm				Perm		
Protected Phases		4			2			6	
Permitted Phases	4		4				6		
Actuated Green, G (s)	13.5	13.5	13.5		56.5			56.5	
Effective Green, g (s)	14.5	14.5	14.5		57.5			57.5	
Actuated g/C Ratio	0.18	0.18	0.18		0.72			0.72	
Clearance Time (s)	5.0	5.0	5.0		5.0			5.0	
Vehicle Extension (s)	3.0	3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)	310	663	277		2503			2232	
v/s Ratio Prot		c0.09			0.09				
v/s Ratio Perm	0.05		0.07					c0.09	
v/c Ratio	0.30	0.49	0.38		0.13			0.13	
Uniform Delay, d1	28.4	29.5	28.8		3.5			3.5	
Progression Factor	1.00	1.00	1.00		0.96			1.00	
Incremental Delay, d2	0.6	0.6	0.9		0.1			0.1	
Delay (s)	28.9	30.0	29.7		3.5			3.6	
Level of Service	C	C	C		A			A	
Approach Delay (s)		29.8			3.5			3.6	
Approach LOS		C			A			A	

Intersection Summary			
HCM Average Control Delay	15.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.20		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	33.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	11	12	12	12	12
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		0.95			0.95			0.95			0.95	
Frt		1.00			0.99			0.91			0.99	
Flt Protected		0.99			0.99			1.00			1.00	
Satd. Flow (prot)		3518			3466			3116			3487	
Flt Permitted		0.90			0.80			1.00			0.93	
Satd. Flow (perm)		3177			2793			3116			3237	
Volume (vph)	100	745	0	20	60	5	0	190	280	10	210	20
Peak-hour factor, PHF	0.90	0.90	0.90	0.87	0.87	0.87	0.77	0.77	0.77	0.93	0.93	0.93
Adj. Flow (vph)	111	828	0	23	69	6	0	247	364	11	226	22
RTOR Reduction (vph)	0	0	0	0	3	0	0	91	0	0	9	0
Lane Group Flow (vph)	0	939	0	0	95	0	0	520	0	0	250	0
Turn Type	Perm			Perm						Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8						6		
Actuated Green, G (s)		42.0			42.0			28.0			28.0	
Effective Green, g (s)		43.0			43.0			29.0			29.0	
Actuated g/C Ratio		0.54			0.54			0.36			0.36	
Clearance Time (s)		5.0			5.0			5.0			5.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		1708			1501			1130			1173	
v/s Ratio Prot								c0.17				
v/s Ratio Perm		c0.30			0.03						0.08	
v/c Ratio		0.55			0.06			0.46			0.21	
Uniform Delay, d1		12.1			8.9			19.5			17.6	
Progression Factor		0.18			1.00			1.00			1.01	
Incremental Delay, d2		1.1			0.1			1.3			0.1	
Delay (s)		3.3			8.9			20.9			17.9	
Level of Service		A			A			C			B	
Approach Delay (s)		3.3			8.9			20.9			17.9	
Approach LOS		A			A			C			B	

