TRAFFIC STUDY
FINAL REPORT

16th Street/4th Avenue Intersection
Yuma, AZ

Prepared For:

City of Yuma

Project No. 191407001
January 2014

Kimley-Horn
and Associates, Inc.

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16th Street/4th Avenue Intersection
Yuma, AZ

Prepared For:

City of Yuma
155 West 14th Street
Yuma, AZ 85364

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1.0 EXECUTIVE SUMMARY

1.1 INTRODUCTION

This report documents the traffic study performed for the proposed widening of 16th Street and 4th Avenue in conjunction with the City of Yuma redevelopment plan for the 16th Street/4th Avenue intersection and surrounding area in Yuma, Arizona. The 16th Street/4th Avenue intersection is a primary traffic hub for the redevelopment area and is currently operating at or over capacity during peak periods. The redevelopment plan proposes changes to land uses and site layouts on all four corners of the intersection.

A previous study of the 16th Street/4th Avenue intersection and surrounding area titled the *4th Avenue and 16th Street Corridors Study* was completed by Kimley-Horn and Associates, Inc. for the City of Yuma in May 2007. This corridor study recommended widening the 16th Street/4th Avenue intersection and provided a geometric layout of the recommended intersection widening.

In 2012, the City of Yuma completed a document titled *Yuma North End, 16th Street and 4th Avenue Redevelopment Plan*, which outlines the redevelopment program, approach, goals and objectives for the 16th Street/4th Avenue intersection and surrounding area. As a result of this redevelopment plan, the proposed intersection geometry for widening the 16th Street/4th Avenue intersection has been updated from the proposed concept presented in the corridor study to provide more access to adjacent properties.

16th Street between 6th Avenue and Arizona Avenue is planned to be widened in two phases. Phase 1 covers the widening of 16th Street between 6th Avenue and 2nd Avenue/3rd Avenue in conjunction with the redevelopment plan and is programmed to be constructed by 2018. Phase 2 covers the widening of 16th Street between 2nd Avenue/3rd Avenue and Arizona Avenue but the implementation timeframe is uncertain as funding has not been programmed. This report focuses on the Phase 1 improvements. It includes some of the Phase 2 intersections for reference but does not include the Phase 2 improvements.

1.2 STUDY PURPOSE AND OBJECTIVES

Kimley-Horn and Associates, Inc. has been retained by the City of Yuma to perform a traffic study for the proposed widening of 16th Street and 4th Avenue in conjunction with the redevelopment of the land adjacent to the 16th Street/4th Avenue intersection. The purpose of this study is to determine existing and projected future traffic conditions and recommend any modifications that may be needed to better promote safe and efficient traffic operations. This traffic study has been prepared based on criteria set forth by the City of Yuma for traffic studies.

The specific objectives of this study are to:

- Determine existing and projected traffic volumes for the study area intersections;
- Determine redevelopment plan area traffic forecasts associated with the redevelopment of the land uses adjacent to the 16th Street/4th Avenue intersection;
- Develop *Synchro* models of the existing (2013) and future (2018 and 2033) morning (AM), mid-day (MD), and afternoon (PM) peak hour traffic conditions for the study area intersections;
- Evaluate the study intersections for level of service;
- Evaluate the queue lengths for all approach lanes at signalized intersections and for left-turn lanes at unsignalized intersections;
- Determine needed modifications to the proposed roadway geometry or traffic control to better promote safe and efficient traffic operations; and
- Document the findings and recommendations of the study in a report.

1.3 PRINCIPAL FINDINGS AND RECOMMENDATIONS

The principal findings and recommendations from the traffic study are summarized below by intersection:

1.3.1 Findings

Redevelopment Plan Area Traffic Forecasts

- The redevelopment plan indicates that some of the existing buildings in the redevelopment plan area will remain, some buildings will be renovated but will largely retain their existing land uses, and some older buildings will be replaced with new buildings and new land uses. The redevelopment plan area is anticipated to be built out by 2018.
- The proposed new land uses within the redevelopment plan area consist of 28,200 square feet of restaurant, 8,300 square feet of fast food, 57,500 square feet of specialty retail and 15,000 square feet of general office.
- The proposed redevelopment plan area is expected to generate 10,432 daily trips, with 706 trips occurring in the AM peak hour and 727 trips occurring in both the MD and PM peak hours.

Right-turn Lanes at Driveways

- Adding right-turn lanes at the driveways adjacent to the 16th Street/4th Avenue intersection would likely be beneficial but should not automatically be required. Impacts to project costs and right-of-way must be weighed against anticipated increased operational efficiency and safety. Other factors that should be considered include the existing or planned locations of bus stops/pull-outs, proximity to adjacent streets and driveways, and impacts to bicycle travel.
- The addition of right-turn lanes is expected to be more cost-effective from an operational and safety standpoint on higher volume roads. As such, the highest priority for a right-turn lane at driveways should be on the east leg of the intersection, followed in order by the west leg, the south leg, and the north leg, based on current and projected volumes, as long as such implementation is not cost-prohibitive or infeasible due to right-of-way constraints.

16th Street/6th Avenue North Leg

- All movements have LOS C or better in the 2013 peak hours except for the 2013 PM eastbound left-turn movement, which has LOS D. There are no queuing issues in 2013.
- In the 2018 and 2033 PM peak hours, the eastbound left-turn movement has LOS F. In the 2033 PM peak hour, the southbound left-turn/right-turn movement has LOS F. The LOS F designations are attributable to high eastbound/westbound through volumes on 16th Street as well as the addition of a portion of the reassigned eastbound left-turn volumes from the 16th Street/5th Avenue intersection.
- In the 2018 and 2033 PM peak hours, the eastbound left-turn queue length is considered moderate (100'-300'). This queue could extend through the adjacent 7th Avenue intersection, but it shouldn't impact through movement traffic on 16th Street as the queue can stack in the existing two-way left-turn lane between 6th Avenue and 7th Avenue.
- While prohibiting the southbound left-turn movement would minimize the likelihood of a long southbound queue length and would potentially improve the safety of the intersection compared to allowing the southbound left-turn movement, it would also restrict left-turn access. Considering the projected southbound left-turn volumes are low and adequate gaps in 16th Street traffic are anticipated for those southbound left-turn volumes to make a left turn, allowing the southbound left-turn movement is not anticipated to have adverse operational and safety impacts. If an operational or safety issue does develop that could be mitigated by a left-turn prohibition, the southbound left-turn movement could be prohibited at that point.

16th Street/6th Avenue South Leg

- All movements have LOS C or better in the 2013 peak hours except for the 2013 AM northbound left-turn/right-turn shared movement, which has LOS D. There are no queuing issues in 2013.
- All movements have LOS D or better in the 2018 and 2033 peak hours with no queuing issues.
- City staff recently indicated the City is considering eliminating the northbound left-turn prohibition that is assumed to be in place in the future in this study. Eliminating the northbound left-turn prohibition is not anticipated to be a concern. While prohibiting the northbound left-turn movement would minimize the likelihood of a long northbound queue length and would potentially improve the safety of the intersection compared to allowing the northbound left-turn movement, it would also restrict left-turn access. Considering the projected northbound left-turn volumes would be low and adequate gaps in 16th Street traffic are anticipated for those northbound left-turn volumes to make a left turn, allowing the northbound left-turn movement is not anticipated to have adverse operational and safety impacts. If an operational or safety issue does develop that could be mitigated by a left-turn prohibition, the northbound left-turn movement could be prohibited at that point.

16th Street/4th Avenue

- The intersection has LOS E in the 2013 AM peak hour and LOS F in the 2013 MD and PM peak hours with several queues that exceed storage lengths or back up 500'-1,000' in the through lanes through adjacent intersections, confirming the need to make improvements at the intersection.
- Proposed improvements result in intersection LOS values of C or D through 2033 for all scenarios except for the 2033 PM with redevelopment scenarios, which have intersection LOS E.
- The intersection average vehicle delay for the 2033 PM with redevelopment scenarios is just beyond the maximum average vehicle delay that is still considered LOS D of 55.0 seconds. To bring the intersection average vehicle delay to 55.0 seconds or less to achieve LOS D would require additional improvements such as a fourth through lane on 16th Street, triple left-turn lanes, or channelized right-turn lanes. Implementing such additional improvements is not recommended because it would significantly increase the cost and right-of-way footprint of the intersection while reducing intersection delay only slightly. It is recommended that the City of Yuma consider intersection LOS E in the 2033 PM peak hour to be acceptable at this intersection.
- The proposed improvements result in queues that are shorter than proposed turn lane storage lengths for all scenarios.
- In the 2033 PM peak hours, the westbound through movement queue length is approximately 600', which puts the back of the queue very close to the 16th Street/2nd Avenue/3rd Avenue intersection.

16th Street/2nd Avenue/3rd Avenue

- All movements have LOS C or better in the 2013 peak hours with no queuing issues.
- All movements have LOS D or better in the 2018 and 2033 peak hours with no queuing issues.
- During the 2013 peak hours, the queuing from 16th Street/4th Avenue and 16th Street/1st Avenue sometimes blocks the eastbound/westbound left-turn movement.
- Implementing the Phase 2 widening of 16th Street between 2nd Avenue/3rd Avenue and Arizona Avenue would likely eliminate or at least significantly reduce the issue of queues blocking the eastbound/westbound left-turn movement that already occurs in the 2013 peak hours.
- If this intersection were to be signalized, the intersection would have LOS B in the 2033 PM peak hour, but it would create a westbound through queue length of 1,100' that would back up through the adjacent 16th Street/1st Avenue intersection and would impede the flow of eastbound through traffic between 4th Avenue and 1st Avenue. Signalizing this intersection would have a negative overall impact on traffic operations and as such is not recommended.

15th Street/4th Avenue/Driveway

- All movements have LOS C or better in the 2013 peak hours with no queuing issues.
- In 2018 and 2033, all movements have LOS D or better if redevelopment of the properties around 16th Street/4th Avenue does not occur. If redevelopment does occur, the westbound movement has LOS E during the 2033 MD and PM peak hours.
- In the 2033 MD and PM peak hours with no traffic signal, the westbound left-turn queue length is just under 100'. This queue length is considered acceptable for a side-street.
- While prohibiting the eastbound/westbound left-turn and through movements would minimize the likelihood of a long eastbound or westbound queue length and would potentially improve the safety of the intersection compared to allowing the eastbound/westbound left-turn and through movements, it would also restrict left-turn and through access. Considering the projected eastbound/westbound left-turn and through volumes are moderate and adequate gaps in 4th Avenue traffic are anticipated for eastbound/westbound volumes to make a left-turn or through movement, allowing the eastbound/westbound left-turn and through movements is not anticipated to have adverse operational and safety impacts. If an operational or safety issue does develop that could be mitigated by a left-turn prohibition, the eastbound/westbound left-turn and through movements could be prohibited at that point.
- If this intersection were to be signalized, the intersection would have LOS A in the 2033 PM peak hour, but it would create a southbound through queue length of approximately 300' that would back up through the adjacent 14th Place/4th Avenue and 14th Street/4th Avenue intersections and would impede the flow of northbound through traffic between 16th Street and 14th Street. Signalizing this intersection would have a negative overall impact on traffic operations and as such is not recommended.

17th Street/4th Avenue/Driveway

- All movements have LOS C or better in the 2013 peak hours with no queuing issues.
- In 2018 and 2033, all movements have LOS D or better if redevelopment of the properties around 16th Street/4th Avenue does not occur. If redevelopment does occur, the eastbound and westbound movements have LOS E or LOS F during the 2018 and 2033 MD and PM peak hours.
- In the 2033 MD and PM peak hour with redevelopment and with no traffic signal scenarios, the eastbound and westbound left-turn queue lengths are moderate (100'-160'). These queue lengths are considered acceptable for a side-street and driveway.
- While prohibiting the eastbound/westbound left-turn and through movements would minimize the likelihood of a long eastbound or westbound queue length and would potentially improve the safety of the intersection compared to allowing the eastbound/westbound left-turn and through movements, it would also restrict left-turn and through access. Considering the projected eastbound/westbound left-turn and through volumes are moderate and adequate gaps in 4th Avenue traffic are anticipated for eastbound/westbound volumes to make a left-turn or through movement, allowing the eastbound/westbound left-turn and through movements is not anticipated to have adverse operational and safety impacts. If an operational or safety issue does develop that could be mitigated by a left-turn prohibition, the eastbound/westbound left-turn and through movements could be prohibited at that point.
- If this intersection were to be signalized, the intersection would have LOS B in the 2033 PM peak hour, but it would create a northbound through queue length of nearly 400' that would back up through the adjacent 18th Street/4th Avenue intersection and would impede the flow of southbound through traffic between 16th Street and 18th Street. Signalizing this intersection would have a negative overall impact on traffic operations and as such is not recommended.

16th Street/1st Avenue

- The intersection has LOS C in the 2013 AM peak hour and LOS D in the 2013 MD and PM peak hours with several queues that exceed storage lengths or back up 400'-1,000' in the through lanes through adjacent intersections, confirming the need to make improvements at the intersection.
- The intersection has LOS F in the 2033 MD peak hour and LOS E in the 2033 PM peak hour with LOS E or F for several movements. Queues get even longer for eastbound and westbound through movements (1,100'+) and start to become an issue for the southbound left-turn movement also (400'+). Not implementing Phase 2 has a significant impact on this intersection and adjacent intersections due to queuing issues.
- Implementing the Phase 2 widening of 16th Street between 2nd Avenue/3rd Avenue and Arizona Avenue would likely eliminate or at least significantly reduce the issue of queues exceeding storage lengths or backing up through adjacent intersections that already occurs in the 2013 peak hours.

16th Street/Maple Avenue/Driveway

- All movements have LOS C or better in the 2013 peak hours except for the southbound movements, which have LOS D in the 2013 AM peak hour and LOS F in the 2013 MD and PM peak hours.
- During the 2013 peak hours, the queuing from 16th Street/1st Avenue sometimes blocks the southbound left-turn and through movements as well as the eastbound/westbound left-turn movement.
- All movements have LOS D or better in the 2018 and 2033 peak hours except for the southbound movements, which have LOS F during the 2018 and 2033 MD and PM peak hours.
- In the 2033 MD peak hours, the southbound movements' queue length is theoretically infinite because there are not enough gaps in 16th Street traffic to allow the southbound left-turn and through movements to occur.
- Prohibiting the southbound left-turn and through movements would minimize the likelihood of a long southbound queue length and would potentially improve the safety of the intersection compared to allowing the southbound left-turn and through movements, although it would also restrict left-turn access. While the projected southbound left-turn and through volumes are low, adequate gaps in 16th Street traffic are not anticipated to be available during the 2033 MD scenarios for those southbound volumes to make a left turn or through movement. Because allowing the southbound left-turn and through movements is anticipated to have adverse operational and safety impacts during the 2033 MD peak hour, the southbound left-turn and through movements should be prohibited.
- Implementing the Phase 2 widening of 16th Street between 2nd Avenue/3rd Avenue and Arizona Avenue would likely eliminate or at least significantly reduce the issue of queues blocking the intersection that already occurs in the 2013 peak hours.

15th Street/1st Avenue/Driveway

- All movements have LOS C or better in the 2013 peak hours with no queuing issues.
- All movements have LOS D or better in the 2018 and 2033 peak hours with no queuing issues.

17th Street/1st Avenue

- All movements have LOS C or better in the 2013 peak hours with no queuing issues.
- All movements have LOS D or better in the 2018 and 2033 peak hours with no queuing issues.

Traffic Simulation Models

- Not having signals at the 1/8-mile locations results in more efficient traffic operations for 16th Street, 4th Avenue, and the overall study network than having signals at the 1/8-mile locations.

- As such, adding traffic signals is not recommended at the intersections of 16th Street/2nd Avenue/3rd Avenue, 15th Street/4th Avenue/Driveway, and 17th Street/4th Avenue/Driveway.

1.3.2 Recommendations

The following conclusions and recommendations have been developed based on a review of the data collected and analysis performed as part of this study:

- The redevelopment plan's proposed geometry for the primary study intersections is generally anticipated to be able to accommodate existing and future conditions through 2033;
- Consider installing right-turn lanes at the driveways in the study area, or at a minimum, require no-build easements over the land where right-turn lanes at driveways could ultimately be needed to improve operational efficiency or safety so that right-turn lanes could be added later if needed;
- Do not prohibit any left-turn or through movements at 16th Street/6th Avenue (both North and South intersections), 15th Street/4th Avenue, and 17th Street/4th Avenue. If an operational or safety issue develops that could be mitigated by a left-turn or through movement prohibition, implement the movement prohibition at that point;
- Do not signalize 16th Street/6th Avenue (both North and South intersections), 16th Street/2nd Avenue/3rd Avenue, 15th Street/4th Avenue, and 17th Street/4th Avenue as signalizing these intersections is anticipated to have a negative overall impact on traffic operations; and
- Implement the proposed Phase 2 improvements of widening 16th Street between Maple Avenue and Arizona Avenue within the next 5-10 years to address queuing issues on 16th Street, including prohibiting the southbound left-turn and through movements at 16th Street/Maple Avenue.

2.0 STUDY AREA

The study area includes the primary study intersections along 16th Street from 6th Avenue to 2nd Avenue/3rd Avenue and along 4th Avenue from 15th Street to 17th Street, as well as the access points on 16th Street and 4th Avenue within the redevelopment plan area (the land in the four corners of the 16th Street/4th Avenue intersection that is included in the City's *Yuma North End, 16th Street and 4th Avenue Redevelopment Plan*). The study area also includes four secondary study intersections that are associated with the aforementioned Phase 2 widening of 16th Street for reference purposes. The study area is shown in **Figure 1**, along with the current proposed preliminary design for the widening of 16th Street and 4th Avenue.

The redevelopment plan area is comprised of various vacant parcels and residential, commercial and office land uses. Regional access to the study area is provided by Interstate 8 and US 95 and by other arterial streets in the vicinity such as Avenue A, Arizona Avenue and 24th Street.

2.1 STUDY INTERSECTIONS

The study area includes the following primary study intersections:

- 16th Street/6th Avenue North,
- 16th Street/6th Avenue South,
- 16th Street/4th Avenue,
- 16th Street/2nd Avenue/3rd Avenue,
- 15th Street/4th Avenue/Driveway, and
- 17th Street/4th Avenue/Driveway.

The study area includes the following secondary study intersections:

- 16th Street/1st Avenue,
- 16th Street/Maple Avenue/Driveway,
- 15th Street/1st Avenue/Driveway,
- 17th Street/1st Avenue.

The *Synchro* models include both the primary and secondary study intersections but redevelopment plan area traffic forecasts have only been developed for the primary study intersections and the access points on 16th Street and 4th Avenue within the redevelopment plan area.

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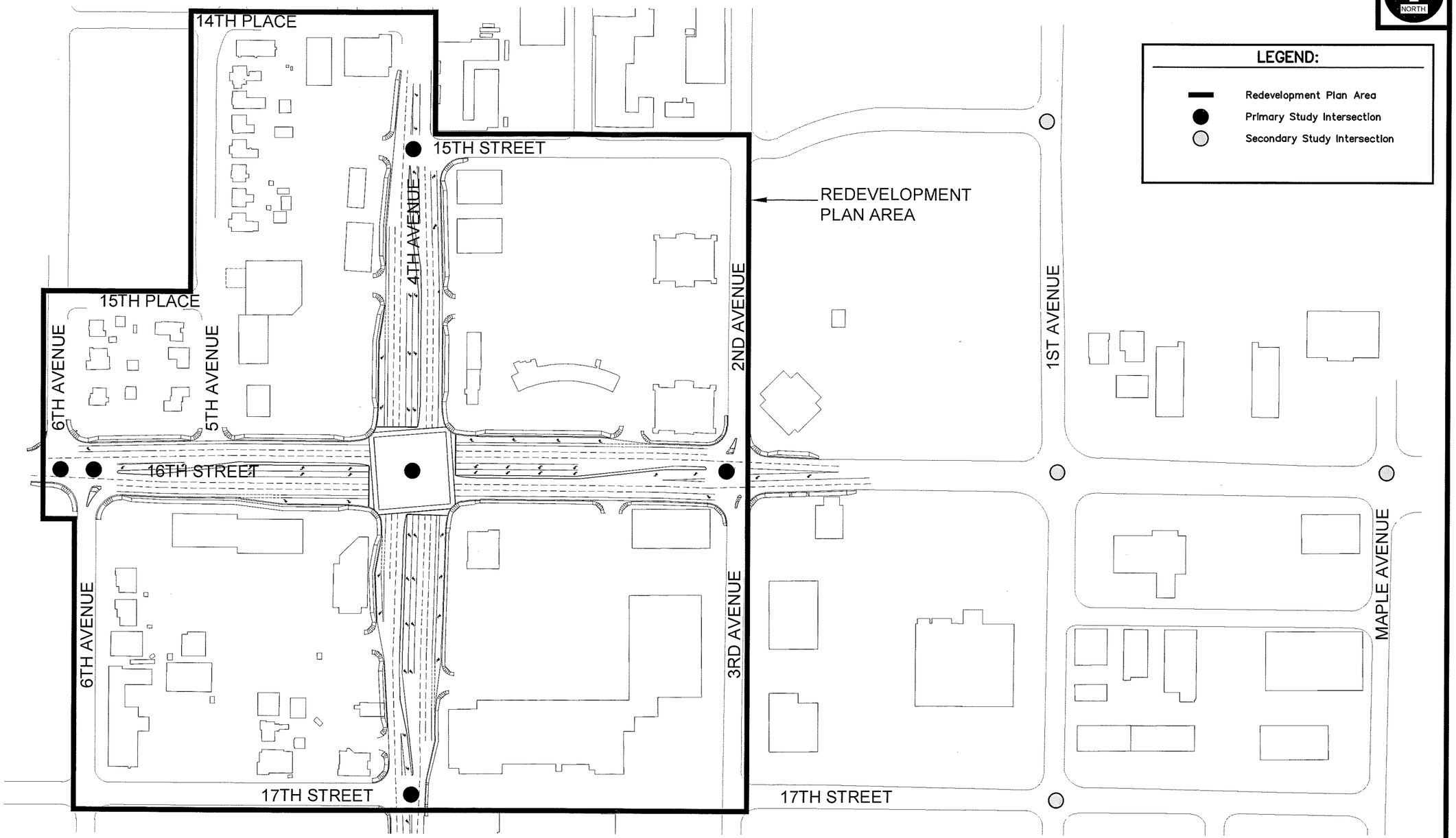

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Study Area

16th Street/4th Avenue Intersection Traffic Study

Figure 1

3.0 EXISTING CONDITIONS

3.1 PHYSICAL CHARACTERISTICS

The existing roadway network within the study area includes two major roadways: 16th Street and 4th Avenue.

16th Street (US 95) currently extends east-west with two lanes in each direction and a two-way left-turn lane and is classified as a Constrained Principal Arterial roadway within the study area per the *City of Yuma 2005 Major Roadways Plan*. The Principal Arterial roadway classification is intended for major carriers of cross-town traffic that typically have six through traffic lanes. Access from private property is limited and controlled. Intersections can be at-grade or grade-separated with other major roadways. This classification of roadway is designed to provide continuity and length for cross-region trips (five miles or more). 16th Street is a Constrained Principal Arterial roadway because existing right-of-way constraints inhibit the implementation of the standard Principal Arterial cross-section. The existing speed limit on 16th Street in the vicinity of the study area is 35 miles per hour (mph).

4th Avenue (Interstate Business Route B-8) currently extends north-south with two lanes in each direction and a two-way left-turn lane and is classified as a Constrained Minor Arterial roadway north of 16th Street and as a Principal Arterial roadway south of 16th Street. Minor Arterial roadways are designated as major carriers of cross-town traffic that typically have four through traffic lanes. Access from private property is limited and controlled. Intersections can be at-grade or grade-separated with other major roadways. This classification of roadway is designed to provide continuity and length for cross-town trips (three miles or more). 4th Avenue is a Constrained Minor Arterial roadway north of 16th Street because existing right-of-way constraints inhibit the implementation of the standard Minor Arterial cross-section. The existing speed limit on 4th Avenue in the vicinity of the study area is 35 mph.

3.2 EXISTING TRAFFIC VOLUMES

Intersection movement counts were collected from 7:00 AM-9:00 AM, 11:00 AM-1:00PM, and 4:00 PM-6:00 PM at the ten primary and secondary study intersections. All counts were conducted on Thursday, July 11, 2013 except for the intersections of 16th Street/6th Avenue North and 16th Street/6th Avenue South, which were counted on Thursday, July 18, 2013. The count data is provided in **Appendix A**. Existing peak hour volumes for the AM, MD, and PM periods were developed from the count data for use in developing background traffic volumes and are shown in **Figure 2**. It should be noted that the northbound and southbound approaches to the 16th Street/2nd Avenue/3rd Avenue intersection are currently limited to a right-turn-only condition.

Because the intersection movement counts were collected in July when traffic volumes are lower than the peak winter season, a seasonal adjustment factor was applied to convert the July peak hour volumes to winter season peak hour volumes. A seasonal adjustment growth factor of 34% was utilized as agreed upon in discussions with City staff. The 34% growth factor was calculated based on the seasonal variations in the 24-hour traffic counts conducted by Yuma Metropolitan Organization (YMPO) in February 2012 and May 2012 on all four legs of the 16th Street/4th Avenue intersection. The seasonally adjusted 2013 existing peak hour traffic volumes are shown in **Figure 3**.

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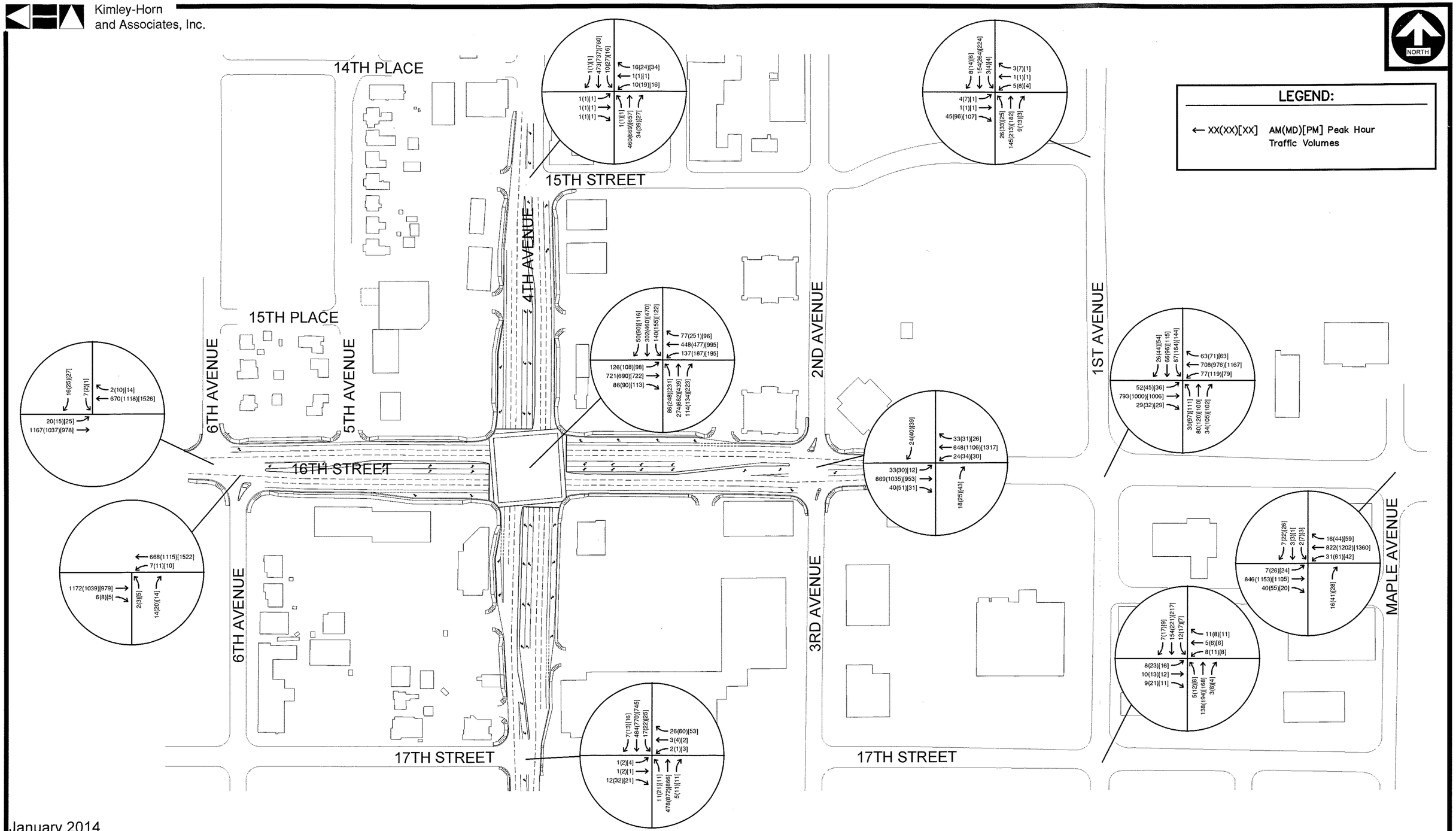

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2013 Existing Traffic Volumes

16th Street/4th Avenue Intersection Traffic Study

Figure 2

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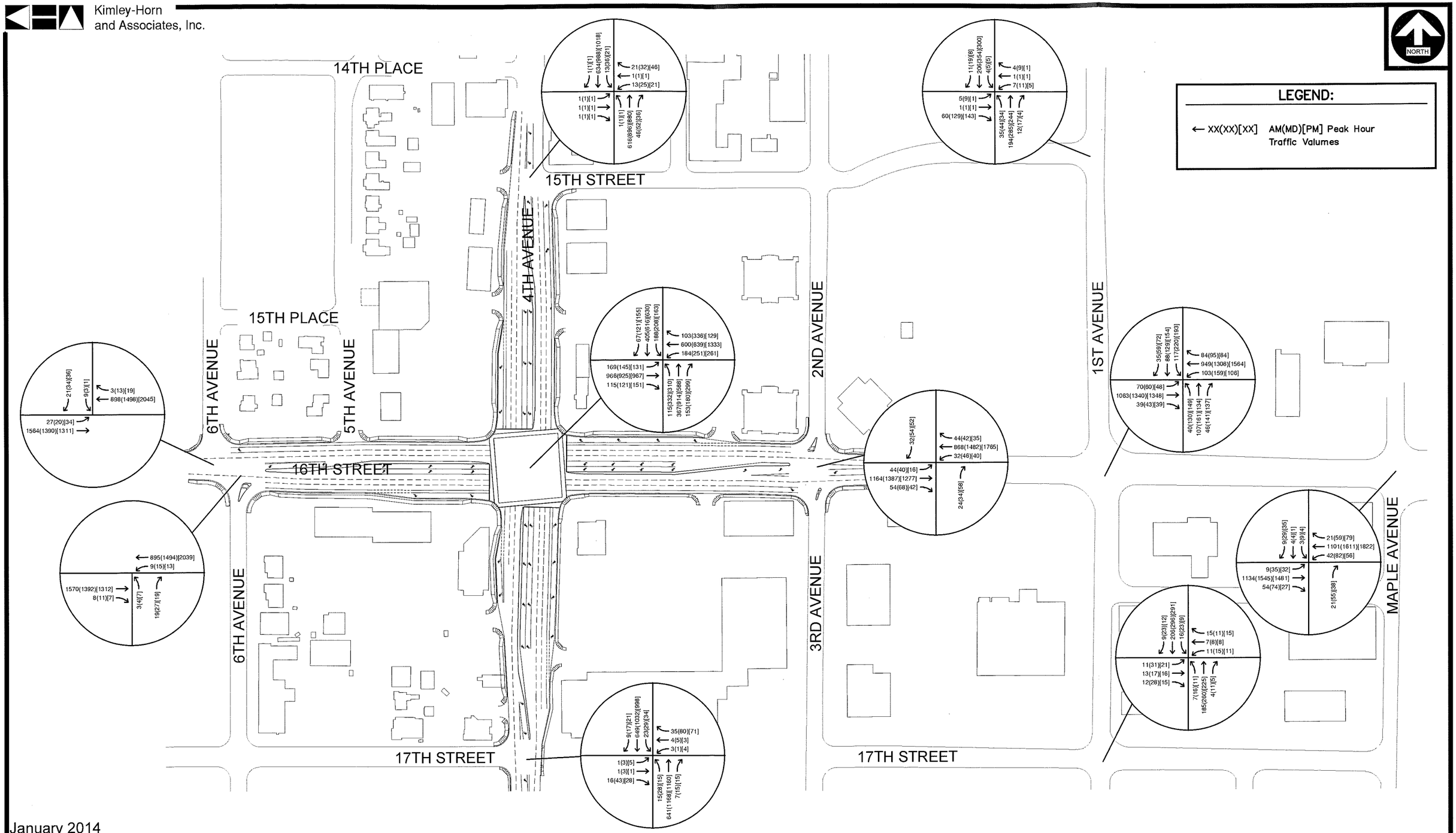

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Seasonally Adjusted 2013 Existing Traffic Volumes

16th Street/4th Avenue Intersection Traffic Study

Figure 3

4.0 FUTURE CONDITIONS

4.1 PROPOSED ROADWAY GEOMETRY AND ACCESS

4.1.1 Corridor Study Proposed Roadway Geometry and Access

A previous study of the 16th Street/4th Avenue intersection and surrounding area titled the *4th Avenue and 16th Street Corridors Study* was completed by Kimley-Horn and Associates, Inc. for the City of Yuma in May 2007. This corridor study recommended widening the 16th Street/4th Avenue intersection and provided a geometric layout of the recommended intersection widening (see **Appendix B**). The recommended intersection geometry included dual left-turn lanes, three through lanes, a bike lane, and a channelized right-turn lane on each leg of the 16th Street/4th Avenue intersection.

Raised median islands were shown on all four legs of the intersection, extending south past 17th Street, north past 15th Street, west past the south leg of 6th Avenue, and east to 2nd Avenue/3rd Avenue, where a partial median break would permit the eastbound/westbound left-turn movement but prohibit the northbound/southbound through and left-turn movement. 5th Avenue was shown being closed south of 16th Street and 15th Place was shown being closed west of 4th Avenue.

The goal of these recommendations was to promote improved traffic operations and safety at the 16th Street/4th Avenue intersection by providing adequate laneage and turn-lane storage and by controlling access near the intersection. The implementation of these recommendations would, however, prohibit some left-turn and through movements that are currently allowed in the vicinity of the intersection, forcing existing traffic currently making those movements to take a different route to arrive at the same destination.

4.1.2 Redevelopment Plan Proposed Roadway Geometry and Access

As a result of the recently completed redevelopment plan, the proposed intersection geometry for widening the 16th Street/4th Avenue intersection has been updated by the City from the proposed concept presented in the corridor study to provide more access to adjacent properties and reduce right-of-way impacts to some properties (see **Figure 1** and all subsequent figures in this report for the updated proposed geometry based on the redevelopment plan). While the proposed updated 16th Street/4th Avenue intersection geometry still includes dual left-turn lanes, three through lanes, a bike lane, and a right-turn lane on each leg of the 16th Street/4th Avenue intersection, the right-turn lanes are no longer channelized.

Raised median islands are still shown on all four legs of the intersection, but the extents of the medians have been shortened. Full median breaks are now shown at 17th Street/4th Avenue, 15th Street/4th Avenue, 16th Street/6th Avenue (both North and South), and 16th Street/2nd Avenue/3rd Avenue, with "pork chop" raised median islands on the north and south legs of 16th Street/2nd Avenue/3rd Avenue prohibiting the northbound/southbound through and left-turn movements. A pork chop raised median island prohibiting the northbound left-turn movement is also shown on the south leg of the 16th Street/6th Avenue South intersection, although it should be noted that City staff recently indicated the City is considering eliminating this pork chop island from the design. 5th Avenue south of 16th Street will be closed to make way for a planned building. 15th Place west of 4th Avenue will be converted from a local street to a site access driveway.

The proposed updated 16th Street/4th Avenue intersection geometry currently shows a southbound right-turn lane into the first driveway on the west side of 4th Avenue south of 16th Street. This is the only driveway in the study area that is currently shown in the preliminary design plans as having a right-turn lane. The City of Yuma does not currently have any adopted guidelines or policies for when right-turn

lanes are required at driveways. A review of other agencies' guidelines and policies indicates that the requirements for a right-turn lane at a driveway vary widely between agencies. Based on this review and considering the magnitude of the driveway volumes and 16th Street and 4th Avenue volumes, it is believed that the addition of right-turn lanes at the other driveways adjacent to the 16th Street/4th Avenue intersection would likely be beneficial but should not automatically be required. Impacts to project costs and right-of-way must be weighed against anticipated increased operational efficiency and safety. Other factors that should be considered include the existing or planned locations of bus stops/pull-outs, proximity to adjacent streets and driveways, and impacts to bicycle travel. The addition of right-turn lanes is expected to be more cost-effective from an operational and safety standpoint on higher volume roads. As such, the highest priority for a right-turn lane at driveways should be on the east leg of the intersection, followed in order by the west leg, the south leg, and the north leg, based on current and projected volumes, as long as such implementation is not cost-prohibitive or infeasible due to right-of-way constraints. At a minimum, it is recommended that the City require no-build easements over the land where right-turn lanes at driveways could ultimately be needed to improve operational efficiency or safety so that right-turn lanes could be added later if needed.

4.1.3 Phasing of 16th Street Widening

16th Street between 6th Avenue and Arizona Avenue is planned to be widened in two phases. Phase 1 covers the widening of 16th Street between 6th Avenue and 2nd Avenue/3rd Avenue and is programmed to be constructed by 2018. The updated proposed geometry for the 16th Street/4th Avenue intersection based on the redevelopment plan is what is planned to be implemented as part of Phase 1.

Phase 2 covers the widening of 16th Street between 2nd Avenue/3rd Avenue and Arizona Avenue but the implementation timeframe is uncertain as funding has not been programmed. This report focuses on the Phase 1 improvements. It includes some of the Phase 2 intersections for reference but does not include the Phase 2 improvements.

4.2 REDEVELOPMENT PLAN AREA TRAFFIC FORECASTS

4.2.1 Land Uses and Sizes

The aforementioned redevelopment plan indicates that some of the existing buildings in the redevelopment plan area will remain, some buildings will be renovated but will largely retain their existing land uses, and some older buildings will be replaced with new buildings and new land uses. The redevelopment plan area is anticipated to be built out by 2018.

The proposed new land uses within the redevelopment plan area consist of 28,200 square feet of restaurant, 8,300 square feet of fast food, 57,500 square feet of specialty retail and 15,000 square feet of general office. Proposed land uses and sizes for each of the four quadrants were provided by the City of Yuma in the form of a ULI Standard Shared Parking Model and are shown in **Appendix C**. **Table 1** provides a summary of the land uses of the proposed development for each corner of the intersection. The Institute of Transportation Engineers (ITE) *Trip Generation, 9th Edition* was used to obtain the land use codes shown in the third column of **Table 1**.

Table 1 – Redevelopment Plan Area Land Uses and Sizes

Corner	General Description	9th Edition ITE Land Use	Size (square feet)
Northeast Corner	High-Turnover (Sit-Down) Restaurant	932	7,700
	General Office Building	710	10,000
	Specialty Retail	826	10,000
Northwest Corner	High-Turnover (Sit-Down) Restaurant	932	4,500
	Fast Food Restaurant w/ Drive Through	934	5,500
	Specialty Retail	826	20,500
Southeast Corner	High-Turnover (Sit-Down) Restaurant	932	7,000
	General Office Building	710	5,000
	Specialty Retail	826	5,800
Southwest Corner	High-Turnover (Sit-Down) Restaurant	932	9,000
	Fast Food Restaurant w/ Drive Through	934	2,800
	Specialty Retail	826	21,200

4.2.2 Trip Generation

The number of daily and peak hour trips that can be attributed to the new land uses for the proposed redevelopment was estimated using the ITE *Trip Generation, 9th Edition* daily and peak-hour trip generation rates and inbound-outbound percentages. The trip generation characteristics for the redevelopment of each corner of the 16th Street/4th Avenue intersection as well as for the entire redevelopment plan area are summarized in **Table 2** through **Table 6**.

It should be noted that the trip generation presented in **Table 2** through **Table 6** is for new development only and does not reflect any trip generation for existing land uses within the redevelopment plan area. To be conservative, no trip reductions were applied to account for the loss of trips from the existing buildings that will be removed or replaced when the redevelopment plan is implemented.

Table 2 – Northwest Corner Redevelopment New Trip Generation

Land Use	ITE Code	Quantity	Units	Daily Trips	AM Peak			PM Peak		
					In	Out	Total	In	Out	Total
High-Turnover Restaurant	932	4,500	SF	574	27	22	49	26	18	44
Fast-Food Restaurant with Drive-Thru	934	5,500	SF	2,730	128	122	250	94	86	180
Specialty Retail Center	826	20,500	SF	910	0	0	0	25	31	56
			Total	**4,214**	**155**	**144**	**299**	**145**	**135**	**280**

Table 3 – Northeast Corner Redevelopment New Trip Generation

Land Use	ITE Code	Quantity	Units	Daily Trips	AM Peak			PM Peak		
					In	Out	Total	In	Out	Total
High-Turnover Restaurant	932	7,700	SF	980	46	37	83	46	30	76
General Office Building	710	10,000	SF	112	14	2	16	3	12	15
Specialty Retail Center	826	10,000	SF	444	0	0	0	12	15	27
			Total	**1,536**	**60**	**39**	**99**	**61**	**57**	**118**

Table 4 – Southwest Corner Redevelopment New Trip Generation

Land Use	ITE Code	Quantity	Units	Daily Trips	AM Peak			PM Peak		
					In	Out	Total	In	Out	Total
High-Turnover Restaurant	932	9,000	SF	1,146	53	44	97	53	36	89
Fast-Food Restaurant with Drive-Thru	934	2,800	SF	1,390	65	62	127	47	44	91
Specialty Retail Center	826	21,200	SF	940	0	0	0	25	32	57
			Total	**3,476**	**118**	**106**	**224**	**125**	**112**	**237**

Table 5 – Southeast Corner Redevelopment New Trip Generation

Land Use	ITE Code	Quantity	Units	Daily Trips	AM Peak			PM Peak		
					In	Out	Total	In	Out	Total
High-Turnover Restaurant	932	7,000	SF	892	42	34	76	41	28	69
General Office Building	710	5,000	SF	56	7	1	8	1	6	7
Specialty Retail Center	826	5,800	SF	258	0	0	0	7	9	16
			Total	**1,206**	**49**	**35**	**84**	**49**	**43**	**92**

Table 6 – Total Redevelopment Plan Area New Trip Generation

Land Use	ITE Code	Quantity	Units	Daily Trips	AM Peak			PM Peak		
					In	Out	Total	In	Out	Total
High-Turnover Restaurant	932	28,200	SF	3,592	168	137	305	166	112	278
Fast-Food Restaurant with Drive-Thru	934	8,300	SF	4,120	193	184	377	141	130	271
Specialty Retail Center	826	57,500	SF	2,552	0	0	0	69	87	156
General Office Building	710	15,000	SF	168	21	3	24	4	18	22
			Total	**10,432**	**382**	**324**	**706**	**380**	**347**	**727**

The proposed redevelopment is expected to generate 10,432 daily trips, with 706 trips occurring in the AM peak hour and 727 trips occurring in the PM peak hour. Owing to the mix of uses on the four corners of the intersection, some pass-by trips are anticipated. Trip generation rates and inbound-outbound percentages for the proposed redevelopment land uses can be found in **Appendix D**.