Intersection Summary			
HCM Average Control Delay	11.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	47.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	9	11	12	13	11	12	12	12	12
Total Lost time (s)		4.0			4.0	4.0	4.0	4.0			4.0	
Lane Util. Factor		1.00			1.00	1.00	1.00	0.95			0.91	
Frt		0.91			1.00	0.85	1.00	1.00			0.99	
Flt Protected		0.98			0.98	1.00	0.95	1.00			1.00	
Satd. Flow (prot)		1673			1760	1583	1829	3421			5024	
Flt Permitted		0.86			0.84	1.00	0.29	1.00			1.00	
Satd. Flow (perm)		1473			1519	1583	551	3421			5024	
Volume (vph)	22	0	38	30	35	30	15	348	0	0	795	70
Peak-hour factor, PHF	0.63	0.63	0.63	0.88	0.88	0.88	0.85	0.85	0.85	0.91	0.91	0.91
Adj. Flow (vph)	35	0	60	34	40	34	18	409	0	0	874	77
RTOR Reduction (vph)	0	51	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	44	0	0	74	34	18	409	0	0	951	0
Turn Type	Perm			Perm		Perm	Perm					
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2					
Actuated Green, G (s)		10.9			9.9	9.9	60.1	60.1			60.1	
Effective Green, g (s)		10.9			10.9	10.9	61.1	61.1			61.1	
Actuated g/C Ratio		0.14			0.14	0.14	0.76	0.76			0.76	
Clearance Time (s)		4.0			5.0	5.0	5.0	5.0			5.0	
Vehicle Extension (s)		3.0			3.0	3.0	3.0	3.0			3.0	
Lane Grp Cap (vph)		201			207	216	421	2613			3837	
v/s Ratio Prot								0.12			c0.19	
v/s Ratio Perm		0.03			c0.05	0.02	0.03					
v/c Ratio		0.22			0.36	0.16	0.04	0.16			0.25	
Uniform Delay, d1		30.8			31.4	30.5	2.3	2.5			2.8	
Progression Factor		1.00			0.86	0.85	1.40	1.35			0.67	
Incremental Delay, d2		0.6			1.1	0.3	0.2	0.1			0.2	
Delay (s)		31.3			28.0	26.4	3.4	3.5			2.0	
Level of Service		C			C	C	A	A			A	
Approach Delay (s)		31.3			27.5			3.5			2.0	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	5.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.26		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	33.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣			✣			✣			✣	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	0	50	0	5	40	10	20	85	0	0	80	20
Peak Hour Factor	0.55	0.55	0.55	0.86	0.86	0.86	0.78	0.78	0.78	0.66	0.66	0.66
Hourly flow rate (vph)	0	91	0	6	47	12	26	109	0	0	121	30

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	91	64	135	152
Volume Left (vph)	0	6	26	0
Volume Right (vph)	0	12	0	30
Hadj (s)	0.03	-0.06	0.07	-0.09
Departure Headway (s)	4.7	4.6	4.5	4.3
Degree Utilization, x	0.12	0.08	0.17	0.18
Capacity (veh/h)	714	720	760	786
Control Delay (s)	8.3	8.0	8.4	8.3
Approach Delay (s)	8.3	8.0	8.4	8.3
Approach LOS	A	A	A	A

Intersection Summary			
Delay	8.3		
HCM Level of Service	A		
Intersection Capacity Utilization	25.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	15	15	12	12	10	12	12	10	12
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frt		0.94			0.99			1.00			0.98	
Flt Protected		0.98			0.98			1.00			1.00	
Satd. Flow (prot)		1984			2033			3356			3284	
Flt Permitted		0.83			0.85			0.92			0.92	
Satd. Flow (perm)		1683			1762			3094			3022	
Volume (vph)	50	15	50	30	45	5	30	1130	22	13	527	105
Peak-hour factor, PHF	0.71	0.71	0.71	0.76	0.76	0.76	0.90	0.90	0.90	0.86	0.86	0.86
Adj. Flow (vph)	70	21	70	39	59	7	33	1256	24	15	613	122
RTOR Reduction (vph)	0	30	0	0	3	0	0	1	0	0	18	0
Lane Group Flow (vph)	0	131	0	0	102	0	0	1312	0	0	732	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		17.6			17.6			64.8			64.8	
Effective Green, g (s)		19.0			19.0			64.4			64.4	
Actuated g/C Ratio		0.21			0.21			0.70			0.70	
Clearance Time (s)		5.4			5.4			3.6			3.6	
Lane Grp Cap (vph)		350			366			2180			2129	
v/s Ratio Prot												
v/s Ratio Perm		c0.08			0.06			c0.42			0.24	
v/c Ratio		0.37			0.28			0.60			0.34	
Uniform Delay, d1		31.1			30.4			6.9			5.3	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		3.0			1.9			1.2			0.4	
Delay (s)		34.1			32.3			8.2			5.7	
Level of Service		C			C			A			A	
Approach Delay (s)		34.1			32.3			8.2			5.7	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	10.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	91.4	Sum of lost time (s)	8.0
Intersection Capacity Utilization	69.3%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	13	12	12	12	12	12	12	12	12	12	11	12
Total Lost time (s)	4.0	4.0			4.0			4.0			4.0	4.0
Lane Util. Factor	0.95	0.95			1.00			0.95			0.95	1.00
Frt	1.00	1.00			0.95			0.99			1.00	0.85
Flt Protected	0.95	0.98			0.98			1.00			0.99	1.00
Satd. Flow (prot)	1737	1734			1736			3499			3397	1583
Flt Permitted	0.95	0.98			0.98			1.00			0.66	1.00
Satd. Flow (perm)	1737	1734			1736			3499			2251	1583
Volume (vph)	502	213	0	15	10	15	0	675	55	62	370	205
Peak-hour factor, PHF	0.94	0.94	0.94	0.63	0.63	0.63	0.91	0.91	0.91	0.93	0.93	0.93
Adj. Flow (vph)	534	227	0	24	16	24	0	742	60	67	398	220
RTOR Reduction (vph)	0	0	0	0	20	0	0	0	0	0	0	0
Lane Group Flow (vph)	377	384	0	0	44	0	0	802	0	0	465	220
Turn Type	Split			Split						Perm		Perm
Protected Phases	7	7		8	8			2			6	
Permitted Phases		7								6		6
Actuated Green, G (s)	31.5	31.5			15.0			30.0			30.0	30.0
Effective Green, g (s)	32.0	32.0			15.5			30.5			30.5	30.5
Actuated g/C Ratio	0.36	0.36			0.17			0.34			0.34	0.34
Clearance Time (s)	4.5	4.5			4.5			4.5			4.5	4.5
Lane Grp Cap (vph)	618	617			299			1186			763	536
v/s Ratio Prot	0.22	c0.22			c0.03			c0.23				
v/s Ratio Perm											0.21	0.14
v/c Ratio	0.61	0.62			0.15			0.68			0.61	0.41
Uniform Delay, d1	23.9	24.0			31.6			25.5			24.8	22.8
Progression Factor	1.00	1.00			1.00			1.00			1.00	1.00
Incremental Delay, d2	4.4	4.7			1.0			3.1			3.6	2.3
Delay (s)	28.3	28.7			32.7			28.6			28.4	25.2
Level of Service	C	C			C			C			C	C
Approach Delay (s)		28.5			32.7			28.6			27.4	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM Average Control Delay	28.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	68.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥			✥			✥			✥	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	20	270	10	0	30	0	0	80	20	10	75	0
Peak Hour Factor	0.93	0.93	0.93	0.92	0.92	0.92	0.88	0.88	0.88	0.75	0.75	0.75
Hourly flow rate (vph)	22	290	11	0	33	0	0	91	23	13	100	0

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	323	33	114	113
Volume Left (vph)	22	0	0	13
Volume Right (vph)	11	0	23	0
Hadj (s)	0.03	0.03	-0.09	0.06
Departure Headway (s)	4.5	4.9	4.8	5.0
Degree Utilization, x	0.41	0.04	0.15	0.16
Capacity (veh/h)	755	675	688	668
Control Delay (s)	10.6	8.1	8.7	8.9
Approach Delay (s)	10.6	8.1	8.7	8.9
Approach LOS	B	A	A	A

Intersection Summary			
Delay	9.8		
HCM Level of Service	A		
Intersection Capacity Utilization	40.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	12	12	12	12	12	12	12	13	12
Total Lost time (s)		4.0						4.0		4.0	4.0	
Lane Util. Factor		0.95						0.95		0.97	0.95	
Frt		1.00						1.00		1.00	0.99	
Flt Protected		0.99						1.00		0.95	1.00	
Satd. Flow (prot)		3384						3523		3433	3613	
Flt Permitted		0.99						0.93		0.95	1.00	
Satd. Flow (perm)		3384						3284		3433	3613	
Volume (vph)	53	312	10	0	0	0	15	310	5	545	290	25
Peak-hour factor, PHF	0.87	0.87	0.87	0.25	0.25	0.25	0.74	0.74	0.74	0.94	0.94	0.94
Adj. Flow (vph)	61	359	11	0	0	0	20	419	7	580	309	27
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	7	0
Lane Group Flow (vph)	0	431	0	0	0	0	0	446	0	580	329	0
Turn Type	Perm						Perm			Prot		
Protected Phases		4						2		1	6	
Permitted Phases	4						2					
Actuated Green, G (s)		15.1						23.0		26.9	54.9	
Effective Green, g (s)		16.1						24.0		27.9	55.9	
Actuated g/C Ratio		0.20						0.30		0.35	0.70	
Clearance Time (s)		5.0						5.0		5.0	5.0	
Vehicle Extension (s)		3.0						3.0		3.0	3.0	
Lane Grp Cap (vph)		681						985		1197	2525	
v/s Ratio Prot										c0.17	0.09	
v/s Ratio Perm		0.13						c0.14				
v/c Ratio		0.63						0.45		0.48	0.13	
Uniform Delay, d1		29.2						22.7		20.4	4.0	
Progression Factor		1.00						1.00		0.74	0.71	
Incremental Delay, d2		1.9						1.5		1.4	0.1	
Delay (s)		31.2						24.2		16.5	3.0	
Level of Service		C						C		B	A	
Approach Delay (s)		31.2			0.0			24.2			11.6	
Approach LOS		C			A			C			B	