While existing traffic counts were collected during the existing AM, MD, and PM peak hours, the ITE *Trip Generation, 9th Edition* includes trip generation rates and inbound-outbound percentages of land uses for the AM and PM peak hours only. Because no MD peak hour trip generation information is available for the proposed land uses, the ITE PM peak hour generation rates and inbound-outbound percentages were used as a reasonable estimate of MD peak hour trip generation for the redevelopment plan area.

4.2.3 Trip Distribution

Redevelopment plan area new daily and peak hour trips were generally distributed based on the proportional distribution of the *YMPO 2014-2037 Regional Transportation Plan* estimated 2014 average daily traffic (ADT) volume for the four approach legs at the 16th Street/4th Avenue intersection, as shown in **Table 7**. This general distribution was used to distribute new trips only for both the 2018 and 2033 horizon year analyses and was not used to distribute pass-by traffic. A few minor manual adjustments were made at access points where the surrounding roadway network and access control suggested the general distribution would not be applicable. The new trip distribution is shown in **Figure 4**.

Table 7 – 16th Street/4th Avenue Intersection Volume Distribution

Roadway Segment	2014 ADT	Percentage of Total 2014 ADT	New Trip General Distribution Percentage
4th Avenue north of 16th Street	17,425	17.2%	17.2%
4th Avenue south of 16th Street	21,273	21.0%	21.0%
16th Street west of 4th Avenue	27,723	27.3%	27.3%
16th Street east of 4th Avenue	34,945	34.5%	34.5%
Total	101,366	100%	100%

4.2.4 Initial Trip Assignment

The initial trip assignment is also shown in **Figure 4**. The initial trip assignment is composed of both new, or primary, trips as well as pass-by trips. New trips generated by the proposed new development were assigned to the roadway network on the basis of the aforementioned trip distribution and the likely travel patterns to and from the various parcels. The subsequent section discusses pass-by trip assignments.

4.2.5 Pass-By Trip Reductions

Per the ITE *Trip Generation*, 9th *Edition*, High-Turnover (Sit-Down) Restaurant and Fast Food Restaurant w/ Drive Through land uses do not typically generate all new traffic on a roadway system. The total traffic generation is a combination of pass-by trips, or traffic drawn directly from the passing traffic flow on the adjacent streets, and primary trips, which represent new traffic drawn to the facility. To identify the pass-by trips, the data published in the ITE *Trip Generation Handbook* was used to estimate the pass-by percentages for the commercial parcels. Pass-by trips were assigned to the roadway network on the basis of likely travel patterns to and from the various parcels. Pass-by trips for each corner of the redevelopment plan area were taken out of the background traffic of the roadway adjacent to each corner. For example, pass-by traffic for the southwest corner was taken from eastbound traffic on 16th Street and southbound traffic on 4th Avenue. All pass-by traffic was assumed to make right-in and right-out movements only at driveways. Pass-by trips were subtracted from the through movements of the initial trip assignment volumes at the primary study intersections. It should be noted that the pass-by trip reductions do not reduce driveway traffic volumes. The pass-by trip reductions are shown in **Figure 5**.

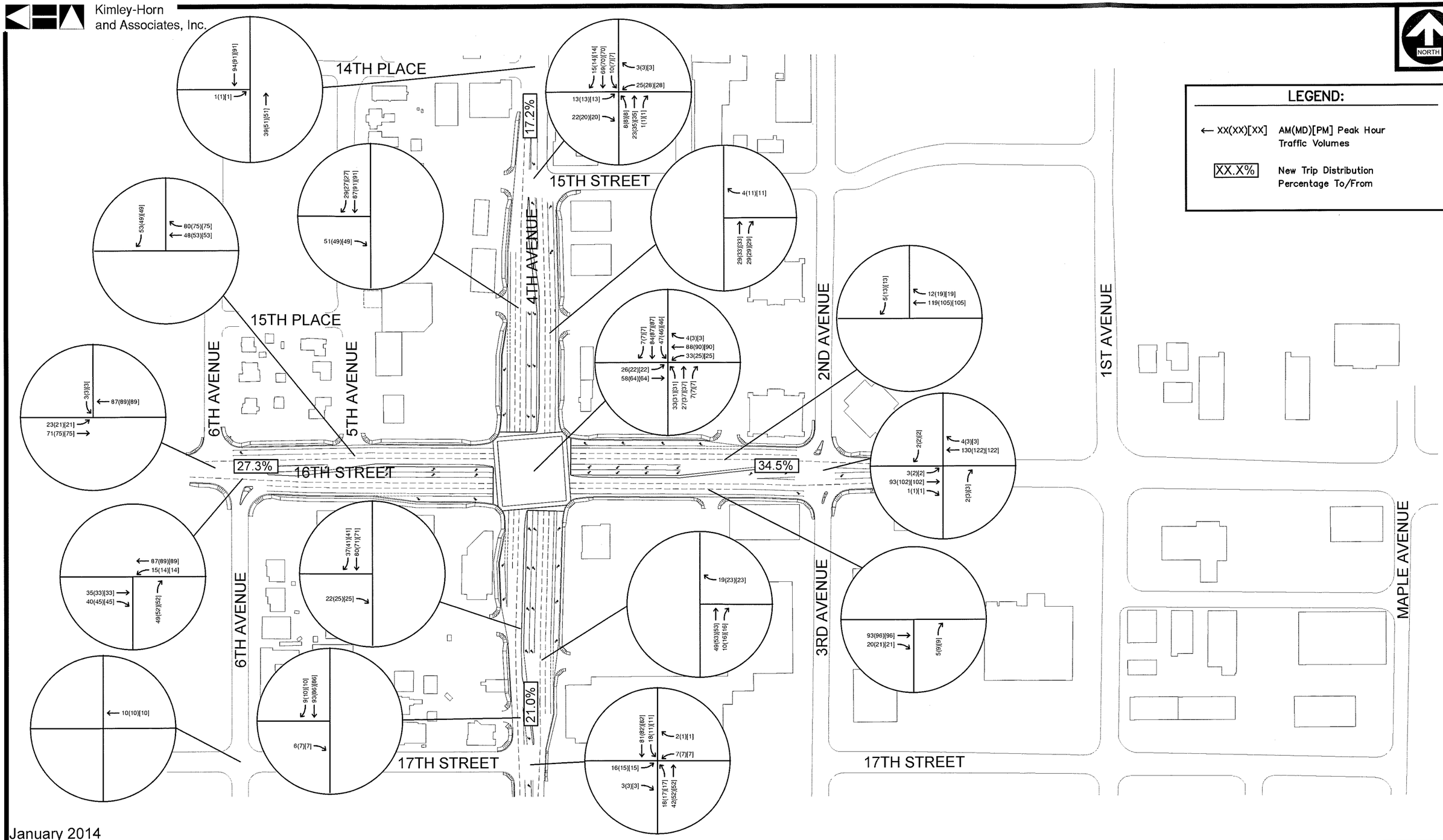
4.2.6 Existing Volume Reassignment

The redevelopment plan's proposed roadway geometry and access will result in the prohibition of some existing movements. Drivers making those movements now will have to modify their travel route in the future once the proposed improvements are implemented. To reflect the anticipated modifications to travel routes due to movement prohibitions, the volumes for the movements to be prohibited were reassigned on the roadway network to locations where left-turn or right-turn movements will be allowed in the future that still result in drivers ultimately getting to the desired destination. It is recognized that some percentage of drivers may choose to make a U-turn movement as part of their modified travel route, but this percentage is believed to be relatively small. To avoid unnecessarily complicating the analysis, this study does not assume any U-turn movements. The reassigned volumes are shown in **Figure 6**.

The 2013 existing conditions traffic counts did not include any of the locations where movements will be prohibited in the future (except at the 16th Street/6th Avenue South intersection, assuming the northbound left-turn movement does get prohibited, which is still being evaluated by City staff). Most of the locations that will have movements prohibited are driveways that have historically had fairly low volumes. With no available traffic count data at these driveways, estimates were made of the volumes that need to be reassigned at these locations.

The 16th Street/5th Avenue intersection is the only location that will have a high-volume movement prohibited (the eastbound left-turn movement). While this intersection was not included in the 2013 existing conditions traffic counts, it was counted as part of the *4th Avenue and 16th Street Corridors Study* completed by Kimley-Horn and Associates, Inc. for the City of Yuma in May 2007. Based on the available count data, it was assumed that an eastbound left-turn volume of 169 vehicles in each of the AM, MD, and PM peak hours will need to be reassigned. Field observations conducted in October 2013 confirmed the general magnitude of the eastbound left-turn volume and, based on observations of origins and destinations of the eastbound left-turn volume, suggested that 60% of the 5th Avenue eastbound left-turn volume be reassigned to the 4th Avenue eastbound left-turn volume and that the remaining 40% be reassigned to the 6th Avenue North eastbound left-turn volume. The 16th Street/5th Avenue eastbound left-turn volume was reassigned accordingly.

Kimley-Horn
and Associates, Inc.



January 2014

Initial Trip Assignment - New + Pass-By

16th Street/4th Avenue Intersection Traffic Study

Figure 4

Kimley-Horn
and Associates, Inc.

NORTH

LEGEND:

← XX(XX)[XX] AM(MD)[PM] Peak Hour Traffic Volumes

14TH PLACE
15TH STREET
15TH PLACE
4TH AVENUE
6TH AVENUE
5TH AVENUE
2ND AVENUE
1ST AVENUE
16TH STREET
6TH AVENUE
3RD AVENUE
MAPLE AVENUE
17TH STREET
17TH STREET

-45(-50)[-50]
-0(-19)[-19]
-35(-43)[-43]
-16(-32)[-32]
33(35)[35]

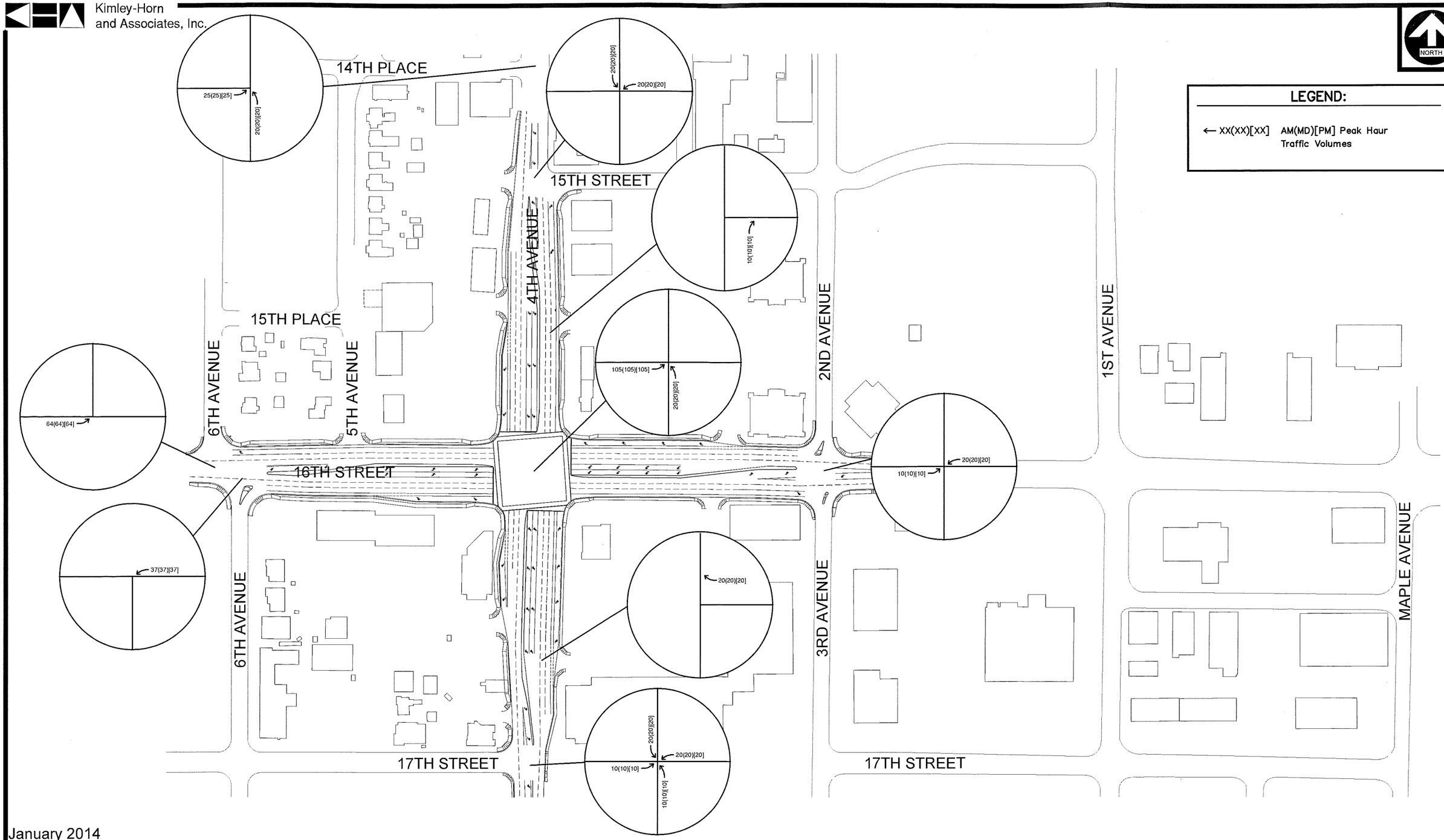
January 2014

Pass-By Trip Reductions

16th Street/4th Avenue Intersection Traffic Study

Figure 5

Kimley-Horn
and Associates, Inc.



January 2014

Prohibited Movements Reassignment

16th Street/4th Avenue Intersection Traffic Study

Figure 6

4.3 FUTURE BACKGROUND TRAFFIC FORECASTS

Future intersection movement peak hour volumes were developed for 2018 (when the proposed widening and anticipated redevelopment are expected to be completed) and for 2033 for the AM, MD, and PM peak hour periods. These future volumes were calculated by applying an average annual growth factor of 1.0% to the seasonally adjusted 2013 traffic counts. The 1.0% average annual growth factor was developed from the average of the growth rates between the projected 2014 and 2037 average daily traffic (ADT) two-way volumes on each leg of the 16th Street/4th Avenue intersection, as shown in **Table 8**. The 2014 and 2037 ADT volume projections were obtained from the YMPO *2014-2037 Regional Transportation Plan* (RTP) travel demand model outputs. Background traffic volume forecasts for the years 2018 and 2033 are shown in **Figure 7** and **Figure 8**, respectively.

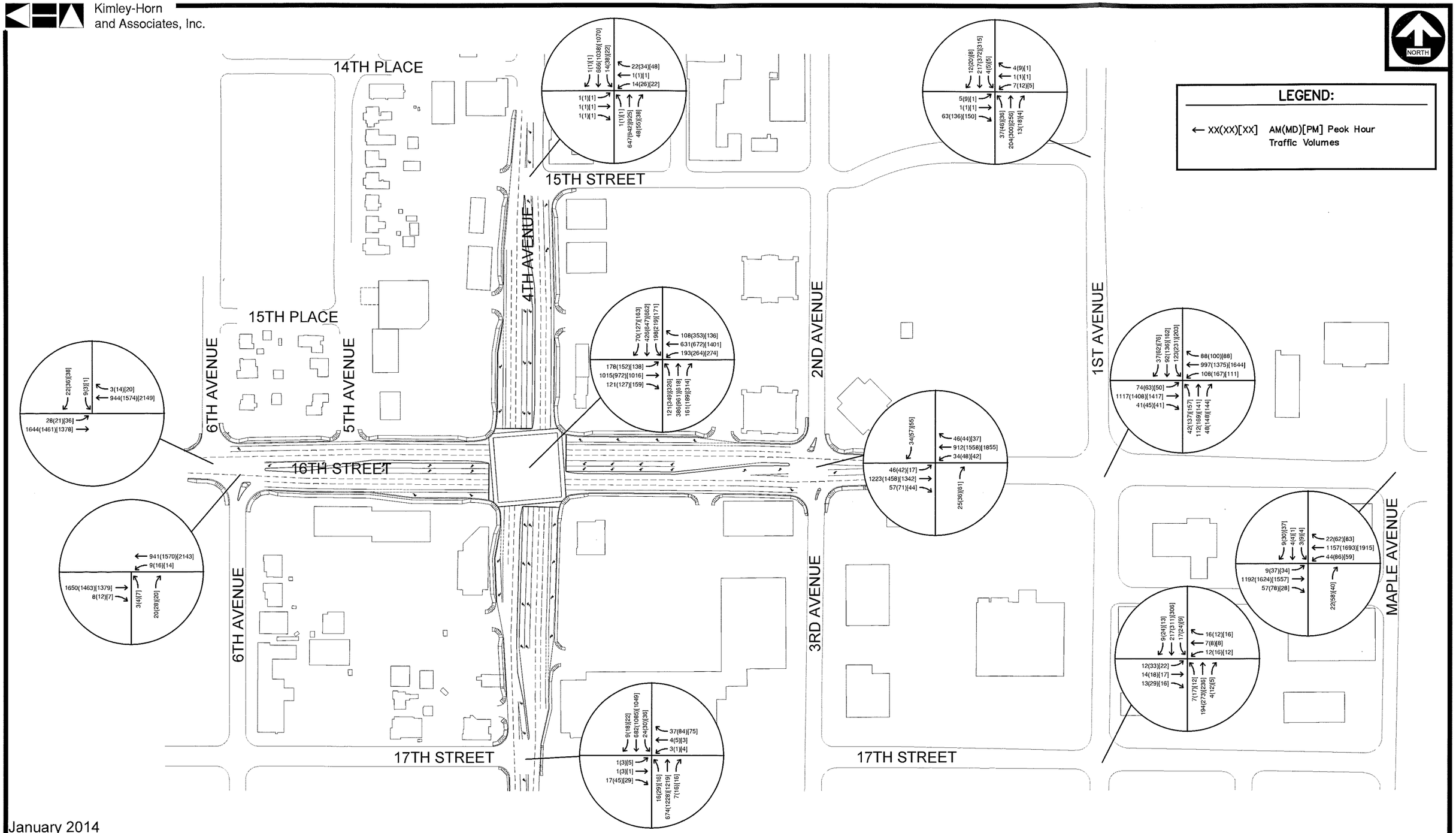
Table 8 – 16th Street/4th Avenue Intersection Daily Traffic Volume Growth Projections

Roadway Segment	2014 ADT	2037 ADT	2014-2037 Average Annual Growth Rate
4th Avenue north of 16th Street	17,425	21,342	0.9%
4th Avenue south of 16th Street	21,273	27,761	1.2%
16th Street west of 4th Avenue	27,723	33,808	0.9%
16th Street east of 4th Avenue	34,945	44,286	1.0%
Total	101,366	127,197	1.0%

4.4 FUTURE TOTAL TRAFFIC FORECASTS

The total traffic volume forecasts for the years 2018 and 2033 were calculated by summing the initial trip assignments, pass-by trip reductions, prohibited movement reassignments, and background traffic forecasts. It should be noted that the pass-by trips are a reduction (i.e., a negative number) in assigned through volume trips. The total traffic volume forecasts for the years 2018 and 2033 are shown in **Figure 9** and **Figure 10**, respectively.

Kimley-Horn
and Associates, Inc.



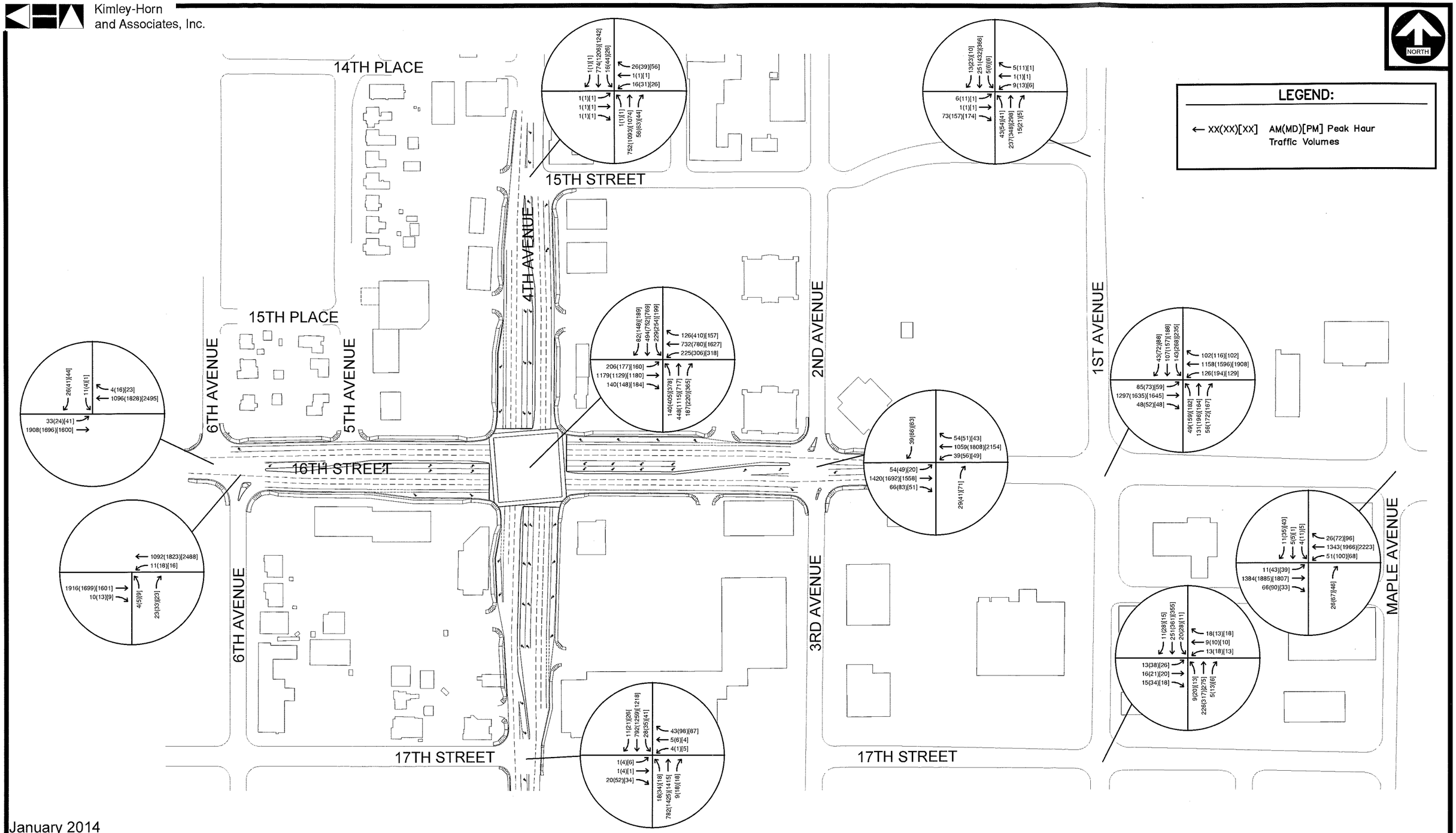
January 2014

2018 Background Traffic

16th Street/4th Avenue Intersection Traffic Study

Figure 7

Kimley-Horn
and Associates, Inc.



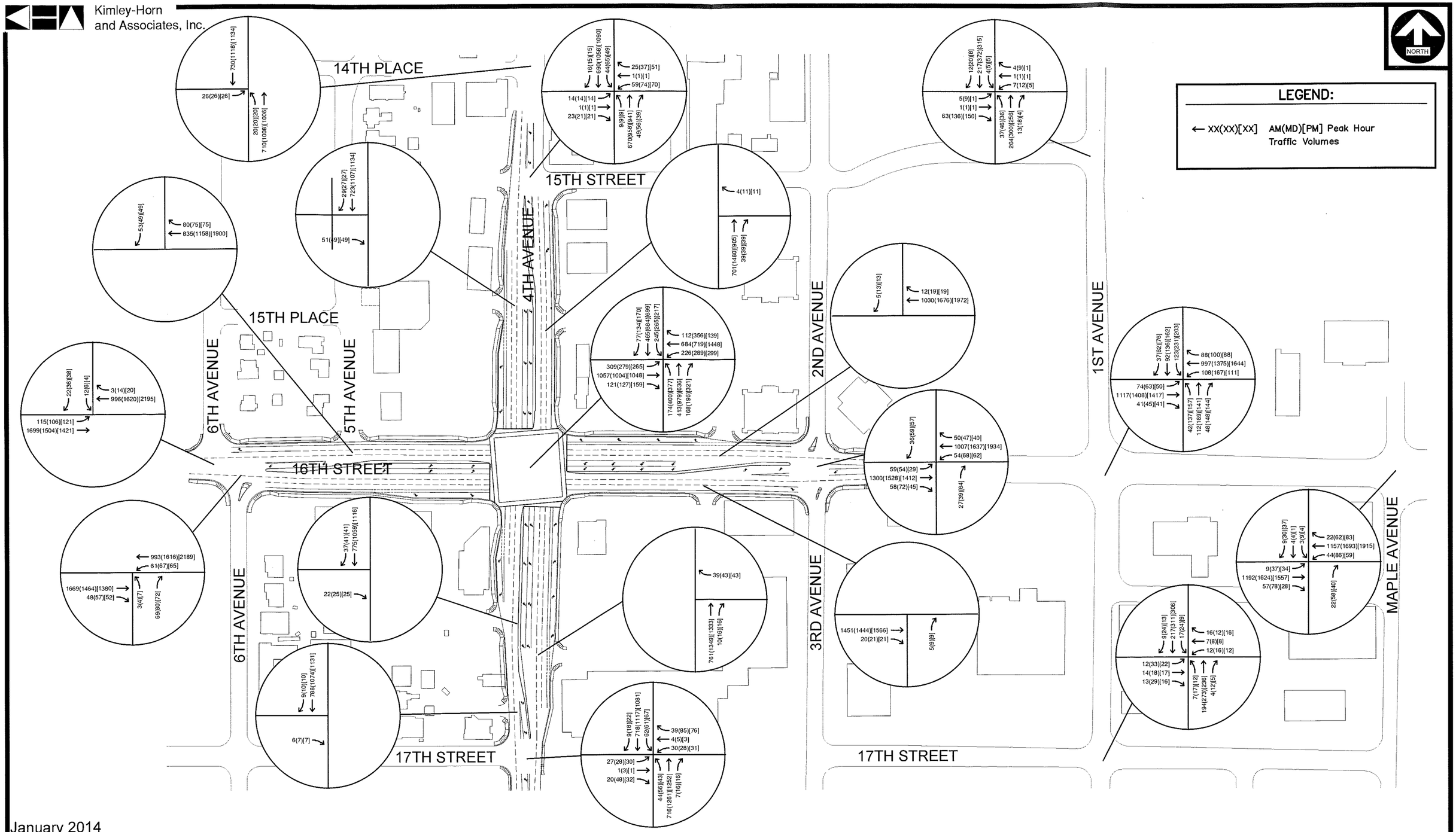
January 2014

2033 Background Traffic

16th Street/4th Avenue Intersection Traffic Study

Figure 8

Kimley-Horn
and Associates, Inc.



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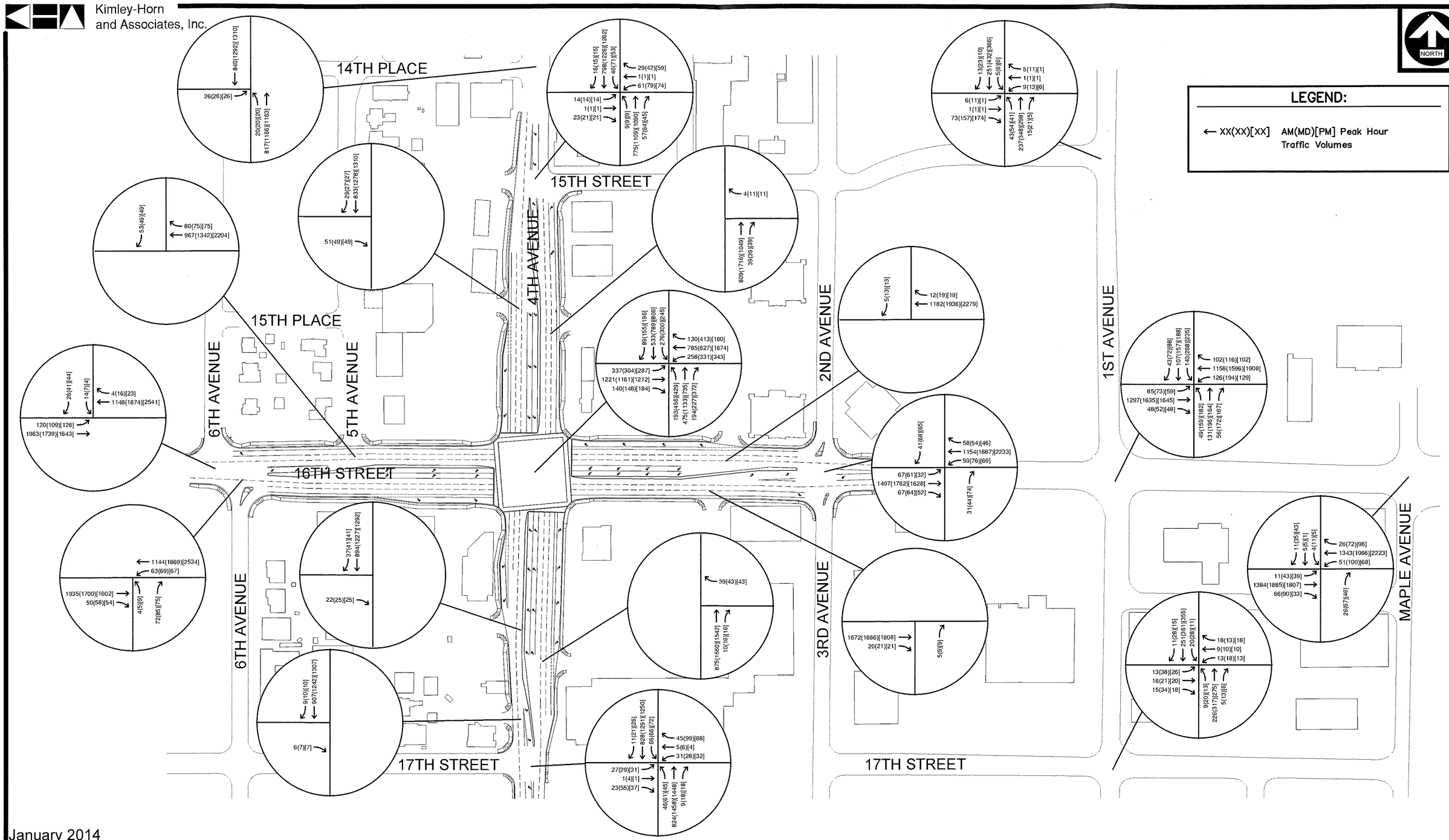
2018 Total Traffic

16th Street/4th Avenue Intersection Traffic Study

Figure 9

Kimley-Horn
and Associates, Inc.



January 2014

2033 Total Traffic

16th Street/4th Avenue Intersection Traffic Study

Figure 10

5.0 LEVEL OF SERVICE AND QUEUING ANALYSIS

5.1 *SYNCHRO* MODELS AND OUTPUTS

The level of service (LOS) and queuing experienced at an intersection are a function of traffic volumes, traffic composition, roadway geometry and capacity, and the manner in which traffic is being controlled. Utilizing the traffic volumes developed for this study, the existing and planned roadway geometry, and signal timing information provided by the City of Yuma, *Synchro* models were developed for the following scenarios:

- 2013 AM with existing geometry,
- 2018 AM with proposed updated Phase 1 geometry and background volumes,
- 2018 AM with proposed updated Phase 1 geometry and redevelopment volumes,
- 2033 AM with proposed updated Phase 1 geometry and background volumes,
- 2033 AM with proposed updated Phase 1 geometry and redevelopment volumes,
- 2013 MD with existing geometry,
- 2018 MD with proposed updated Phase 1 geometry and background volumes,
- 2018 MD with proposed updated Phase 1 geometry and redevelopment volumes,
- 2033 MD with proposed updated Phase 1 geometry and background volumes,
- 2033 MD with proposed updated Phase 1 geometry and redevelopment volumes,
- 2013 PM with existing geometry,
- 2018 PM with proposed updated Phase 1 geometry and background volumes,
- 2018 PM with proposed updated Phase 1 geometry and redevelopment volumes,
- 2033 PM with proposed updated Phase 1 geometry and background volumes,
- 2033 PM with proposed updated Phase 1 geometry and redevelopment volumes, and
- 2033 PM with proposed updated Phase 1 geometry, redevelopment volumes, and traffic signals at 16th Street/2nd Avenue/3rd Avenue, 15th Street/4th Avenue/Driveway, and 17th Street/4th Avenue/Driveway.

LOS and queuing analysis was conducted in accordance with City of Yuma *Traffic Impact Study Guidelines* within *Synchro* for each of the aforementioned scenarios for each of the study intersections.

LOS measures the amount of delay the average vehicle experiences and ranges from LOS A (no delay) to LOS F (significant delay). For signalized intersections, per City guidelines the desired overall intersection LOS is LOS C or better for existing conditions and LOS D or better for future conditions. Individual movements can have a worse LOS as long as the overall intersection LOS is acceptable. LOS can be improved by providing additional throughput capacity, which could be provided through means such as additional lanes, increased green time, or signal phasing changes.

For unsignalized intersections with free-flow movements (e.g., movements with no stop sign), LOS is not measured at the overall intersection level because the free-flow movements always have LOS A. LOS is measured at the individual lane and approach level for those movements that have to stop or yield. At unsignalized intersections along major roadways such as arterials, cross-streets commonly have LOS E or LOS F for left-turn and through movements but this in and of itself is not necessarily an issue – rather, it is an indicator that the 95th percentile queue lengths should be reviewed to determine if there are excessive queues that create blocking issues for upstream or cross-street traffic. LOS can be improved and queue lengths decreased by means such as signalizing the intersection or prohibiting the problematic movements.

The 95th percentile queue lengths indicate the maximum queue length in feet expected per the mathematical model equations within *Synchro*. To convert queue lengths to the number of estimated vehicles in the queue, the queue length can be rounded up to the nearest 25 feet and then divided by 25 feet, which is the typical length of an automobile plus the space between that vehicle and the next vehicle in the queue. It is generally desirable for turn lane storage lengths to be 25 feet to 50 feet longer than the 95th percentile queue length. For through movements, it is generally desirable for queue lengths to be short enough that they do not extend to the next upstream intersection or major driveway and create blocking issues for upstream or cross-street traffic.

Synchro output sheets for each of the scenarios are provided in **Appendix E** (Lanes, Volumes, and Timings for signalized intersections) and **Appendix F** (Highway Capacity Manual (HCM) Unsignalized Intersection Capacity Analysis for unsignalized intersections). **Table 9** through **Table 28** summarize the LOS and 95th percentile queues at each intersection. Highlights have been added to all of the LOS movements that are LOS E or LOS F as well as the queue lengths that exceed the turn bay storage length or are longer than 300' for through lanes on major streets or longer than 100' for cross-streets. Bullets for each study intersection are located after the tables that discuss the major findings and recommendations from the LOS and queuing analysis.

It should be noted that an "Err" notation for a particular queue length indicates the queue length is indeterminate because one or more inputs to the mathematical equations in *Synchro* are outside the bounds of the equation. This occurs in situations such as when there are not adequate gaps for turning vehicles or when the queue length exceeds the length of the modeled roadway segment and is typically indicative of excessive delay or queue lengths.

It should also be noted that the AM, MD, and PM peak hour factors utilized in the *Synchro* models were derived from the 2013 existing traffic count data. The peak hour factors were kept constant through all of the scenarios for all movements except where volumes changed significantly due to the trips generated by the redevelopment plan area (e.g., from 2 vehicles per hour to 25 vehicles per hour). Where volumes changed significantly, any peak hour factors below 0.85 were adjusted to 0.85 per City guidelines to reflect the anticipated more uniform distribution of volumes within the peak hours.