Intersection Summary			
HCM Average Control Delay	19.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	45.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	14	15	12	13	11	12	12	12	12
Total Lost time (s)		4.0		4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor		1.00		1.00	1.00		1.00	0.91			0.91	
Frt		0.93		1.00	0.92		1.00	1.00			0.98	
Flt Protected		0.98		0.95	1.00		0.95	1.00			1.00	
Satd. Flow (prot)		1921		1888	1876		1829	4916			4997	
Flt Permitted		0.55		0.57	1.00		0.37	1.00			1.00	
Satd. Flow (perm)		1091		1135	1876		709	4916			4997	
Volume (vph)	90	0	90	20	105	135	30	545	0	0	540	70
Peak-hour factor, PHF	0.70	0.70	0.70	0.90	0.90	0.90	0.93	0.93	0.93	0.89	0.89	0.89
Adj. Flow (vph)	129	0	129	22	117	150	32	586	0	0	607	79
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	258	0	22	267	0	32	586	0	0	686	0
Turn Type	Perm			Perm			Perm					
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2					
Actuated Green, G (s)		25.0		25.0	25.0		50.0	50.0			50.0	
Effective Green, g (s)		26.0		26.0	26.0		51.0	51.0			51.0	
Actuated g/C Ratio		0.31		0.31	0.31		0.60	0.60			0.60	
Clearance Time (s)		5.0		5.0	5.0		5.0	5.0			5.0	
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)		334		347	574		425	2950			2998	
v/s Ratio Prot					0.14			0.12			c0.14	
v/s Ratio Perm		c0.24		0.02			0.05					
v/c Ratio		0.77		0.06	0.47		0.08	0.20			0.23	
Uniform Delay, d1		26.8		20.9	23.9		7.1	7.7			7.9	
Progression Factor		1.00		0.73	0.79		0.79	0.77			1.00	
Incremental Delay, d2		10.6		0.1	0.6		0.3	0.1			0.2	
Delay (s)		37.4		15.3	19.3		6.0	6.1			8.1	
Level of Service		D		B	B		A	A			A	
Approach Delay (s)		37.4			19.0			6.1			8.1	
Approach LOS		D			B			A			A	

Intersection Summary			
HCM Average Control Delay	13.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	85.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	53.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBL	SBT	SBR	SBR2	NET	NER	SWL	SWT	SWR
Lane Configurations									
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	13	11	12	12	12	12	12	12
Total Lost time (s)	4.0	4.0	4.0		4.0			4.0	
Lane Util. Factor	1.00	0.95	1.00		0.95			0.95	
Frt	1.00	1.00	0.85		1.00			0.95	
Flt Protected	0.95	1.00	1.00		1.00			1.00	
Satd. Flow (prot)	1711	3657	1531		3524			3360	
Flt Permitted	0.95	1.00	1.00		1.00			0.95	
Satd. Flow (perm)	1711	3657	1531		3524			3185	
Volume (vph)	140	335	205	35	175	5	15	400	205
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.86	0.86	0.88	0.88	0.88
Adj. Flow (vph)	146	349	214	36	203	6	17	455	233
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	0
Lane Group Flow (vph)	146	349	250	0	208	0	0	705	0
Turn Type	Perm		Perm				Perm		
Protected Phases		4			2			6	
Permitted Phases	4		4				6		
Actuated Green, G (s)	18.4	18.4	18.4		56.6			56.6	
Effective Green, g (s)	19.4	19.4	19.4		57.6			57.6	
Actuated g/C Ratio	0.23	0.23	0.23		0.68			0.68	
Clearance Time (s)	5.0	5.0	5.0		5.0			5.0	
Vehicle Extension (s)	3.0	3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)	391	835	349		2388			2158	
v/s Ratio Prot		0.10			0.06				
v/s Ratio Perm	0.09		c0.16					c0.22	
v/c Ratio	0.37	0.42	0.72		0.09			0.33	
Uniform Delay, d1	27.7	28.0	30.3		4.7			5.7	
Progression Factor	1.00	1.00	1.00		1.44			1.00	
Incremental Delay, d2	0.6	0.3	6.8		0.1			0.4	
Delay (s)	28.3	28.3	37.1		6.9			6.1	
Level of Service	C	C	D		A			A	
Approach Delay (s)		31.3			6.9			6.1	
Approach LOS		C			A			A	

Intersection Summary			
HCM Average Control Delay	17.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	85.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	42.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	11	12	12	12	12
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		0.95			0.95			0.95			0.95	
Frt		1.00			1.00			0.93			0.97	
Flt Protected		0.99			0.99			1.00			1.00	
Satd. Flow (prot)		3506			3481			3180			3437	
Flt Permitted		0.82			0.79			1.00			0.95	
Satd. Flow (perm)		2901			2791			3180			3276	
Volume (vph)	50	210	0	90	265	10	0	130	115	5	485	115
Peak-hour factor, PHF	0.87	0.87	0.87	0.86	0.86	0.86	0.97	0.97	0.97	0.96	0.96	0.96
Adj. Flow (vph)	57	241	0	105	308	12	0	134	119	5	505	120
RTOR Reduction (vph)	0	0	0	0	3	0	0	78	0	0	24	0
Lane Group Flow (vph)	0	298	0	0	422	0	0	175	0	0	606	0
Turn Type	Perm			Perm						Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8						6		
Actuated Green, G (s)		47.0			47.0			28.0			28.0	
Effective Green, g (s)		48.0			48.0			29.0			29.0	
Actuated g/C Ratio		0.56			0.56			0.34			0.34	
Clearance Time (s)		5.0			5.0			5.0			5.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		1638			1576			1085			1118	
v/s Ratio Prot								0.05				
v/s Ratio Perm		0.10			c0.15						c0.19	
v/c Ratio		0.18			0.27			0.16			0.54	
Uniform Delay, d1		9.0			9.5			19.5			22.6	
Progression Factor		0.78			1.00			1.00			1.02	
Incremental Delay, d2		0.2			0.4			0.3			0.5	
Delay (s)		7.2			9.9			19.8			23.5	
Level of Service		A			A			B			C	
Approach Delay (s)		7.2			9.9			19.8			23.5	
Approach LOS		A			A			B			C	

Intersection Summary			
HCM Average Control Delay	16.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	85.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	48.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	9	11	12	13	11	12	12	12	12
Total Lost time (s)		4.0			4.0	4.0	4.0	4.0			4.0	
Lane Util. Factor		1.00			1.00	1.00	1.00	0.95			0.91	
Frt		0.93			1.00	0.85	1.00	1.00			0.99	
Flt Protected		0.98			0.98	1.00	0.95	1.00			1.00	
Satd. Flow (prot)		1693			1764	1583	1829	3421			5015	
Flt Permitted		0.75			0.85	1.00	0.33	1.00			1.00	
Satd. Flow (perm)		1308			1539	1583	640	3421			5015	
Volume (vph)	27	0	28	92	128	210	5	338	0	0	590	60
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.94	0.94	0.94	0.82	0.82	0.82
Adj. Flow (vph)	31	0	32	106	147	241	5	360	0	0	720	73
RTOR Reduction (vph)	0	25	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	38	0	0	253	241	5	360	0	0	793	0
Turn Type	Perm			Perm		Perm	Perm					
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2					
Actuated Green, G (s)		19.3			18.3	18.3	56.7	56.7			56.7	
Effective Green, g (s)		19.3			19.3	19.3	57.7	57.7			57.7	
Actuated g/C Ratio		0.23			0.23	0.23	0.68	0.68			0.68	
Clearance Time (s)		4.0			5.0	5.0	5.0	5.0			5.0	
Vehicle Extension (s)		3.0			3.0	3.0	3.0	3.0			3.0	
Lane Grp Cap (vph)		297			349	359	434	2322			3404	
v/s Ratio Prot								0.11			c0.16	
v/s Ratio Perm		0.03			c0.16	0.15	0.01					
v/c Ratio		0.13			0.72	0.67	0.01	0.16			0.23	
Uniform Delay, d1		26.2			30.4	30.0	4.4	4.9			5.2	
Progression Factor		1.00			0.92	0.91	0.33	0.34			0.58	
Incremental Delay, d2		0.2			7.1	4.7	0.0	0.1			0.2	
Delay (s)		26.4			35.0	32.1	1.5	1.8			3.2	
Level of Service		C			C	C	A	A			A	
Approach Delay (s)		26.4			33.6			1.8			3.2	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	12.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.36		
Actuated Cycle Length (s)	85.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	37.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣			✣			✣			✣	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	0	45	0	65	158	25	50	135	0	0	140	30
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.87	0.87	0.87	0.91	0.91	0.91
Hourly flow rate (vph)	0	55	0	79	193	30	57	155	0	0	154	33