Table 9 – 16th Street/6th Avenue North Level of Service

Scenario	EB			WB			NB			SB			Overall Intersection
	L	T	R	L	T	R	L	T	R	L	T	R	
AM Peak Hour													
2013 AM Existing	B	-	-	-	-	-	-	-	-	B	-	B	-
2018 AM Phase 1	B	-	-	-	-	-	-	-	-	B	-	B	-
2018 AM Phase 1 & Redev.	B	-	-	-	-	-	-	-	-	C	-	C	-
2033 AM Phase 1	B	-	-	-	-	-	-	-	-	C	-	C	-
2033 AM Phase 1 & Redev.	B	-	-	-	-	-	-	-	-	C	-	C	-
MD Peak Hour													
2013 MD Existing	B	-	-	-	-	-	-	-	-	C	-	C	-
2018 MD Phase 1	C	-	-	-	-	-	-	-	-	C	-	C	-
2018 MD Phase 1 & Redev.	C	-	-	-	-	-	-	-	-	C	-	C	-
2033 MD Phase 1	C	-	-	-	-	-	-	-	-	C	-	C	-
2033 MD Phase 1 & Redev.	D	-	-	-	-	-	-	-	-	C	-	C	-
PM Peak Hour													
2013 PM Existing	D	-	-	-	-	-	-	-	-	C	-	C	-
2018 PM Phase 1	F	-	-	-	-	-	-	-	-	C	-	C	-
2018 PM Phase 1 & Redev.	F	-	-	-	-	-	-	-	-	D	-	D	-
2033 PM Phase 1	F	-	-	-	-	-	-	-	-	F	-	F	-
2033 PM Phase 1 & Redev.	F	-	-	-	-	-	-	-	-	F	-	F	-
2033 PM Ph. 1 & Redev. & 1/8-mi. Signals	F	-	-	-	-	-	-	-	-	F	-	F	-

Table 10 – 16th Street/6th Avenue South Level of Service

Scenario	EB			WB			NB			SB			Overall Intersection
	L	T	R	L	T	R	L	T	R	L	T	R	
AM Peak Hour													
2013 AM Existing	-	-		C	-	-	D	-	D	-	-	-	-
2018 AM Phase 1	-	-		C	-	-	-	-	C	-	-	-	-
2018 AM Phase 1 & Redev.	-	-		C	-	-	-	-	D	-	-	-	-
2033 AM Phase 1	-	-		C	-	-	-	-	C	-	-	-	-
2033 AM Phase 1 & Redev.	-	-		D	-	-	-	-	D	-	-	-	-
MD Peak Hour													
2013 MD Existing	-	-		B	-	-	C	-	C	-	-	-	-
2018 MD Phase 1	-	-		B	-	-	-	-	C	-	-	-	-
2018 MD Phase 1 & Redev.	-	-		C	-	-	-	-	C	-	-	-	-
2033 MD Phase 1	-	-		C	-	-	-	-	C	-	-	-	-
2033 MD Phase 1 & Redev.	-	-		C	-	-	-	-	D	-	-	-	-
PM Peak Hour													
2013 PM Existing	-	-		B	-	-	C	-	C	-	-	-	-
2018 PM Phase 1	-	-		B	-	-	-	-	C	-	-	-	-
2018 PM Phase 1 & Redev.	-	-		B	-	-	-	-	C	-	-	-	-
2033 PM Phase 1	-	-		B	-	-	-	-	C	-	-	-	-
2033 PM Phase 1 & Redev.	-	-		C	-	-	-	-	C	-	-	-	-
2033 PM Ph. 1 & Redev. & 1/8-mi. Signals	-	-		C	-	-	-	-	C	-	-	-	-

Table 11 – 16th Street/4th Avenue Level of Service

Scenario	EB			WB			NB			SB			Overall Intersection
	L	T	R	L	T	R	L	T	R	L	T	R	
AM Peak Hour													
2013 AM Existing	C	F		D	D	A	C	D		D	D		E
2018 AM Phase 1	D	C	A	D	C	A	D	C	A	D	C	A	C
2018 AM Phase 1 & Redev.	D	C	A	D	C	A	D	C	A	D	C	A	C
2033 AM Phase 1	D	C	A	D	C	A	D	C	A	D	C	A	C
2033 AM Phase 1 & Redev.	D	C	A	E	C	A	D	C	A	E	C	A	C
MD Peak Hour													
2013 MD Existing	C	F		F	D	B	F	F		F	D		F
2018 MD Phase 1	D	D	A	D	C	B	D	C	A	D	C	A	C
2018 MD Phase 1 & Redev.	D	D	A	E	C	B	E	C	A	E	C	A	D
2033 MD Phase 1	E	D	A	E	C	C	E	C	A	F	C	A	D
2033 MD Phase 1 & Redev.	D	E	A	F	C	C	F	D	A	F	D	A	D
PM Peak Hour													
2013 PM Existing	E	F		F	F	B	F	F		E	D		F
2018 PM Phase 1	F	C	A	D	D	A	E	C	B	D	C	A	D
2018 PM Phase 1 & Redev.	F	C	A	E	E	A	F	C	B	E	D	A	D
2033 PM Phase 1	F	D	B	E	E	B	F	C	C	E	D	A	D
2033 PM Phase 1 & Redev.	F	D	B	E	E	B	F	D	C	E	E	B	E
2033 PM Ph. 1 & Redev. & 1/8-mi. Signals	F	D	B	E	E	A	F	D	C	F	E	B	E

Table 12 – 16th Street/2nd Avenue/3rd Avenue Level of Service

Scenario	EB			WB			NB			SB			Overall Intersection
	L	T	R	L	T	R	L	T	R	L	T	R	
AM Peak Hour													
2013 AM Existing	B	-		B	-		-		B	-		A	-
2018 AM Phase 1	B	-		B	-		-		B	-		A	-
2018 AM Phase 1 & Redev.	B	-		B	-		-		B	-		B	-
2033 AM Phase 1	B	-		C	-		-		B	-		A	-
2033 AM Phase 1 & Redev.	B	-		C	-		-		B	-		A	-
MD Peak Hour													
2013 MD Existing	B	-		B	-		-		B	-		B	-
2018 MD Phase 1	B	-		C	-		-		B	-		B	-
2018 MD Phase 1 & Redev.	C	-		C	-		-		B	-		B	-
2033 MD Phase 1	C	-		C	-		-		B	-		B	-
2033 MD Phase 1 & Redev.	C	-		D	-		-		B	-		B	-
PM Peak Hour													
2013 PM Existing	B	-		B	-		-		B	-		B	-
2018 PM Phase 1	C	-		B	-		-		A	-		B	-
2018 PM Phase 1 & Redev.	C	-		B	-		-		A	-		B	-
2033 PM Phase 1	C	-		B	-		-		B	-		B	-
2033 PM Phase 1 & Redev.	D	-		C	-		-		B	-		B	-
2033 PM Ph. 1 & Redev. & 1/8-mi. Signals	E	A	A	C	C		D	C		D	D		B

Table 13 – 15th Street/4th Avenue/Driveway Level of Service

Scenario	EB			WB			NB			SB			Overall Intersection
	L	T	R	L	T	R	L	T	R	L	T	R	
AM Peak Hour													
2013 AM Existing		C			B		A	-		A	-		-
2018 AM Phase 1		C			B		A	-		A	-		-
2018 AM Phase 1 & Redev.		C			C		A	-		A	-		-
2033 AM Phase 1		C			B		A	-		A	-		-
2033 AM Phase 1 & Redev.		C			C		B	-		A	-		-
MD Peak Hour													
2013 MD Existing		C			C		B	-		A	-		-
2018 MD Phase 1		C			C		B	-		B	-		-
2018 MD Phase 1 & Redev.		C			D		B	-		B	-		-
2033 MD Phase 1		D			C		B	-		B	-		-
2033 MD Phase 1 & Redev.		D			E		B	-		B	-		-
PM Peak Hour													
2013 PM Existing		C			C		B	-		A	-		-
2018 PM Phase 1		C			C		B	-		B	-		-
2018 PM Phase 1 & Redev.		C			D		B	-		B	-		-
2033 PM Phase 1		D			C		B	-		B	-		-
2033 PM Phase 1 & Redev.		D			E		B	-		B	-		-
2033 PM Ph. 1 & Redev. & 1/8-mi. Signals		D			D		A	A		B	A		A

Table 14 – 17th Street/4th Avenue/Driveway Level of Service

Scenario	EB			WB			NB			SB			Overall Intersection
	L	T	R	L	T	R	L	T	R	L	T	R	
AM Peak Hour													
2013 AM Existing		B			B		A	-		A	-		-
2018 AM Phase 1		B			B		A	-		A	-		-
2018 AM Phase 1 & Redev.		C			C		A	-		A	-		-
2033 AM Phase 1		B			B		A	-		A	-		-
2033 AM Phase 1 & Redev.		C			C		A	-		B	-		-
MD Peak Hour													
2013 MD Existing		B			C		B	-		B	-		-
2018 MD Phase 1		C			D		B	-		B	-		-
2018 MD Phase 1 & Redev.		E			E		B	-		B	-		-
2033 MD Phase 1		C			D		B	-		B	-		-
2033 MD Phase 1 & Redev.		F			F		B	-		C	-		-
PM Peak Hour													
2013 PM Existing		C			C		B	-		B	-		-
2018 PM Phase 1		C			C		B	-		B	-		-
2018 PM Phase 1 & Redev.		E			E		B	-		B	-		-
2033 PM Phase 1		C			D		B	-		C	-		-
2033 PM Phase 1 & Redev.		F			F		B	-		C	-		-
2033 PM Ph. 1 & Redev. & 1/8-mi. Signals		C			D		A	A		C	A		B

Table 15 – 16th Street/1st Avenue Level of Service

Scenario	EB			WB			NB			SB			Overall Intersection
	L	T	R	L	T	R	L	T	R	L	T	R	
AM Peak Hour													
2013 AM Existing	B	C		C	B	A	C	E	B	D	D	B	C
2018 AM Phase 1	A	C		C	B	A	D	E	B	F	D	B	C
2018 AM Phase 1 & Redev.	A	C		C	B	A	D	E	B	F	D	B	C
2033 AM Phase 1	B	C		D	B	A	D	E	B	F	D	B	C
2033 AM Phase 1 & Redev.	B	C		D	B	A	D	E	B	F	D	B	C
MD Peak Hour													
2013 MD Existing	C	E		E	C	B	D	E	B	F	D	B	D
2018 MD Phase 1	C	E		E	C	A	D	E	B	F	E	B	D
2018 MD Phase 1 & Redev.	C	E		E	C	A	D	E	B	F	E	B	D
2033 MD Phase 1	D	F		F	D	A	D	E	C	F	E	B	F
2033 MD Phase 1 & Redev.	D	F		F	D	A	D	E	C	F	E	B	F
PM Peak Hour													
2013 PM Existing	C	D		D	D	B	D	E	A	E	E	B	D
2018 PM Phase 1	D	D		D	D	A	F	E	C	F	E	B	D
2018 PM Phase 1 & Redev.	C	D		D	D	A	F	E	C	F	E	B	D
2033 PM Phase 1	D	E		E	E	A	F	D	C	F	E	C	E
2033 PM Phase 1 & Redev.	D	E		E	E	A	F	D	C	F	E	C	E
2033 PM Ph. 1 & Redev. & 1/8-mi. Signals	D	F		E	E	A	F	D	C	F	E	C	F

Table 16 – 16th Street/Maple Avenue/Driveway Level of Service

Scenario	EB			WB			NB			SB			Overall Intersection
	L	T	R	L	T	R	L	T	R	L	T	R	
AM Peak Hour													
2013 AM Existing	B	-		B	-	-	-	-	B	D			-
2018 AM Phase 1	B	-		B	-	-	-	-	B	D			-
2018 AM Phase 1 & Redev.	B	-		B	-	-	-	-	B	D			-
2033 AM Phase 1	B	-		B	-	-	-	-	B	D			-
2033 AM Phase 1 & Redev.	B	-		B	-	-	-	-	B	D			-
MD Peak Hour													
2013 MD Existing	C	-		C	-	-	-	-	B	F			-
2018 MD Phase 1	C	-		B	-	-	-	-	B	F			-
2018 MD Phase 1 & Redev.	C	-		C	-	-	-	-	B	F			-
2033 MD Phase 1	C	-		D	-	-	-	-	B	F			-
2033 MD Phase 1 & Redev.	C	-		D	-	-	-	-	B	F			-
PM Peak Hour													
2013 PM Existing	C	-		B	-	-	-	-	B	F			-
2018 PM Phase 1	C	-		B	-	-	-	-	B	F			-
2018 PM Phase 1 & Redev.	C	-		B	-	-	-	-	B	F			-
2033 PM Phase 1	D	-		C	-	-	-	-	B	F			-
2033 PM Phase 1 & Redev.	D	-		C	-	-	-	-	B	F			-
2033 PM Ph. 1 & Redev. & 1/8-mi. Signals	D	-		C	-	-	-	-	B	F			-

Table 17 – 15th Street/1st Avenue/Driveway Level of Service

Scenario	EB			WB			NB			SB			Overall Intersection
	L	T	R	L	T	R	L	T	R	L	T	R	
AM Peak Hour													
2013 AM Existing		B			B		A	-		A	-		-
2018 AM Phase 1		B			B		A	-		A	-		-
2018 AM Phase 1 & Redev.		B			B		A	-		A	-		-
2033 AM Phase 1		B			B		A	-		A	-		-
2033 AM Phase 1 & Redev.		B			B		A	-		A	-		-
MD Peak Hour													
2013 MD Existing		B			C		A	-		A	-		-
2018 MD Phase 1		B			C		A	-		A	-		-
2018 MD Phase 1 & Redev.		B			C		A	-		A	-		-
2033 MD Phase 1		B			C		A	-		A	-		-
2033 MD Phase 1 & Redev.		B			C		A	-		A	-		-
PM Peak Hour													
2013 PM Existing		B			C		A	-		A	-		-
2018 PM Phase 1		B			D		A	-		A	-		-
2018 PM Phase 1 & Redev.		B			D		A	-		A	-		-
2033 PM Phase 1		B			C		A	-		A	-		-
2033 PM Phase 1 & Redev.		B			C		A	-		A	-		-
2033 PM Ph. 1 & Redev. & 1/8-mi. Signals		B			C		A	-		A	-		-

Table 18 – 17th Street/1st Avenue Level of Service

Scenario	EB			WB			NB			SB			Overall Intersection
	L	T	R	L	T	R	L	T	R	L	T	R	
AM Peak Hour													
2013 AM Existing		B			B		A	-		A	-		-
2018 AM Phase 1		B			B		A	-		A	-		-
2018 AM Phase 1 & Redev.		B			B		A	-		A	-		-
2033 AM Phase 1		B			B		A	-		A	-		-
2033 AM Phase 1 & Redev.		B			B		A	-		A	-		-
MD Peak Hour													
2013 MD Existing		B			B		A	-		A	-		-
2018 MD Phase 1		B			B		A	-		A	-		-
2018 MD Phase 1 & Redev.		B			B		A	-		A	-		-
2033 MD Phase 1		B			B		A	-		A	-		-
2033 MD Phase 1 & Redev.		B			B		A	-		A	-		-
PM Peak Hour													
2013 PM Existing		B			B		A	-		A	-		-
2018 PM Phase 1		B			B		A	-		A	-		-
2018 PM Phase 1 & Redev.		B			B		A	-		A	-		-
2033 PM Phase 1		B			B		A	-		A	-		-
2033 PM Phase 1 & Redev.		B			B		A	-		A	-		-
2033 PM Ph. 1 & Redev. & 1/8-mi. Signals		B			B		A	-		A	-		-

Table 19 – 16th Street/6th Avenue North Queuing Length

Scenario	Length (Feet)	EB			WB			NB			SB		
		L	T	R	L	T	R	L	T	R	L	T	R
AM Peak Hour													
2013 AM Existing	95th %	3	-	-	-	-	-	-	-	-	8	-	8
	Storage	*75*	-	-	-	-	-	-	-	-	-	-	-
2018 AM Phase 1	95th %	14	-	-	-	-	-	-	-	-	11	-	11
	Storage	*75*	-	-	-	-	-	-	-	-	-	-	-
2018 AM Phase 1 & Redev.	95th %	18	-	-	-	-	-	-	-	-	10	-	10
	Storage	*75*	-	-	-	-	-	-	-	-	-	-	-
2033 AM Phase 1	95th %	18	-	-	-	-	-	-	-	-	11	-	11
	Storage	*75*	-	-	-	-	-	-	-	-	-	-	-
2033 AM Phase 1 & Redev.	95th %	24	-	-	-	-	-	-	-	-	15	-	15
	Storage	*75*	-	-	-	-	-	-	-	-	-	-	-
MD Peak Hour													
2013 MD Existing	95th %	4	-	-	-	-	-	-	-	-	12	-	12
	Storage	*75*	-	-	-	-	-	-	-	-	-	-	-
2018 MD Phase 1	95th %	23	-	-	-	-	-	-	-	-	16	-	16
	Storage	*75*	-	-	-	-	-	-	-	-	-	-	-
2018 MD Phase 1 & Redev.	95th %	32	-	-	-	-	-	-	-	-	12	-	12
	Storage	*75*	-	-	-	-	-	-	-	-	-	-	-
2033 MD Phase 1	95th %	35	-	-	-	-	-	-	-	-	14	-	14
	Storage	*75*	-	-	-	-	-	-	-	-	-	-	-
2033 MD Phase 1 & Redev.	95th %	51	-	-	-	-	-	-	-	-	20	-	20
	Storage	*75*	-	-	-	-	-	-	-	-	-	-	-
PM Peak Hour													
2013 PM Existing	95th %	28	-	-	-	-	-	-	-	-	13	-	13
	Storage	*75*	-	-	-	-	-	-	-	-	-	-	-
2018 PM Phase 1	95th %	95	-	-	-	-	-	-	-	-	15	-	15
	Storage	*75*	-	-	-	-	-	-	-	-	-	-	-
2018 PM Phase 1 & Redev.	95th %	146	-	-	-	-	-	-	-	-	21	-	21
	Storage	*75*	-	-	-	-	-	-	-	-	-	-	-
2033 PM Phase 1	95th %	207	-	-	-	-	-	-	-	-	Err	-	Err
	Storage	*75*	-	-	-	-	-	-	-	-	-	-	-
2033 PM Phase 1 & Redev.	95th %	290	-	-	-	-	-	-	-	-	Err	-	Err
	Storage	*75*	-	-	-	-	-	-	-	-	-	-	-
2033 PM Ph. 1 & Redev. & 1/8-mi. Signals	95th %	290	-	-	-	-	-	-	-	-	Err	-	Err
	Storage	*75*	-	-	-	-	-	-	-	-	-	-	-

Table 20 – 16th Street/6th Avenue South Queuing Length

Scenario	Length (Feet)	EB			WB			NB			SB		
		L	T	R	L	T	R	L	T	R	L	T	R
AM Peak Hour													
2013 AM Existing	**95th %**	-	-	-	**4**	-	-	**16**	-	**16**	-	-	-
	Storage	-	-	-	*75*	-	-	-	-	-	-	-	-
2018 AM Phase 1	**95th %**	-	-	-	**4**	-	-	-	-	**7**	-	-	-
	Storage	-	-	-	*140*	-	-	-	-	-	-	-	-
2018 AM Phase 1 & Redev.	**95th %**	-	-	-	**23**	-	-	-	-	**37**	-	-	-
	Storage	-	-	-	*140*	-	-	-	-	-	-	-	-
2033 AM Phase 1	**95th %**	-	-	-	**4**	-	-	-	-	**10**	-	-	-
	Storage	-	-	-	*140*	-	-	-	-	-	-	-	-
2033 AM Phase 1 & Redev.	**95th %**	-	-	-	**34**	-	-	-	-	**46**	-	-	-
	Storage	-	-	-	*140*	-	-	-	-	-	-	-	-
MD Peak Hour													
2013 MD Existing	**95th %**	-	-	-	**3**	-	-	**19**	-	**19**	-	-	-
	Storage	-	-	-	*75*	-	-	-	-	-	-	-	-
2018 MD Phase 1	**95th %**	-	-	-	**3**	-	-	-	-	**13**	-	-	-
	Storage	-	-	-	*140*	-	-	-	-	-	-	-	-
2018 MD Phase 1 & Redev.	**95th %**	-	-	-	**17**	-	-	-	-	**31**	-	-	-
	Storage	-	-	-	*140*	-	-	-	-	-	-	-	-
2033 MD Phase 1	**95th %**	-	-	-	**5**	-	-	-	-	**12**	-	-	-
	Storage	-	-	-	*140*	-	-	-	-	-	-	-	-
2033 MD Phase 1 & Redev.	**95th %**	-	-	-	**24**	-	-	-	-	**43**	-	-	-
	Storage	-	-	-	*140*	-	-	-	-	-	-	-	-
PM Peak Hour													
2013 PM Existing	**95th %**	-	-	-	**2**	-	-	**13**	-	**13**	-	-	-
	Storage	-	-	-	*75*	-	-	-	-	-	-	-	-
2018 PM Phase 1	**95th %**	-	-	-	**3**	-	-	-	-	**6**	-	-	-
	Storage	-	-	-	*140*	-	-	-	-	-	-	-	-
2018 PM Phase 1 & Redev.	**95th %**	-	-	-	**15**	-	-	-	-	**23**	-	-	-
	Storage	-	-	-	*140*	-	-	-	-	-	-	-	-
2033 PM Phase 1	**95th %**	-	-	-	**4**	-	-	-	-	**7**	-	-	-
	Storage	-	-	-	*140*	-	-	-	-	-	-	-	-
2033 PM Phase 1 & Redev.	**95th %**	-	-	-	**20**	-	-	-	-	**30**	-	-	-
	Storage	-	-	-	*140*	-	-	-	-	-	-	-	-
2033 PM Ph. 1 & Redev. & 1/8-mi. Signals	**95th %**	-	-	-	**20**	-	-	-	-	**30**	-	-	-
	Storage	-	-	-	*140*	-	-	-	-	-	-	-	-

Table 21 – 16th Street/4th Avenue Queuing Length

Scenario	Length (Feet)	EB			WB			NB			SB		
		L	T	R	L	T	R	L	T	R	L	T	R
AM Peak Hour													
2013 AM Existing	50th %	83		733	92	277	0	87		204	97		180
	95th %	**141**		**714**	**228**	**295**	**23**	**96**		**255**	**174**		**244**
	Storage	*150*		-	*205*	-	*325*	*240*		-	*250*		-
2018 AM Phase 1	50th %	74	205	8	47	124	0	43	70	0	49	75	0
	95th %	**121**	**238**	**40**	**101**	**156**	**23**	**59**	**93**	**46**	**108**	**105**	**25**
	Storage	*250*	-	*175*	*250*	-	*300*	*325*	-	*300*	*275*	-	*175*
2018 AM Phase 1 & Redev.	50th %	92	239	10	60	153	0	67	78	0	66	88	0
	95th %	**154**	**255**	**41**	**128**	**169**	**23**	**79**	**102**	**48**	**138**	**121**	**27**
	Storage	*250*	-	*175*	*250*	-	*300*	*325*	-	*300*	*275*	-	*175*
2033 AM Phase 1	50th %	82	211	10	56	128	0	39	83	0	58	87	0
	95th %	**136**	**297**	**49**	**124**	**185**	**37**	**72**	**108**	**49**	**130**	**119**	**31**
	Storage	*250*	-	*175*	*250*	-	*300*	*325*	-	*300*	*275*	-	*175*
2033 AM Phase 1 & Redev.	50th %	96	239	13	67	152	0	55	89	0	73	97	0
	95th %	**159**	**343**	**53**	**148**	**207**	**38**	**91**	**114**	**50**	**157**	**133**	**34**
	Storage	*250*	-	*175*	*250*	-	*300*	*325*	-	*300*	*275*	-	*175*
MD Peak Hour													
2013 MD Existing	50th %	75		626	291	295	41	327		631	182		310
	95th %	**123**		**765**	**426**	**345**	**109**	**525**		**771**	**328**		**391**
	Storage	*150*		-	*205*	-	*325*	*240*		-	*250*		-
2018 MD Phase 1	50th %	75	208	3	90	142	76	105	186	0	72	121	0
	95th %	**138**	**287**	**33**	**136**	**168**	**156**	**177**	**235**	**41**	**121**	**160**	**42**
	Storage	*250*	-	*175*	*250*	-	*300*	*325*	-	*300*	*275*	-	*175*
2018 MD Phase 1 & Redev.	50th %	85	220	4	98	161	66	123	194	0	89	131	0
	95th %	**144**	**303**	**44**	**156**	**187**	**155**	**207**	**245**	**44**	**148**	**172**	**43**
	Storage	*250*	-	*175*	*250*	-	*300*	*325*	-	*300*	*275*	-	*175*
2033 MD Phase 1	50th %	85	255	12	106	168	137	126	222	8	87	145	0
	95th %	**157**	**354**	**54**	**178**	**199**	**279**	**219**	**278**	**53**	**158**	**188**	**44**
	Storage	*250*	-	*175*	*250*	-	*300*	*325*	-	*300*	*275*	-	*175*
2033 MD Phase 1 & Redev.	50th %	92	266	14	115	187	112	145	240	14	103	159	0
	95th %	**155**	**370**	**56**	**189**	**220**	**254**	**247**	**324**	**65**	**176**	**205**	**47**
	Storage	*250*	-	*175*	*250*	-	*300*	*325*	-	*300*	*275*	-	*175*
PM Peak Hour													
2013 PM Existing	50th %	94		704	274	878	25	399		564	111		354
	95th %	**146**		**845**	**457**	**1018**	**52**	**541**		**504**	**221**		**465**
	Storage	*150*		-	*205*	-	*325*	*240*		-	*250*		-
2018 PM Phase 1	50th %	78	207	4	83	293	14	111	145	64	55	133	0
	95th %	**147**	**272**	**42**	**147**	**417**	**39**	**186**	**148**	**152**	**100**	**174**	**48**
	Storage	*250*	-	*175*	*250*	-	*300*	*325*	-	*300*	*275*	-	*175*
2018 PM Phase 1 & Redev.	50th %	94	224	6	95	354	16	142	152	63	72	144	0
	95th %	**165**	**282**	**47**	**168**	**450**	**54**	**217**	**156**	**153**	**128**	**188**	**50**
	Storage	*250*	-	*175*	*250*	-	*300*	*325*	-	*300*	*275*	-	*175*
2033 PM Phase 1	50th %	111	289	24	114	454	28	166	170	122	75	183	9
	95th %	**179**	**378**	**72**	**192**	**550**	**69**	**241**	**200**	**232**	**132**	**232**	**66**
	Storage	*250*	-	*175*	*250*	-	*300*	*325*	-	*300*	*275*	-	*175*
2033 PM Phase 1 & Redev.	50th %	134	326	33	136	516	37	205	205	138	102	228	18
	95th %	**206**	**391**	**84**	**218**	**613**	**81**	**284**	**237**	**286**	**169**	**316**	**85**
	Storage	*250*	-	*175*	*250*	-	*300*	*325*	-	*300*	*275*	-	*175*
2033 PM Ph. 1 & Redev. & 1/8-mi. Signals	50th %	134	326	33	132	512	19	200	186	81	108	207	7
	95th %	**206**	**391**	**84**	**146**	**597**	**29**	**292**	**211**	**196**	**174**	**308**	**90**
	Storage	*250*	-	*175*	*250*	-	*300*	*325*	-	*300*	*275*	-	*175*

Table 22 – 16th Street/2nd Avenue/3rd Avenue Queuing Length

Scenario	Length (Feet)	EB			WB			NB			SB		
		L	T	R	L	T	R	L	T	R	L	T	R
AM Peak Hour													
2013 AM Existing	95th %	6		-	7		-		-	4		-	5
	Storage	*85*		-	*85*		-		-	-		-	-
2018 AM Phase 1	95th %	7		-	9		-		-	4		-	6
	Storage	*90*		-	*185*		-		-	-		-	-
2018 AM Phase 1 & Redev.	95th %	10		-	12		-		-	3		-	4
	Storage	*90*		-	*185*		-		-	-		-	-
2033 AM Phase 1	95th %	8		-	10		-		-	4		-	4
	Storage	*90*		-	*185*		-		-	-		-	-
2033 AM Phase 1 & Redev.	95th %	13		-	18		-		-	4		-	5
	Storage	*90*		-	*185*		-		-	-		-	-
MD Peak Hour													
2013 MD Existing	95th %	8		-	14		-		-	6		-	9
	Storage	*85*		-	*85*		-		-	-		-	-
2018 MD Phase 1	95th %	9		-	17		-		-	7		-	10
	Storage	*90*		-	*185*		-		-	-		-	-
2018 MD Phase 1 & Redev.	95th %	14		-	21		-		-	5		-	9
	Storage	*90*		-	*185*		-		-	-		-	-
2033 MD Phase 1	95th %	14		-	22		-		-	6		-	14
	Storage	*90*		-	*185*		-		-	-		-	-
2033 MD Phase 1 & Redev.	95th %	23		-	37		-		-	7		-	14
	Storage	*90*		-	*185*		-		-	-		-	-
PM Peak Hour													
2013 PM Existing	95th %	8		-	9		-		-	8		-	9
	Storage	*85*		-	*85*		-		-	-		-	-
2018 PM Phase 1	95th %	10		-	12		-		-	8		-	11
	Storage	*90*		-	*185*		-		-	-		-	-
2018 PM Phase 1 & Redev.	95th %	8		-	13		-		-	8		-	11
	Storage	*90*		-	*185*		-		-	-		-	-
2033 PM Phase 1	95th %	9		-	11		-		-	9		-	14
	Storage	*90*		-	*185*		-		-	-		-	-
2033 PM Phase 1 & Redev.	95th %	18		-	19		-		-	10		-	15
	Storage	*90*		-	*185*		-		-	-		-	-
2033 PM Ph. 1 & Redev. & 1/8-mi. Signals	50th %	11	194	1	15	541		19		28	19		44
	95th %	16	300	1	113	1102		43		67	43		80
	Storage	*90*	-	-	*185*	-		*100*		-	*100*		-

Table 23 – 15th Street/4th Avenue/Driveway Queuing Length

Scenario	Length (Feet)	EB			WB			NB			SB		
		L	T	R	L	T	R	L	T	R	L	T	R
AM Peak Hour													
2013 AM Existing	95th %			3			11	0		-	2		-
	Storage			-			-	*85*		-	*85*		-
2018 AM Phase 1	95th %			3			11	0		-	2		-
	Storage			-			-	*120*		-	*105*		-
2018 AM Phase 1 & Redev.	95th %			10			26	1		-	5		-
	Storage			-			-	*120*		-	*105*		-
2033 AM Phase 1	95th %			1			8	0		-	2		-
	Storage			-			-	*120*		-	*105*		-
2033 AM Phase 1 & Redev.	95th %			11			32	1		-	5		-
	Storage			-			-	*120*		-	*105*		-
MD Peak Hour													
2013 MD Existing	95th %			4			16	0		-	5		-
	Storage			-			-	*85*		-	*85*		-
2018 MD Phase 1	95th %			4			19	0		-	6		-
	Storage			-			-	*120*		-	*105*		-
2018 MD Phase 1 & Redev.	95th %			15			57	1		-	9		-
	Storage			-			-	*120*		-	*105*		-
2033 MD Phase 1	95th %			1			22	0		-	7		-
	Storage			-			-	*120*		-	*105*		-
2033 MD Phase 1 & Redev.	95th %			20			85	2		-	11		-
	Storage			-			-	*120*		-	*105*		-
PM Peak Hour													
2013 PM Existing	95th %			4			21	0		-	2		-
	Storage			-			-	*85*		-	*85*		-
2018 PM Phase 1	95th %			4			27	1		-	3		-
	Storage			-			-	*120*		-	*105*		-
2018 PM Phase 1 & Redev.	95th %			15			58	1		-	7		-
	Storage			-			-	*120*		-	*105*		-
2033 PM Phase 1	95th %			2			24	0		-	4		-
	Storage			-			-	*120*		-	*105*		-
2033 PM Phase 1 & Redev.	95th %			21			93	2		-	9		-
	Storage			-			-	*120*		-	*105*		-
2033 PM Ph. 1 & Redev. & 1/8-mi. Signals	50th %			10			85	0		98	11		180
	95th %			37			135	1		47	41		314
	Storage			-			-	*120*		-	*105*		-

Table 24 – 17th Street/4th Avenue/Driveway Queuing Length

Scenario	Length (Feet)	EB			WB			NB			SB		
		L	T	R	L	T	R	L	T	R	L	T	R
AM Peak Hour													
2013 AM Existing	95th %			4			13	2		-	3		-
	Storage			-			-	*85*		-	*85*		-
2018 AM Phase 1	95th %			4			14	2		-	3		-
	Storage			-			-	*150*		-	*85*		-
2018 AM Phase 1 & Redev.	95th %			14			23	4		-	7		-
	Storage			-			-	*150*		-	*85*		-
2033 AM Phase 1	95th %			3			11	2		-	3		-
	Storage			-			-	*150*		-	*85*		-
2033 AM Phase 1 & Redev.	95th %			18			32	5		-	9		-
	Storage			-			-	*150*		-	*85*		-
MD Peak Hour													
2013 MD Existing	95th %			14			42	5		-	9		-
	Storage			-			-	*85*		-	*85*		-
2018 MD Phase 1	95th %			18			49	6		-	10		-
	Storage			-			-	*150*		-	*85*		-
2018 MD Phase 1 & Redev.	95th %			54			90	8		-	12		-
	Storage			-			-	*150*		-	*85*		-
2033 MD Phase 1	95th %			17			49	6		-	8		-
	Storage			-			-	*150*		-	*85*		-
2033 MD Phase 1 & Redev.	95th %			139			160	11		-	17		-
	Storage			-			-	*150*		-	*85*		-
PM Peak Hour													
2013 PM Existing	95th %			11			35	2		-	7		-
	Storage			-			-	*85*		-	*85*		-
2018 PM Phase 1	95th %			14			42	3		-	8		-
	Storage			-			-	*150*		-	*85*		-
2018 PM Phase 1 & Redev.	95th %			47			87	6		-	15		-
	Storage			-			-	*150*		-	*85*		-
2033 PM Phase 1	95th %			12			49	3		-	10		-
	Storage			-			-	*150*		-	*85*		-
2033 PM Phase 1 & Redev.	95th %			105			156	8		-	20		-
	Storage			-			-	*150*		-	*85*		-
2033 PM Ph. 1 & Redev. & 1/8-mi. Signals	50th %			24			62	8		208	13		107
	95th %			64			114	31		371	39		135
	Storage			-			-	*150*		-	*85*		-

Table 25 – 16th Street/1st Avenue Queuing Length

Scenario	Length (Feet)	EB			WB			NB			SB		
		L	T	R	L	T	R	L	T	R	L	T	R
AM Peak Hour													
2013 AM Existing	50th %	19	416		33	265	27	36	88	0	91	69	0
	95th %	**48**	**622**		**80**	**432**	**33**	**47**	**134**	**6**	**122**	**112**	**5**
	Storage	*65*	-		*100*	-	*100*	*360*	-	*165*	-	-	*115*
2018 AM Phase 1	50th %	15	365		26	228	18	42	91	0	106	75	0
	95th %	**41**	**507**		**69**	**374**	**21**	**55**	**140**	**6**	**144**	**118**	**5**
	Storage	*65*	-		*100*	-	*100*	*360*	-	*165*	-	-	*115*
2018 AM Phase 1 & Redev.	50th %	15	365		26	228	18	42	91	0	106	75	0
	95th %	**41**	**507**		**69**	**374**	**21**	**55**	**140**	**6**	**144**	**118**	**5**
	Storage	*65*	-		*100*	-	*100*	*360*	-	*165*	-	-	*115*
2033 AM Phase 1	50th %	17	547		58	299	17	39	107	0	138	88	0
	95th %	**44**	**641**		**173**	**486**	**48**	**66**	**161**	**34**	**206**	**136**	**30**
	Storage	*65*	-		*100*	-	*100*	*360*	-	*165*	-	-	*115*
2033 AM Phase 1 & Redev.	50th %	17	548		58	299	16	39	107	0	138	88	0
	95th %	**44**	**641**		**172**	**476**	**47**	**66**	**161**	**34**	**206**	**136**	**30**
	Storage	*65*	-		*100*	-	*100*	*360*	-	*165*	-	-	*115*
MD Peak Hour													
2013 MD Existing	50th %	26	695		99	501	27	94	161	0	176	111	0
	95th %	**41**	**857**		**237**	**777**	**68**	**135**	**197**	**57**	**282**	**172**	**36**
	Storage	*65*	-		*100*	-	*100*	*360*	-	*165*	-	-	*115*
2018 MD Phase 1	50th %	26	715		108	535	26	103	169	30	204	119	0
	95th %	**43**	**856**		**273**	**667**	**56**	**148**	**207**	**95**	**319**	**176**	**36**
	Storage	*65*	-		*100*	-	*100*	*360*	-	*165*	-	-	*115*
2018 MD Phase 1 & Redev.	50th %	26	715		108	535	25	103	169	30	204	119	0
	95th %	**44**	**856**		**273**	**664**	**55**	**148**	**207**	**95**	**319**	**176**	**36**
	Storage	*65*	-		*100*	-	*100*	*360*	-	*165*	-	-	*115*
2033 MD Phase 1	50th %	27	927		153	778	32	119	178	69	274	137	0
	95th %	**112**	**1068**		**343**	**918**	**65**	**172**	**245**	**145**	**400**	**200**	**38**
	Storage	*65*	-		*100*	-	*100*	*360*	-	*165*	-	-	*115*
2033 MD Phase 1 & Redev.	50th %	27	927		153	778	32	119	178	69	274	137	0
	95th %	**112**	**1068**		**343**	**918**	**65**	**172**	**245**	**145**	**400**	**200**	**38**
	Storage	*65*	-		*100*	-	*100*	*360*	-	*165*	-	-	*115*
PM Peak Hour													
2013 PM Existing	50th %	18	596		50	756	29	108	141	0	138	156	2
	95th %	**47**	**867**		**115**	**970**	**57**	**153**	**163**	**20**	**233**	**197**	**15**
	Storage	*65*	-		*100*	-	*100*	*360*	-	*165*	-	-	*115*
2018 PM Phase 1	50th %	17	622		51	705	25	123	149	79	173	164	25
	95th %	**59**	**815**		**150**	**909**	**44**	**179**	**171**	**103**	**332**	**202**	**38**
	Storage	*65*	-		*100*	-	*100*	*360*	-	*165*	-	-	*115*
2018 PM Phase 1 & Redev.	50th %	17	622		51	713	25	123	149	79	173	164	21
	95th %	**54**	**815**		**150**	**914**	**44**	**179**	**171**	**103**	**332**	**202**	**33**
	Storage	*65*	-		*100*	-	*100*	*360*	-	*165*	-	-	*115*
2033 PM Phase 1	50th %	18	857		71	991	27	161	140	85	252	172	24
	95th %	**77**	**998**		**191**	**1128**	**51**	**266**	**206**	**152**	**436**	**263**	**70**
	Storage	*65*	-		*100*	-	*100*	*360*	-	*165*	-	-	*115*
2033 PM Phase 1 & Redev.	50th %	18	857		71	991	27	161	140	85	252	172	24
	95th %	**77**	**998**		**191**	**1128**	**51**	**266**	**206**	**152**	**436**	**263**	**70**
	Storage	*65*	-		*100*	-	*100*	*360*	-	*165*	-	-	*115*
2033 PM Ph. 1 & Redev. & 1/8-mi. Signals	50th %	18	857		71	991	27	161	140	85	252	172	24
	95th %	**77**	**998**		**191**	**1128**	**51**	**266**	**206**	**152**	**436**	**263**	**70**
	Storage	*65*	-		*100*	-	*100*	*360*	-	*165*	-	-	*115*

Table 26 – 16th Street/Maple Avenue/Driveway Queuing Length

Scenario	Length (Feet)	EB			WB			NB			SB		
		L	T	R	L	T	R	L	T	R	L	T	R
AM Peak Hour													
2013 AM Existing	95th %	2	-		7	-	-	-	-	3			14
	Storage	*85*	-		*135*	-	-	-	-	-			-
2018 AM Phase 1	95th %	3	-		9	-	-	-	-	3			16
	Storage	*85*	-		*135*	-	-	-	-	-			-
2018 AM Phase 1 & Redev.	95th %	3	-		9	-	-	-	-	3			16
	Storage	*85*	-		*135*	-	-	-	-	-			-
2033 AM Phase 1	95th %	3	-		10	-	-	-	-	4			14
	Storage	*85*	-		*135*	-	-	-	-	-			-
2033 AM Phase 1 & Redev.	95th %	3	-		10	-	-	-	-	4			14
	Storage	*85*	-		*135*	-	-	-	-	-			-
MD Peak Hour													
2013 MD Existing	95th %	12	-		22	-	-	-	-	10			66
	Storage	*85*	-		*135*	-	-	-	-	-			-
2018 MD Phase 1	95th %	14	-		28	-	-	-	-	11			110
	Storage	*85*	-		*135*	-	-	-	-	-			-
2018 MD Phase 1 & Redev.	95th %	14	-		28	-	-	-	-	11			110
	Storage	*85*	-		*135*	-	-	-	-	-			-
2033 MD Phase 1	95th %	19	-		57	-	-	-	-	12			Err
	Storage	*85*	-		*135*	-	-	-	-	-			-
2033 MD Phase 1 & Redev.	95th %	19	-		57	-	-	-	-	12			Err
	Storage	*85*	-		*135*	-	-	-	-	-			-
PM Peak Hour													
2013 PM Existing	95th %	14	-		11	-	-	-	-	9			52
	Storage	*85*	-		*135*	-	-	-	-	-			-
2018 PM Phase 1	95th %	17	-		13	-	-	-	-	10			65
	Storage	*85*	-		*135*	-	-	-	-	-			-
2018 PM Phase 1 & Redev.	95th %	17	-		13	-	-	-	-	10			65
	Storage	*85*	-		*135*	-	-	-	-	-			-
2033 PM Phase 1	95th %	24	-		22	-	-	-	-	9			75
	Storage	*85*	-		*135*	-	-	-	-	-			-
2033 PM Phase 1 & Redev.	95th %	24	-		22	-	-	-	-	9			75
	Storage	*85*	-		*135*	-	-	-	-	-			-
2033 PM Ph. 1 & Redev. & 1/8-mi. Signals	95th %	24	-		22	-	-	-	-	9			75
	Storage	*85*	-		*135*	-	-	-	-	-			-

Table 27 – 15th Street/1st Avenue/Driveway Queuing Length

Scenario	Length (Feet)	EB			WB			NB			SB		
		L	T	R	L	T	R	L	T	R	L	T	R
AM Peak Hour													
2013 AM Existing	95th % Storage			10 -			6 -	3 -		- -	1 -		- -
2018 AM Phase 1	95th % Storage			10 -			6 -	3 -		- -	1 -		- -
2018 AM Phase 1 & Redev.	95th % Storage			10 -			6 -	3 -		- -	1 -		- -
2033 AM Phase 1	95th % Storage			10 -			3 -	3 -		- -	0 -		- -
2033 AM Phase 1 & Redev.	95th % Storage			10 -			3 -	3 -		- -	0 -		- -
MD Peak Hour													
2013 MD Existing	95th % Storage			25 -			9 -	4 -		- -	1 -		- -
2018 MD Phase 1	95th % Storage			27 -			11 -	4 -		- -	1 -		- -
2018 MD Phase 1 & Redev.	95th % Storage			27 -			11 -	4 -		- -	1 -		- -
2033 MD Phase 1	95th % Storage			31 -			11 -	5 -		- -	0 -		- -
2033 MD Phase 1 & Redev.	95th % Storage			31 -			11 -	5 -		- -	0 -		- -
PM Peak Hour													
2013 PM Existing	95th % Storage			32 -			7 -	6 -		- -	1 -		- -
2018 PM Phase 1	95th % Storage			35 -			8 -	6 -		- -	1 -		- -
2018 PM Phase 1 & Redev.	95th % Storage			35 -			8 -	6 -		- -	1 -		- -
2033 PM Phase 1	95th % Storage			28 -			4 -	3 -		- -	0 -		- -
2033 PM Phase 1 & Redev.	95th % Storage			28 -			4 -	3 -		- -	0 -		- -
2033 PM Ph. 1 & Redev. & 1/8-mi. Signals	95th % Storage			28 -			4 -	3 -		- -	0 -		- -

Table 28 – 17th Street/1st Avenue Queuing Length

Scenario	Length (Feet)	EB			WB			NB			SB		
		L	T	R	L	T	R	L	T	R	L	T	R
AM Peak Hour													
2013 AM Existing	**95th %** *Storage*			**9** -			**8** -	**1** *85*		**-** -	**1** *85*		**-** -
2018 AM Phase 1	**95th %** *Storage*			**10** -			**9** -	**1** *85*		**-** -	**1** *85*		**-** -
2018 AM Phase 1 & Redev.	**95th %** *Storage*			**10** -			**9** -	**1** *85*		**-** -	**1** *85*		**-** -
2033 AM Phase 1	**95th %** *Storage*			**7** -			**6** -	**1** *85*		**-** -	**1** *85*		**-** -
2033 AM Phase 1 & Redev.	**95th %** *Storage*			**7** -			**6** -	**1** *85*		**-** -	**1** *85*		**-** -
MD Peak Hour													
2013 MD Existing	**95th %** *Storage*			**20** -			**10** -	**1** *85*		**-** -	**2** *85*		**-** -
2018 MD Phase 1	**95th %** *Storage*			**22** -			**11** -	**1** *85*		**-** -	**2** *85*		**-** -
2018 MD Phase 1 & Redev.	**95th %** *Storage*			**22** -			**11** -	**1** *85*		**-** -	**2** *85*		**-** -
2033 MD Phase 1	**95th %** *Storage*			**21** -			**9** -	**2** *85*		**-** -	**2** *85*		**-** -
2033 MD Phase 1 & Redev.	**95th %** *Storage*			**21** -			**9** -	**2** *85*		**-** -	**2** *85*		**-** -
PM Peak Hour													
2013 PM Existing	**95th %** *Storage*			**14** -			**8** -	**1** *85*		**-** -	**1** *85*		**-** -
2018 PM Phase 1	**95th %** *Storage*			**15** -			**9** -	**1** *85*		**-** -	**1** *85*		**-** -
2018 PM Phase 1 & Redev.	**95th %** *Storage*			**15** -			**9** -	**1** *85*		**-** -	**1** *85*		**-** -
2033 PM Phase 1	**95th %** *Storage*			**12** -			**7** -	**1** *85*		**-** -	**1** *85*		**-** -
2033 PM Phase 1 & Redev.	**95th %** *Storage*			**12** -			**7** -	**1** *85*		**-** -	**1** *85*		**-** -
2033 PM Ph. 1 & Redev. & 1/8-mi. Signals	**95th %** *Storage*			**12** -			**7** -	**1** *85*		**-** -	**1** *85*		**-** -

5.2 LEVEL OF SERVICE AND QUEUING ANALYSIS FINDINGS

16th Street/6th Avenue North Leg

- All movements have LOS C or better in the 2013 peak hours except for the 2013 PM eastbound left-turn movement, which has LOS D. There are no queuing issues in 2013.
- In the 2018 and 2033 PM peak hours, the eastbound left-turn movement has LOS F. In the 2033 PM peak hour, the southbound left-turn/right-turn movement has LOS F. The LOS F designations are attributable to high eastbound/westbound through volumes on 16th Street as well as the addition of a portion of the reassigned eastbound left-turn volumes from the 16th Street/5th Avenue intersection.
- In the 2018 and 2033 PM peak hours, the eastbound left-turn queue length is considered moderate (100'-300'). This queue could extend through the adjacent 7th Avenue intersection, but it shouldn't impact through movement traffic on 16th Street as the queue can stack in the existing two-way left-turn lane between 6th Avenue and 7th Avenue.
- While prohibiting the southbound left-turn movement would minimize the likelihood of a long southbound queue length and would potentially improve the safety of the intersection compared to allowing the southbound left-turn movement, it would also restrict left-turn access. Considering the projected southbound left-turn volumes are low and adequate gaps in 16th Street traffic are anticipated for those southbound left-turn volumes to make a left turn, allowing the southbound left-turn movement is not anticipated to have adverse operational and safety impacts. If an operational or safety issue does develop that could be mitigated by a left-turn prohibition, the southbound left-turn movement could be prohibited at that point.

16th Street/6th Avenue South Leg

- All movements have LOS C or better in the 2013 peak hours except for the 2013 AM northbound left-turn/right-turn shared movement, which has LOS D. There are no queuing issues in 2013.
- All movements have LOS D or better in the 2018 and 2033 peak hours with no queuing issues.
- City staff recently indicated the City is considering eliminating the northbound left-turn prohibition that is assumed to be in place in the future in this study. Eliminating the northbound left-turn prohibition is not anticipated to be a concern. While prohibiting the northbound left-turn movement would minimize the likelihood of a long northbound queue length and would potentially improve the safety of the intersection compared to allowing the northbound left-turn movement, it would also restrict left-turn access. Considering the projected northbound left-turn volumes would be low and adequate gaps in 16th Street traffic are anticipated for those northbound left-turn volumes to make a left turn, allowing the northbound left-turn movement is not anticipated to have adverse operational and safety impacts. If an operational or safety issue does develop that could be mitigated by a left-turn prohibition, the northbound left-turn movement could be prohibited at that point.

16th Street/4th Avenue

- The intersection has LOS E in the 2013 AM peak hour and LOS F in the 2013 MD and PM peak hours with several queues that exceed storage lengths or back up 500'-1,000' in the through lanes through adjacent intersections, confirming the need to make improvements at the intersection.
- Proposed improvements result in intersection LOS values of C or D through 2033 for all scenarios except for the 2033 PM with redevelopment scenarios, which have intersection LOS E.
- The intersection average vehicle delay for the 2033 PM with redevelopment scenarios is just beyond the maximum average vehicle delay that is still considered LOS D of 55.0 seconds. To bring the intersection average vehicle delay to 55.0 seconds or less to achieve LOS D would require additional improvements such as a fourth through lane on 16th Street, triple left-turn lanes,

or channelized right-turn lanes. Implementing such additional improvements is not recommended because it would significantly increase the cost and right-of-way footprint of the intersection while reducing intersection delay only slightly. It is recommended that the City of Yuma consider intersection LOS E in the 2033 PM peak hour to be acceptable at this intersection.

- The proposed improvements result in queues that are shorter than proposed turn lane storage lengths for all scenarios.
- In the 2033 PM peak hours, the westbound through movement queue length is approximately 600', which puts the back of the queue very close to the 16th Street/2nd Avenue/3rd Avenue intersection.

16th Street/2nd Avenue/3rd Avenue

- All movements have LOS C or better in the 2013 peak hours with no queuing issues.
- All movements have LOS D or better in the 2018 and 2033 peak hours with no queuing issues.
- During the 2013 peak hours, the queuing from 16th Street/4th Avenue and 16th Street/1st Avenue sometimes blocks the eastbound/westbound left-turn movement.
- Implementing the Phase 2 widening of 16th Street between 2nd Avenue/3rd Avenue and Arizona Avenue would likely eliminate or at least significantly reduce the issue of queues blocking the eastbound/westbound left-turn movement that already occurs in the 2013 peak hours.
- If this intersection were to be signalized, the intersection would have LOS B in the 2033 PM peak hour, but it would create a westbound through queue length of 1,100' that would back up through the adjacent 16th Street/1st Avenue intersection and would impede the flow of eastbound through traffic between 4th Avenue and 1st Avenue. Signalizing this intersection would have a negative overall impact on traffic operations and as such is not recommended.

15th Street/4th Avenue/Driveway

- All movements have LOS C or better in the 2013 peak hours with no queuing issues.
- In 2018 and 2033, all movements have LOS D or better if redevelopment of the properties around 16th Street/4th Avenue does not occur. If redevelopment does occur, the westbound movement has LOS E during the 2033 MD and PM peak hours.
- In the 2033 MD and PM peak hours with no traffic signal, the westbound left-turn queue length is just under 100'. This queue length is considered acceptable for a side-street.
- While prohibiting the eastbound/westbound left-turn and through movements would minimize the likelihood of a long eastbound or westbound queue length and would potentially improve the safety of the intersection compared to allowing the eastbound/westbound left-turn and through movements, it would also restrict left-turn and through access. Considering the projected eastbound/westbound left-turn and through volumes are moderate and adequate gaps in 4th Avenue traffic are anticipated for eastbound/westbound volumes to make a left-turn or through movement, allowing the eastbound/westbound left-turn and through movements is not anticipated to have adverse operational and safety impacts. If an operational or safety issue does develop that could be mitigated by a left-turn prohibition, the eastbound/westbound left-turn and through movements could be prohibited at that point.
- If this intersection were to be signalized, the intersection would have LOS A in the 2033 PM peak hour, but it would create a southbound through queue length of approximately 300' that would back up through the adjacent 14th Place/4th Avenue and 14th Street/4th Avenue intersections and would impede the flow of northbound through traffic between 16th Street and 14th Street. Signalizing this intersection would have a negative overall impact on traffic operations and as such is not recommended.

17th Street/4th Avenue/Driveway

- All movements have LOS C or better in the 2013 peak hours with no queuing issues.
- In 2018 and 2033, all movements have LOS D or better if redevelopment of the properties around 16th Street/4th Avenue does not occur. If redevelopment does occur, the eastbound and westbound movements have LOS E or LOS F during the 2018 and 2033 MD and PM peak hours.
- In the 2033 MD and PM peak hour with redevelopment and with no traffic signal scenarios, the eastbound and westbound left-turn queue lengths are moderate (100'-160'). These queue lengths are considered acceptable for a side-street and driveway.
- While prohibiting the eastbound/westbound left-turn and through movements would minimize the likelihood of a long eastbound or westbound queue length and would potentially improve the safety of the intersection compared to allowing the eastbound/westbound left-turn and through movements, it would also restrict left-turn and through access. Considering the projected eastbound/westbound left-turn and through volumes are moderate and adequate gaps in 4th Avenue traffic are anticipated for eastbound/westbound volumes to make a left-turn or through movement, allowing the eastbound/westbound left-turn and through movements is not anticipated to have adverse operational and safety impacts. If an operational or safety issue does develop that could be mitigated by a left-turn prohibition, the eastbound/westbound left-turn and through movements could be prohibited at that point.
- If this intersection were to be signalized, the intersection would have LOS B in the 2033 PM peak hour, but it would create a northbound through queue length of nearly 400' that would back up through the adjacent 18th Street/4th Avenue intersection and would impede the flow of southbound through traffic between 16th Street and 18th Street. Signalizing this intersection would have a negative overall impact on traffic operations and as such is not recommended.

16th Street/1st Avenue

- The intersection has LOS C in the 2013 AM peak hour and LOS D in the 2013 MD and PM peak hours with several queues that exceed storage lengths or back up 400'-1,000' in the through lanes through adjacent intersections, confirming the need to make improvements at the intersection.
- The intersection has LOS F in the 2033 MD peak hour and LOS E in the 2033 PM peak hour with LOS E or F for several movements. Queues get even longer for eastbound and westbound through movements (1,100'+) and start to become an issue for the southbound left-turn movement also (400'+). Not implementing Phase 2 has a significant impact on this intersection and adjacent intersections due to queuing issues.
- Implementing the Phase 2 widening of 16th Street between 2nd Avenue/3rd Avenue and Arizona Avenue would likely eliminate or at least significantly reduce the issue of queues exceeding storage lengths or backing up through adjacent intersections that already occurs in the 2013 peak hours.

16th Street/Maple Avenue/Driveway

- All movements have LOS C or better in the 2013 peak hours except for the southbound movements, which have LOS D in the 2013 AM peak hour and LOS F in the 2013 MD and PM peak hours.
- During the 2013 peak hours, the queuing from 16th Street/1st Avenue sometimes blocks the southbound left-turn and through movements as well as the eastbound/westbound left-turn movement.
- All movements have LOS D or better in the 2018 and 2033 peak hours except for the southbound movements, which have LOS F during the 2018 and 2033 MD and PM peak hours.
- In the 2033 MD peak hours, the southbound movements' queue length is theoretically infinite because there are not enough gaps in 16th Street traffic to allow the southbound left-turn and through movements to occur.

- Prohibiting the southbound left-turn and through movements would minimize the likelihood of a long southbound queue length and would potentially improve the safety of the intersection compared to allowing the southbound left-turn and through movements, although it would also restrict left-turn access. While the projected southbound left-turn and through volumes are low, adequate gaps in 16th Street traffic are not anticipated to be available during the 2033 MD scenarios for those southbound volumes to make a left turn or through movement. Because allowing the southbound left-turn and through movements is anticipated to have adverse operational and safety impacts during the 2033 MD peak hour, the southbound left-turn and through movements should be prohibited.
- Implementing the Phase 2 widening of 16th Street between 2nd Avenue/3rd Avenue and Arizona Avenue would likely eliminate or at least significantly reduce the issue of queues blocking the intersection that already occurs in the 2013 peak hours.

15th Street/1st Avenue/Driveway

- All movements have LOS C or better in the 2013 peak hours with no queuing issues.
- All movements have LOS D or better in the 2018 and 2033 peak hours with no queuing issues.

17th Street/1st Avenue

- All movements have LOS C or better in the 2013 peak hours with no queuing issues.
- All movements have LOS D or better in the 2018 and 2033 peak hours with no queuing issues.

5.3 TRAFFIC SIMULATION MODELS

SimTraffic network simulation models and videos were created for the following two aforementioned *Synchro* scenarios:

- 2033 PM with proposed updated Phase 1 geometry and redevelopment volumes, and
- 2033 PM with proposed updated Phase 1 geometry, redevelopment volumes, and traffic signals at 16th Street/2nd Avenue/3rd Avenue, 15th Street/4th Avenue/Driveway, and 17th Street/4th Avenue/Driveway.

The simulations were developed to determine the impacts of adding traffic signals at the intersections of 16th Street/2nd Avenue/3rd Avenue, 15th Street/4th Avenue/Driveway, and 17th Street/4th Avenue/Driveway. These three intersections are currently unsignalized and are each located approximately 1/8 mile from the 16th Street/4th Avenue intersection on the east, north, and south legs, respectively, of that intersection. (6th Avenue, the 1/8 mile intersection on the west leg, is an offset intersection – signalizing this intersection was not evaluated because it would require realignment of the offset 6th Avenue legs.) Because the 16th Street/2nd Avenue/3rd Avenue intersection currently prohibits left-turn and through movements, left-turn and through volumes were developed for the signalized scenario that were similar in magnitude to the left-turn and through volumes at the intersections of 15th Street/4th Avenue/Driveway and 17th Street/4th Avenue/Driveway

SimTraffic output sheets of measures of effectiveness (MOE) for both scenarios are provided in **Appendix G**. **Table 29** and **Table 30**, respectively, summarize selected MOEs effectiveness with, and without, the 1/8-mile signals for 16th Street, 4th Avenue, and the overall study network. At the bottom of both tables is a value called the Performance Index (PI). The PI is a value calculated by *Synchro* and *SimTraffic* that serves as an overall MOE value. A lower PI value indicates more efficient traffic operations than a higher PI value. The PI is calculated using the following equation:

$$PI = [\text{Total Delay in seconds} + (\text{Total Stops} * 10)] / 3{,}600$$

Table 29 – 2033 PM Peak Hour without 1/8-mile Signals Simulation Measures of Effectiveness

Measure of Effectiveness	16th Street			4th Avenue			Overall Network
	EB	WB	All	NB	SB	All	
Control Delay/Vehicle (seconds)	24	21	22	22	19	20	37
Queue Delay/Vehicle (seconds)	0	0	0	0	0	0	0
Total Delay/Vehicle (seconds)	24	21	22	22	19	20	37
Total Delay (hours)	69	81	150	25	21	46	370
Stops/Vehicle	1.24	0.29	0.69	0.32	0.35	0.33	0.60
Stops	12,920	4,178	17,098	1,324	1,358	2,682	21,683
Average Speed (mph)	10	11	11	12	12	12	8
Total Travel Time (hours)	102	125	227	43	37	81	497
Fuel Consumed (gallons)	174	142	316	47	42	88	556
Performance Index	**105.1**	**92.6**	**197.7**	**28.7**	**24.6**	**53.3**	**430.2**

Table 30 – 2033 PM Peak Hour with 1/8-mile Signals Simulation Measures of Effectiveness

Measure of Effectiveness	16th Street			4th Avenue			Overall Network
	EB	WB	All	NB	SB	All	
Control Delay/Vehicle (seconds)	25	22	24	24	24	24	39
Queue Delay/Vehicle (seconds)	7	1	4	0	0	0	3
Total Delay/Vehicle (seconds)	33	23	27	24	24	24	41
Total Delay (hours)	95	92	186	28	26	54	413
Stops/Vehicle	1.29	0.37	0.76	0.51	0.56	0.53	0.69
Stops	13,441	5,319	18,760	2,141	2,198	4,339	24,856
Average Speed (mph)	8	10	9	11	11	11	7
Total Travel Time (hours)	128	136	263	46	43	89	540
Fuel Consumed (gallons)	196	157	353	53	49	103	606
Performance Index	**131.9**	**106.5**	**238.4**	**34.2**	**32.0**	**66.3**	**482.4**

After comparing the MOEs between the two scenarios, it is clear that not having signals at the 1/8-mile locations results in more efficient traffic operations for 16th Street, 4th Avenue, and the overall study network than having signals at the 1/8-mile locations. As such, adding traffic signals at the intersections of 16th Street/2nd Avenue/3rd Avenue, 15th Street/4th Avenue/Driveway, and 17th Street/4th Avenue/Driveway is not recommended.

6.0 CONCLUSIONS AND RECOMMENDATIONS

The following conclusions and recommendations have been developed based on a review of the data collected and analysis performed as part of this study:

- The redevelopment plan's proposed geometry for the primary study intersections is generally anticipated to be able to accommodate existing and future conditions through 2033;
- Consider installing right-turn lanes at the driveways in the study area, or at a minimum, require no-build easements over the land where right-turn lanes at driveways could ultimately be needed to improve operational efficiency or safety so that right-turn lanes could be added later if needed;
- Do not prohibit any left-turn or through movements at 16th Street/6th Avenue (both North and South intersections), 15th Street/4th Avenue, and 17th Street/4th Avenue. If an operational or safety issue develops that could be mitigated by a left-turn or through movement prohibition, implement the movement prohibition at that point;
- Do not signalize 16th Street/6th Avenue (both North and South intersections), 16th Street/2nd Avenue/3rd Avenue, 15th Street/4th Avenue, and 17th Street/4th Avenue as signalizing these intersections is anticipated to have a negative overall impact on traffic operations; and
- Implement the proposed Phase 2 improvements of widening 16th Street between Maple Avenue and Arizona Avenue within the next 5-10 years to address queuing issues on 16th Street, including prohibiting the southbound left-turn and through movements at 16th Street/Maple Avenue.

7.0 APPENDIX

- Appendix A – Existing Traffic Counts
- Appendix B – Recommended Geometric Layout of 16th Street/4th Avenue per the *4th Avenue and 16th Street Corridors Study*
- Appendix C – Redevelopment Plan Area Land Use Table (ULI Standard Shared Parking Model)
- Appendix D – Redevelopment Plan Area Trip Generation Rates
- Appendix E – *Synchro* Output Sheets – Lanes, Volumes, and Timings
- Appendix F – *Synchro* Output Sheets – HCM Unsignalized Intersection Capacity Analysis
- Appendix G – *SimTraffic* Output Sheets – Measures of Effectiveness

Appendix A – Existing Traffic Counts

15th Street and 1st Avenue **7/11/2013**

Street Name	PED	1st AVENUE - From North				PED	15th STREET - From East/DRWY				PED	1st AVENUE - From South				PED	15th STREET - From West				Grand
Start Time	West	Right	Thru	Left	Total	North	Right	Thru	Left	Total	East	Right	Thru	Left	Total	South	Right	Thru	Left	Total	Total
7:00	0	1	19	0	20	0	1	0	0	1	0	1	22	14	37	0	8	0	1	9	**67**
7:15	0	0	22	1	23	0	0	0	0	0	2	1	17	4	22	0	3	0	1	4	**49**
7:30	0	0	25	1	26	0	0	0	2	2	0	1	25	6	32	0	6	0	0	6	**66**
7:45	0	2	28	1	31	0	0	0	0	0	0	3	45	13	61	0	5	0	1	6	**98**
8:00	0	1	41	1	43	0	0	0	3	3	0	4	41	7	52	0	6	0	1	7	**105**
8:15	0	2	41	0	43	0	0	0	1	1	0	1	33	8	42	0	14	0	0	14	**100**
8:30	0	1	40	0	41	0	0	0	1	1	0	2	31	5	38	0	14	0	1	15	**95**
8:45	0	4	32	2	38	0	3	0	0	3	0	2	40	6	48	0	11	0	2	13	**102**
7-9 Total	**0**	**11**	**248**	**6**	**265**	**0**	**4**	**0**	**7**	**11**	**2**	**15**	**254**	**63**	**332**	**0**	**67**	**0**	**7**	**74**	**682**
11:00	0	4	50	1	55	0	0	0	3	3	0	6	43	7	56	0	22	0	2	24	**138**
11:15	0	5	56	1	62	0	0	0	2	2	0	3	58	5	66	0	22	0	3	25	**155**
11:30	0	1	55	1	57	0	2	0	3	5	0	3	30	7	40	0	12	1	0	13	**115**
11:45	0	5	72	1	78	0	2	0	3	5	1	2	46	7	55	0	22	0	0	22	**160**
12:00	0	1	69	3	73	0	2	1	1	4	0	4	50	6	60	2	26	0	3	29	**166**
12:15	0	3	61	0	64	0	1	0	3	4	0	2	54	10	66	1	27	0	1	28	**162**
12:30	0	5	62	0	67	0	2	0	1	3	3	5	63	10	78	0	21	0	3	24	**172**
12:45	0	3	51	1	55	0	1	0	3	4	0	5	51	10	66	2	24	0	1	25	**150**
11-1 Total	**0**	**27**	**476**	**8**	**511**	**0**	**10**	**1**	**19**	**30**	**4**	**30**	**395**	**62**	**487**	**5**	**176**	**1**	**13**	**190**	**1218**
4:00	0	1	64	0	65	0	0	0	3	3	0	2	48	8	58	0	29	0	1	30	**156**
4:15	0	3	43	0	46	0	0	0	1	1	0	4	39	7	50	0	14	0	4	18	**115**
4:30	0	3	64	0	67	0	2	1	1	4	1	0	37	4	41	0	17	0	1	18	**130**
4:45	0	3	53	1	57	0	0	0	1	1	0	1	36	15	52	0	18	0	0	18	**128**
5:00	0	0	67	3	70	0	0	0	2	2	0	0	44	4	48	0	42	0	0	42	**162**
5:15	0	3	42	0	45	0	0	0	1	1	0	0	55	2	57	0	28	0	0	28	**131**
5:30	0	0	62	0	62	0	1	0	0	1	0	2	47	4	53	0	19	1	0	20	**136**
5:45	0	1	47	1	49	0	0	0	3	3	1	0	23	4	27	0	12	0	0	12	**91**
4-6 Total	**0**	**14**	**442**	**5**	**461**	**0**	**3**	**1**	**12**	**16**	**2**	**9**	**329**	**48**	**386**	**0**	**179**	**1**	**6**	**186**	**1049**
AM PEAK	0	8	154	3	165	0	3	0	5	8	0	9	145	26	180	0	45	0	4	49	402
PHF		0.50	0.94	0.38			0.25	0.00	0.42			0.56	0.88	0.81			0.80	0.00	0.50		
MIDDAY PEAK	0	14	264	4	282	0	7	1	8	16	4	13	213	33	259	3	96	0	7	103	660
PHF		0.70	0.92	0.33			0.88	0.25	0.67			0.65	0.85	0.83			0.89	0.00	0.58		
PM PEAK	0	6	224	4	234	0	1	0	4	5	0	3	182	25	210	0	107	1	0	108	557
PHF		0.50	0.84	0.33			0.25	0.00	0.50			0.38	0.83	0.42			0.64	0.25	0.00		

Courtesy of Core Engineering Group, PLLC

15th Street and 4th Avenue **7/11/2013**

Street Name	PED	4th AVENUE - From North				PED	15th STREET - From East				PED	4th AVENUE - From South				PED	15th STREET - From West/DRWY				Grand
Start Time	West	Right	Thru	Left	Total	North	Right	Thru	Left	Total	East	Right	Thru	Left	Total	South	Right	Thru	Left	Total	Total
7:00	0	0	73	4	77	0	1	0	3	4	0	5	65	0	70	0	0	0	0	0	151
7:15	0	0	63	2	65	0	2	0	4	6	1	8	79	0	87	1	0	0	0	0	158
7:30	2	0	108	3	111	0	2	0	1	3	0	12	92	0	104	0	0	0	0	0	218
7:45	1	0	113	5	118	0	3	0	0	3	0	14	111	0	125	0	0	0	1	1	247
8:00	0	0	122	1	123	0	7	0	4	11	0	13	121	0	134	0	0	0	0	0	268
8:15	0	0	99	3	102	0	2	0	2	4	0	11	108	0	119	0	0	0	0	0	225
8:30	1	0	111	2	113	0	1	0	2	3	1	3	109	0	112	0	0	0	0	0	228
8:45	1	0	141	4	145	0	6	0	2	8	0	7	122	0	129	0	0	0	0	0	282
7-9 Total	**5**	**0**	**830**	**24**	**854**	**0**	**24**	**0**	**18**	**42**	**2**	**73**	**807**	**0**	**880**	**1**	**0**	**0**	**1**	**1**	**1777**
11:00	2	0	165	6	171	0	3	0	1	4	3	9	160	0	169	0	0	0	0	0	344
11:15	1	0	177	9	186	0	4	0	5	9	0	10	147	0	157	0	0	0	0	0	352
11:30	0	0	175	6	181	0	3	0	3	6	3	8	149	0	157	0	0	0	0	0	344
11:45	0	0	185	6	191	1	4	0	2	6	3	8	176	0	184	0	0	0	0	0	381
12:00	0	0	193	2	195	0	6	0	3	9	0	11	154	0	165	1	0	0	0	0	369
12:15	0	0	191	10	201	1	6	0	6	12	2	10	176	0	186	0	0	0	0	0	399
12:30	1	0	170	8	178	0	7	0	4	11	3	7	153	0	160	0	0	0	0	0	349
12:45	0	0	183	7	190	0	5	0	6	11	1	11	186	0	197	0	0	0	0	0	398
11-1 Total	**4**	**0**	**1439**	**54**	**1493**	**2**	**38**	**0**	**30**	**68**	**15**	**74**	**1301**	**0**	**1375**	**1**	**0**	**0**	**0**	**0**	**2936**
4:00	0	0	169	4	173	0	9	0	4	13	0	5	174	0	179	0	0	0	0	0	365
4:15	1	0	186	4	190	0	1	0	3	4	0	7	186	0	193	0	0	0	0	0	387
4:30	2	0	180	3	183	0	9	0	2	11	0	8	173	0	181	0	0	0	0	0	375
4:45	0	0	180	4	184	0	6	0	2	8	0	10	156	0	166	0	0	0	0	0	358
5:00	0	0	205	5	210	0	9	0	4	13	0	6	138	0	144	0	0	0	0	0	367
5:15	2	0	195	4	199	0	10	0	8	18	0	3	190	0	193	0	0	0	0	0	410
5:30	2	0	177	2	179	0	2	0	10	12	2	4	131	0	135	1	0	0	0	0	326
5:45	0	0	138	5	143	0	3	0	2	5	0	5	154	0	159	0	0	0	0	0	307
4-6 Total	**7**	**0**	**1430**	**31**	**1461**	**0**	**49**	**0**	**35**	**84**	**2**	**48**	**1302**	**0**	**1350**	**1**	**0**	**0**	**0**	**0**	**2895**
AM PEAK	2	0	473	10	483	0	16	0	10	26	1	34	460	0	494	0	0	0	0	0	1003
PHF		0.00	0.84	0.63			0.57	0.00	0.63			0.65	0.94	0.00			0.00	0.00	0.00		
MIDDAY PEAK	1	0	737	27	764	1	24	0	19	43	6	39	669	0	708	1	0	0	0	0	1515
PHF		0.00	0.95	0.68			0.86	0.00	0.79			0.89	0.90	0.00			0.00	0.00	0.00		
PM PEAK	4	0	760	16	776	0	34	0	16	50	0	27	657	0	684	0	0	0	0	0	1510
PHF		0.00	0.93	0.80			0.85	0.00	0.50			0.68	0.86	0.00			0.00	0.00	0.00		

Courtesy of Core Engineering Group, PLLC

16th Street and 1st Avenue

7/16/2013

	1	2	3	4		5	6	7	8		9	10	11	12		13	14	15	16		
Street Name	**PED**	**1st AVENUE - From North**				**PED**	**16th STREET - From East**				**PED**	**1st AVENUE - From South**				**PED**	**16th STREET - From West**				**Grand**
Start Time	**West**	**Right**	**Thru**	**Left**	**Total**	**North**	**Right**	**Thru**	**Left**	**Total**	**East**	**Right**	**Thru**	**Left**	**Total**	**South**	**Right**	**Thru**	**Left**	**Total**	**Total**
7:00	0	3	8	16	27	0	20	107	5	132	0	14	18	14	46	0	1	167	2	170	**375**
7:15	0	6	15	11	32	0	10	134	4	148	0	4	13	8	25	0	3	188	5	196	**401**
7:30	0	3	10	16	29	0	14	174	13	201	1	8	25	8	41	0	4	184	8	196	**467**
7:45	0	12	16	24	52	0	28	200	17	245	0	15	21	7	43	0	9	240	12	261	**601**
8:00	3	3	18	26	47	2	15	166	18	199	1	3	21	11	35	1	7	182	14	203	**484**
8:15	1	3	18	18	39	1	13	152	18	183	0	9	19	6	34	0	4	170	13	187	**443**
8:30	0	8	14	19	41	0	7	190	24	221	1	7	19	6	32	0	9	201	13	223	**517**
8:45	0	2	16	26	44	0	10	192	21	223	0	15	15	15	45	0	4	225	8	237	**549**
7-9 Total	**4**	**40**	**115**	**156**	**311**	**3**	**117**	**1315**	**120**	**1552**	**3**	**75**	**151**	**75**	**301**	**1**	**41**	**1557**	**75**	**1673**	**3837**
11:00	0	9	21	40	70	0	19	190	25	234	0	18	22	19	59	1	6	241	10	257	**620**
11:15	0	7	27	31	65	1	20	240	22	282	0	19	42	29	90	1	5	223	14	242	**679**
11:30	0	8	19	38	65	0	9	233	21	263	0	18	23	24	65	1	8	238	10	256	**649**
11:45	0	7	23	51	81	1	11	233	17	261	1	30	25	27	82	1	11	275	8	294	**718**
12:00	1	13	28	30	71	0	19	239	32	290	1	28	27	18	73	0	8	265	9	282	**716**
12:15	0	11	28	48	87	0	18	242	25	285	0	25	32	29	86	0	7	230	12	249	**707**
12:30	0	13	21	42	76	0	14	234	33	281	0	23	22	27	72	0	9	263	8	280	**709**
12:45	0	7	19	44	70	0	20	261	29	310	0	29	39	23	91	0	8	242	16	266	**737**
11-1 Total	**1**	**75**	**186**	**324**	**585**	**2**	**130**	**1872**	**204**	**2206**	**2**	**190**	**232**	**196**	**618**	**4**	**62**	**1977**	**87**	**2126**	**5535**
4:00	0	6	30	31	67	1	11	282	21	314	0	13	26	22	61	0	10	211	8	229	**671**
4:15	0	5	24	38	67	0	13	289	28	330	0	17	23	18	58	0	13	204	11	228	**683**
4:30	0	13	23	33	69	0	18	268	17	303	0	17	26	30	73	0	4	242	8	254	**699**
4:45	0	8	27	36	71	0	13	287	20	320	0	19	35	17	71	0	9	245	11	265	**727**
5:00	0	21	38	41	100	0	20	309	21	350	0	30	27	33	90	0	10	252	6	268	**808**
5:15	0	12	27	34	73	1	12	303	21	336	0	36	12	31	79	0	6	267	11	284	**772**
5:30	0	8	25	38	71	1	11	279	15	305	0	32	20	27	79	0	2	234	4	240	**695**
5:45	0	6	8	17	31	0	11	247	13	271	0	18	12	12	42	0	5	204	7	216	**560**
4-6 Total	**0**	**79**	**202**	**268**	**549**	**3**	**109**	**2264**	**156**	**2529**	**0**	**182**	**181**	**190**	**553**	**0**	**59**	**1859**	**66**	**1984**	**5615**
AM PEAK	4	26	66	87	179	3	63	708	77	848	2	34	80	30	144	1	29	793	52	874	2045
PHF		0.54	0.92	0.84			0.56	0.89	0.80			0.57	0.95	0.68			0.81	0.83	0.93		
MIDDAY PEAK	1	44	96	164	304	0	71	976	119	1166	1	105	120	97	322	0	32	1000	45	1077	2869
PHF		0.85	0.86	0.85			0.89	0.93	0.90			0.91	0.77	0.84			0.89	0.94	0.70		
PM PEAK	0	54	115	144	313	1	63	1167	79	1309	0	102	100	111	313	0	29	1006	36	1071	3006
PHF		0.64	0.76	0.88			0.79	0.94	0.94			0.71	0.71	0.84			0.73	0.94	0.82		

Courtesy of Core Engineering Group, PLLC

16th Street and 2nd/3rd Avenue **7/17/2013**

	1	2	3	4		5	6	7	8		9	10	11	12		13	14	15	16		
Street Name	**PED**	**2nd AVENUE - From North**				**PED**	**16th STREET - From East**				**PED**	**3rd AVENUE - From South**				**PED**	**16th STREET - From West**				**Grand**
Start Time	**West**	**Right**	**Thru**	**Left**	**Total**	**North**	**Right**	**Thru**	**Left**	**Total**	**East**	**Right**	**Thru**	**Left**	**Total**	**South**	**Right**	**Thru**	**Left**	**Total**	**Total**
7:00	0	2	0	0	2	0	5	131	2	138	0	2	0	0	2	1	3	150	5	158	**300**
7:15	0	1	0	1	2	0	6	137	2	145	0	1	0	1	2	1	4	194	5	203	**352**
7:30	0	4	0	0	4	1	7	163	6	176	0	3	0	0	3	0	9	203	7	219	**402**
7:45	0	8	0	0	8	0	11	193	9	213	0	3	0	0	3	0	7	266	9	282	**506**
8:00	0	10	0	0	10	0	7	151	2	160	0	7	0	0	7	0	8	206	11	225	**402**
8:15	0	2	0	0	2	0	8	141	7	156	0	5	1	0	6	1	16	194	6	216	**380**
8:30	0	10	0	0	10	0	3	169	2	174	0	6	0	0	6	0	6	184	6	196	**386**
8:45	0	2	0	0	2	0	10	162	9	181	0	5	0	0	5	0	7	219	10	236	**424**
7-9 Total	**0**	**39**	**0**	**1**	**40**	**1**	**57**	**1247**	**39**	**1343**	**0**	**32**	**1**	**1**	**34**	**3**	**60**	**1616**	**59**	**1735**	**3152**
11:00	0	4	1	0	5	1	11	205	4	220	0	9	0	0	9	1	6	239	5	250	**484**
11:15	1	14	0	0	14	0	9	249	10	268	0	9	0	0	9	1	10	258	2	270	**561**
11:30	0	10	0	0	10	0	7	245	9	261	0	10	0	0	10	1	3	255	12	270	**551**
11:45	0	11	0	0	11	3	8	298	10	316	0	4	0	0	4	4	13	254	9	276	**607**
12:00	0	13	0	0	13	0	8	271	4	283	0	10	0	0	10	1	16	257	8	281	**587**
12:15	0	8	0	0	8	0	6	266	7	279	0	4	0	0	4	0	15	289	6	310	**601**
12:30	0	8	0	0	8	0	9	271	13	293	0	7	1	0	8	1	7	235	7	249	**558**
12:45	0	8	0	0	8	0	7	278	11	296	0	11	0	0	11	0	8	261	11	280	**595**
11-1 Total	**1**	**76**	**1**	**0**	**77**	**4**	**65**	**2083**	**68**	**2216**	**0**	**64**	**1**	**0**	**65**	**9**	**78**	**2048**	**60**	**2186**	**4544**
4:00	0	6	1	1	8	0	4	290	6	300	0	6	0	0	6	0	8	228	9	245	**559**
4:15	0	11	0	0	11	0	7	329	5	341	0	5	0	0	5	0	7	251	2	260	**617**
4:30	0	10	0	0	10	0	9	319	13	341	0	14	0	1	15	0	11	239	8	258	**624**
4:45	0	8	0	0	8	0	8	323	5	336	1	9	0	0	9	0	6	231	3	240	**593**
5:00	0	11	1	0	12	1	4	335	8	347	0	7	0	0	7	1	10	241	1	252	**618**
5:15	1	10	0	0	10	1	5	340	4	349	0	13	0	0	13	1	4	242	0	246	**618**
5:30	0	6	0	0	6	3	3	327	5	335	1	6	0	0	6	0	3	251	4	258	**605**
5:45	1	3	0	0	3	0	2	277	3	282	0	3	0	0	3	0	9	239	3	251	**539**
4-6 Total	**2**	**65**	**2**	**1**	**68**	**5**	**42**	**2540**	**49**	**2631**	**2**	**63**	**0**	**1**	**64**	**2**	**58**	**1922**	**30**	**2010**	**4773**
AM PEAK	0	24	0	0	24	1	33	648	24	705	0	18	1	0	19	1	40	869	33	942	1690
PHF		0.60	0.00	0.00			0.75	0.84	0.67			0.64	0.25	0.00			0.63	0.82	0.75		
MIDDAY PEAK	0	40	0	0	40	3	31	1106	34	1171	0	25	1	0	26	6	51	1035	30	1116	2353
PHF		0.77	0.00	0.00			0.86	0.93	0.65			0.63	0.25	0.00			0.80	0.90	0.83		
PM PEAK	1	39	1	0	40	2	26	1317	30	1373	1	43	0	1	44	2	31	953	12	996	2453
PHF		0.89	0.25	0.00			0.72	0.97	0.58			0.77	0.00	0.25			0.70	0.98	0.38		

Courtesy of Core Engineering Group, PLLC

16th Street and 4th Avenue

7/18/2013

	1	2	3	4		5	6	7	8		9	10	11	12		13	14	15	16		
Street Name	PED	4th AVENUE - From North				PED	16th STREET - From East				PED	4th AVENUE - From South				PED	16th STREET - From West				Grand
Start Time	West	Right	Thru	Left	Total	North	Right	Thru	Left	Total	East	Right	Thru	Left	Total	South	Right	Thru	Left	Total	Total
7:00	0	11	38	20	69	1	13	79	16	108	0	24	32	20	76	0	16	127	22	165	418
7:15	0	9	53	35	97	0	15	95	27	137	0	21	37	17	75	0	17	146	30	193	502
7:30	1	12	74	29	115	0	13	116	25	154	1	32	47	11	90	1	12	166	34	212	571
7:45	1	9	82	36	127	1	26	153	35	214	0	30	80	33	143	0	27	244	40	311	795
8:00	2	13	71	36	120	0	13	88	35	136	1	29	60	18	107	0	25	179	33	237	600
8:15	0	12	79	32	123	0	19	102	32	153	0	23	67	17	107	0	16	152	17	185	568
8:30	0	16	70	36	122	0	19	105	35	159	0	32	67	18	117	0	18	146	36	200	598
8:45	1	19	89	36	144	2	41	111	28	180	0	39	72	22	133	0	24	183	33	240	697
7-9 Total	**5**	**101**	**556**	**260**	**917**	**4**	**159**	**849**	**233**	**1241**	**2**	**230**	**462**	**156**	**848**	**1**	**155**	**1343**	**245**	**1743**	**4749**
11:00	0	13	128	41	182	0	49	111	28	188	1	29	154	59	242	0	17	140	23	180	792
11:15	1	18	107	48	173	0	47	114	45	206	0	34	151	60	245	0	23	158	29	210	834
11:30	1	24	98	42	164	2	57	104	37	198	0	33	151	49	233	1	25	165	32	222	817
11:45	0	29	125	37	191	33	125	66	33	224	0	35	157	55	247	0	20	178	30	228	890
12:00	0	20	105	45	170	2	56	116	51	223	0	40	162	61	263	1	28	190	24	242	898
12:15	1	22	114	42	178	0	58	102	56	216	1	35	175	66	276	1	29	161	29	219	889
12:30	0	22	121	26	169	0	76	115	41	232	0	35	164	62	261	0	18	171	27	216	878
12:45	0	26	120	42	188	0	61	144	39	244	0	24	181	59	264	0	15	168	28	211	907
11-1 Total	**3**	**174**	**918**	**323**	**1415**	**37**	**529**	**872**	**330**	**1731**	**2**	**265**	**1295**	**471**	**2031**	**3**	**175**	**1331**	**222**	**1728**	**6905**
4:00	0	23	93	38	154	0	29	211	50	290	0	58	106	38	202	0	25	154	21	200	846
4:15	0	26	115	31	172	0	21	233	49	303	0	61	107	59	227	0	30	136	18	184	886
4:30	2	28	100	33	161	0	34	221	52	307	1	58	98	39	195	0	12	163	27	202	865
4:45	0	20	116	26	162	0	23	217	54	294	0	64	103	49	216	0	26	188	31	245	917
5:00	0	31	115	31	177	0	32	269	52	353	1	50	110	62	222	0	26	169	27	222	974
5:15	0	33	110	30	173	0	18	270	45	333	0	56	146	69	271	0	34	201	18	253	1030
5:30	0	32	129	35	196	0	23	239	44	306	0	53	80	51	184	0	27	164	22	213	899
5:45	1	20	91	24	135	0	31	189	62	282	1	69	93	51	213	0	23	183	19	225	855
4-6 Total	**3**	**213**	**869**	**248**	**1330**	**0**	**211**	**1849**	**408**	**2468**	**3**	**469**	**843**	**418**	**1730**	**0**	**203**	**1358**	**183**	**1744**	**7272**
AM PEAK	3	50	302	140	492	1	77	448	137	662	1	114	274	86	474	0	86	721	126	933	2561
PHF		0.78	0.92	0.97			0.74	0.73	0.98			0.89	0.86	0.65			0.80	0.74	0.79		
MIDDAY PEAK	1	90	460	155	705	2	251	477	187	915	1	134	682	248	1064	2	90	690	108	888	3572
PHF		0.87	0.95	0.86			0.83	0.83	0.83			0.84	0.94	0.94			0.78	0.91	0.93		
PM PEAK	0	116	470	122	708	0	96	995	195	1286	1	223	439	231	893	0	113	722	98	933	3820
PHF		0.88	0.91	0.87			0.75	0.92	0.90			0.87	0.75	0.84			0.83	0.90	0.79		