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	55	302	213	187
Volume Left (vph)	0	79	57	0
Volume Right (vph)	0	30	0	33
Hadj (s)	0.03	0.03	0.09	-0.07
Departure Headway (s)	5.5	5.1	5.2	5.1
Degree Utilization, x	0.08	0.43	0.31	0.27
Capacity (veh/h)	582	668	642	649
Control Delay (s)	9.0	11.8	10.6	10.0
Approach Delay (s)	9.0	11.8	10.6	10.0
Approach LOS	A	B	B	A

Intersection Summary			
Delay	10.8		
HCM Level of Service	B		
Intersection Capacity Utilization	49.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	15	15	12	12	10	12	12	10	12
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frt		0.95			0.97			1.00			0.99	
Flt Protected		0.97			0.98			1.00			1.00	
Satd. Flow (prot)		1996			1991			3348			3342	
Flt Permitted		0.72			0.83			0.74			0.95	
Satd. Flow (perm)		1488			1680			2485			3174	
Volume (vph)	75	10	45	83	75	40	35	855	27	8	1457	80
Peak-hour factor, PHF	0.94	0.94	0.94	0.77	0.77	0.77	0.91	0.91	0.91	0.93	0.93	0.93
Adj. Flow (vph)	80	11	48	108	97	52	38	940	30	9	1567	86
RTOR Reduction (vph)	0	17	0	0	11	0	0	3	0	0	5	0
Lane Group Flow (vph)	0	122	0	0	246	0	0	1005	0	0	1657	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		27.3			27.3			48.7			48.7	
Effective Green, g (s)		28.7			28.7			48.3			48.3	
Actuated g/C Ratio		0.34			0.34			0.57			0.57	
Clearance Time (s)		5.4			5.4			3.6			3.6	
Lane Grp Cap (vph)		502			567			1412			1804	
v/s Ratio Prot												
v/s Ratio Perm		0.08			c0.15			0.40			c0.52	
v/c Ratio		0.24			0.43			0.71			0.92	
Uniform Delay, d1		20.3			21.9			13.3			16.6	
Progression Factor		1.00			1.00			0.45			1.00	
Incremental Delay, d2		1.1			2.4			2.7			9.0	
Delay (s)		21.5			24.3			8.7			25.6	
Level of Service		C			C			A			C	
Approach Delay (s)		21.5			24.3			8.7			25.6	
Approach LOS		C			C			A			C	