Courtesy of Core Engineering Group, PLLC

16th Street and 6th Avenue **7/18/2013**

	1	2	3	4		5	6	7	8		9	10	11	12		13	14	15	16		
Street Name	**PED**	**6th AVENUE - From North**				**PED**	**16th STREET - From East**				**PED**	**6th AVENUE - From South**				**PED**	**16th STREET - From West**				**Grand**
Start Time	**West**	**Right**	**Thru**	**Left**	**Total**	**North**	**Right**	**Thru**	**Left**	**Total**	**East**	**Right**	**Thru**	**Left**	**Total**	**South**	**Right**	**Thru**	**Left**	**Total**	**Total**
7:00	0	8	0	1	9	0	0	105	0	105	0	2	0	0	2	3	0	248	4	252	**368**
7:15	0	2	0	0	2	0	0	139	0	139	0	1	1	1	3	0	1	200	7	208	**352**
7:30	0	4	0	0	4	1	0	155	0	155	0	4	0	1	5	0	0	241	2	243	**407**
7:45	0	5	2	2	9	1	0	192	3	195	2	3	0	0	3	0	5	323	6	334	**541**
8:00	0	7	0	2	9	0	1	207	1	209	0	3	0	0	3	0	0	319	6	325	**546**
8:15	0	3	0	0	3	0	1	128	2	131	1	4	0	0	4	0	1	271	3	275	**413**
8:30	0	1	0	1	2	0	0	141	1	142	0	4	0	2	6	0	0	254	5	259	**409**
8:45	0	1	0	0	1	0	1	161	2	164	0	3	0	0	3	0	3	271	5	279	**447**
7-9 Total	**0**	**31**	**2**	**6**	**39**	**2**	**3**	**1228**	**9**	**1240**	**3**	**24**	**1**	**4**	**29**	**3**	**10**	**2127**	**38**	**2175**	**3483**
11:00	0	6	0	0	6	0	2	210	1	213	0	3	0	1	4	0	3	249	3	255	**478**
11:15	0	4	0	2	6	0	2	197	2	201	0	6	0	1	7	0	2	235	5	242	**456**
11:30	0	4	0	1	5	0	2	251	1	254	0	4	0	1	5	0	0	242	5	247	**511**
11:45	0	5	0	0	5	1	2	236	2	240	0	4	0	0	4	1	5	272	3	280	**529**
12:00	0	7	0	0	7	0	2	277	3	282	0	5	0	1	6	0	5	277	3	285	**580**
12:15	0	7	0	0	7	0	2	270	3	275	0	9	0	0	9	0	1	238	4	243	**534**
12:30	0	6	0	2	8	0	2	270	3	275	0	1	0	0	1	0	0	252	4	256	**540**
12:45	0	5	0	0	5	0	4	298	2	304	0	5	0	2	7	0	2	270	4	276	**592**
11-1 Total	**0**	**44**	**0**	**5**	**49**	**1**	**18**	**2009**	**17**	**2044**	**0**	**37**	**0**	**6**	**43**	**1**	**18**	**2035**	**31**	**2084**	**4220**
4:00	0	9	0	0	9	0	2	347	4	353	0	3	0	1	4	0	2	221	5	228	**594**
4:15	0	1	0	0	1	0	3	316	3	322	0	3	0	1	4	0	0	229	11	240	**567**
4:30	1	3	0	0	3	0	5	343	4	352	0	5	0	1	6	0	1	250	5	256	**617**
4:45	1	8	0	1	9	0	4	316	3	323	0	6	0	0	6	1	1	266	5	272	**610**
5:00	0	9	0	0	9	2	4	390	3	397	0	3	1	0	4	0	2	247	2	251	**661**
5:15	0	7	0	0	7	2	4	409	3	416	0	5	0	1	6	0	2	247	11	260	**689**
5:30	0	5	0	0	5	0	4	381	2	387	0	3	0	1	4	0	1	236	4	241	**637**
5:45	0	6	0	0	6	0	2	342	2	346	0	3	0	2	5	0	0	248	8	256	**613**
4-6 Total	**2**	**48**	**0**	**1**	**49**	**4**	**28**	**2844**	**24**	**2896**	**0**	**31**	**1**	**7**	**39**	**1**	**9**	**1944**	**51**	**2004**	**4988**
AM PEAK	0	16	2	5	23	1	2	668	7	677	3	14	0	2	16	0	6	1167	20	1193	**1909**
PHF		0.57	0.25	0.63			0.50	0.81	0.58			0.88	0.00	0.25			0.30	0.90	0.83		
MIDDAY PEAK	0	25	0	2	27	0	10	1115	11	1136	0	20	0	3	23	0	8	1037	15	1060	**2246**
PHF		0.89	0.00	0.25			0.63	0.94	0.92			0.56	0.00	0.38			0.40	0.94	0.94		
PM PEAK	0	27	0	0	27	4	14	1522	10	1546	0	14	1	4	19	0	5	978	25	1008	**2600**
PHF		0.75	0.00	0.00			0.88	0.93	0.83			0.70	0.25	0.50			0.63	0.99	0.57		

Courtesy of Core Engineering Group, PLLC

16th Street and Maple Avenue

7/17/2013

	1	2	3	4		5	6	7	8		9	10	11	12		13	14	15	16		
Street Name	PED	Maple AVENUE - From North/DRWY				PED	16th STREET - From East				PED	Maple AVENUE - From South				PED	16th STREET - From West				Grand
Start Time	West	Right	Thru	Left	Total	North	Right	Thru	Left	Total	East	Right	Thru	Left	Total	South	Right	Thru	Left	Total	Total
7:00	0	0	0	0	0	0	1	140	3	144	0	6	0	0	6	0	6	153	1	160	**310**
7:15	0	2	0	0	2	0	2	150	2	154	0	2	0	0	2	1	6	208	1	215	**373**
7:30	0	1	0	3	4	1	1	195	8	204	0	4	0	0	4	1	4	208	0	212	**424**
7:45	0	1	1	0	2	0	6	239	10	255	0	3	0	0	3	0	7	244	2	253	**513**
8:00	0	1	0	1	2	0	3	191	8	202	0	1	0	0	1	1	21	201	2	224	**429**
8:15	0	2	2	0	4	0	3	193	5	201	0	6	0	0	6	0	6	190	3	199	**410**
8:30	0	3	0	1	4	0	4	199	8	211	0	6	0	0	6	1	6	211	0	217	**438**
8:45	0	2	0	0	2	0	9	203	4	216	0	5	0	0	5	0	5	245	8	258	**481**
7-9 Total	**0**	**12**	**3**	**5**	**20**	**1**	**29**	**1510**	**48**	**1587**	**0**	**33**	**0**	**0**	**33**	**4**	**61**	**1660**	**17**	**1738**	**3378**
11:00	0	8	1	1	10	0	10	229	11	250	0	5	0	0	5	0	12	271	2	285	**550**
11:15	0	7	0	0	7	0	9	282	17	308	0	5	0	0	5	1	9	296	2	307	**627**
11:30	0	3	0	1	4	2	12	263	9	284	0	9	0	0	9	0	6	282	5	293	**590**
11:45	0	6	0	0	6	0	12	291	15	318	0	7	0	0	7	0	4	283	1	288	**619**
12:00	0	5	1	2	8	1	13	295	15	323	0	10	0	0	10	1	15	286	5	306	**647**
12:15	0	4	0	1	5	0	11	309	18	338	0	13	0	0	13	0	18	311	7	336	**692**
12:30	0	7	2	2	11	1	10	296	20	326	0	8	0	0	8	0	9	251	9	269	**614**
12:45	0	6	0	2	8	0	10	302	8	320	0	10	0	0	10	1	13	305	5	323	**661**
11-1 Total	**0**	**46**	**4**	**9**	**59**	**4**	**87**	**2267**	**113**	**2467**	**0**	**67**	**0**	**0**	**67**	**3**	**86**	**2285**	**36**	**2407**	**5000**
4:00	0	5	0	1	6	0	5	310	7	322	1	8	0	0	8	0	11	274	1	286	**622**
4:15	0	10	1	2	13	0	9	336	9	354	0	8	0	0	8	0	11	267	6	284	**659**
4:30	0	11	2	1	14	0	11	292	9	312	0	5	0	0	5	0	3	261	9	273	**604**
4:45	0	8	0	0	8	0	14	345	13	372	0	5	0	0	5	0	7	247	4	258	**643**
5:00	0	6	0	1	7	0	16	340	13	369	0	5	0	0	5	0	3	301	4	308	**689**
5:15	0	6	0	0	6	0	18	357	11	386	0	12	0	0	12	0	5	286	8	299	**703**
5:30	0	6	0	2	8	1	11	318	5	334	0	6	0	0	6	0	5	271	8	284	**632**
5:45	0	6	1	0	7	0	11	272	9	292	0	12	0	1	13	0	4	276	5	285	**597**
4-6 Total	**0**	**58**	**4**	**7**	**69**	**1**	**95**	**2570**	**76**	**2741**	**1**	**61**	**0**	**1**	**62**	**0**	**49**	**2183**	**45**	**2277**	**5149**
AM PEAK	0	7	3	2	12	0	16	822	31	869	0	16	0	0	16	2	40	846	7	893	1790
PHF		0.58	0.38	0.50			0.67	0.86	0.78			0.67	0.00	0.00			0.48	0.87	0.58		
MIDDAY PEAK	0	22	3	7	32	2	44	1202	61	1307	0	41	0	0	41	2	55	1153	26	1234	2614
PHF		0.79	0.38	0.88			0.85	0.97	0.76			0.79	0.00	0.00			0.76	0.93	0.72		
PM PEAK	0	26	0	3	29	1	59	1360	42	1461	0	28	0	0	28	0	20	1105	24	1149	2667
PHF		0.81	0.00	0.38			0.82	0.95	0.81			0.58	0.00	0.00			0.71	0.92	0.75		

Courtesy of Core Engineering Group, PLLC

17th Street and 1st Avenue **7/11/2013**

	1	2	3	4		5	6	7	8		9	10	11	12		13	14	15	16		
Street Name	**PED**	**1st AVENUE - From North**				**PED**	**17th STREET - From East**				**PED**	**1st AVENUE - From South**				**PED**	**17th STREET - From West**				**Grand**
Start Time	**West**	**Right**	**Thru**	**Left**	**Total**	**North**	**Right**	**Thru**	**Left**	**Total**	**East**	**Right**	**Thru**	**Left**	**Total**	**South**	**Right**	**Thru**	**Left**	**Total**	**Total**
7:00	0	0	14	0	14	0	0	0	0	0	1	0	22	0	22	1	0	1	1	2	**38**
7:15	1	1	21	2	24	0	0	1	1	2	0	1	23	3	27	1	1	1	1	3	**56**
7:30	0	2	15	1	18	0	0	1	0	1	0	0	25	0	25	1	0	1	2	3	**47**
7:45	0	0	15	6	21	0	1	1	1	3	1	1	31	0	32	0	1	2	0	3	**59**
8:00	1	2	41	4	47	0	1	1	2	4	0	1	30	1	32	2	5	4	0	9	**92**
8:15	0	3	43	3	49	0	6	1	1	8	0	1	35	1	37	0	1	2	2	5	**99**
8:30	1	2	35	4	41	0	3	0	3	6	0	1	36	2	39	0	1	3	2	6	**92**
8:45	0	0	35	1	36	0	1	3	2	6	1	0	37	1	38	0	2	1	4	7	**87**
7-9 Total	**3**	**10**	**219**	**21**	**250**	**0**	**12**	**8**	**10**	**30**	**3**	**5**	**239**	**8**	**252**	**5**	**11**	**15**	**12**	**38**	**570**
11:00	0	0	50	1	51	0	2	0	2	4	0	1	53	3	57	0	4	2	3	9	**121**
11:15	0	2	48	3	53	0	1	2	2	5	0	0	44	4	48	0	5	3	7	15	**121**
11:30	0	6	37	3	46	0	2	1	4	7	0	0	49	4	53	0	4	3	4	11	**117**
11:45	0	2	58	5	65	0	3	1	2	6	0	2	44	3	49	0	6	5	9	20	**140**
12:00	0	4	55	6	65	0	1	0	4	5	0	3	46	4	53	0	3	3	5	11	**134**
12:15	0	4	50	3	57	0	3	1	3	7	0	2	47	1	50	0	7	2	5	14	**128**
12:30	3	7	58	3	68	0	1	4	2	7	0	1	57	4	62	0	5	3	4	12	**149**
12:45	0	8	53	3	64	0	2	2	2	6	0	2	54	1	57	0	2	1	5	8	**135**
11-1 Total	**3**	**33**	**409**	**27**	**469**	**0**	**15**	**11**	**21**	**47**	**0**	**11**	**394**	**24**	**429**	**0**	**36**	**22**	**42**	**100**	**1045**
4:00	0	3	47	4	54	0	2	3	3	8	0	1	55	2	58	0	1	1	4	6	**126**
4:15	0	3	50	0	53	0	4	1	3	8	0	3	48	2	53	0	4	2	7	13	**127**
4:30	2	1	53	2	56	0	1	1	1	3	2	0	40	1	41	0	5	5	4	14	**114**
4:45	0	2	55	2	59	0	1	3	2	6	0	0	33	2	35	0	1	2	1	4	**104**
5:00	0	3	59	3	65	0	5	1	2	8	0	1	47	3	51	3	1	3	4	8	**132**
5:15	1	4	53	0	57	0	2	1	2	5	0	1	38	2	41	0	6	0	5	11	**114**
5:30	0	2	47	2	51	0	2	1	3	6	1	0	56	4	60	0	2	1	6	9	**126**
5:45	0	3	44	2	49	0	0	1	3	4	0	2	24	2	28	0	4	1	5	10	**91**
4-6 Total	**3**	**21**	**408**	**15**	**444**	**0**	**17**	**12**	**19**	**48**	**3**	**8**	**341**	**18**	**367**	**3**	**24**	**15**	**36**	**75**	**934**
AM PEAK	2	7	154	12	173	0	11	5	8	24	1	3	138	5	146	2	9	10	8	27	370
PHF		0.58	0.90	0.75			0.46	0.42	0.67			0.75	0.93	0.63			0.45	0.63	0.50		
MIDDAY PEAK	3	17	221	17	255	0	8	6	11	25	0	8	194	12	214	0	21	13	23	57	551
PHF		0.61	0.95	0.71			0.67	0.38	0.69			0.67	0.85	0.75			0.75	0.65	0.64		
PM PEAK	2	9	217	7	233	0	11	6	8	25	2	4	168	8	180	3	11	12	16	39	477
PHF		0.75	0.92	0.58			0.55	0.50	0.67			0.33	0.88	0.67			0.55	0.60	0.57		

Courtesy of Core Engineering Group, PLLC

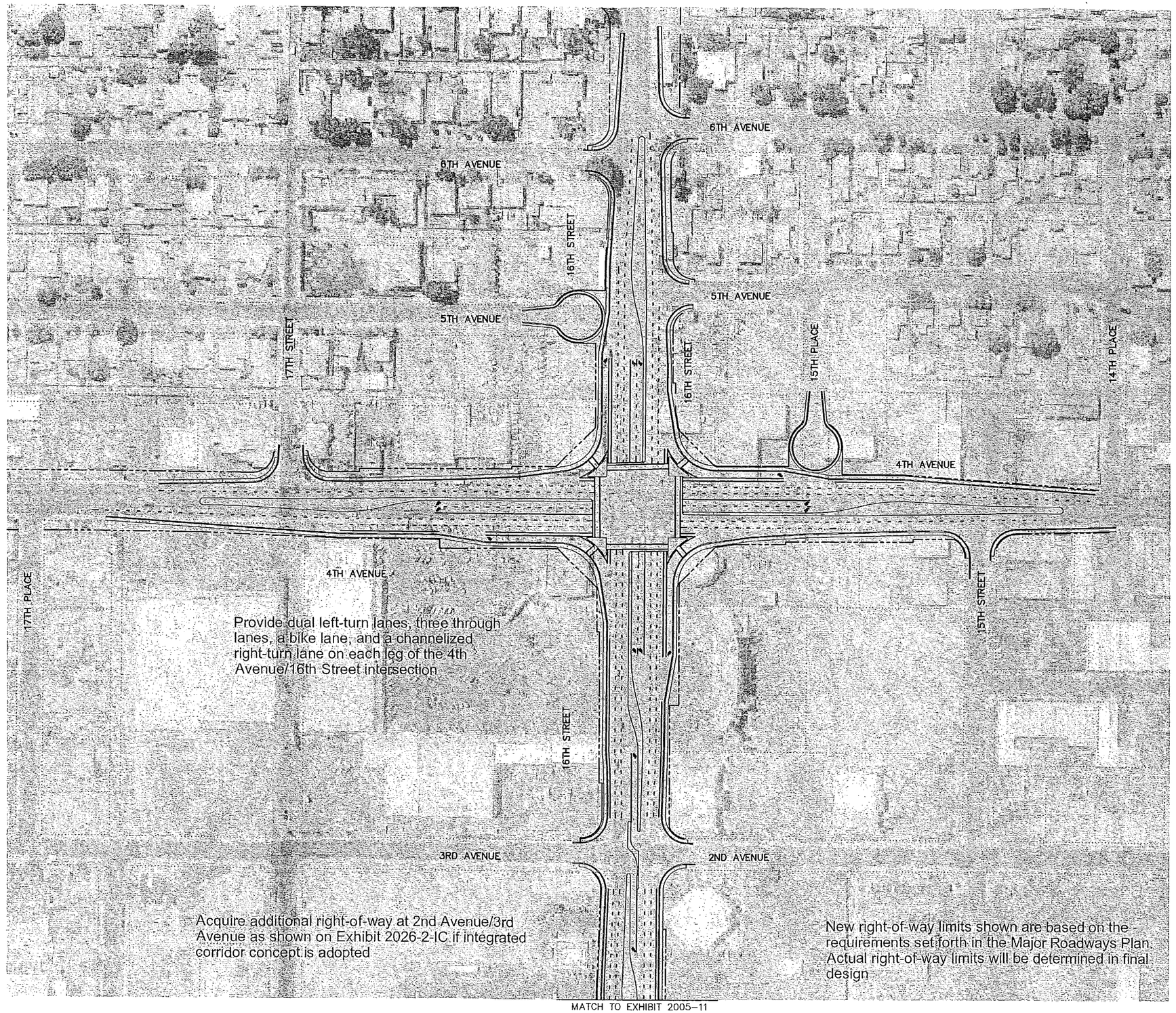
17th Street and 4th Avenue

7/16/2013

	1	2	3	4		5	6	7	8		9	10	11	12		13	14	15	16		
Street Name	PED	4th AVENUE - From North				PED	17th STREET - From East/DRWY				PED	4th AVENUE - From South				PED	17th STREET - From West				Grand
Start Time	West	Right	Thru	Left	Total	North	Right	Thru	Left	Total	East	Right	Thru	Left	Total	South	Right	Thru	Left	Total	Total
7:00	0	1	71	3	75	0	0	0	0	0	0	0	67	0	67	0	2	0	0	2	144
7:15	1	0	85	2	87	0	2	0	0	2	0	2	81	2	85	0	1	0	0	1	175
7:30	2	0	112	3	115	0	5	0	0	5	1	1	79	0	80	2	0	0	0	0	200
7:45	0	5	138	4	147	1	3	0	0	3	0	1	114	0	115	0	6	1	0	7	272
8:00	1	3	111	6	120	0	4	2	1	7	1	0	103	3	106	0	1	1	0	2	235
8:15	0	2	121	3	126	0	7	1	1	9	2	1	117	2	120	0	4	0	1	5	260
8:30	1	0	124	4	128	1	11	0	0	11	0	3	123	2	128	0	4	0	0	4	271
8:45	0	2	128	4	134	0	4	0	0	4	0	1	135	4	140	0	3	0	0	3	281
8-9 Total	**5**	**13**	**890**	**29**	**932**	**2**	**36**	**3**	**2**	**41**	**4**	**9**	**819**	**13**	**841**	**2**	**21**	**2**	**1**	**24**	**1838**
11:00	1	1	158	7	166	0	20	1	1	22	0	2	215	6	223	1	6	0	5	11	422
11:15	0	1	184	11	196	1	11	2	0	13	1	3	195	5	203	0	5	1	3	9	421
11:30	0	2	174	6	182	0	16	3	0	19	2	1	210	6	217	0	8	0	1	9	427
11:45	0	4	182	3	189	3	13	1	0	14	0	8	211	7	226	0	9	0	0	9	438
12:00	0	2	187	3	192	0	12	1	0	13	1	2	201	9	212	0	11	1	1	13	430
12:15	0	5	196	3	204	0	16	0	0	16	3	2	231	9	242	1	11	0	1	12	474
12:30	2	3	198	5	206	0	13	3	0	16	0	3	219	0	222	0	6	1	0	7	451
12:45	0	3	189	11	203	0	19	0	0	19	3	4	221	3	228	0	4	0	0	4	454
12-1 Total	**3**	**21**	**1468**	**49**	**1538**	**4**	**120**	**11**	**1**	**132**	**10**	**25**	**1703**	**45**	**1773**	**2**	**60**	**3**	**11**	**74**	**3517**
4:00	2	1	179	5	185	0	13	2	0	15	0	3	196	4	203	1	8	0	2	10	413
4:15	0	4	178	7	189	0	15	1	0	16	2	3	220	3	226	0	6	0	2	8	439
4:30	0	3	177	6	186	0	17	0	2	19	0	4	240	1	245	0	7	0	0	7	457
4:45	0	5	183	4	192	0	10	1	1	12	0	1	193	4	198	0	4	0	1	5	407
5:00	2	4	207	8	219	0	11	0	0	11	0	3	213	3	219	0	4	0	1	5	454
5:15	1	0	191	8	199	0	12	3	1	16	0	2	194	5	201	0	8	0	1	9	425
5:30	0	4	169	2	175	0	12	1	2	15	1	3	207	7	217	0	6	0	1	7	414
5:45	0	1	162	7	170	0	11	0	0	11	0	5	176	5	186	0	3	0	0	3	370
5-6 Total	**5**	**22**	**1446**	**47**	**1515**	**0**	**101**	**8**	**6**	**115**	**3**	**24**	**1639**	**32**	**1695**	**1**	**46**	**0**	**8**	**54**	**3379**
AM PEAK	2	7	484	17	508	1	26	3	2	31	3	5	478	11	494	0	12	1	1	14	1047
PHF		0.58	0.95	0.71			0.59	0.38	0.50			0.42	0.89	0.69			0.75	0.25	0.25		
MIDDAY PEAK	2	13	770	22	805	0	60	4	0	64	7	11	872	21	904	1	32	2	2	36	1809
PHF		0.65	0.97	0.50			0.79	0.33	0.00			0.69	0.94	0.58			0.73	0.50	0.50		
PM PEAK	2	16	745	25	786	0	53	2	3	58	2	11	866	11	888	0	21	0	4	25	1757
PHF		0.80	0.90	0.78			0.78	0.50	0.38			0.69	0.90	0.69			0.75	0.00	0.50		

Courtesy of Core Engineering Group, PLLC

Appendix B – Recommended Geometric Layout of 16th Street/4th Avenue per the *4th Avenue and 16th Street Corridors Study*



N

GRAPHIC SCALE
100 0 50 100 200
(IN FEET)

Kimley-Horn and Associates, Inc.
7878 North 16th Street, Suite 300
Phoenix, Arizona 85020 (602) 944-5500

DESIGNED BY: MLG
DRAWN BY: LJA
CHECKED BY: KAA
DATE: 05/22/07

4TH AVENUE AND 16TH STREET CORRIDORS STUDY
RECOMMENDED IMPROVEMENT CONCEPT
2005 DESIGN HORIZON
EXHIBIT 2005-3

PROJECT NO. 091852004
DRAWING NAME 2005-3.DWG

Appendix C – Redevelopment Plan Area Land Use Table (ULI Standard Shared Parking Model)

CITY OF YUMA 4TH AVENUE & 16TH STREET REDEVELOPMENT AREA

ULI - STANDARD SHARED PARKING MODEL

PROJECT NAME: Phase 1 - Core Intersection Development Yield

DATE: 1/24/2013

BUILDING AREA SUMMARY - BY QUADRANT

		Existing (to Remain)				New Development					SHARED PARKING PROPOSED		
Owner/Developer	Block	Restaurant	Retail	Office	Warehouse/ Industrial	Restaurant	Fast Food	Retail	Office	Total SQ. FT.	Existing	Project New	Totals
North West Corner Quadrant													
Beeler Equipment Co.	16				11,600					11,600	12	0	12
Beckham	16-2					4,500	5,500	20,500		30,500	0	205	205
North East Corner Quadrant													
PMG AZ Partnership	3			8,400		7,700		10,000	10,000	36,100	83	196	279
Stewart Title & Trust, Phx.	3			23,600						23,600	106	0	106
South West Corner Quadrant													
City of Yuma	10					9,000		21,200		30,200	0	119	119
Taco Bell	10					-	2,800			2,800	23	10	33
Rivercats AZ, LLC	10			3,100						3,100	16	0	16
South East Corner Quadrant													
City of Yuma	9					-		-	5,000	5,000	0	18	18
Cheonis Family Trust	9	8,000	60,000		15,900	7,000		5,800		96,700	461	34	495
99 Cent Stores CA Corp	9		40,000	-	27,500					67,500	161	0	161
	Totals	8,000	100,000	35,100	55,000	28,200	8,300	57,500	15,000	307,100	Total Shared Parking		
											862	582	1444

ULI - Standard Parking Model

Projected Shared Use Parking Needs

Land Use		ULI Parking Ratios	WEEKDAY Walker - ULI Unadjusted Demand	Month Adj. December	Pk. Hr. Adj Noon	Non Captive Daytime	Drive Ratio Daytime	Walker-ULI Demand Late Dec. 2:00 PM
Retail	157,500 Sq.Ft.	2.90	457	100%	90%	90%	100%	370
Employee	157,500 Sq.Ft.	0.70	110	100%	100%	100%	98%	108
Family Restaurant	36,200 Sq.Ft.	9.00	326	100%	100%	90%	100%	293
Employee	36,200 Sq.Ft.	1.50	54	100%	100%	100%	98%	53
Fast Food	8,300 Sq.Ft.	15.25	127	100%	100%	100%	100%	127
Employee	8,300 Sq.Ft.	1.25	10	100%	100%	100%	98%	10
Office	50,100 Sq.Ft.	0.29	15	100%	15%	100%	100%	2
Employee	50,100 Sq.Ft.	3.57	179	100%	90%	100%	98%	158
Warehouse/ Industrial	55,000 Sq.Ft.	0.29	16	100%	90%	100%	100%	14
Employee	55,000 Sq.Ft.	3.57	196	100%	100%	100%	98%	192
Subtotal Customer/Guest Spaces			940					806
Subtotal Employee Spaces			550					522
Total Parking Spaces			1490	Percentage Reduction			11%	1328
							Parking Spaces Provided	1444
							Excess (Shortage) Parking Provided	116

Land Use		Walker ULI Parking Ratios	WEEKEND Walker - ULI Unadjusted Demand	Month Adj. December	Pk. Hr. Adj Noon	Non Captive Daytime	Drive Ratio Daytime	Walker-ULI Demand Late Dec. 8:00 PM
Retail	157,500 Sq.Ft.	3.20	504	100%	80%	90%	100%	363
Employee	157,500 Sq.Ft.	0.80	126	100%	100%	100%	98%	123
Family Restaurant	36,200 Sq.Ft.	12.50	453	100%	100%	90%	100%	407
Employee	36,200 Sq.Ft.	2.00	72	100%	100%	100%	98%	71
Fast Food	8,300 Sq.Ft.	17.56	146	100%	100%	100%	100%	146
Employee	8,300 Sq.Ft.	1.56	13	100%	100%	100%	98%	13
Office	50,100 Sq.Ft.	0.03	2	100%	90%	100%	100%	1
Employee	50,100 Sq.Ft.	0.33	17	100%	90%	100%	98%	15
Warehouse/ Industrial	55,000 Sq.Ft.	0.03	2	100%	80%	100%	100%	1
Employee	55,000 Sq.Ft.	0.33	18	100%	90%	100%	98%	16
Subtotal Customer/Guest Spaces			1105					919
Subtotal Employee Spaces			246					238
Total Parking Spaces			1351	Percentage Reduction			14%	1156
							Parking Spaces Provided	1444
							Excess (Shortage) Parking Provided	288

Appendix D – Redevelopment Plan Area Trip Generation Rates

ITE Trip Generation, 9th Edition

Land Use Rates and Inbound/Outbound Percentages

High-Turnover (Sit-Down) Restaurant			
Daily (932)	T = 127.15 x (1000s of 5F)	50% In	50% Out
AM Peak (932)	T = 10.81 x (1000s of SF)	55% In	45% Out
PM Peak (932)	T = 9.85 x (1000s of 5F)	60% In	40% Out
Fast-Food Restaurant w/D.T.			
Daily (934)	T = 496.12 x (1000s of 5F)	50% In	50% Out
AM Peak (934)	T = 45.42 x (1000s of 5F)	51% In	49% Out
PM Peak (934)	T = 32.65 x (1000s of 5F)	52% In	48% Out
5pecialty Retail Center			
Daily (826)	T = 44.32 x (1000s of SF)	50% In	50% Out
AM Peak (826)	-	- In	- Out
PM Peak (826)	T = 2.71 x (1000s of 5F)	44% In	56% Out
General Office Building			
Daily (710)	T = 11.03 x (1000s of SF)	50% In	50% Out
AM Peak (710)	T = 1.56 x (1000s of 5F)	88% In	12% Out
PM Peak (710)	T = 1.49 x (1000s of 5F)	17% In	83% Out

Appendix E – *Synchro* Output Sheets – Lanes, Volumes, and Timings

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	1	1	1	13	1	21	1	616	46	13	634	1
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Storage Length (ft)	0		0	0		0	85		0	85		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor												
Frt		0.955			0.919			0.985			0.999	
Flt Protected		0.984			0.983		0.950			0.950		
Satd. Flow (prot)	0	1566	0	0	1506	0	1397	3119	0	1397	3163	0
Flt Permitted		0.984			0.983		0.950			0.950		
Satd. Flow (perm)	0	1566	0	0	1506	0	1397	3119	0	1397	3163	0
Link Speed (mph)		25			25			28			28	
Link Distance (ft)		388			303			662			556	
Travel Time (s)		10.6			8.3			16.1			13.5	
Confl. Peds. (#/hr)							2		1	1		2
Peak Hour Factor	0.25	0.25	0.25	0.63	0.25	0.57	0.25	0.94	0.65	0.63	0.84	0.25
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	4	4	4	21	4	37	4	655	71	21	755	4
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	12	0	0	62	0	4	726	0	21	759	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 30.7% ICU Level of Service A
Analysis Period (min) 15

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	5	1	60	7	1	4	35	194	12	4	206	11
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95
Frt		0.886			0.942			0.989			0.987	
Flt Protected		0.994			0.978			0.992			0.998	
Satd. Flow (prot)	0	1426	0	0	1492	0	0	3018	0	0	3030	0
Flt Permitted		0.994			0.978			0.992			0.998	
Satd. Flow (perm)	0	1426	0	0	1492	0	0	3018	0	0	3030	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		279			330			336			504	
Travel Time (s)		7.6			9.0			9.2			13.7	
Peak Hour Factor	0.50	0.25	0.80	0.42	0.25	0.25	0.81	0.88	0.56	0.38	0.94	0.50
Adj. Flow (vph)	10	4	75	17	4	16	43	220	21	11	219	22
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	89	0	0	37	0	0	284	0	0	252	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 28.9% ICU Level of Service A
Analysis Period (min) 15

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	169	966	115	184	600	103	115	367	153	188	405	67
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Storage Length (ft)	150		0	205		325	240		0	250		0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor						0.99	1.00	1.00		1.00	1.00	
Frt		0.985				0.850		0.957			0.975	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1357	3030	0	1357	3076	1376	1397	3019	0	1397	3079	0
Flt Permitted	0.184			0.096			0.267			0.195		
Satd. Flow (perm)	263	3030	0	137	3076	1357	392	3019	0	287	3079	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		10				139		49			18	
Link Speed (mph)		32			32			28			28	
Link Distance (ft)		399			660			662			662	
Travel Time (s)		8.5			14.1			16.1			16.1	
Confl. Peds. (#/hr)	1					1	3		1	1		3
Peak Hour Factor	0.79	0.74	0.80	0.98	0.73	0.74	0.65	0.86	0.89	0.97	0.92	0.78
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	214	1305	144	188	822	139	177	427	172	194	440	86
Shared Lane Traffic (%)												
Lane Group Flow (vph)	214	1449	0	188	822	139	177	599	0	194	526	0
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8	2			6		
Detector Phase	7	4		3	8	8	5	2		1	6	
Switch Phase												
Minimum Initial (s)	3.0	15.0		3.0	15.0	15.0	3.0	5.0		3.0	5.0	
Minimum Split (s)	8.0	27.0		8.0	25.0	25.0	8.0	30.0		8.0	26.0	
Total Split (s)	20.0	45.0		20.0	45.0	45.0	20.0	45.0		20.0	45.0	
Total Split (%)	15.4%	34.6%		15.4%	34.6%	34.6%	15.4%	34.6%		15.4%	34.6%	
Yellow Time (s)	3.0	3.6		3.0	3.6	3.6	3.0	3.6		3.0	3.6	
All-Red Time (s)	1.5	1.5		1.5	1.5	1.5	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	
Total Lost Time (s)	2.5	3.1		2.5	3.1	3.1	3.0	3.6		3.0	3.6	
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Recall Mode	None	None		None	None	None	None	Min		None	Min	
Act Effct Green (s)	58.8	42.4		57.7	41.8	41.8	41.9	27.0		42.9	27.5	
Actuated g/C Ratio	0.53	0.38		0.52	0.37	0.37	0.37	0.24		0.38	0.25	
v/c Ratio	0.73	1.26		0.79	0.71	0.23	0.64	0.78		0.75	0.68	
Control Delay	33.2	153.9		51.1	35.9	5.7	33.7	44.4		42.5	42.0	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	33.2	153.9		51.1	35.9	5.7	33.7	44.4		42.5	42.0	
LOS	C	F		D	D	A	C	D		D	D	
Approach Delay		138.3			34.7			41.9			42.1	
Approach LOS		F			C			D			D	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Stops (vph)	89	823		116	500	12	74	432		121	397	
Fuel Used(gal)	3	44		4	11	1	2	10		3	8	
CO Emissions (g/hr)	175	3089		249	735	50	123	668		225	592	
NOx Emissions (g/hr)	34	601		48	143	10	24	130		44	115	
VOC Emissions (g/hr)	41	716		58	170	11	29	155		52	137	
Dilemma Vehicles (#)	0	0		0	0	0	0	0		0	0	
Queue Length 50th (ft)	83	~733		92	277	0	87	204		97	180	
Queue Length 95th (ft)	141	#714		#228	295	23	96	255		#174	244	
Internal Link Dist (ft)		319			580			582			582	
Turn Bay Length (ft)	150			205		325	240			250		
Base Capacity (vph)	313	1154		266	1165	600	308	1161		284	1164	
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	
Reduced v/c Ratio	0.68	1.26		0.71	0.71	0.23	0.57	0.52		0.68	0.45	

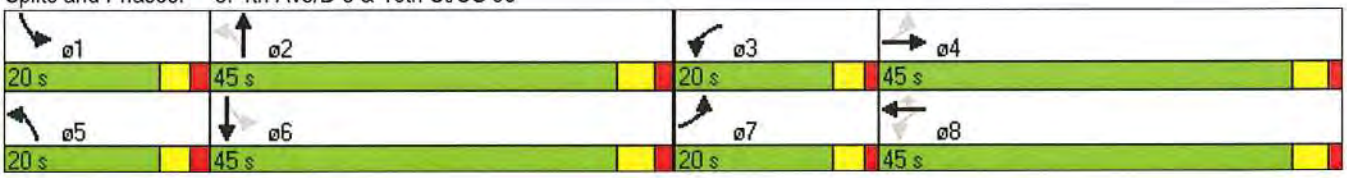
Intersection Summary

Area Type: Other
Cycle Length: 130
Actuated Cycle Length: 111.8
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 1.26
Intersection Signal Delay: 77.3 — Intersection LOS: E
Intersection Capacity Utilization 90.3% — ICU Level of Service E
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 8: 4th Ave/B-8 & 16th St/US 95



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	27	1564	898	3	9	21
Ideal Flow (vphpl)	1500	1700	1700	1700	1500	1700
Storage Length (ft)	75			0	0	0
Storage Lanes	1			0	1	0
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Frt			0.999		0.902	
Flt Protected	0.950				0.986	
Satd. Flow (prot)	1357	3076	3073	0	1271	0
Flt Permitted	0.950				0.986	
Satd. Flow (perm)	1357	3076	3073	0	1271	0
Link Speed (mph)		32	32		25	
Link Distance (ft)		284	106		419	
Travel Time (s)		6.1	2.3		11.4	
Peak Hour Factor	0.83	0.90	0.81	0.50	0.63	0.57
Adj. Flow (vph)	33	1738	1109	6	14	37
Shared Lane Traffic (%)						
Lane Group Flow (vph)	33	1738	1115	0	51	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 58.3% ICU Level of Service B
Analysis Period (min) 15

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	9	1134	54	42	1101	21	0	0	21	3	4	9
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Storage Length (ft)	85		0	135		0	0		0	0		0
Storage Lanes	1		0	1		1	0		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.988				0.850			0.865		0.935	
Flt Protected	0.950			0.950							0.991	
Satd. Flow (prot)	1357	3039	0	1357	3076	1376	0	0	1400	0	1500	0
Flt Permitted	0.950			0.950							0.991	
Satd. Flow (perm)	1357	3039	0	1357	3076	1376	0	0	1400	0	1500	0
Link Speed (mph)		32			32			25			25	
Link Distance (ft)		661			483			555			306	
Travel Time (s)		14.1			10.3			15.1			8.3	
Confl. Peds. (#/hr)			2	2								
Peak Hour Factor	0.58	0.87	0.48	0.78	0.86	0.67	0.25	0.25	0.67	0.50	0.38	0.58
Adj. Flow (vph)	16	1303	113	54	1280	31	0	0	31	6	11	16
Shared Lane Traffic (%)												
Lane Group Flow (vph)	16	1415	0	54	1280	31	0	0	31	0	33	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 53.6% ICU Level of Service A
Analysis Period (min) 15

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	1	1	16	3	4	35	15	641	7	23	649	9
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Storage Length (ft)	0		0	0		0	85		0	85		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor												
Frt		0.902			0.895			0.997			0.997	
Flt Protected		0.993			0.996		0.950			0.950		
Satd. Flow (prot)	0	1493	0	0	1486	0	1397	3157	0	1397	3157	0
Flt Permitted		0.993			0.996		0.950			0.950		
Satd. Flow (perm)	0	1493	0	0	1486	0	1397	3157	0	1397	3157	0
Link Speed (mph)		25			25			28			28	
Link Distance (ft)		222			285			640			662	
Travel Time (s)		6.1			7.8			15.6			16.1	
Confl. Peds. (#/hr)	1					1	2		3	3		2
Peak Hour Factor	0.25	0.25	0.75	0.50	0.38	0.59	0.69	0.89	0.42	0.71	0.95	0.58
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	4	4	21	6	11	59	22	720	17	32	683	16
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	29	0	0	76	0	22	737	0	32	699	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 35.1% ICU Level of Service A
Analysis Period (min) 15

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	11	13	12	11	7	15	7	185	4	16	206	9
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Storage Length (ft)	0		0	0		0	85		0	85		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.948			0.932			0.996			0.990	
Flt Protected		0.985			0.988		0.950			0.950		
Satd. Flow (prot)	0	1512	0	0	1491	0	1357	1613	0	1357	1603	0
Flt Permitted		0.985			0.988		0.950			0.950		
Satd. Flow (perm)	0	1512	0	0	1491	0	1357	1613	0	1357	1603	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		395			415			452			660	
Travel Time (s)		10.8			11.3			12.3			18.0	
Confl. Peds. (#/hr)			2	2			2		1	1		2
Peak Hour Factor	0.50	0.63	0.45	0.67	0.42	0.46	0.63	0.93	0.75	0.75	0.90	0.58
Adj. Flow (vph)	22	21	27	16	17	33	11	199	5	21	229	16
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	70	0	0	66	0	11	204	0	21	245	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 27.5% ICU Level of Service A
Analysis Period (min) 15

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	1570	8	9	895	3	19
Ideal Flow (vphpl)	1700	1700	1500	1700	1500	1700
Storage Length (ft)		0	75		0	0
Storage Lanes		0	1		1	0
Taper Length (ft)			25		25	
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00
Frt	0.998				0.913	
Flt Protected			0.950		0.983	
Satd. Flow (prot)	3070	0	1357	3076	1282	0
Flt Permitted			0.950		0.983	
Satd. Flow (perm)	3070	0	1357	3076	1282	0
Link Speed (mph)	32			32	25	
Link Distance (ft)	106			233	405	
Travel Time (s)	2.3			5.0	11.0	
Peak Hour Factor	0.90	0.30	0.58	0.81	0.25	0.88
Adj. Flow (vph)	1744	27	16	1105	12	22
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1771	0	16	1105	34	0
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 58.8% ICU Level of Service B
Analysis Period (min) 15

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	44	1164	54	32	868	44	0	0	24	0	0	32
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Storage Length (ft)	85		0	85		0	0		0	0		0
Storage Lanes	1		0	1		0	0		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.991			0.992				0.865			0.865
Flt Protected	0.950			0.950								
Satd. Flow (prot)	1357	3049	0	1357	3052	0	0	0	1400	0	0	1400
Flt Permitted	0.950			0.950								
Satd. Flow (perm)	1357	3049	0	1357	3052	0	0	0	1400	0	0	1400
Link Speed (mph)		32			32			25			25	
Link Distance (ft)		660			648			652			636	
Travel Time (s)		14.1			13.8			17.8			17.3	
Confl. Peds. (#/hr)	1		1	1		1						
Peak Hour Factor	0.75	0.82	0.63	0.67	0.84	0.75	0.25	0.25	0.64	0.25	0.25	0.60
Adj. Flow (vph)	59	1420	86	48	1033	59	0	0	38	0	0	53
Shared Lane Traffic (%)												
Lane Group Flow (vph)	59	1506	0	48	1092	0	0	0	38	0	0	53
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 47.9% ICU Level of Service A
Analysis Period (min) 15

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	70	1063	39	103	949	84	40	107	46	117	88	35
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Storage Length (ft)	65		0	100		100	360		165	0		115
Storage Lanes	1		0	1		1	1		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00				0.97	0.99		0.99	1.00		0.98
Frt		0.995				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1357	3058	0	1357	3076	1376	1357	1619	1376	1357	1619	1376
Flt Permitted	0.209			0.108			0.695			0.441		
Satd. Flow (perm)	299	3058	0	154	3076	1335	987	1619	1356	628	1619	1350
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4				69			81			65
Link Speed (mph)		32			32			25			25	
Link Distance (ft)		648			661			660			400	
Travel Time (s)		13.8			14.1			18.0			10.9	
Confl. Peds. (#/hr)	3		1	1		3	4		2	2		4
Peak Hour Factor	0.93	0.83	0.81	0.80	0.89	0.56	0.68	0.95	0.57	0.84	0.92	0.54
Adj. Flow (vph)	75	1281	48	129	1066	150	59	113	81	139	96	65
Shared Lane Traffic (%)												
Lane Group Flow (vph)	75	1329	0	129	1066	150	59	113	81	139	96	65
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases	6			2		2	8		8	4		4
Detector Phase	1	6		5	2	2	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	3.0	15.0		7.0	15.0	15.0	3.0	5.0	5.0	3.0	5.0	5.0
Minimum Split (s)	7.5	30.1		13.0	30.0	30.0	8.0	30.0	30.0	8.0	25.0	25.0
Total Split (s)	18.0	58.0		18.0	58.0	58.0	23.0	30.0	30.0	19.0	26.0	26.0
Total Split (%)	14.4%	46.4%		14.4%	46.4%	46.4%	18.4%	24.0%	24.0%	15.2%	20.8%	20.8%
Yellow Time (s)	3.0	3.6		3.0	3.6	3.6	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.5	2.0		1.5	1.5	1.5	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	2.5	3.6		2.5	3.1	3.1	3.0	3.0	3.0	3.0	3.0	3.0
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
Recall Mode	None	C-Max		None	C-Max	C-Max	None	None	None	None	None	None
Act Effct Green (s)	79.2	70.1		85.5	76.1	76.1	25.9	16.4	16.4	33.9	23.2	23.2
Actuated g/C Ratio	0.63	0.56		0.68	0.61	0.61	0.21	0.13	0.13	0.27	0.19	0.19
v/c Ratio	0.29	0.77		0.59	0.57	0.18	0.25	0.53	0.33	0.55	0.32	0.21
Control Delay	11.5	27.3		23.4	18.5	8.5	34.8	58.5	12.6	43.4	46.4	11.0
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.5	27.3		23.4	18.5	8.5	34.8	58.5	12.6	43.4	46.4	11.0
LOS	B	C		C	B	A	C	E	B	D	D	B
Approach Delay		26.5			17.9			38.3			37.3	
Approach LOS		C			B			D			D	
Stops (vph)	28	784		42	574	23	31	96	8	91	74	7

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Fuel Used(gal)	1	16		1	12	1	1	2	0	2	2	0
CO Emissions (g/hr)	48	1149		89	834	50	44	157	28	148	117	23
NOx Emissions (g/hr)	9	224		17	162	10	9	31	6	29	23	4
VOC Emissions (g/hr)	11	266		21	193	11	10	36	7	34	27	5
Dilemma Vehicles (#)	0	0		0	0	0	0	0	0	0	0	0
Queue Length 50th (ft)	19	416		33	265	27	36	88	0	91	69	0
Queue Length 95th (ft)	48	#622		80	432	33	47	134	6	122	112	5
Internal Link Dist (ft)		568			581			580			320	
Turn Bay Length (ft)	65			100		100	360		165			115
Base Capacity (vph)	334	1717		255	1873	840	327	350	356	264	318	317
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.22	0.77		0.51	0.57	0.18	0.18	0.32	0.23	0.53	0.30	0.21

Intersection Summary

Area Type: Other
Cycle Length: 125
Actuated Cycle Length: 125
Offset: 38.5 (31%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow
Natural Cycle: 95
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.77
Intersection Signal Delay: 24.9 Intersection LOS: C
Intersection Capacity Utilization 66.6% ICU Level of Service C
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 28: 1st Ave & 16th St/US 95

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	1	1	1	14	1	22	1	647	48	14	666	1
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Storage Length (ft)	0		0	0		0	30		0	85		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor												
Frt		0.955			0.919			0.985			0.999	
Flt Protected		0.984			0.983		0.950			0.950		
Satd. Flow (prot)	0	1566	0	0	1506	0	1397	3119	0	1397	3163	0
Flt Permitted		0.984			0.983		0.950			0.950		
Satd. Flow (perm)	0	1566	0	0	1506	0	1397	3119	0	1397	3163	0
Link Speed (mph)		25			25			28			28	
Link Distance (ft)		388			303			281			556	
Travel Time (s)		10.6			8.3			6.8			13.5	
Confl. Peds. (#/hr)							2		1	1		2
Peak Hour Factor	0.25	0.25	0.25	0.63	0.25	0.57	0.25	0.94	0.65	0.63	0.84	0.25
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	4	4	4	22	4	39	4	688	74	22	793	4
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	12	0	0	65	0	4	762	0	22	797	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 31.7% ICU Level of Service A
Analysis Period (min) 15

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	5	1	63	7	1	4	37	204	13	4	217	12
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95
Frt		0.885			0.942			0.989			0.986	
Flt Protected		0.995			0.978			0.992			0.998	
Satd. Flow (prot)	0	1426	0	0	1492	0	0	3018	0	0	3027	0
Flt Permitted		0.995			0.978			0.992			0.998	
Satd. Flow (perm)	0	1426	0	0	1492	0	0	3018	0	0	3027	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		279			330			336			504	
Travel Time (s)		7.6			9.0			9.2			13.7	
Peak Hour Factor	0.50	0.25	0.80	0.42	0.25	0.25	0.81	0.88	0.56	0.38	0.94	0.50
Adj. Flow (vph)	10	4	79	17	4	16	46	232	23	11	231	24
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	93	0	0	37	0	0	301	0	0	266	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 29.9% ICU Level of Service A
Analysis Period (min) 15

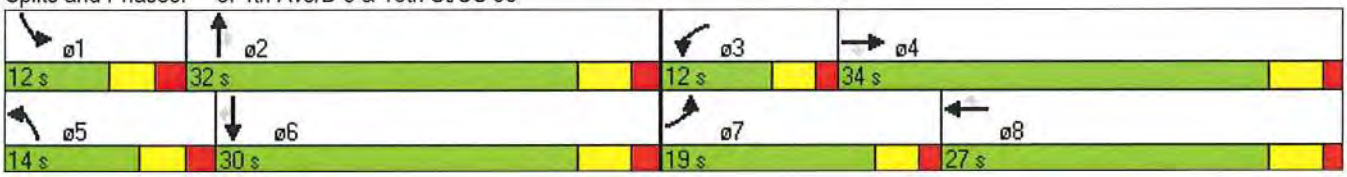
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	273	1015	121	193	631	108	121	386	161	198	426	70
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Storage Length (ft)	200		150	200		150	300		150	250		150
Storage Lanes	2		1	2		1	2		1	2		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.91	1.00
Ped Bike Factor	1.00					0.99	1.00		0.99	1.00		0.98
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	2633	4420	1376	2633	4420	1376	2710	4550	1417	2710	4550	1417
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	2632	4420	1376	2633	4420	1358	2701	4550	1398	2709	4550	1394
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			124			146			181			90
Link Speed (mph)		32			32			28			28	
Link Distance (ft)		488			660			429			381	
Travel Time (s)		10.4			14.1			10.4			9.3	
Confl. Peds. (#/hr)	1					1	3		1	1		3
Peak Hour Factor	0.85	0.74	0.80	0.98	0.73	0.74	0.65	0.86	0.89	0.97	0.92	0.78
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	321	1372	151	197	864	146	186	449	181	204	463	90
Shared Lane Traffic (%)												
Lane Group Flow (vph)	321	1372	151	197	864	146	186	449	181	204	463	90
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	3.0	15.0	15.0	3.0	15.0	15.0	3.0	5.0	5.0	3.0	5.0	5.0
Minimum Split (s)	8.0	27.0	27.0	8.0	25.0	25.0	8.0	30.0	30.0	8.0	26.0	26.0
Total Split (s)	19.0	34.0	34.0	12.0	27.0	27.0	14.0	32.0	32.0	12.0	30.0	30.0
Total Split (%)	21.1%	37.8%	37.8%	13.3%	30.0%	30.0%	15.6%	35.6%	35.6%	13.3%	33.3%	33.3%
Yellow Time (s)	3.0	3.6	3.6	3.0	3.6	3.6	3.0	3.6	3.6	3.0	3.6	3.6
All-Red Time (s)	1.5	1.5	1.5	1.5	1.5	1.5	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	0.0	-2.0	-2.0	-2.0	-2.0	-2.0	0.0	-2.0	-2.0	0.0
Total Lost Time (s)	2.5	3.1	5.1	2.5	3.1	3.1	3.0	3.6	5.6	3.0	3.6	5.6
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
Recall Mode	None	None	None	None	None	None	None	Min	Min	None	Min	Min
Act Effct Green (s)	14.0	29.2	27.1	9.2	24.4	24.4	9.8	16.3	14.3	8.9	15.3	13.3
Actuated g/C Ratio	0.18	0.38	0.36	0.12	0.32	0.32	0.13	0.21	0.19	0.12	0.20	0.18
v/c Ratio	0.66	0.81	0.26	0.62	0.61	0.27	0.53	0.46	0.44	0.64	0.50	0.28
Control Delay	37.0	26.4	7.1	43.0	25.1	6.0	38.4	27.6	8.1	44.7	29.2	9.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	37.0	26.4	7.1	43.0	25.1	6.0	38.4	27.6	8.1	44.7	29.2	9.0
LOS	D	C	A	D	C	A	D	C	A	D	C	A
Approach Delay		26.7			25.7			25.7			31.0	
Approach LOS		C			C			C			C	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Stops (vph)	242	833	25	169	508	16	107	312	23	173	355	14
Fuel Used(gal)	5	16	1	4	10	1	2	6	1	4	7	1
CO Emissions (g/hr)	346	1105	66	260	669	54	147	400	86	258	456	40
NOx Emissions (g/hr)	67	215	13	51	130	10	29	78	17	50	89	8
VOC Emissions (g/hr)	80	256	15	60	155	12	34	93	20	60	106	9
Dilemma Vehicles (#)	0	0	0	0	0	0	0	0	0	0	0	0
Queue Length 50th (ft)	74	205	8	47	124	0	43	70	0	49	75	0
Queue Length 95th (ft)	121	238	40	#101	156	23	59	93	46	#108	105	25
Internal Link Dist (ft)		408			580			349			301	
Turn Bay Length (ft)	200		150	200		150	300		150	250		150
Base Capacity (vph)	579	1820	606	334	1453	544	397	1722	609	325	1601	514
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.55	0.75	0.25	0.59	0.59	0.27	0.47	0.26	0.30	0.63	0.29	0.18

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 75.9
Natural Cycle: 80
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.81
Intersection Signal Delay: 27.0 — Intersection LOS: C
Intersection Capacity Utilization 58.1% — ICU Level of Service B
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 8: 4th Ave/B-8 & 16th St/US 95



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	92	1644	944	3	9	22
Ideal Flow (vphpl)	1500	1700	1700	1700	1500	1700
Storage Length (ft)	75			0	0	0
Storage Lanes	1			0	1	0
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Frt			0.999		0.901	
Flt Protected	0.950				0.987	
Satd. Flow (prot)	1357	3076	3073	0	1270	0
Flt Permitted	0.950				0.987	
Satd. Flow (perm)	1357	3076	3073	0	1270	0
Link Speed (mph)		32	32		25	
Link Distance (ft)		465	105		558	
Travel Time (s)		9.9	2.2		15.2	
Peak Hour Factor	0.85	0.90	0.81	0.50	0.63	0.57
Adj. Flow (vph)	108	1827	1165	6	14	39
Shared Lane Traffic (%)						
Lane Group Flow (vph)	108	1827	1171	0	53	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 60.8% ICU Level of Service B
Analysis Period (min) 15

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	9	1192	57	44	1157	22	0	0	22	3	4	9
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Storage Length (ft)	85		0	135		0	0		0	0		0
Storage Lanes	1		0	1		1	0		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.988				0.850			0.865		0.935	
Flt Protected	0.950			0.950							0.991	
Satd. Flow (prot)	1357	3039	0	1357	3076	1376	0	0	1400	0	1500	0
Flt Permitted	0.950			0.950							0.991	
Satd. Flow (perm)	1357	3039	0	1357	3076	1376	0	0	1400	0	1500	0
Link Speed (mph)		32			32			25			25	
Link Distance (ft)		661			483			555			306	
Travel Time (s)		14.1			10.3			15.1			8.3	
Confl. Peds. (#/hr)			2	2								
Peak Hour Factor	0.58	0.87	0.48	0.78	0.86	0.67	0.25	0.25	0.67	0.50	0.38	0.58
Adj. Flow (vph)	16	1370	119	56	1345	33	0	0	33	6	11	16
Shared Lane Traffic (%)												
Lane Group Flow (vph)	16	1489	0	56	1345	33	0	0	33	0	33	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 55.5% ICU Level of Service B
Analysis Period (min) 15

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	1	1	17	3	4	37	16	674	7	24	682	9
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Storage Length (ft)	0		0	0		0	85		0	85		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor												
Frt		0.900			0.894			0.997			0.997	
Flt Protected		0.994			0.996		0.950			0.950		
Satd. Flow (prot)	0	1491	0	0	1484	0	1397	3157	0	1397	3157	0
Flt Permitted		0.994			0.996		0.950			0.950		
Satd. Flow (perm)	0	1491	0	0	1484	0	1397	3157	0	1397	3157	0
Link Speed (mph)		25			25			28			28	
Link Distance (ft)		222			285			640			233	
Travel Time (s)		6.1			7.8			15.6			5.7	
Confl. Peds. (#/hr)	1					1	2		3	3		2
Peak Hour Factor	0.25	0.25	0.75	0.50	0.38	0.59	0.69	0.89	0.42	0.71	0.95	0.58
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	4	4	23	6	11	63	23	757	17	34	718	16
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	31	0	0	80	0	23	774	0	34	734	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 36.4%		ICU Level of Service A	
Analysis Period (min) 15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	12	14	13	12	7	16	7	194	4	17	217	9
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Storage Length (ft)	0		0	0		0	85		0	85		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.948			0.932			0.996			0.991	
Flt Protected		0.984			0.987		0.950			0.950		
Satd. Flow (prot)	0	1510	0	0	1489	0	1357	1613	0	1357	1604	0
Flt Permitted		0.984			0.987		0.950			0.950		
Satd. Flow (perm)	0	1510	0	0	1489	0	1357	1613	0	1357	1604	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		395			415			452			660	
Travel Time (s)		10.8			11.3			12.3			18.0	
Confl. Peds. (#/hr)			2	2			2		1	1		2
Peak Hour Factor	0.50	0.63	0.45	0.67	0.42	0.46	0.63	0.93	0.75	0.75	0.90	0.58
Adj. Flow (vph)	24	22	29	18	17	35	11	209	5	23	241	16
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	75	0	0	70	0	11	214	0	23	257	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 28.5% ICU Level of Service A
Analysis Period (min) 15

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	1650	8	9	941	0	20
Ideal Flow (vphpl)	1700	1700	1500	1700	1500	1700
Storage Length (ft)		0	75		0	0
Storage Lanes		0	1		0	1
Taper Length (ft)			25		25	
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00
Frt	0.998					0.865
Flt Protected			0.950			
Satd. Flow (prot)	3070	0	1357	3076	0	1400
Flt Permitted			0.950			
Satd. Flow (perm)	3070	0	1357	3076	0	1400
Link Speed (mph)	32			32	25	
Link Distance (ft)	105			179	578	
Travel Time (s)	2.2			3.8	15.8	
Peak Hour Factor	0.90	0.30	0.58	0.81	0.25	0.88
Adj. Flow (vph)	1833	27	16	1162	0	23
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1860	0	16	1162	0	23
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 61.3%		ICU Level of Service B	
Analysis Period (min) 15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	46	1223	57	34	912	46	0	0	25	0	0	34
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Storage Length (ft)	115		0	125		0	0		0	0		0
Storage Lanes	1		1	1		0	0		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt			0.850		0.992				0.865			0.865
Flt Protected	0.950			0.950								
Satd. Flow (prot)	1357	3076	1376	1357	3052	0	0	0	1400	0	0	1400
Flt Permitted	0.950			0.950								
Satd. Flow (perm)	1357	3076	1376	1357	3052	0	0	0	1400	0	0	1400
Link Speed (mph)		32			32			25			25	
Link Distance (ft)		660			648			652			636	
Travel Time (s)		14.1			13.8			17.8			17.3	
Confl. Peds. (#/hr)	1		1	1		1						
Peak Hour Factor	0.75	0.82	0.63	0.67	0.84	0.75	0.25	0.25	0.64	0.25	0.25	0.60
Adj. Flow (vph)	61	1491	90	51	1086	61	0	0	39	0	0	57
Shared Lane Traffic (%)												
Lane Group Flow (vph)	61	1491	90	51	1147	0	0	0	39	0	0	57
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 47.8% ICU Level of Service A
Analysis Period (min) 15

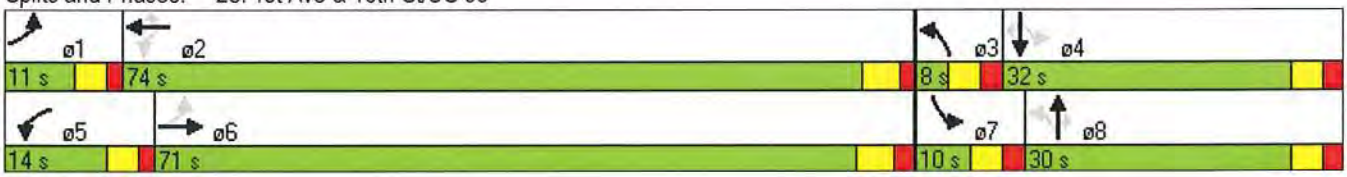
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	74	1117	41	108	997	88	42	112	48	123	92	37
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Storage Length (ft)	65		0	100		100	360		165	0		115
Storage Lanes	1		0	1		1	1		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00				0.97	0.99		0.99	1.00		0.98
Frt		0.995				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1357	3058	0	1357	3076	1376	1357	1619	1376	1357	1619	1376
Flt Permitted	0.210			0.117			0.670			0.441		
Satd. Flow (perm)	300	3058	0	167	3076	1335	951	1619	1356	629	1619	1350
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5				89			84			69
Link Speed (mph)		32			32			25			25	
Link Distance (ft)		648			661			660			400	
Travel Time (s)		13.8			14.1			18.0			10.9	
Confl. Peds. (#/hr)	3		1	1		3	4		2	2		4
Peak Hour Factor	0.93	0.83	0.81	0.80	0.89	0.56	0.68	0.95	0.57	0.84	0.92	0.54
Adj. Flow (vph)	80	1346	51	135	1120	157	62	118	84	146	100	69
Shared Lane Traffic (%)												
Lane Group Flow (vph)	80	1397	0	135	1120	157	62	118	84	146	100	69
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases	6			2		2	8		8	4		4
Detector Phase	1	6		5	2	2	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	3.0	15.0		7.0	15.0	15.0	3.0	5.0	5.0	3.0	5.0	5.0
Minimum Split (s)	7.5	30.1		13.0	30.0	30.0	8.0	30.0	30.0	8.0	25.0	25.0
Total Split (s)	11.0	71.0		14.0	74.0	74.0	8.0	30.0	30.0	10.0	32.0	32.0
Total Split (%)	8.8%	56.8%		11.2%	59.2%	59.2%	6.4%	24.0%	24.0%	8.0%	25.6%	25.6%
Yellow Time (s)	3.0	3.6		3.0	3.6	3.6	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.5	2.0		1.5	1.5	1.5	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	2.5	3.6		2.5	3.1	3.1	3.0	3.0	3.0	3.0	3.0	3.0
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
Recall Mode	None	C-Max		None	C-Max	C-Max	None	None	None	None	None	None
Act Effct Green (s)	87.0	78.5		92.8	84.1	84.1	21.6	16.6	16.6	25.8	20.2	20.2
Actuated g/C Ratio	0.70	0.63		0.74	0.67	0.67	0.17	0.13	0.13	0.21	0.16	0.16
v/c Ratio	0.30	0.73		0.60	0.54	0.17	0.34	0.55	0.33	0.85	0.38	0.25
Control Delay	8.5	20.2		20.3	13.3	5.0	44.7	58.8	12.4	83.8	50.3	11.5
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.5	20.2		20.3	13.3	5.0	44.7	58.8	12.4	83.8	50.3	11.5
LOS	A	C		C	B	A	D	E	B	F	D	B
Approach Delay		19.5			13.1			40.7			57.3	
Approach LOS		B			B			D			E	
Stops (vph)	23	787		38	510	16	37	101	8	109	80	7

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Fuel Used(gal)	1	15		1	11	1	1	2	0	3	2	0
CO Emissions (g/hr)	44	1074		86	761	44	53	165	30	230	128	24
NOx Emissions (g/hr)	9	209		17	148	9	10	32	6	45	25	5
VOC Emissions (g/hr)	10	249		20	176	10	12	38	7	53	30	6
Dilemma Vehicles (#)	0	0		0	0	0	0	0	0	0	0	0
Queue Length 50th (ft)	15	365		26	228	18	42	91	0	106	75	0
Queue Length 95th (ft)	41	507		69	374	21	55	140	6	144	118	5
Internal Link Dist (ft)		568			581			580			320	
Turn Bay Length (ft)	65			100		100	360		165			115
Base Capacity (vph)	283	1923		238	2069	927	181	350	359	171	376	366
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.28	0.73		0.57	0.54	0.17	0.34	0.34	0.23	0.85	0.27	0.19

Intersection Summary

Area Type: Other
Cycle Length: 125
Actuated Cycle Length: 125
Offset: 38.5 (31%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow
Natural Cycle: 95
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.85
Intersection Signal Delay: 21.9 Intersection LOS: C
Intersection Capacity Utilization 69.0% ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 28: 1st Ave & 16th St/US 95



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	14	1	23	59	1	25	9	670	49	44	690	16
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Storage Length (ft)	0		0	0		0	30		0	85		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor												
Frt		0.917			0.960			0.989			0.997	
Flt Protected		0.982			0.966		0.950			0.950		
Satd. Flow (prot)	0	1501	0	0	1546	0	1397	3132	0	1397	3157	0
Flt Permitted		0.982			0.966		0.950			0.950		
Satd. Flow (perm)	0	1501	0	0	1546	0	1397	3132	0	1397	3157	0
Link Speed (mph)		25			25			28			28	
Link Distance (ft)		388			303			281			556	
Travel Time (s)		10.6			8.3			6.8			13.5	
Confl. Peds. (#/hr)							2		1	1		2
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.94	0.85	0.85	0.85	0.85
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	16	1	27	69	1	29	11	713	58	52	812	19
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	44	0	0	99	0	11	771	0	52	831	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 45.5% ICU Level of Service A
Analysis Period (min) 15

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	5	1	63	7	1	4	37	204	13	4	217	12
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95
Frt		0.885			0.942			0.989			0.986	
Flt Protected		0.995			0.978			0.992			0.998	
Satd. Flow (prot)	0	1426	0	0	1492	0	0	3018	0	0	3027	0
Flt Permitted		0.995			0.978			0.992			0.998	
Satd. Flow (perm)	0	1426	0	0	1492	0	0	3018	0	0	3027	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		279			330			336			504	
Travel Time (s)		7.6			9.0			9.2			13.7	
Peak Hour Factor	0.50	0.25	0.80	0.42	0.25	0.25	0.81	0.88	0.56	0.38	0.94	0.50
Adj. Flow (vph)	10	4	79	17	4	16	46	232	23	11	231	24
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	93	0	0	37	0	0	301	0	0	266	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 29.9% ICU Level of Service A
Analysis Period (min) 15

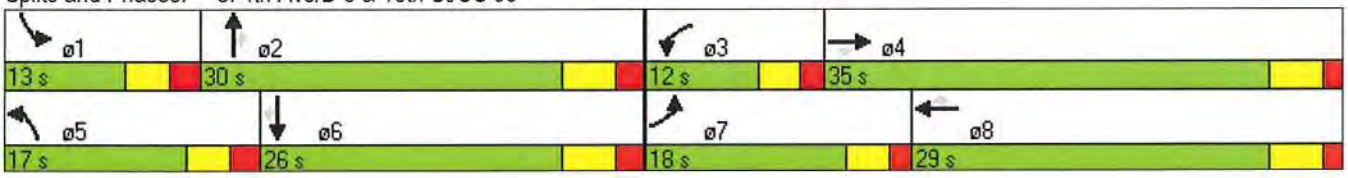
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	309	1057	121	226	684	112	174	413	168	245	465	77
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Storage Length (ft)	200		150	200		150	300		150	250		150
Storage Lanes	2		1	2		1	2		1	2		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.91	1.00
Ped Bike Factor	1.00					0.99	1.00		0.99	1.00		0.98
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	2633	4420	1376	2633	4420	1376	2710	4550	1417	2710	4550	1417
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	2632	4420	1376	2633	4420	1358	2705	4550	1398	2709	4550	1394
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			121			151			189			99
Link Speed (mph)		32			32			28			28	
Link Distance (ft)		488			660			429			381	
Travel Time (s)		10.4			14.1			10.4			9.3	
Confl. Peds. (#/hr)	1					1	3		1	1		3
Peak Hour Factor	0.85	0.74	0.80	0.98	0.73	0.74	0.65	0.86	0.89	0.97	0.92	0.78
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	364	1428	151	231	937	151	268	480	189	253	505	99
Shared Lane Traffic (%)												
Lane Group Flow (vph)	364	1428	151	231	937	151	268	480	189	253	505	99
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	3.0	15.0	15.0	3.0	15.0	15.0	3.0	5.0	5.0	3.0	5.0	5.0
Minimum Split (s)	8.0	27.0	27.0	8.0	25.0	25.0	8.0	30.0	30.0	8.0	26.0	26.0
Total Split (s)	18.0	35.0	35.0	12.0	29.0	29.0	17.0	30.0	30.0	13.0	26.0	26.0
Total Split (%)	20.0%	38.9%	38.9%	13.3%	32.2%	32.2%	18.9%	33.3%	33.3%	14.4%	28.9%	28.9%
Yellow Time (s)	3.0	3.6	3.6	3.0	3.6	3.6	3.0	3.6	3.6	3.0	3.6	3.6
All-Red Time (s)	1.5	1.5	1.5	1.5	1.5	1.5	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	0.0	-2.0	-2.0	-2.0	-2.0	-2.0	0.0	-2.0	-2.0	0.0
Total Lost Time (s)	2.5	3.1	5.1	2.5	3.1	3.1	3.0	3.6	5.6	3.0	3.6	5.6
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
Recall Mode	None	None	None	None	None	None	None	Min	Min	None	Min	Min
Act Effct Green (s)	14.7	30.8	28.8	9.6	25.7	25.7	12.4	18.2	16.2	10.0	15.9	13.9
Actuated g/C Ratio	0.18	0.38	0.36	0.12	0.32	0.32	0.15	0.22	0.20	0.12	0.20	0.17
v/c Ratio	0.76	0.85	0.27	0.74	0.67	0.28	0.65	0.47	0.44	0.75	0.56	0.31
Control Delay	44.5	29.8	7.6	52.4	27.6	5.9	41.0	28.5	7.7	51.6	32.3	9.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.5	29.8	7.6	52.4	27.6	5.9	41.0	28.5	7.7	51.6	32.3	9.4
LOS	D	C	A	D	C	A	D	C	A	D	C	A
Approach Delay		30.8			29.5			27.9			35.4	
Approach LOS		C			C			C			D	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Stops (vph)	271	887	26	196	568	16	156	335	23	213	398	15
Fuel Used(gal)	6	17	1	5	11	1	3	6	1	5	7	1
CO Emissions (g/hr)	424	1210	67	333	757	55	219	434	89	343	521	44
NOx Emissions (g/hr)	82	235	13	65	147	11	43	85	17	67	101	9
VOC Emissions (g/hr)	98	280	16	77	175	13	51	101	21	80	121	10
Dilemma Vehicles (#)	0	0	0	0	0	0	0	0	0	0	0	0
Queue Length 50th (ft)	92	239	10	60	153	0	67	78	0	66	88	0
Queue Length 95th (ft)	#154	255	41	#128	169	23	79	102	48	#138	121	27
Internal Link Dist (ft)		408			580			349			301	
Turn Bay Length (ft)	200		150	200		150	300		150	250		150
Base Capacity (vph)	508	1757	589	312	1432	542	472	1497	556	337	1270	428
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.72	0.81	0.26	0.74	0.65	0.28	0.57	0.32	0.34	0.75	0.40	0.23

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 80.9
Natural Cycle: 80
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.85
Intersection Signal Delay: 30.7 — Intersection LOS: C
Intersection Capacity Utilization 62.5% — ICU Level of Service B
Analysis Period (min) 15
\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 8: 4th Ave/B-8 & 16th St/US 95



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	115	1699	996	3	12	22
Ideal Flow (vphpl)	1500	1700	1700	1700	1500	1700
Storage Length (ft)	75			0	0	0
Storage Lanes	1			0	1	0
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Frt			0.999		0.912	
Flt Protected	0.950				0.983	
Satd. Flow (prot)	1357	3076	3073	0	1281	0
Flt Permitted	0.950				0.983	
Satd. Flow (perm)	1357	3076	3073	0	1281	0
Link Speed (mph)		32	32		25	
Link Distance (ft)		465	102		558	
Travel Time (s)		9.9	2.2		15.2	
Peak Hour Factor	0.85	0.90	0.85	0.85	0.85	0.85
Adj. Flow (vph)	135	1888	1172	4	14	26
Shared Lane Traffic (%)						
Lane Group Flow (vph)	135	1888	1176	0	40	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 62.5% ICU Level of Service B
Analysis Period (min) 15

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	9	1192	57	44	1157	22	0	0	22	3	4	9
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Storage Length (ft)	85		0	135		0	0		0	0		0
Storage Lanes	1		0	1		1	0		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.988				0.850			0.865		0.935	
Flt Protected	0.950			0.950							0.991	
Satd. Flow (prot)	1357	3039	0	1357	3076	1376	0	0	1400	0	1500	0
Flt Permitted	0.950			0.950							0.991	
Satd. Flow (perm)	1357	3039	0	1357	3076	1376	0	0	1400	0	1500	0
Link Speed (mph)		32			32			25			25	
Link Distance (ft)		661			483			555			306	
Travel Time (s)		14.1			10.3			15.1			8.3	
Confl. Peds. (#/hr)			2	2								
Peak Hour Factor	0.58	0.87	0.48	0.78	0.86	0.67	0.25	0.25	0.67	0.50	0.38	0.58
Adj. Flow (vph)	16	1370	119	56	1345	33	0	0	33	6	11	16
Shared Lane Traffic (%)												
Lane Group Flow (vph)	16	1489	0	56	1345	33	0	0	33	0	33	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 55.5% ICU Level of Service B
Analysis Period (min) 15

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	27	1	20	30	4	39	44	716	7	62	718	9
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Storage Length (ft)	0		0	0		0	85		0	85		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor												
Frt		0.943			0.928			0.999			0.998	
Flt Protected		0.973			0.980		0.950			0.950		
Satd. Flow (prot)	0	1529	0	0	1516	0	1397	3163	0	1397	3160	0
Flt Permitted		0.973			0.980		0.950			0.950		
Satd. Flow (perm)	0	1529	0	0	1516	0	1397	3163	0	1397	3160	0
Link Speed (mph)		25			25			28			28	
Link Distance (ft)		222			285			640			233	
Travel Time (s)		6.1			7.8			15.6			5.7	
Confl. Peds. (#/hr)	1					1	2		3	3		2
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.89	0.85	0.85	0.95	0.85
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	32	1	24	35	5	46	52	804	8	73	756	11
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	57	0	0	86	0	52	812	0	73	767	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 42.4% ICU Level of Service A
Analysis Period (min) 15

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	12	14	13	12	7	16	7	194	4	17	217	9
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Storage Length (ft)	0		0	0		0	85		0	85		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.948			0.932			0.996			0.991	
Flt Protected		0.984			0.987		0.950			0.950		
Satd. Flow (prot)	0	1510	0	0	1489	0	1357	1613	0	1357	1604	0
Flt Permitted		0.984			0.987		0.950			0.950		
Satd. Flow (perm)	0	1510	0	0	1489	0	1357	1613	0	1357	1604	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		395			415			452			660	
Travel Time (s)		10.8			11.3			12.3			18.0	
Confl. Peds. (#/hr)			2	2			2		1	1		2
Peak Hour Factor	0.50	0.63	0.45	0.67	0.42	0.46	0.63	0.93	0.75	0.75	0.90	0.58
Adj. Flow (vph)	24	22	29	18	17	35	11	209	5	23	241	16
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	75	0	0	70	0	11	214	0	23	257	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 28.5% ICU Level of Service A
Analysis Period (min) 15

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	1669	48	61	993	3	69
Ideal Flow (vphpl)	1700	1700	1500	1700	1500	1700
Storage Length (ft)		0	75		0	0
Storage Lanes		0	1		0	1
Taper Length (ft)			25		25	
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00
Frt	0.996					0.865
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3064	0	1357	3076	0	1400
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	3064	0	1357	3076	0	1400
Link Speed (mph)	32			32	25	
Link Distance (ft)	102			179	578	
Travel Time (s)	2.2			3.8	15.8	
Peak Hour Factor	0.90	0.85	0.85	0.85	0.85	0.88
Adj. Flow (vph)	1854	56	72	1168	4	78
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1910	0	72	1168	4	78
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization Err% ICU Level of Service H
Analysis Period (min) 15

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	59	1300	58	54	1007	50	0	0	27	0	0	36
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Storage Length (ft)	115		0	125		0	0		0	0		0
Storage Lanes	1		1	1		0	0		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt			0.850		0.993				0.865			0.865
Flt Protected	0.950			0.950								
Satd. Flow (prot)	1357	3076	1376	1357	3055	0	0	0	1400	0	0	1400
Flt Permitted	0.950			0.950								
Satd. Flow (perm)	1357	3076	1376	1357	3055	0	0	0	1400	0	0	1400
Link Speed (mph)		32			32			25			25	
Link Distance (ft)		660			648			652			636	
Travel Time (s)		14.1			13.8			17.8			17.3	
Confl. Peds. (#/hr)	1		1	1		1						
Peak Hour Factor	0.85	0.82	0.85	0.85	0.84	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	69	1585	68	64	1199	59	0	0	32	0	0	42
Shared Lane Traffic (%)												
Lane Group Flow (vph)	69	1585	68	64	1258	0	0	0	32	0	0	42
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 50.6% ICU Level of Service A
Analysis Period (min) 15

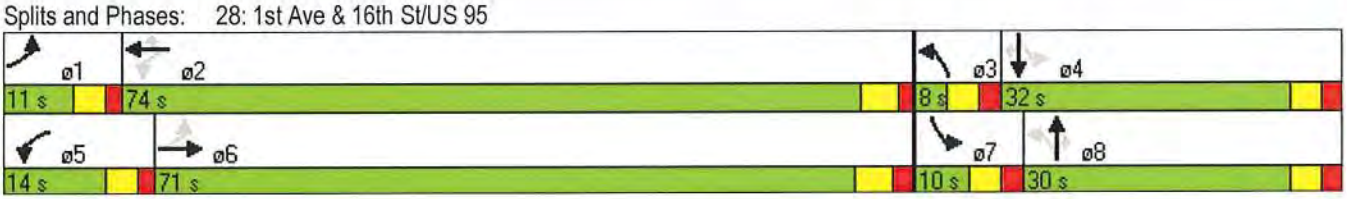
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	74	1117	41	108	997	88	42	112	48	123	92	37
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Storage Length (ft)	65		0	100		100	360		165	0		115
Storage Lanes	1		0	1		1	1		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00				0.97	0.99		0.99	1.00		0.98
Frt		0.995				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1357	3058	0	1357	3076	1376	1357	1619	1376	1357	1619	1376
Flt Permitted	0.210			0.117			0.670			0.441		
Satd. Flow (perm)	300	3058	0	167	3076	1335	951	1619	1356	629	1619	1350
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5				89			84			69
Link Speed (mph)		32			32			25			25	
Link Distance (ft)		648			661			660			400	
Travel Time (s)		13.8			14.1			18.0			10.9	
Confl. Peds. (#/hr)	3		1	1		3	4		2	2		4
Peak Hour Factor	0.93	0.83	0.81	0.80	0.89	0.56	0.68	0.95	0.57	0.84	0.92	0.54
Adj. Flow (vph)	80	1346	51	135	1120	157	62	118	84	146	100	69
Shared Lane Traffic (%)												
Lane Group Flow (vph)	80	1397	0	135	1120	157	62	118	84	146	100	69
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases	6			2		2	8		8	4		4
Detector Phase	1	6		5	2	2	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	3.0	15.0		7.0	15.0	15.0	3.0	5.0	5.0	3.0	5.0	5.0
Minimum Split (s)	7.5	30.1		13.0	30.0	30.0	8.0	30.0	30.0	8.0	25.0	25.0
Total Split (s)	11.0	71.0		14.0	74.0	74.0	8.0	30.0	30.0	10.0	32.0	32.0
Total Split (%)	8.8%	56.8%		11.2%	59.2%	59.2%	6.4%	24.0%	24.0%	8.0%	25.6%	25.6%
Yellow Time (s)	3.0	3.6		3.0	3.6	3.6	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.5	2.0		1.5	1.5	1.5	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	2.5	3.6		2.5	3.1	3.1	3.0	3.0	3.0	3.0	3.0	3.0
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
Recall Mode	None	C-Max		None	C-Max	C-Max	None	None	None	None	None	None
Act Effct Green (s)	87.0	78.5		92.8	84.1	84.1	21.6	16.6	16.6	25.8	20.2	20.2
Actuated g/C Ratio	0.70	0.63		0.74	0.67	0.67	0.17	0.13	0.13	0.21	0.16	0.16
v/c Ratio	0.30	0.73		0.60	0.54	0.17	0.34	0.55	0.33	0.85	0.38	0.25
Control Delay	8.5	20.2		20.3	13.3	5.0	44.7	58.8	12.4	83.8	50.3	11.5
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.5	20.2		20.3	13.3	5.0	44.7	58.8	12.4	83.8	50.3	11.5
LOS	A	C		C	B	A	D	E	B	F	D	B
Approach Delay		19.5			13.1			40.7			57.3	
Approach LOS		B			B			D			E	
Stops (vph)	23	787		38	510	16	37	101	8	109	80	7

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Fuel Used(gal)	1	15		1	11	1	1	2	0	3	2	0
CO Emissions (g/hr)	44	1074		86	761	44	53	165	30	230	128	24
NOx Emissions (g/hr)	9	209		17	148	9	10	32	6	45	25	5
VOC Emissions (g/hr)	10	249		20	176	10	12	38	7	53	30	6
Dilemma Vehicles (#)	0	0		0	0	0	0	0	0	0	0	0
Queue Length 50th (ft)	15	365		26	228	18	42	91	0	106	75	0
Queue Length 95th (ft)	41	507		69	374	21	55	140	6	144	118	5
Internal Link Dist (ft)		568			581			580			320	
Turn Bay Length (ft)	65			100		100	360		165			115
Base Capacity (vph)	283	1923		238	2069	927	181	350	359	171	376	366
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.28	0.73		0.57	0.54	0.17	0.34	0.34	0.23	0.85	0.27	0.19

Intersection Summary

Area Type: Other
Cycle Length: 125
Actuated Cycle Length: 125
Offset: 38.5 (31%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow
Natural Cycle: 95
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.85
Intersection Signal Delay: 21.9 Intersection LOS: C
Intersection Capacity Utilization 69.0% ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 28: 1st Ave & 16th St/US 95



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	1	1	1	16	1	26	1	752	56	16	774	1
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Storage Length (ft)	0		0	0		0	30		0	85		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor												
Frt		0.955			0.918			0.989				
Flt Protected		0.984			0.982		0.950			0.950		
Satd. Flow (prot)	0	1566	0	0	1502	0	1397	3132	0	1397	3167	0
Flt Permitted		0.984			0.982		0.950			0.950		
Satd. Flow (perm)	0	1566	0	0	1502	0	1397	3132	0	1397	3167	0
Link Speed (mph)		25			25			28			28	
Link Distance (ft)		388			303			281			556	
Travel Time (s)		10.6			8.3			6.8			13.5	
Confl. Peds. (#/hr)							2		1	1		2
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.94	0.85	0.85	0.85	0.85
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	1	1	1	19	1	31	1	800	66	19	911	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	3	0	0	51	0	1	866	0	19	912	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 35.8% ICU Level of Service A
Analysis Period (min) 15

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	6	1	73	9	1	5	43	237	15	5	251	13
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95
Frt		0.876			0.955			0.992			0.992	
Flt Protected		0.996			0.970			0.993			0.999	
Satd. Flow (prot)	0	1413	0	0	1500	0	0	3030	0	0	3049	0
Flt Permitted		0.996			0.970			0.993			0.999	
Satd. Flow (perm)	0	1413	0	0	1500	0	0	3030	0	0	3049	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		279			330			336			504	
Travel Time (s)		7.6			9.0			9.2			13.7	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.88	0.85	0.85	0.94	0.85
Adj. Flow (vph)	7	1	86	11	1	6	51	269	18	6	267	15
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	94	0	0	18	0	0	338	0	0	288	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 33.1% ICU Level of Service A
Analysis Period (min) 15