Intersection Summary			
HCM Average Control Delay	19.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	85.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	69.0%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	13	12	12	12	12	12	12	12	12	12	11	12
Total Lost time (s)	4.0	4.0			4.0			4.0			4.0	4.0
Lane Util. Factor	0.95	0.95			1.00			0.95			0.95	1.00
Frt	1.00	1.00			0.98			0.99			1.00	0.85
Flt Protected	0.95	0.96			0.98			1.00			1.00	1.00
Satd. Flow (prot)	1737	1698			1785			3508			3412	1583
Flt Permitted	0.95	0.96			0.98			1.00			0.87	1.00
Satd. Flow (perm)	1737	1698			1785			3508			2971	1583
Volume (vph)	285	25	0	42	40	15	0	617	38	47	833	825
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.80	0.80	0.80	0.97	0.97	0.97
Adj. Flow (vph)	320	28	0	47	45	17	0	771	48	48	859	851
RTOR Reduction (vph)	0	0	0	0	7	0	0	0	0	0	0	0
Lane Group Flow (vph)	172	176	0	0	102	0	0	819	0	0	907	851
Turn Type	Split			Split						Perm		Perm
Protected Phases	7	7		8	8			2			6	
Permitted Phases		7								6		6
Actuated Green, G (s)	13.5	13.5			14.0			44.0			44.0	44.0
Effective Green, g (s)	14.0	14.0			14.5			44.5			44.5	44.5
Actuated g/C Ratio	0.16	0.16			0.17			0.52			0.52	0.52
Clearance Time (s)	4.5	4.5			4.5			4.5			4.5	4.5
Lane Grp Cap (vph)	286	280			305			1837			1555	829
v/s Ratio Prot	0.10	c0.10			c0.06			0.23				
v/s Ratio Perm											0.31	c0.54
v/c Ratio	0.60	0.63			0.33			0.45			0.58	1.03
Uniform Delay, d1	32.9	33.1			31.0			12.6			13.9	20.2
Progression Factor	1.00	1.00			1.00			1.00			0.36	0.40
Incremental Delay, d2	9.0	10.3			2.9			0.8			0.8	28.9
Delay (s)	42.0	43.3			33.9			13.4			5.8	37.0
Level of Service	D	D			C			B			A	D
Approach Delay (s)		42.6			33.9			13.4			20.9	
Approach LOS		D			C			B			C	

Intersection Summary			
HCM Average Control Delay	21.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	85.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	67.9%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣			✣			✣			✣	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	30	45	30	0	87	0	0	155	35	20	185	0
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.91	0.91	0.91	0.90	0.90	0.90
Hourly flow rate (vph)	34	51	34	0	99	0	0	170	38	22	206	0

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	119	99	209	228
Volume Left (vph)	34	0	0	22
Volume Right (vph)	34	0	38	0
Hadj (s)	-0.08	0.03	-0.08	0.05
Departure Headway (s)	5.0	5.2	4.7	4.8
Degree Utilization, x	0.17	0.14	0.27	0.30
Capacity (veh/h)	648	627	725	709
Control Delay (s)	9.0	9.0	9.4	9.9
Approach Delay (s)	9.0	9.0	9.4	9.9
Approach LOS	A	A	A	A

Intersection Summary			
Delay	9.5		
HCM Level of Service	A		
Intersection Capacity Utilization	43.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	12	12	12	12	12	12	12	13	12
Total Lost time (s)		4.0						4.0		4.0	4.0	
Lane Util. Factor		0.95						0.95		0.97	0.95	
Frt		0.98						1.00		1.00	0.98	
Flt Protected		0.98						1.00		0.95	1.00	
Satd. Flow (prot)		3285						3522		3433	3574	
Flt Permitted		0.98						0.92		0.95	1.00	
Satd. Flow (perm)		3285						3237		3433	3574	
Volume (vph)	63	82	25	0	0	0	15	280	5	173	455	82
Peak-hour factor, PHF	0.67	0.67	0.67	0.92	0.92	0.92	0.83	0.83	0.83	0.92	0.92	0.92
Adj. Flow (vph)	94	122	37	0	0	0	18	337	6	188	495	89
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	13	0
Lane Group Flow (vph)	0	253	0	0	0	0	0	361	0	188	571	0
Turn Type	Perm						Perm			Prot		
Protected Phases		4						2		1	6	
Permitted Phases	4						2					
Actuated Green, G (s)		12.3						35.0		22.7	62.7	
Effective Green, g (s)		13.3						36.0		23.7	63.7	
Actuated g/C Ratio		0.16						0.42		0.28	0.75	
Clearance Time (s)		5.0						5.0		5.0	5.0	
Vehicle Extension (s)		3.0						3.0		3.0	3.0	
Lane Grp Cap (vph)		514						1371		957	2678	
v/s Ratio Prot										0.05	c0.16	
v/s Ratio Perm		0.08						c0.11				
v/c Ratio		0.49						0.26		0.20	0.21	
Uniform Delay, d1		32.8						15.9		23.4	3.2	
Progression Factor		1.00						1.00		1.09	1.26	
Incremental Delay, d2		0.7						0.5		0.4	0.2	
Delay (s)		33.5						16.4		25.9	4.2	
Level of Service		C						B		C	A	
Approach Delay (s)		33.5			0.0			16.4			9.5	
Approach LOS		C			A			B			A	

Intersection Summary			
HCM Average Control Delay	15.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.29		
Actuated Cycle Length (s)	85.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	38.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group