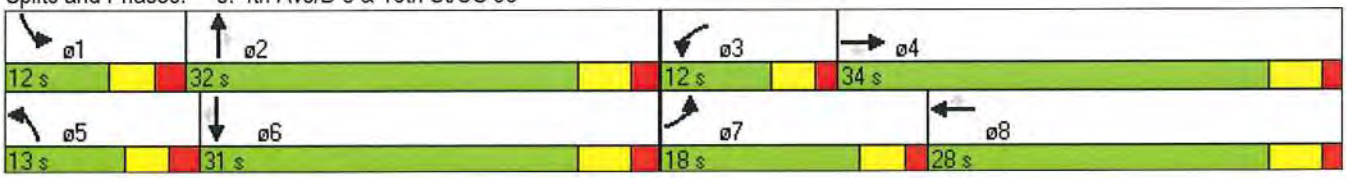
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	301	1179	140	225	732	126	140	448	187	229	494	82
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Storage Length (ft)	200		150	200		150	300		150	250		150
Storage Lanes	2		1	2		1	2		1	2		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.91	1.00
Ped Bike Factor	1.00					0.99	1.00		0.99	1.00		0.98
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	2633	4420	1376	2633	4420	1376	2710	4550	1417	2710	4550	1417
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	2632	4420	1376	2633	4420	1358	2705	4550	1398	2709	4550	1394
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			134			148			210			96
Link Speed (mph)		32			32			28			28	
Link Distance (ft)		488			660			429			381	
Travel Time (s)		10.4			14.1			10.4			9.3	
Confl. Peds. (#/hr)	1					1	3		1	1		3
Peak Hour Factor	0.85	0.85	0.85	0.98	0.85	0.85	0.85	0.86	0.89	0.97	0.92	0.85
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	354	1387	165	230	861	148	165	521	210	236	537	96
Shared Lane Traffic (%)												
Lane Group Flow (vph)	354	1387	165	230	861	148	165	521	210	236	537	96
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	3.0	15.0	15.0	3.0	15.0	15.0	3.0	5.0	5.0	3.0	5.0	5.0
Minimum Split (s)	8.0	27.0	27.0	8.0	25.0	25.0	8.0	30.0	30.0	8.0	26.0	26.0
Total Split (s)	18.0	34.0	34.0	12.0	28.0	28.0	13.0	32.0	32.0	12.0	31.0	31.0
Total Split (%)	20.0%	37.8%	37.8%	13.3%	31.1%	31.1%	14.4%	35.6%	35.6%	13.3%	34.4%	34.4%
Yellow Time (s)	3.0	3.6	3.6	3.0	3.6	3.6	3.0	3.6	3.6	3.0	3.6	3.6
All-Red Time (s)	1.5	1.5	1.5	1.5	1.5	1.5	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	0.0	-2.0	-2.0	-2.0	-2.0	-2.0	0.0	-2.0	-2.0	0.0
Total Lost Time (s)	2.5	3.1	5.1	2.5	3.1	3.1	3.0	3.6	5.6	3.0	3.6	5.6
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
Recall Mode	None	None	None	None	None	None	None	Min	Min	None	Min	Min
Act Effct Green (s)	14.4	29.6	27.6	9.5	24.7	24.7	9.2	16.9	14.8	9.1	16.8	14.8
Actuated g/C Ratio	0.19	0.38	0.36	0.12	0.32	0.32	0.12	0.22	0.19	0.12	0.22	0.19
v/c Ratio	0.72	0.82	0.29	0.71	0.61	0.28	0.51	0.53	0.48	0.74	0.54	0.28
Control Delay	40.4	27.3	7.2	48.0	25.3	5.8	39.5	28.6	8.0	50.7	29.3	8.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.4	27.3	7.2	48.0	25.3	5.8	39.5	28.6	8.0	50.7	29.3	8.4
LOS	D	C	A	D	C	A	D	C	A	D	C	A
Approach Delay		28.0			27.2			25.8			32.8	
Approach LOS		C			C			C			C	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Stops (vph)	264	976	30	195	591	19	126	370	25	197	414	15
Fuel Used(gal)	6	19	1	5	11	1	2	7	1	5	8	1
CO Emissions (g/hr)	395	1301	77	318	779	63	173	474	100	317	529	45
NOx Emissions (g/hr)	77	253	15	62	152	12	34	92	19	62	103	9
VOC Emissions (g/hr)	92	302	18	74	180	15	40	110	23	73	123	11
Dilemma Vehicles (#)	0	0	0	0	0	0	0	0	0	0	0	0
Queue Length 50th (ft)	82	211	10	56	128	0	39	83	0	58	87	0
Queue Length 95th (ft)	#136	297	49	#124	185	37	72	108	49	#130	119	31
Internal Link Dist (ft)		408			580			349			301	
Turn Bay Length (ft)	200		150	200		150	300		150	250		150
Base Capacity (vph)	531	1779	601	326	1438	542	353	1683	619	318	1624	526
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.67	0.78	0.27	0.71	0.60	0.27	0.47	0.31	0.34	0.74	0.33	0.18

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 77.3
Natural Cycle: 80
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.82
Intersection Signal Delay: 28.2 — Intersection LOS: C
Intersection Capacity Utilization 65.2% — ICU Level of Service C
Analysis Period (min) 15
\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 8: 4th Ave/B-8 & 16th St/US 95



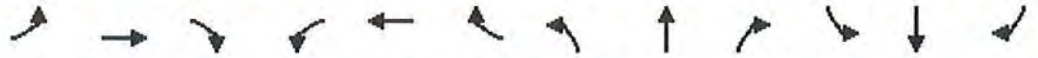
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	97	1908	1096	4	11	26
Ideal Flow (vphpl)	1500	1700	1700	1700	1500	1700
Storage Length (ft)	75			0	0	0
Storage Lanes	1			0	1	0
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Frt			0.999		0.905	
Flt Protected	0.950				0.985	
Satd. Flow (prot)	1357	3076	3073	0	1273	0
Flt Permitted	0.950				0.985	
Satd. Flow (perm)	1357	3076	3073	0	1273	0
Link Speed (mph)		32	32		25	
Link Distance (ft)		465	105		558	
Travel Time (s)		9.9	2.2		15.2	
Peak Hour Factor	0.85	0.90	0.85	0.85	0.85	0.85
Adj. Flow (vph)	114	2120	1289	5	13	31
Shared Lane Traffic (%)						
Lane Group Flow (vph)	114	2120	1294	0	44	0
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 68.9%		ICU Level of Service C	
Analysis Period (min) 15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	11	1384	66	51	1343	26	0	0	26	4	5	11
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Storage Length (ft)	85		0	135		0	0		0	0		0
Storage Lanes	1		0	1		1	0		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.993				0.850			0.865		0.927	
Flt Protected	0.950			0.950							0.990	
Satd. Flow (prot)	1357	3055	0	1357	3076	1376	0	0	1400	0	1486	0
Flt Permitted	0.950			0.950							0.990	
Satd. Flow (perm)	1357	3055	0	1357	3076	1376	0	0	1400	0	1486	0
Link Speed (mph)		32			32			25			25	
Link Distance (ft)		661			483			555			306	
Travel Time (s)		14.1			10.3			15.1			8.3	
Confl. Peds. (#/hr)			2	2								
Peak Hour Factor	0.85	0.87	0.85	0.85	0.86	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	13	1591	78	60	1562	31	0	0	31	5	6	13
Shared Lane Traffic (%)												
Lane Group Flow (vph)	13	1669	0	60	1562	31	0	0	31	0	24	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

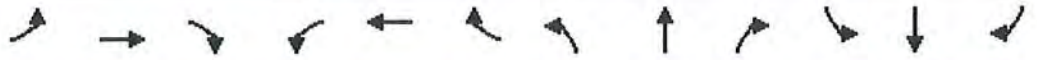
Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 62.0% ICU Level of Service B
Analysis Period (min) 15



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	1	1	20	4	5	43	18	782	9	28	792	11
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Storage Length (ft)	0		0	0		0	85		0	85		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor												
Frt		0.875			0.889			0.998			0.998	
Flt Protected		0.998			0.996		0.950			0.950		
Satd. Flow (prot)	0	1455	0	0	1476	0	1397	3160	0	1397	3160	0
Flt Permitted		0.998			0.996		0.950			0.950		
Satd. Flow (perm)	0	1455	0	0	1476	0	1397	3160	0	1397	3160	0
Link Speed (mph)		25			25			28			28	
Link Distance (ft)		222			285			640			233	
Travel Time (s)		6.1			7.8			15.6			5.7	
Confl. Peds. (#/hr)	1					1	2		3	3		2
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.89	0.85	0.85	0.95	0.85
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	1	1	24	5	6	51	21	879	11	33	834	13
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	26	0	0	62	0	21	890	0	33	847	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 41.6% ICU Level of Service A
Analysis Period (min) 15



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	13	16	15	13	9	18	9	226	5	20	251	11
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Storage Length (ft)	0		0	0		0	85		0	85		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.953			0.940			0.997			0.993	
Flt Protected		0.986			0.984		0.950			0.950		
Satd. Flow (prot)	0	1521	0	0	1498	0	1357	1614	0	1357	1608	0
Flt Permitted		0.986			0.984		0.950			0.950		
Satd. Flow (perm)	0	1521	0	0	1498	0	1357	1614	0	1357	1608	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		395			415			452			660	
Travel Time (s)		10.8			11.3			12.3			18.0	
Confl. Peds. (#/hr)			2	2			2		1	1		2
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.90	0.85
Adj. Flow (vph)	15	19	18	15	11	21	11	266	6	24	279	13
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	52	0	0	47	0	11	272	0	24	292	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 31.9% ICU Level of Service A
Analysis Period (min) 15

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	1916	10	11	1092	0	23
Ideal Flow (vphpl)	1700	1700	1500	1700	1500	1700
Storage Length (ft)		0	75		0	0
Storage Lanes		0	1		0	1
Taper Length (ft)			25		25	
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00
Frt	0.999					0.865
Flt Protected			0.950			
Satd. Flow (prot)	3073	0	1357	3076	0	1400
Flt Permitted			0.950			
Satd. Flow (perm)	3073	0	1357	3076	0	1400
Link Speed (mph)	32			32	25	
Link Distance (ft)	105			179	578	
Travel Time (s)	2.2			3.8	15.8	
Peak Hour Factor	0.90	0.85	0.85	0.85	0.85	0.88
Adj. Flow (vph)	2129	12	13	1285	0	26
Shared Lane Traffic (%)						
Lane Group Flow (vph)	2141	0	13	1285	0	26
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 69.5%		ICU Level of Service C	
Analysis Period (min) 15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	54	1420	66	39	1059	54	0	0	29	0	0	39
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Storage Length (ft)	115		0	125		0	0		0	0		0
Storage Lanes	1		1	1		0	0		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt			0.850		0.993				0.865			0.865
Flt Protected	0.950			0.950								
Satd. Flow (prot)	1357	3076	1376	1357	3055	0	0	0	1400	0	0	1400
Flt Permitted	0.950			0.950								
Satd. Flow (perm)	1357	3076	1376	1357	3055	0	0	0	1400	0	0	1400
Link Speed (mph)		32			32			25			25	
Link Distance (ft)		660			648			652			636	
Travel Time (s)		14.1			13.8			17.8			17.3	
Confl. Peds. (#/hr)	1		1	1		1						
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	64	1671	78	46	1246	64	0	0	34	0	0	46
Shared Lane Traffic (%)												
Lane Group Flow (vph)	64	1671	78	46	1310	0	0	0	34	0	0	46
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 53.9% ICU Level of Service A
Analysis Period (min) 15

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	85	1297	48	126	1158	102	49	131	56	143	107	43
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Storage Length (ft)	65		0	100		100	360		165	0		115
Storage Lanes	1		0	1		1	1		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00				0.97	0.99		0.99	1.00		0.98
Frt		0.995				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1357	3058	0	1357	3076	1376	1357	1619	1376	1357	1619	1376
Flt Permitted	0.161			0.071			0.588			0.426		
Satd. Flow (perm)	230	3058	0	101	3076	1335	835	1619	1356	607	1619	1350
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5				57			66			51
Link Speed (mph)		32			32			25			25	
Link Distance (ft)		648			661			660			400	
Travel Time (s)		13.8			14.1			18.0			10.9	
Confl. Peds. (#/hr)	3		1	1		3	4		2	2		4
Peak Hour Factor	0.93	0.85	0.85	0.85	0.89	0.85	0.85	0.95	0.85	0.85	0.92	0.85
Adj. Flow (vph)	91	1526	56	148	1301	120	58	138	66	168	116	51
Shared Lane Traffic (%)												
Lane Group Flow (vph)	91	1582	0	148	1301	120	58	138	66	168	116	51
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases	6			2		2	8		8	4		4
Detector Phase	1	6		5	2	2	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	3.0	15.0		7.0	15.0	15.0	3.0	5.0	5.0	3.0	5.0	5.0
Minimum Split (s)	7.5	30.1		13.0	30.0	30.0	8.0	30.0	30.0	8.0	25.0	25.0
Total Split (s)	13.0	73.0		13.0	73.0	73.0	8.0	30.0	30.0	9.0	31.0	31.0
Total Split (%)	10.4%	58.4%		10.4%	58.4%	58.4%	6.4%	24.0%	24.0%	7.2%	24.8%	24.8%
Yellow Time (s)	3.0	3.6		3.0	3.6	3.6	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.5	2.0		1.5	1.5	1.5	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	2.5	3.6		2.5	3.1	3.1	3.0	3.0	3.0	3.0	3.0	3.0
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
Recall Mode	None	C-Max		None	C-Max	C-Max	None	None	None	None	None	None
Act Effct Green (s)	84.2	75.2		92.2	81.7	81.7	22.8	17.8	17.8	25.2	20.4	20.4
Actuated g/C Ratio	0.67	0.60		0.74	0.65	0.65	0.18	0.14	0.14	0.20	0.16	0.16
v/c Ratio	0.40	0.86		0.69	0.65	0.13	0.34	0.60	0.27	1.06	0.44	0.19
Control Delay	11.3	27.8		40.3	16.2	6.0	44.3	60.1	12.6	133.9	51.9	12.6
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.3	27.8		40.3	16.2	6.0	44.3	60.1	12.6	133.9	51.9	12.6
LOS	B	C		D	B	A	D	E	B	F	D	B
Approach Delay		26.9			17.7			44.6			87.1	
Approach LOS		C			B			D			F	
Stops (vph)	28	1047		57	688	22	41	120	11	119	93	9

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Fuel Used(gal)	1	21		2	14	1	1	3	1	5	2	0
CO Emissions (g/hr)	55	1453		141	974	54	61	196	35	367	151	29
NOx Emissions (g/hr)	11	283		27	190	10	12	38	7	71	29	6
VOC Emissions (g/hr)	13	337		33	226	12	14	45	8	85	35	7
Dilemma Vehicles (#)	0	0		0	0	0	0	0	0	0	0	0
Queue Length 50th (ft)	17	547		58	299	17	39	107	0	~138	88	0
Queue Length 95th (ft)	44	641		#173	486	48	66	161	34	#206	136	30
Internal Link Dist (ft)		568			581			580			320	
Turn Bay Length (ft)	65			100		100	360		165			115
Base Capacity (vph)	255	1841		215	2010	892	173	350	345	158	363	342
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.36	0.86		0.69	0.65	0.13	0.34	0.39	0.19	1.06	0.32	0.15

Intersection Summary

Area Type: Other
Cycle Length: 125
Actuated Cycle Length: 125
Offset: 38.5 (31%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow
Natural Cycle: 105
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.06
Intersection Signal Delay: 29.6 Intersection LOS: C
Intersection Capacity Utilization 82.5% ICU Level of Service E
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 28: 1st Ave & 16th St/US 95

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	14	1	23	61	1	29	9	775	57	46	798	16
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Storage Length (ft)	0		0	0		0	30		0	85		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor												
Frt		0.917			0.957			0.989			0.997	
Flt Protected		0.982			0.967		0.950			0.950		
Satd. Flow (prot)	0	1501	0	0	1542	0	1397	3132	0	1397	3157	0
Flt Permitted		0.982			0.967		0.950			0.950		
Satd. Flow (perm)	0	1501	0	0	1542	0	1397	3132	0	1397	3157	0
Link Speed (mph)		25			25			28			28	
Link Distance (ft)		388			303			281			556	
Travel Time (s)		10.6			8.3			6.8			13.5	
Confl. Peds. (#/hr)							2		1	1		2
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.94	0.85	0.85	0.85	0.85
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	16	1	27	72	1	34	11	824	67	54	939	19
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	44	0	0	107	0	11	891	0	54	958	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 49.5% ICU Level of Service A
Analysis Period (min) 15

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	6	1	73	9	1	5	43	237	15	5	251	13
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95
Frt		0.876			0.955			0.992			0.992	
Flt Protected		0.996			0.970			0.993			0.999	
Satd. Flow (prot)	0	1413	0	0	1500	0	0	3030	0	0	3049	0
Flt Permitted		0.996			0.970			0.993			0.999	
Satd. Flow (perm)	0	1413	0	0	1500	0	0	3030	0	0	3049	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		279			330			336			504	
Travel Time (s)		7.6			9.0			9.2			13.7	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.88	0.85	0.85	0.94	0.85
Adj. Flow (vph)	7	1	86	11	1	6	51	269	18	6	267	15
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	94	0	0	18	0	0	338	0	0	288	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 33.1% ICU Level of Service A
Analysis Period (min) 15

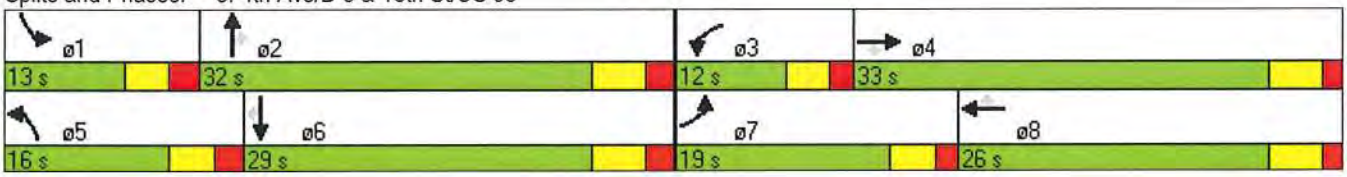
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	337	1221	140	258	785	130	193	475	194	276	533	89
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Storage Length (ft)	200		150	200		150	300		150	250		150
Storage Lanes	2		1	2		1	2		1	2		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.91	1.00
Ped Bike Factor	1.00					0.99	1.00		0.99	1.00		0.98
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	2633	4420	1376	2633	4420	1376	2710	4550	1417	2710	4550	1417
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	2632	4420	1376	2633	4420	1358	2705	4550	1398	2709	4550	1394
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			127			153			218			105
Link Speed (mph)		32			32			28			28	
Link Distance (ft)		488			660			429			381	
Travel Time (s)		10.4			14.1			10.4			9.3	
Confl. Peds. (#/hr)	1					1	3		1	1		3
Peak Hour Factor	0.85	0.85	0.85	0.98	0.85	0.85	0.85	0.86	0.89	0.97	0.92	0.85
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	396	1436	165	263	924	153	227	552	218	285	579	105
Shared Lane Traffic (%)												
Lane Group Flow (vph)	396	1436	165	263	924	153	227	552	218	285	579	105
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	3.0	15.0	15.0	3.0	15.0	15.0	3.0	5.0	5.0	3.0	5.0	5.0
Minimum Split (s)	8.0	27.0	27.0	8.0	25.0	25.0	8.0	30.0	30.0	8.0	26.0	26.0
Total Split (s)	19.0	33.0	33.0	12.0	26.0	26.0	16.0	32.0	32.0	13.0	29.0	29.0
Total Split (%)	21.1%	36.7%	36.7%	13.3%	28.9%	28.9%	17.8%	35.6%	35.6%	14.4%	32.2%	32.2%
Yellow Time (s)	3.0	3.6	3.6	3.0	3.6	3.6	3.0	3.6	3.6	3.0	3.6	3.6
All-Red Time (s)	1.5	1.5	1.5	1.5	1.5	1.5	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	0.0	-2.0	-2.0	-2.0	-2.0	-2.0	0.0	-2.0	-2.0	0.0
Total Lost Time (s)	2.5	3.1	5.1	2.5	3.1	3.1	3.0	3.6	5.6	3.0	3.6	5.6
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
Recall Mode	None	None	None	None	None	None	None	Min	Min	None	Min	Min
Act Effct Green (s)	15.5	30.0	28.0	9.5	24.0	24.0	11.3	18.6	16.6	10.0	17.3	15.3
Actuated g/C Ratio	0.19	0.37	0.35	0.12	0.30	0.30	0.14	0.23	0.21	0.12	0.22	0.19
v/c Ratio	0.78	0.87	0.29	0.84	0.70	0.30	0.60	0.52	0.47	0.84	0.59	0.30
Control Delay	43.7	31.6	8.2	61.0	29.6	6.3	40.0	28.6	7.5	59.3	31.1	8.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.7	31.6	8.2	61.0	29.6	6.3	40.0	28.6	7.5	59.3	31.1	8.4
LOS	D	C	A	E	C	A	D	C	A	E	C	A
Approach Delay		32.1			33.1			26.6			36.9	
Approach LOS		C			C			C			D	

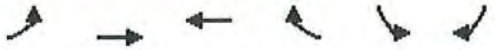
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Stops (vph)	297	1030	32	218	669	20	173	391	25	234	454	16
Fuel Used(gal)	7	20	1	6	13	1	3	7	1	6	8	1
CO Emissions (g/hr)	458	1431	80	410	898	66	240	502	102	415	587	49
NOx Emissions (g/hr)	89	279	16	80	175	13	47	98	20	81	114	10
VOC Emissions (g/hr)	106	332	18	95	208	15	56	116	24	96	136	11
Dilemma Vehicles (#)	0	0	0	0	0	0	0	0	0	0	0	0
Queue Length 50th (ft)	96	239	13	67	152	0	55	89	0	73	97	0
Queue Length 95th (ft)	#159	#343	53	#148	207	38	91	114	50	#157	133	34
Internal Link Dist (ft)		408			580			349			301	
Turn Bay Length (ft)	200		150	200		150	300		150	250		150
Base Capacity (vph)	542	1650	562	312	1322	513	439	1613	607	338	1442	481
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.73	0.87	0.29	0.84	0.70	0.30	0.52	0.34	0.36	0.84	0.40	0.22

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 80.4
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.87
Intersection Signal Delay: 32.2 — Intersection LOS: C
Intersection Capacity Utilization 69.6% — ICU Level of Service C
Analysis Period (min) 15
\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 8: 4th Ave/B-8 & 16th St/US 95





Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	120	1963	1148	4	14	26
Ideal Flow (vphpl)	1500	1700	1700	1700	1500	1700
Storage Length (ft)	75			0	0	0
Storage Lanes	1			0	1	0
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Frt			0.999		0.911	
Flt Protected	0.950				0.983	
Satd. Flow (prot)	1357	3076	3073	0	1279	0
Flt Permitted	0.950				0.983	
Satd. Flow (perm)	1357	3076	3073	0	1279	0
Link Speed (mph)		32	32		25	
Link Distance (ft)		465	108		558	
Travel Time (s)		9.9	2.3		15.2	
Peak Hour Factor	0.85	0.90	0.85	0.85	0.85	0.85
Adj. Flow (vph)	141	2181	1351	5	16	31
Shared Lane Traffic (%)						
Lane Group Flow (vph)	141	2181	1356	0	47	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 70.6% ICU Level of Service C
Analysis Period (min) 15

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	11	1384	66	51	1343	26	0	0	26	4	5	11
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Storage Length (ft)	85		0	135		0	0		0	0		0
Storage Lanes	1		0	1		1	0		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.993				0.850			0.865		0.927	
Flt Protected	0.950			0.950							0.990	
Satd. Flow (prot)	1357	3055	0	1357	3076	1376	0	0	1400	0	1486	0
Flt Permitted	0.950			0.950							0.990	
Satd. Flow (perm)	1357	3055	0	1357	3076	1376	0	0	1400	0	1486	0
Link Speed (mph)		32			32			25			25	
Link Distance (ft)		661			483			555			306	
Travel Time (s)		14.1			10.3			15.1			8.3	
Confl. Peds. (#/hr)			2	2								
Peak Hour Factor	0.85	0.87	0.85	0.85	0.86	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	13	1591	78	60	1562	31	0	0	31	5	6	13
Shared Lane Traffic (%)												
Lane Group Flow (vph)	13	1669	0	60	1562	31	0	0	31	0	24	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 62.0% ICU Level of Service B
Analysis Period (min) 15

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	27	1	23	31	5	45	46	824	9	66	828	11
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Storage Length (ft)	0		0	0		0	85		0	85		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor												
Frt		0.939			0.925			0.998			0.998	
Flt Protected		0.974			0.981		0.950			0.950		
Satd. Flow (prot)	0	1524	0	0	1512	0	1397	3160	0	1397	3160	0
Flt Permitted		0.974			0.981		0.950			0.950		
Satd. Flow (perm)	0	1524	0	0	1512	0	1397	3160	0	1397	3160	0
Link Speed (mph)		25			25			28			28	
Link Distance (ft)		222			285			640			233	
Travel Time (s)		6.1			7.8			15.6			5.7	
Confl. Peds. (#/hr)	1					1	2		3	3		2
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.89	0.85	0.85	0.95	0.85
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	32	1	27	36	6	53	54	926	11	78	872	13
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	60	0	0	95	0	54	937	0	78	885	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 46.7% ICU Level of Service A
Analysis Period (min) 15

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	13	16	15	13	9	18	9	226	5	20	251	11
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Storage Length (ft)	0		0	0		0	85		0	85		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.953			0.940			0.996			0.993	
Flt Protected		0.986			0.984		0.950			0.950		
Satd. Flow (prot)	0	1521	0	0	1498	0	1357	1613	0	1357	1608	0
Flt Permitted		0.986			0.984		0.950			0.950		
Satd. Flow (perm)	0	1521	0	0	1498	0	1357	1613	0	1357	1608	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		395			415			452			660	
Travel Time (s)		10.8			11.3			12.3			18.0	
Confl. Peds. (#/hr)			2	2			2		1	1		2
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.93	0.85	0.85	0.90	0.85
Adj. Flow (vph)	15	19	18	15	11	21	11	243	6	24	279	13
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	52	0	0	47	0	11	249	0	24	292	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 31.9% ICU Level of Service A
Analysis Period (min) 15

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	1935	50	63	1144	0	72
Ideal Flow (vphpl)	1700	1700	1500	1700	1500	1700
Storage Length (ft)		0	75		0	0
Storage Lanes		0	1		0	1
Taper Length (ft)			25		25	
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00
Frt	0.996					0.865
Flt Protected			0.950			
Satd. Flow (prot)	3064	0	1357	3076	0	1400
Flt Permitted			0.950			
Satd. Flow (perm)	3064	0	1357	3076	0	1400
Link Speed (mph)	32			32	25	
Link Distance (ft)	108			179	578	
Travel Time (s)	2.3			3.8	15.8	
Peak Hour Factor	0.90	0.85	0.85	0.85	0.85	0.88
Adj. Flow (vph)	2150	59	74	1346	0	82
Shared Lane Traffic (%)						
Lane Group Flow (vph)	2209	0	74	1346	0	82
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 73.2% ICU Level of Service D
Analysis Period (min) 15

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	67	1497	67	59	1154	58	0	0	31	0	0	41
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Storage Length (ft)	115		0	125		0	0		0	0		0
Storage Lanes	1		1	1		0	0		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt			0.850		0.993				0.865			0.865
Flt Protected	0.950			0.950								
Satd. Flow (prot)	1357	3076	1376	1357	3055	0	0	0	1400	0	0	1400
Flt Permitted	0.950			0.950								
Satd. Flow (perm)	1357	3076	1376	1357	3055	0	0	0	1400	0	0	1400
Link Speed (mph)		32			32			25			25	
Link Distance (ft)		660			648			652			636	
Travel Time (s)		14.1			13.8			17.8			17.3	
Confl. Peds. (#/hr)	1		1	1		1						
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	79	1761	79	69	1358	68	0	0	36	0	0	48
Shared Lane Traffic (%)												
Lane Group Flow (vph)	79	1761	79	69	1426	0	0	0	36	0	0	48
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 57.1% ICU Level of Service B
Analysis Period (min) 15

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	85	1297	48	126	1158	102	49	131	56	143	107	43
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Storage Length (ft)	65		0	100		100	360		165	0		115
Storage Lanes	1		0	1		1	1		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00				0.97	0.99		0.99	1.00		0.98
Frt		0.995				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1357	3058	0	1357	3076	1376	1357	1619	1376	1357	1619	1376
Flt Permitted	0.161			0.071			0.588			0.426		
Satd. Flow (perm)	230	3058	0	101	3076	1335	835	1619	1356	607	1619	1350
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5				58			66			51
Link Speed (mph)		32			32			25			25	
Link Distance (ft)		648			661			660			400	
Travel Time (s)		13.8			14.1			18.0			10.9	
Confl. Peds. (#/hr)	3		1	1		3	4		2	2		4
Peak Hour Factor	0.93	0.85	0.85	0.85	0.89	0.85	0.85	0.95	0.85	0.85	0.92	0.85
Adj. Flow (vph)	91	1526	56	148	1301	120	58	138	66	168	116	51
Shared Lane Traffic (%)												
Lane Group Flow (vph)	91	1582	0	148	1301	120	58	138	66	168	116	51
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases	6			2		2	8		8	4		4
Detector Phase	1	6		5	2	2	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	3.0	15.0		7.0	15.0	15.0	3.0	5.0	5.0	3.0	5.0	5.0
Minimum Split (s)	7.5	30.1		13.0	30.0	30.0	8.0	30.0	30.0	8.0	25.0	25.0
Total Split (s)	12.0	73.0		13.0	74.0	74.0	8.0	30.0	30.0	9.0	31.0	31.0
Total Split (%)	9.6%	58.4%		10.4%	59.2%	59.2%	6.4%	24.0%	24.0%	7.2%	24.8%	24.8%
Yellow Time (s)	3.0	3.6		3.0	3.6	3.6	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.5	2.0		1.5	1.5	1.5	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	2.5	3.6		2.5	3.1	3.1	3.0	3.0	3.0	3.0	3.0	3.0
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
Recall Mode	None	C-Max		None	C-Max	C-Max	None	None	None	None	None	None
Act Effct Green (s)	84.0	75.1		92.4	81.9	81.9	22.8	17.8	17.8	25.2	20.4	20.4
Actuated g/C Ratio	0.67	0.60		0.74	0.66	0.66	0.18	0.14	0.14	0.20	0.16	0.16
v/c Ratio	0.41	0.86		0.69	0.65	0.13	0.34	0.60	0.27	1.06	0.44	0.19
Control Delay	11.5	27.9		40.0	16.0	5.8	44.3	60.1	12.6	133.9	51.9	12.6
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.5	27.9		40.0	16.0	5.8	44.3	60.1	12.6	133.9	51.9	12.6
LOS	B	C		D	B	A	D	E	B	F	D	B
Approach Delay		27.0			17.5			44.6			87.1	
Approach LOS		C			B			D			F	
Stops (vph)	28	1047		57	684	22	41	120	11	119	93	9

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Fuel Used(gal)	1	21		2	14	1	1	3	1	5	2	0
CO Emissions (g/hr)	55	1454		141	969	54	61	196	35	367	151	29
NOx Emissions (g/hr)	11	283		27	188	10	12	38	7	71	29	6
VOC Emissions (g/hr)	13	337		33	224	12	14	45	8	85	35	7
Dilemma Vehicles (#)	0	0		0	0	0	0	0	0	0	0	0
Queue Length 50th (ft)	17	548		58	299	16	39	107	0	~138	88	0
Queue Length 95th (ft)	44	641		#172	476	47	66	161	34	#206	136	30
Internal Link Dist (ft)		568			581			580			320	
Turn Bay Length (ft)	65			100		100	360		165			115
Base Capacity (vph)	244	1840		215	2015	895	173	350	345	158	363	342
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.37	0.86		0.69	0.65	0.13	0.34	0.39	0.19	1.06	0.32	0.15

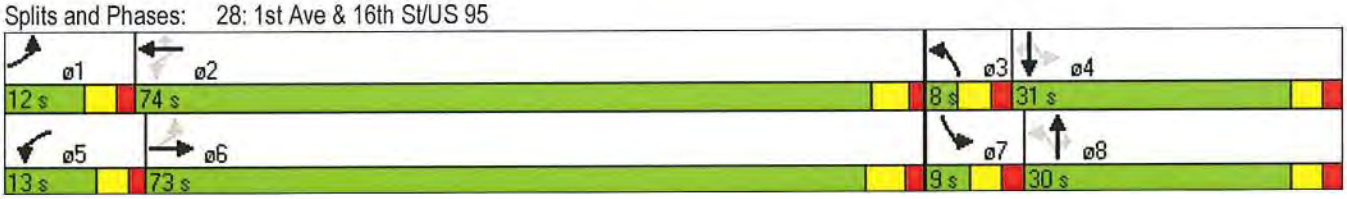
Intersection Summary

Area Type: Other
Cycle Length: 125
Actuated Cycle Length: 125
Offset: 38.5 (31%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow
Natural Cycle: 105
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.06
Intersection Signal Delay: 29.6 Intersection LOS: C
Intersection Capacity Utilization 82.5% ICU Level of Service E
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

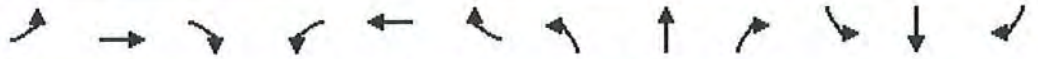
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 28: 1st Ave & 16th St/US 95



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	1	1	1	25	1	32	1	896	52	36	988	1
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Storage Length (ft)	0		0	0		0	85		0	85		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor												
Frt		0.955			0.932			0.992			0.999	
Flt Protected		0.984			0.979		0.950			0.950		
Satd. Flow (prot)	0	1566	0	0	1521	0	1397	3141	0	1397	3163	0
Flt Permitted		0.984			0.979		0.950			0.950		
Satd. Flow (perm)	0	1566	0	0	1521	0	1397	3141	0	1397	3163	0
Link Speed (mph)		25			25			28			28	
Link Distance (ft)		347			303			662			551	
Travel Time (s)		9.5			8.3			16.1			13.4	
Confl. Peds. (#/hr)	1		1	1		1	1		6	6		1
Peak Hour Factor	0.25	0.25	0.25	0.79	0.25	0.86	0.25	0.90	0.89	0.68	0.95	0.25
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	4	4	4	32	4	37	4	996	58	53	1040	4
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	12	0	0	73	0	4	1054	0	53	1044	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 49.8%		ICU Level of Service A	
Analysis Period (min) 15			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	9	1	129	11	1	9	44	285	17	5	354	19
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95
Ped Bike Factor												
Frt		0.881			0.955			0.991			0.991	
Flt Protected		0.995			0.974			0.994			0.998	
Satd. Flow (prot)	0	1419	0	0	1506	0	0	3030	0	0	3042	0
Flt Permitted		0.995			0.974			0.994			0.998	
Satd. Flow (perm)	0	1419	0	0	1506	0	0	3030	0	0	3042	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		279			330			336			487	
Travel Time (s)		7.6			9.0			9.2			13.3	
Confl. Peds. (#/hr)			3	3					4	4		
Peak Hour Factor	0.58	0.25	0.89	0.67	0.25	0.88	0.83	0.85	0.65	0.33	0.92	0.70
Adj. Flow (vph)	16	4	145	16	4	10	53	335	26	15	385	27
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	165	0	0	30	0	0	414	0	0	427	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 43.1% ICU Level of Service A
Analysis Period (min) 15

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	145	925	121	251	639	336	332	914	180	208	616	121
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Storage Length (ft)	150		0	205		325	240		0	250		0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor		1.00				0.98		1.00			1.00	
Frt		0.980				0.850		0.973			0.974	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1357	3008	0	1357	3076	1376	1397	3074	0	1397	3077	0
Flt Permitted	0.207			0.090			0.158			0.097		
Satd. Flow (perm)	296	3008	0	129	3076	1354	232	3074	0	143	3077	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		14				334		21			21	
Link Speed (mph)		32			32			28			28	
Link Distance (ft)		399			660			662			662	
Travel Time (s)		8.5			14.1			16.1			16.1	
Confl. Peds. (#/hr)	2		2	2		2	1		1	1		1
Peak Hour Factor	0.93	0.91	0.78	0.83	0.83	0.83	0.94	0.94	0.84	0.86	0.95	0.87
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	156	1016	155	302	770	405	353	972	214	242	648	139
Shared Lane Traffic (%)												
Lane Group Flow (vph)	156	1171	0	302	770	405	353	1186	0	242	787	0
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8	2			6		
Detector Phase	7	4		3	8	8	5	2		1	6	
Switch Phase												
Minimum Initial (s)	3.0	15.0		3.0	15.0	15.0	3.0	5.0		3.0	5.0	
Minimum Split (s)	8.0	27.0		8.0	25.0	25.0	8.0	30.0		8.0	26.0	
Total Split (s)	20.0	45.0		20.0	45.0	45.0	20.0	45.0		20.0	45.0	
Total Split (%)	15.4%	34.6%		15.4%	34.6%	34.6%	15.4%	34.6%		15.4%	34.6%	
Yellow Time (s)	3.0	3.6		3.0	3.6	3.6	3.0	3.6		3.0	3.6	
All-Red Time (s)	1.5	1.5		1.5	1.5	1.5	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	
Total Lost Time (s)	2.5	3.1		2.5	3.1	3.1	3.0	3.6		3.0	3.6	
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Recall Mode	None	None		None	None	None	None	Min		None	Min	
Act Effct Green (s)	56.4	41.9		61.7	45.5	45.5	59.0	41.4		59.0	41.4	
Actuated g/C Ratio	0.43	0.32		0.47	0.35	0.35	0.45	0.32		0.45	0.32	
v/c Ratio	0.64	1.20		1.34	0.71	0.59	1.37	1.19		1.06	0.79	
Control Delay	33.0	136.9		209.3	41.7	10.8	215.3	136.0		111.2	46.1	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	33.0	136.9		209.3	41.7	10.8	215.3	136.0		111.2	46.1	
LOS	C	F		F	D	B	F	F		F	D	
Approach Delay		124.7			67.5			154.2			61.4	
Approach LOS		F			E			F			E	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Stops (vph)	86	864		155	546	66	181	899		135	645	
Fuel Used(gal)	2	40		13	12	3	17	40		6	14	
CO Emissions (g/hr)	155	2772		903	842	198	1202	2826		452	976	
NOx Emissions (g/hr)	30	539		176	164	38	234	550		88	190	
VOC Emissions (g/hr)	36	642		209	195	46	279	655		105	226	
Dilemma Vehicles (#)	0	0		0	0	0	0	0		0	0	
Queue Length 50th (ft)	75	~626		~291	295	41	~327	~631		~182	310	
Queue Length 95th (ft)	123	#765		#426	345	109	#525	#771		#328	391	
Internal Link Dist (ft)		319			580			582			582	
Turn Bay Length (ft)	150			205		325	240			250		
Base Capacity (vph)	279	979		226	1077	691	258	993		229	994	
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	
Reduced v/c Ratio	0.56	1.20		1.34	0.71	0.59	1.37	1.19		1.06	0.79	

Intersection Summary

Area Type: Other
Cycle Length: 130
Actuated Cycle Length: 130
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 1.37
Intersection Signal Delay: 105.3 — Intersection LOS: F
Intersection Capacity Utilization 113.1% — ICU Level of Service H
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 8: 4th Ave/B-8 & 16th St/US 95

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	20	1390	1498	13	3	34
Ideal Flow (vphpl)	1500	1700	1700	1700	1500	1700
Storage Length (ft)	75			0	0	0
Storage Lanes	1			0	1	0
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Frt			0.998		0.897	
Flt Protected	0.950				0.988	
Satd. Flow (prot)	1357	3076	3070	0	1266	0
Flt Permitted	0.950				0.988	
Satd. Flow (perm)	1357	3076	3070	0	1266	0
Link Speed (mph)		32	32		25	
Link Distance (ft)		351	103		558	
Travel Time (s)		7.5	2.2		15.2	
Peak Hour Factor	0.94	0.94	0.94	0.63	0.25	0.89
Adj. Flow (vph)	21	1479	1594	21	12	38
Shared Lane Traffic (%)						
Lane Group Flow (vph)	21	1479	1615	0	50	0
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 56.7%		ICU Level of Service B	
Analysis Period (min) 15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	35	1545	74	82	1611	59	0	0	55	9	4	29
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Storage Length (ft)	85		0	135		0	0		0	0		0
Storage Lanes	1		0	1		1	0		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.992				0.850			0.865		0.914	
Flt Protected	0.950			0.950							0.991	
Satd. Flow (prot)	1357	3052	0	1357	3076	1376	0	0	1400	0	1466	0
Flt Permitted	0.950			0.950							0.991	
Satd. Flow (perm)	1357	3052	0	1357	3076	1376	0	0	1400	0	1466	0
Link Speed (mph)		32			32			25			25	
Link Distance (ft)		661			488			555			306	
Travel Time (s)		14.1			10.4			15.1			8.3	
Confl. Peds. (#/hr)	2		2	2		2						
Peak Hour Factor	0.72	0.93	0.76	0.76	0.97	0.85	0.25	0.25	0.79	0.88	0.38	0.79
Adj. Flow (vph)	49	1661	97	108	1661	69	0	0	70	10	11	37
Shared Lane Traffic (%)												
Lane Group Flow (vph)	49	1758	0	108	1661	69	0	0	70	0	58	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 69.5% ICU Level of Service C
Analysis Period (min) 15

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	3	3	43	1	5	80	28	1168	15	29	1032	17
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Storage Length (ft)	0		0	0		0	85		0	85		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor												
Frt		0.888			0.886			0.997			0.996	
Flt Protected		0.996			0.998		0.950			0.950		
Satd. Flow (prot)	0	1474	0	0	1474	0	1397	3157	0	1397	3154	0
Flt Permitted		0.996			0.998		0.950			0.950		
Satd. Flow (perm)	0	1474	0	0	1474	0	1397	3157	0	1397	3154	0
Link Speed (mph)		25			25			28			28	
Link Distance (ft)		222			261			570			662	
Travel Time (s)		6.1			7.1			13.9			16.1	
Confl. Peds. (#/hr)			1	1			2		7	7		2
Peak Hour Factor	0.50	0.50	0.73	0.25	0.33	0.79	0.58	0.94	0.69	0.50	0.97	0.65
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	6	6	59	4	15	101	48	1243	22	58	1064	26
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	71	0	0	120	0	48	1265	0	58	1090	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 49.5% ICU Level of Service A
Analysis Period (min) 15

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	31	17	28	15	8	11	16	260	11	23	296	23
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Storage Length (ft)	0		0	0		0	85		0	85		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.955			0.963			0.993			0.984	
Flt Protected		0.979			0.982		0.950			0.950		
Satd. Flow (prot)	0	1514	0	0	1531	0	1357	1608	0	1357	1593	0
Flt Permitted		0.979			0.982		0.950			0.950		
Satd. Flow (perm)	0	1514	0	0	1531	0	1357	1608	0	1357	1593	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		450			465			397			660	
Travel Time (s)		12.3			12.7			10.8			18.0	
Confl. Peds. (#/hr)							3					3
Peak Hour Factor	0.64	0.65	0.75	0.69	0.38	0.67	0.75	0.85	0.67	0.71	0.95	0.61
Adj. Flow (vph)	48	26	37	22	21	16	21	306	16	32	312	38
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	111	0	0	59	0	21	322	0	32	350	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 36.9% ICU Level of Service A
Analysis Period (min) 15

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	1392	11	15	1494	4	27
Ideal Flow (vphpl)	1700	1700	1500	1700	1500	1700
Storage Length (ft)		0	75		0	0
Storage Lanes		0	1		1	0
Taper Length (ft)			25		25	
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00
Frt	0.997				0.890	
Flt Protected			0.950		0.991	
Satd. Flow (prot)	3067	0	1357	3076	1260	0
Flt Permitted			0.950		0.991	
Satd. Flow (perm)	3067	0	1357	3076	1260	0
Link Speed (mph)	32			32	25	
Link Distance (ft)	103			248	588	
Travel Time (s)	2.2			5.3	16.0	
Peak Hour Factor	0.94	0.40	0.92	0.94	0.38	0.56
Adj. Flow (vph)	1481	28	16	1589	11	48
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1509	0	16	1589	59	0
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 56.2% ICU Level of Service B
Analysis Period (min) 15

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	40	1387	68	46	1482	42	0	0	34	0	0	54
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Storage Length (ft)	85		0	85		0	0		0	0		0
Storage Lanes	1		0	1		0	0		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.992			0.996				0.865			0.865
Flt Protected	0.950			0.950								
Satd. Flow (prot)	1357	3052	0	1357	3064	0	0	0	1400	0	0	1400
Flt Permitted	0.950			0.950								
Satd. Flow (perm)	1357	3052	0	1357	3064	0	0	0	1400	0	0	1400
Link Speed (mph)		32			32			25			25	
Link Distance (ft)		660			648			652			636	
Travel Time (s)		14.1			13.8			17.8			17.3	
Confl. Peds. (#/hr)	3		6	6		3						
Peak Hour Factor	0.83	0.90	0.80	0.65	0.93	0.86	0.25	0.25	0.63	0.25	0.25	0.77
Adj. Flow (vph)	48	1541	85	71	1594	49	0	0	54	0	0	70
Shared Lane Traffic (%)												
Lane Group Flow (vph)	48	1626	0	71	1643	0	0	0	54	0	0	70
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 57.7% ICU Level of Service B
Analysis Period (min) 15

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	60	1340	43	159	1308	95	130	161	141	220	129	59
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Storage Length (ft)	65		0	100		100	360		165	0		115
Storage Lanes	1		0	1		1	1		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor							1.00		0.99	1.00		0.99
Frt		0.995				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1357	3061	0	1357	3076	1376	1357	1619	1376	1357	1619	1376
Flt Permitted	0.086			0.063			0.472			0.324		
Satd. Flow (perm)	123	3061	0	90	3076	1376	673	1619	1358	462	1619	1357
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3				37			155			69
Link Speed (mph)		32			32			25			25	
Link Distance (ft)		648			661			660			400	
Travel Time (s)		13.8			14.1			18.0			10.9	
Confl. Peds. (#/hr)							1		1	1		1
Peak Hour Factor	0.70	0.94	0.89	0.90	0.93	0.89	0.84	0.77	0.91	0.85	0.86	0.85
Adj. Flow (vph)	86	1426	48	177	1406	107	155	209	155	259	150	69
Shared Lane Traffic (%)												
Lane Group Flow (vph)	86	1474	0	177	1406	107	155	209	155	259	150	69
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases	6			2		2	8		8	4		4
Detector Phase	1	6		5	2	2	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	3.0	15.0		7.0	15.0	15.0	3.0	5.0	5.0	3.0	5.0	5.0
Minimum Split (s)	7.5	30.1		13.0	30.0	30.0	8.0	30.0	30.0	8.0	25.0	25.0
Total Split (s)	18.0	58.0		18.0	58.0	58.0	23.0	30.0	30.0	19.0	26.0	26.0
Total Split (%)	14.4%	46.4%		14.4%	46.4%	46.4%	18.4%	24.0%	24.0%	15.2%	20.8%	20.8%
Yellow Time (s)	3.0	3.6		3.0	3.6	3.6	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.5	2.0		1.5	1.5	1.5	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	2.5	3.6		2.5	3.1	3.1	3.0	3.0	3.0	3.0	3.0	3.0
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
Recall Mode	None	C-Max		None	C-Max	C-Max	None	None	None	None	None	None
Act Effct Green (s)	70.9	60.1		78.3	65.8	65.8	37.5	21.8	21.8	37.4	22.0	22.0
Actuated g/C Ratio	0.57	0.48		0.63	0.53	0.53	0.30	0.17	0.17	0.30	0.18	0.18
v/c Ratio	0.52	1.00		0.85	0.87	0.14	0.54	0.74	0.42	1.02	0.53	0.23
Control Delay	26.3	57.1		65.1	34.3	12.3	38.4	64.3	10.0	100.4	54.0	11.9
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.3	57.1		65.1	34.3	12.3	38.4	64.3	10.0	100.4	54.0	11.9
LOS	C	E		E	C	B	D	E	B	F	D	B
Approach Delay		55.4			36.1			40.3			73.1	
Approach LOS		E			D			D			E	
Stops (vph)	29	1108		102	1024	34	96	149	19	166	114	12

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Fuel Used(gal)	1	30		4	22	1	2	4	1	7	3	1
CO Emissions (g/hr)	56	2083		248	1544	65	148	250	81	455	186	39
NOx Emissions (g/hr)	11	405		48	300	13	29	49	16	89	36	8
VOC Emissions (g/hr)	13	483		57	358	15	34	58	19	105	43	9
Dilemma Vehicles (#)	0	0		0	0	0	0	0	0	0	0	0
Queue Length 50th (ft)	26	~695		99	501	27	94	161	0	~176	111	0
Queue Length 95th (ft)	41	#857		#237	#777	68	135	197	57	#282	172	36
Internal Link Dist (ft)		568			581			580			320	
Turn Bay Length (ft)	65			100		100	360		165			115
Base Capacity (vph)	228	1472		222	1620	742	329	350	415	253	298	306
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.38	1.00		0.80	0.87	0.14	0.47	0.60	0.37	1.02	0.50	0.23

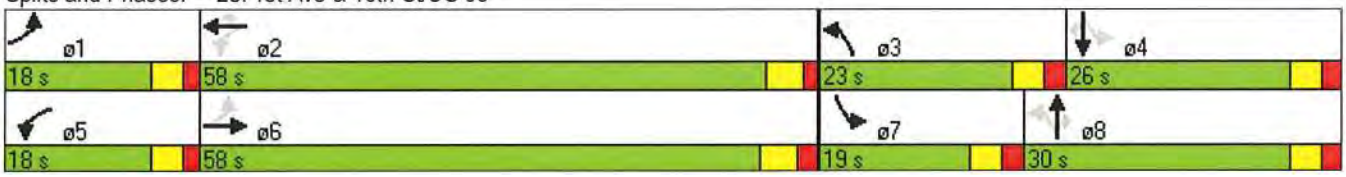
Intersection Summary

Area Type: Other
Cycle Length: 125
Actuated Cycle Length: 125
Offset: 38.5 (31%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow
Natural Cycle: 105
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.02
Intersection Signal Delay: 47.9 Intersection LOS: D
Intersection Capacity Utilization 92.7% ICU Level of Service F
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 28: 1st Ave & 16th St/US 95



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	1	1	1	26	1	34	1	942	55	38	1038	1
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Storage Length (ft)	0		0	0		0	30		0	85		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor												
Frt		0.955			0.930			0.992			0.999	
Flt Protected		0.984			0.979		0.950			0.950		
Satd. Flow (prot)	0	1566	0	0	1517	0	1397	3141	0	1397	3163	0
Flt Permitted		0.984			0.979		0.950			0.950		
Satd. Flow (perm)	0	1566	0	0	1517	0	1397	3141	0	1397	3163	0
Link Speed (mph)		25			25			28			28	
Link Distance (ft)		388			303			281			556	
Travel Time (s)		10.6			8.3			6.8			13.5	
Confl. Peds. (#/hr)							2		1	1		2
Peak Hour Factor	0.25	0.25	0.25	0.79	0.25	0.86	0.25	0.90	0.89	0.68	0.95	0.25
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	4	4	4	33	4	40	4	1047	62	56	1093	4
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	12	0	0	77	0	4	1109	0	56	1097	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 51.3% ICU Level of Service A
Analysis Period (min) 15

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	9	1	136	12	1	9	46	300	18	5	372	20
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95
Frt		0.881			0.958			0.990			0.990	
Flt Protected		0.995			0.973			0.994			0.998	
Satd. Flow (prot)	0	1419	0	0	1509	0	0	3027	0	0	3039	0
Flt Permitted		0.995			0.973			0.994			0.998	
Satd. Flow (perm)	0	1419	0	0	1509	0	0	3027	0	0	3039	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		279			330			336			504	
Travel Time (s)		7.6			9.0			9.2			13.7	
Peak Hour Factor	0.58	0.25	0.89	0.67	0.25	0.88	0.83	0.85	0.65	0.33	0.92	0.70
Adj. Flow (vph)	16	4	153	18	4	10	55	353	28	15	404	29
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	173	0	0	32	0	0	436	0	0	448	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 43.7% ICU Level of Service A
Analysis Period (min) 15

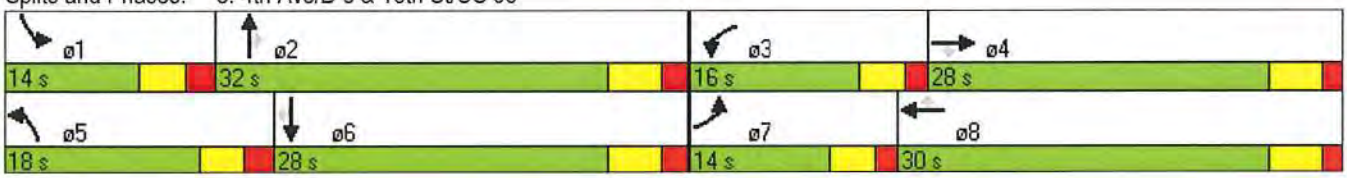
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	247	972	127	264	672	353	349	961	189	219	647	127
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Storage Length (ft)	200		150	200		150	300		150	250		150
Storage Lanes	2		1	2		1	2		1	2		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.91	1.00
Ped Bike Factor	1.00					0.99	1.00		0.99	1.00		0.98
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	2633	4420	1376	2633	4420	1376	2710	4550	1417	2710	4550	1417
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	2632	4420	1376	2633	4420	1358	2706	4550	1398	2710	4550	1394
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			157			263			225			146
Link Speed (mph)		32			32			28			28	
Link Distance (ft)		488			660			429			381	
Travel Time (s)		10.4			14.1			10.4			9.3	
Confl. Peds. (#/hr)	1					1	3		1	1		3
Peak Hour Factor	0.93	0.91	0.78	0.83	0.83	0.83	0.94	0.94	0.84	0.86	0.95	0.87
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	266	1068	163	318	810	425	371	1022	225	255	681	146
Shared Lane Traffic (%)												
Lane Group Flow (vph)	266	1068	163	318	810	425	371	1022	225	255	681	146
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	3.0	15.0	15.0	3.0	15.0	15.0	3.0	5.0	5.0	3.0	5.0	5.0
Minimum Split (s)	8.0	27.0	27.0	8.0	25.0	25.0	8.0	30.0	30.0	8.0	26.0	26.0
Total Split (s)	14.0	28.0	28.0	16.0	30.0	30.0	18.0	32.0	32.0	14.0	28.0	28.0
Total Split (%)	15.6%	31.1%	31.1%	17.8%	33.3%	33.3%	20.0%	35.6%	35.6%	15.6%	31.1%	31.1%
Yellow Time (s)	3.0	3.6	3.6	3.0	3.6	3.6	3.0	3.6	3.6	3.0	3.6	3.6
All-Red Time (s)	1.5	1.5	1.5	1.5	1.5	1.5	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	0.0	-2.0	-2.0	-2.0	-2.0	-2.0	0.0	-2.0	-2.0	0.0
Total Lost Time (s)	2.5	3.1	5.1	2.5	3.1	3.1	3.0	3.6	5.6	3.0	3.6	5.6
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
Recall Mode	None	None	None	None	None	None	None	Min	Min	None	Min	Min
Act Effct Green (s)	11.2	24.2	22.2	13.0	26.0	26.0	14.4	25.8	23.8	10.7	22.1	20.1
Actuated g/C Ratio	0.13	0.28	0.26	0.15	0.30	0.30	0.17	0.30	0.28	0.12	0.26	0.23
v/c Ratio	0.78	0.86	0.35	0.80	0.61	0.72	0.82	0.75	0.41	0.76	0.58	0.33
Control Delay	54.1	38.2	7.5	52.4	28.3	18.2	51.1	31.3	6.1	53.0	30.4	7.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	54.1	38.2	7.5	52.4	28.3	18.2	51.1	31.3	6.1	53.0	30.4	7.3
LOS	D	D	A	D	C	B	D	C	A	D	C	A
Approach Delay		37.7			30.5			32.3			32.6	
Approach LOS		D			C			C			C	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Stops (vph)	220	862	20	235	550	137	311	827	23	196	541	19
Fuel Used(gal)	5	18	1	6	11	4	7	15	1	4	10	1
CO Emissions (g/hr)	370	1234	65	392	747	274	489	1065	95	313	704	67
NOx Emissions (g/hr)	72	240	13	76	145	53	95	207	18	61	137	13
VOC Emissions (g/hr)	86	286	15	91	173	64	113	247	22	72	163	16
Dilemma Vehicles (#)	0	0	0	0	0	0	0	0	0	0	0	0
Queue Length 50th (ft)	75	208	3	90	142	76	105	186	0	72	121	0
Queue Length 95th (ft)	#138	#287	33	#136	168	156	#177	235	41	#121	160	42
Internal Link Dist (ft)		408			580			349			301	
Turn Bay Length (ft)	200		150	200		150	300		150	250		150
Base Capacity (vph)	354	1287	483	416	1390	607	476	1511	587	348	1298	473
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.75	0.83	0.34	0.76	0.58	0.70	0.78	0.68	0.38	0.73	0.52	0.31

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 86
Natural Cycle: 80
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.86
Intersection Signal Delay: 33.3 Intersection LOS: C
Intersection Capacity Utilization 72.5% ICU Level of Service C
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 8: 4th Ave/B-8 & 16th St/US 95



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	85	1461	1574	14	3	36
Ideal Flow (vphpl)	1500	1700	1700	1700	1500	1700
Storage Length (ft)	75			0	0	0
Storage Lanes	1			0	1	0
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Frt			0.998		0.896	
Flt Protected	0.950				0.989	
Satd. Flow (prot)	1357	3076	3070	0	1266	0
Flt Permitted	0.950				0.989	
Satd. Flow (perm)	1357	3076	3070	0	1266	0
Link Speed (mph)		32	32		25	
Link Distance (ft)		495	105		549	
Travel Time (s)		10.5	2.2		15.0	
Peak Hour Factor	0.94	0.94	0.94	0.63	0.25	0.89
Adj. Flow (vph)	90	1554	1674	22	12	40
Shared Lane Traffic (%)						
Lane Group Flow (vph)	90	1554	1696	0	52	0
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 68.4%		ICU Level of Service C	
Analysis Period (min) 15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	37	1624	78	86	1693	62	0	0	58	9	4	30
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Storage Length (ft)	85		0	135		0	0		0	0		0
Storage Lanes	1		0	1		1	0		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.992				0.850			0.865		0.913	
Flt Protected	0.950			0.950							0.992	
Satd. Flow (prot)	1357	3052	0	1357	3076	1376	0	0	1400	0	1466	0
Flt Permitted	0.950			0.950							0.992	
Satd. Flow (perm)	1357	3052	0	1357	3076	1376	0	0	1400	0	1466	0
Link Speed (mph)		32			32			25			25	
Link Distance (ft)		661			483			555			306	
Travel Time (s)		14.1			10.3			15.1			8.3	
Confl. Peds. (#/hr)			2	2								
Peak Hour Factor	0.72	0.93	0.76	0.76	0.97	0.85	0.25	0.25	0.79	0.88	0.38	0.79
Adj. Flow (vph)	51	1746	103	113	1745	73	0	0	73	10	11	38
Shared Lane Traffic (%)												
Lane Group Flow (vph)	51	1849	0	113	1745	73	0	0	73	0	59	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 72.3% ICU Level of Service C
Analysis Period (min) 15

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	3	3	45	1	5	84	29	1228	16	30	1085	18
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Storage Length (ft)	0		0	0		0	85		0	85		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor												
Frt		0.887			0.886			0.997			0.996	
Flt Protected		0.996			0.998		0.950			0.950		
Satd. Flow (prot)	0	1472	0	0	1474	0	1397	3157	0	1397	3154	0
Flt Permitted		0.996			0.998		0.950			0.950		
Satd. Flow (perm)	0	1472	0	0	1474	0	1397	3157	0	1397	3154	0
Link Speed (mph)		25			25			28			28	
Link Distance (ft)		222			285			640			233	
Travel Time (s)		6.1			7.8			15.6			5.7	
Confl. Peds. (#/hr)	1					1	2		3	3		2
Peak Hour Factor	0.50	0.50	0.73	0.25	0.33	0.79	0.58	0.94	0.69	0.50	0.97	0.65
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	6	6	62	4	15	106	50	1306	23	60	1119	28
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	74	0	0	125	0	50	1329	0	60	1147	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 52.0% ICU Level of Service A
Analysis Period (min) 15

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	33	18	29	16	8	12	17	273	12	24	311	24
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Storage Length (ft)	0		0	0		0	85		0	85		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.956			0.961			0.992			0.984	
Flt Protected		0.979			0.982		0.950			0.950		
Satd. Flow (prot)	0	1515	0	0	1528	0	1357	1606	0	1357	1593	0
Flt Permitted		0.979			0.982		0.950			0.950		
Satd. Flow (perm)	0	1515	0	0	1528	0	1357	1606	0	1357	1593	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		395			415			452			660	
Travel Time (s)		10.8			11.3			12.3			18.0	
Confl. Peds. (#/hr)			2	2			2		1	1		2
Peak Hour Factor	0.64	0.65	0.75	0.69	0.38	0.67	0.75	0.85	0.67	0.71	0.95	0.61
Adj. Flow (vph)	52	28	39	23	21	18	23	321	18	34	327	39
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	119	0	0	62	0	23	339	0	34	366	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 38.8% ICU Level of Service A
Analysis Period (min) 15

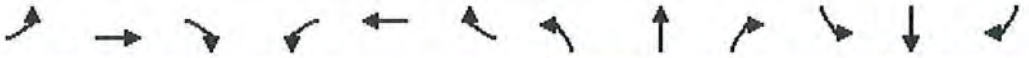
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	1463	12	16	1570	0	28
Ideal Flow (vphpl)	1700	1700	1500	1700	1500	1700
Storage Length (ft)		0	75		0	0
Storage Lanes		0	1		0	1
Taper Length (ft)			25		25	
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00
Frt	0.997					0.865
Flt Protected			0.950			
Satd. Flow (prot)	3067	0	1357	3076	0	1400
Flt Permitted			0.950			
Satd. Flow (perm)	3067	0	1357	3076	0	1400
Link Speed (mph)	32			32	25	
Link Distance (ft)	105			149	553	
Travel Time (s)	2.2			3.2	15.1	
Peak Hour Factor	0.94	0.40	0.92	0.94	0.38	0.56
Adj. Flow (vph)	1556	30	17	1670	0	50
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1586	0	17	1670	0	50
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 55.6%		ICU Level of Service B	
Analysis Period (min) 15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	42	1458	71	48	1558	44	0	0	36	0	0	57
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Storage Length (ft)	115		0	125		0	0		0	0		0
Storage Lanes	1		1	1		0	0		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt			0.850		0.996				0.865			0.865
Flt Protected	0.950			0.950								
Satd. Flow (prot)	1357	3076	1376	1357	3064	0	0	0	1400	0	0	1400
Flt Permitted	0.950			0.950								
Satd. Flow (perm)	1357	3076	1376	1357	3064	0	0	0	1400	0	0	1400
Link Speed (mph)		32			32			25			25	
Link Distance (ft)		660			648			652			636	
Travel Time (s)		14.1			13.8			17.8			17.3	
Confl. Peds. (#/hr)	1		1	1		1						
Peak Hour Factor	0.83	0.90	0.80	0.65	0.93	0.86	0.25	0.25	0.63	0.25	0.25	0.77
Adj. Flow (vph)	51	1620	89	74	1675	51	0	0	57	0	0	74
Shared Lane Traffic (%)												
Lane Group Flow (vph)	51	1620	89	74	1726	0	0	0	57	0	0	74
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 60.3% ICU Level of Service B
Analysis Period (min) 15



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	63	1408	45	167	1375	100	137	169	148	231	136	62
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Storage Length (ft)	65		0	100		100	360		165	0		115
Storage Lanes	1		0	1		1	1		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00				0.97	1.00		0.99	1.00		0.98
Frt		0.995				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1357	3059	0	1357	3076	1376	1357	1619	1376	1357	1619	1376
Flt Permitted	0.090			0.062			0.420			0.326		
Satd. Flow (perm)	129	3059	0	89	3076	1335	597	1619	1356	465	1619	1350
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4				44			119			73
Link Speed (mph)		32			32			25			25	
Link Distance (ft)		648			661			660			400	
Travel Time (s)		13.8			14.1			18.0			10.9	
Confl. Peds. (#/hr)	3		1	1		3	4		2	2		4
Peak Hour Factor	0.70	0.94	0.89	0.90	0.93	0.89	0.84	0.77	0.91	0.85	0.86	0.85
Adj. Flow (vph)	90	1498	51	186	1478	112	163	219	163	272	158	73
Shared Lane Traffic (%)												
Lane Group Flow (vph)	90	1549	0	186	1478	112	163	219	163	272	158	73
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases	6			2		2	8		8	4		4
Detector Phase	1	6		5	2	2	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	3.0	15.0		7.0	15.0	15.0	3.0	5.0	5.0	3.0	5.0	5.0
Minimum Split (s)	7.5	30.1		13.0	30.0	30.0	8.0	30.0	30.0	8.0	25.0	25.0
Total Split (s)	9.2	64.0		15.0	69.8	69.8	18.0	30.0	30.0	16.0	28.0	28.0
Total Split (%)	7.4%	51.2%		12.0%	55.8%	55.8%	14.4%	24.0%	24.0%	12.8%	22.4%	22.4%
Yellow Time (s)	3.0	3.6		3.0	3.6	3.6	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.5	2.0		1.5	1.5	1.5	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	2.5	3.6		2.5	3.1	3.1	3.0	3.0	3.0	3.0	3.0	3.0
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
Recall Mode	None	C-Max		None	C-Max	C-Max	None	None	None	None	None	None
Act Effct Green (s)	70.3	61.4		81.1	70.2	70.2	36.5	22.4	22.4	34.2	21.2	21.2
Actuated g/C Ratio	0.56	0.49		0.65	0.56	0.56	0.29	0.18	0.18	0.27	0.17	0.17
v/c Ratio	0.60	1.03		0.84	0.86	0.15	0.63	0.76	0.48	1.24	0.57	0.25
Control Delay	32.7	63.0		63.7	30.2	9.3	44.6	64.9	18.6	173.1	55.9	11.6
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.7	63.0		63.7	30.2	9.3	44.6	64.9	18.6	173.1	55.9	11.6
LOS	C	E		E	C	A	D	E	B	F	E	B
Approach Delay		61.4			32.4			45.0			112.8	
Approach LOS		E			C			D			F	
Stops (vph)	28	1247		94	1108	29	107	157	42	170	122	12

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Fuel Used(gal)	1	34		4	22	1	2	4	2	10	3	1
CO Emissions (g/hr)	63	2350		251	1557	61	170	265	109	716	200	41
NOx Emissions (g/hr)	12	457		49	303	12	33	51	21	139	39	8
VOC Emissions (g/hr)	15	545		58	361	14	39	61	25	166	46	9
Dilemma Vehicles (#)	0	0		0	0	0	0	0	0	0	0	0
Queue Length 50th (ft)	26	~715		108	535	26	103	169	30	~204	119	0
Queue Length 95th (ft)	43	#856		#273	667	56	148	207	95	#319	176	36
Internal Link Dist (ft)		568			581			580			320	
Turn Bay Length (ft)	65			100		100	360		165			115
Base Capacity (vph)	149	1504		221	1728	770	270	350	386	220	324	328
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.60	1.03		0.84	0.86	0.15	0.60	0.63	0.42	1.24	0.49	0.22

Intersection Summary

Area Type: Other
Cycle Length: 125
Actuated Cycle Length: 125
Offset: 38.5 (31%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow
Natural Cycle: 105
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.24
Intersection Signal Delay: 53.6 Intersection LOS: D
Intersection Capacity Utilization 97.0% ICU Level of Service F
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 28: 1st Ave & 16th St/US 95

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	14	1	21	74	1	37	9	958	56	65	1058	15
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Storage Length (ft)	0		0	0		0	30		0	85		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor												
Frt		0.920			0.956			0.992			0.998	
Flt Protected		0.981			0.968		0.950			0.950		
Satd. Flow (prot)	0	1504	0	0	1542	0	1397	3141	0	1397	3160	0
Flt Permitted		0.981			0.968		0.950			0.950		
Satd. Flow (perm)	0	1504	0	0	1542	0	1397	3141	0	1397	3160	0
Link Speed (mph)		25			25			28			28	
Link Distance (ft)		388			303			281			556	
Travel Time (s)		10.6			8.3			6.8			13.5	
Confl. Peds. (#/hr)							2		1	1		2
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.86	0.85	0.90	0.89	0.85	0.95	0.85
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	16	1	25	87	1	43	11	1064	63	76	1114	18
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	42	0	0	131	0	11	1127	0	76	1132	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 58.6% ICU Level of Service B
Analysis Period (min) 15

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	9	1	136	12	1	9	46	300	18	5	372	20
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95
Frt		0.881			0.958			0.990			0.990	
Flt Protected		0.995			0.973			0.994			0.998	
Satd. Flow (prot)	0	1419	0	0	1509	0	0	3027	0	0	3039	0
Flt Permitted		0.995			0.973			0.994			0.998	
Satd. Flow (perm)	0	1419	0	0	1509	0	0	3027	0	0	3039	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		279			330			336			504	
Travel Time (s)		7.6			9.0			9.2			13.7	
Peak Hour Factor	0.58	0.25	0.89	0.67	0.25	0.88	0.83	0.85	0.65	0.33	0.92	0.70
Adj. Flow (vph)	16	4	153	18	4	10	55	353	28	15	404	29
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	173	0	0	32	0	0	436	0	0	448	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 43.7%		ICU Level of Service A	
Analysis Period (min) 15			

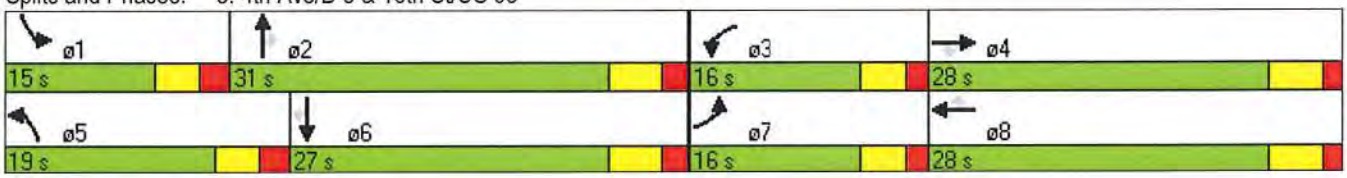
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	279	1004	127	289	719	356	400	979	196	265	684	134
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Storage Length (ft)	200		150	200		150	300		150	250		150
Storage Lanes	2		1	2		1	2		1	2		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.91	1.00
Ped Bike Factor	1.00					0.99	1.00		0.99	1.00		0.98
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	2633	4420	1376	2633	4420	1376	2710	4550	1417	2710	4550	1417
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	2632	4420	1376	2633	4420	1358	2706	4550	1398	2710	4550	1394
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			139			280			231			154
Link Speed (mph)		32			32			28			28	
Link Distance (ft)		488			660			429			381	
Travel Time (s)		10.4			14.1			10.4			9.3	
Confl. Peds. (#/hr)	1					1	3		1	1		3
Peak Hour Factor	0.93	0.91	0.85	0.85	0.83	0.85	0.94	0.94	0.85	0.86	0.95	0.87
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	300	1103	149	340	866	419	426	1041	231	308	720	154
Shared Lane Traffic (%)												
Lane Group Flow (vph)	300	1103	149	340	866	419	426	1041	231	308	720	154
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	3.0	15.0	15.0	3.0	15.0	15.0	3.0	5.0	5.0	3.0	5.0	5.0
Minimum Split (s)	8.0	27.0	27.0	8.0	25.0	25.0	8.0	30.0	30.0	8.0	26.0	26.0
Total Split (s)	16.0	28.0	28.0	16.0	28.0	28.0	19.0	31.0	31.0	15.0	27.0	27.0
Total Split (%)	17.8%	31.1%	31.1%	17.8%	31.1%	31.1%	21.1%	34.4%	34.4%	16.7%	30.0%	30.0%
Yellow Time (s)	3.0	3.6	3.6	3.0	3.6	3.6	3.0	3.6	3.6	3.0	3.6	3.6
All-Red Time (s)	1.5	1.5	1.5	1.5	1.5	1.5	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	0.0	-2.0	-2.0	-2.0	-2.0	-2.0	0.0	-2.0	-2.0	0.0
Total Lost Time (s)	2.5	3.1	5.1	2.5	3.1	3.1	3.0	3.6	5.6	3.0	3.6	5.6
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
Recall Mode	None	None	None	None	None	None	None	Min	Min	None	Min	Min
Act Effct Green (s)	12.9	24.6	22.6	13.3	24.9	24.9	15.7	25.8	23.8	11.9	22.0	20.0
Actuated g/C Ratio	0.15	0.28	0.26	0.15	0.28	0.28	0.18	0.29	0.27	0.14	0.25	0.23
v/c Ratio	0.77	0.89	0.33	0.85	0.69	0.72	0.88	0.78	0.42	0.84	0.63	0.35
Control Delay	51.2	41.3	8.1	58.1	31.8	17.6	56.4	33.2	6.2	58.8	32.2	7.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.2	41.3	8.1	58.1	31.8	17.6	56.4	33.2	6.2	58.8	32.2	7.4
LOS	D	D	A	E	C	B	E	C	A	E	C	A
Approach Delay		40.0			33.7			35.4			35.9	
Approach LOS		D			C			D			D	

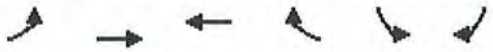
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Stops (vph)	252	897	23	257	617	127	355	860	24	236	583	20
Fuel Used(gal)	6	19	1	6	12	4	8	16	1	6	11	1
CO Emissions (g/hr)	408	1322	67	453	847	269	590	1117	99	400	765	71
NOx Emissions (g/hr)	79	257	13	88	165	52	115	217	19	78	149	14
VOC Emissions (g/hr)	94	306	16	105	196	62	137	259	23	93	177	16
Dilemma Vehicles (#)	0	0	0	0	0	0	0	0	0	0	0	0
Queue Length 50th (ft)	85	220	4	98	161	66	123	194	0	89	131	0
Queue Length 95th (ft)	#144	#303	44	#156	187	155	#207	245	44	#148	172	43
Internal Link Dist (ft)		408			580			349			301	
Turn Bay Length (ft)	200		150	200		150	300		150	250		150
Base Capacity (vph)	406	1256	462	406	1256	586	495	1422	569	371	1215	457
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.74	0.88	0.32	0.84	0.69	0.72	0.86	0.73	0.41	0.83	0.59	0.34

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 87.8
Natural Cycle: 80
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.89
Intersection Signal Delay: 36.2 Intersection LOS: D
Intersection Capacity Utilization 76.2% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 8: 4th Ave/B-8 & 16th St/US 95





Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	106	1504	1620	14	6	36
Ideal Flow (vphpl)	1500	1700	1700	1700	1500	1700
Storage Length (ft)	75			0	0	0
Storage Lanes	1			0	1	0
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Frt			0.999		0.885	
Flt Protected	0.950				0.993	
Satd. Flow (prot)	1357	3076	3073	0	1255	0
Flt Permitted	0.950				0.993	
Satd. Flow (perm)	1357	3076	3073	0	1255	0
Link Speed (mph)		32	32		25	
Link Distance (ft)		495	108		549	
Travel Time (s)		10.5	2.3		15.0	
Peak Hour Factor	0.94	0.94	0.94	0.85	0.85	0.89
Adj. Flow (vph)	113	1600	1723	16	7	40
Shared Lane Traffic (%)						
Lane Group Flow (vph)	113	1600	1739	0	47	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 71.3% ICU Level of Service C
Analysis Period (min) 15

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	37	1624	78	86	1693	62	0	0	58	9	4	30
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Storage Length (ft)	85		0	135		0	0		0	0		0
Storage Lanes	1		0	1		1	0		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.992				0.850			0.865		0.913	
Flt Protected	0.950			0.950							0.992	
Satd. Flow (prot)	1357	3052	0	1357	3076	1376	0	0	1400	0	1466	0
Flt Permitted	0.950			0.950							0.992	
Satd. Flow (perm)	1357	3052	0	1357	3076	1376	0	0	1400	0	1466	0
Link Speed (mph)		32			32			25			25	
Link Distance (ft)		661			483			555			306	
Travel Time (s)		14.1			10.3			15.1			8.3	
Confl. Peds. (#/hr)			2	2								
Peak Hour Factor	0.72	0.93	0.76	0.76	0.97	0.85	0.25	0.25	0.79	0.88	0.38	0.79
Adj. Flow (vph)	51	1746	103	113	1745	73	0	0	73	10	11	38
Shared Lane Traffic (%)												
Lane Group Flow (vph)	51	1849	0	113	1745	73	0	0	73	0	59	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 72.3% ICU Level of Service C
Analysis Period (min) 15

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	28	3	48	28	5	85	56	1261	16	61	1117	18
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Storage Length (ft)	0		0	0		0	85		0	85		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor												
Frt		0.919			0.903			0.998			0.997	
Flt Protected		0.983			0.988		0.950			0.950		
Satd. Flow (prot)	0	1506	0	0	1487	0	1397	3160	0	1397	3157	0
Flt Permitted		0.983			0.988		0.950			0.950		
Satd. Flow (perm)	0	1506	0	0	1487	0	1397	3160	0	1397	3157	0
Link Speed (mph)		25			25			28			28	
Link Distance (ft)		222			285			640			233	
Travel Time (s)		6.1			7.8			15.6			5.7	
Confl. Peds. (#/hr)	1					1	2		3	3		2
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.94	0.85	0.85	0.97	0.85
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	33	4	56	33	6	100	66	1341	19	72	1152	21
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	93	0	0	139	0	66	1360	0	72	1173	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 63.2% ICU Level of Service B
Analysis Period (min) 15

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	33	18	29	16	8	12	17	273	12	24	311	24
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Storage Length (ft)	0		0	0		0	85		0	85		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.956			0.961			0.992			0.984	
Flt Protected		0.979			0.982		0.950			0.950		
Satd. Flow (prot)	0	1515	0	0	1528	0	1357	1606	0	1357	1593	0
Flt Permitted		0.979			0.982		0.950			0.950		
Satd. Flow (perm)	0	1515	0	0	1528	0	1357	1606	0	1357	1593	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		395			415			452			660	
Travel Time (s)		10.8			11.3			12.3			18.0	
Confl. Peds. (#/hr)			2	2			2		1	1		2
Peak Hour Factor	0.64	0.65	0.75	0.69	0.38	0.67	0.75	0.85	0.67	0.71	0.95	0.61
Adj. Flow (vph)	52	28	39	23	21	18	23	321	18	34	327	39
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	119	0	0	62	0	23	339	0	34	366	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 38.8% ICU Level of Service A
Analysis Period (min) 15

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	1464	57	67	1616	0	80
Ideal Flow (vphpl)	1700	1700	1500	1700	1500	1700
Storage Length (ft)		0	75		0	0
Storage Lanes		0	1		0	1
Taper Length (ft)			25		25	
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00
Frt	0.994					0.865
Flt Protected			0.950			
Satd. Flow (prot)	3058	0	1357	3076	0	1400
Flt Permitted			0.950			
Satd. Flow (perm)	3058	0	1357	3076	0	1400
Link Speed (mph)	32			32	25	
Link Distance (ft)	108			149	553	
Travel Time (s)	2.3			3.2	15.1	
Peak Hour Factor	0.94	0.85	0.92	0.94	0.85	0.85
Adj. Flow (vph)	1557	67	73	1719	0	94
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1624	0	73	1719	0	94
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 59.5%		ICU Level of Service B	
Analysis Period (min) 15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	54	1528	72	68	1637	47	0	0	39	0	0	59
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Storage Length (ft)	115		0	125		0	0		0	0		0
Storage Lanes	1		1	1		0	0		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt			0.850		0.995				0.865			0.865
Flt Protected	0.950			0.950								
Satd. Flow (prot)	1357	3076	1376	1357	3061	0	0	0	1400	0	0	1400
Flt Permitted	0.950			0.950								
Satd. Flow (perm)	1357	3076	1376	1357	3061	0	0	0	1400	0	0	1400
Link Speed (mph)		32			32			25			25	
Link Distance (ft)		660			648			652			636	
Travel Time (s)		14.1			13.8			17.8			17.3	
Confl. Peds. (#/hr)	1		1	1		1						
Peak Hour Factor	0.85	0.90	0.85	0.85	0.93	0.86	0.85	0.25	0.85	0.85	0.85	0.85
Adj. Flow (vph)	64	1698	85	80	1760	55	0	0	46	0	0	69
Shared Lane Traffic (%)												
Lane Group Flow (vph)	64	1698	85	80	1815	0	0	0	46	0	0	69
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 63.0% ICU Level of Service B
Analysis Period (min) 15

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	63	1408	45	167	1375	100	137	169	148	231	136	62
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Storage Length (ft)	65		0	100		100	360		165	0		115
Storage Lanes	1		0	1		1	1		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00				0.97	1.00		0.99	1.00		0.98
Frt		0.995				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1357	3059	0	1357	3076	1376	1357	1619	1376	1357	1619	1376
Flt Permitted	0.090			0.062			0.420			0.326		
Satd. Flow (perm)	129	3059	0	89	3076	1335	597	1619	1356	465	1619	1350
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4				45			119			73
Link Speed (mph)		32			32			25			25	
Link Distance (ft)		648			661			660			400	
Travel Time (s)		13.8			14.1			18.0			10.9	
Confl. Peds. (#/hr)	3		1	1		3	4		2	2		4
Peak Hour Factor	0.70	0.94	0.89	0.90	0.93	0.89	0.84	0.77	0.91	0.85	0.86	0.85
Adj. Flow (vph)	90	1498	51	186	1478	112	163	219	163	272	158	73
Shared Lane Traffic (%)												
Lane Group Flow (vph)	90	1549	0	186	1478	112	163	219	163	272	158	73
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases	6			2		2	8		8	4		4
Detector Phase	1	6		5	2	2	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	3.0	15.0		7.0	15.0	15.0	3.0	5.0	5.0	3.0	5.0	5.0
Minimum Split (s)	7.5	30.1		13.0	30.0	30.0	8.0	30.0	30.0	8.0	25.0	25.0
Total Split (s)	9.0	64.0		15.0	70.0	70.0	18.0	30.0	30.0	16.0	28.0	28.0
Total Split (%)	7.2%	51.2%		12.0%	56.0%	56.0%	14.4%	24.0%	24.0%	12.8%	22.4%	22.4%
Yellow Time (s)	3.0	3.6		3.0	3.6	3.6	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.5	2.0		1.5	1.5	1.5	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	2.5	3.6		2.5	3.1	3.1	3.0	3.0	3.0	3.0	3.0	3.0
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
Recall Mode	None	C-Max		None	C-Max	C-Max	None	None	None	None	None	None
Act Effct Green (s)	70.2	61.4		81.1	70.3	70.3	36.5	22.4	22.4	34.2	21.2	21.2
Actuated g/C Ratio	0.56	0.49		0.65	0.56	0.56	0.29	0.18	0.18	0.27	0.17	0.17
v/c Ratio	0.60	1.03		0.84	0.85	0.15	0.63	0.76	0.48	1.24	0.57	0.25
Control Delay	32.8	63.0		63.7	30.1	9.1	44.6	64.9	18.6	173.1	55.9	11.6
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.8	63.0		63.7	30.1	9.1	44.6	64.9	18.6	173.1	55.9	11.6
LOS	C	E		E	C	A	D	E	B	F	E	B
Approach Delay		61.4			32.3			45.0			112.8	
Approach LOS		E			C			D			F	
Stops (vph)	27	1247		94	1108	29	107	157	42	170	122	12

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Fuel Used(gal)	1	34		4	22	1	2	4	2	10	3	1
CO Emissions (g/hr)	63	2350		251	1555	61	170	265	109	716	200	41
NOx Emissions (g/hr)	12	457		49	303	12	33	51	21	139	39	8
VOC Emissions (g/hr)	15	545		58	360	14	39	61	25	166	46	9
Dilemma Vehicles (#)	0	0		0	0	0	0	0	0	0	0	0
Queue Length 50th (ft)	26	~715		108	535	25	103	169	30	~204	119	0
Queue Length 95th (ft)	44	#856		#273	664	55	148	207	95	#319	176	36
Internal Link Dist (ft)		568			581			580			320	
Turn Bay Length (ft)	65			100		100	360		165			115
Base Capacity (vph)	149	1504		221	1729	770	270	350	386	220	324	328
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.60	1.03		0.84	0.85	0.15	0.60	0.63	0.42	1.24	0.49	0.22

Intersection Summary

Area Type: Other
Cycle Length: 125
Actuated Cycle Length: 125
Offset: 38.5 (31%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow
Natural Cycle: 105
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.24
Intersection Signal Delay: 53.6 Intersection LOS: D
Intersection Capacity Utilization 97.0% ICU Level of Service F
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 28: 1st Ave & 16th St/US 95

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	1	1	1	31	1	39	1	1093	63	44	1206	1
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Storage Length (ft)	0		0	0		0	30		0	85		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor												
Frt		0.955			0.926			0.992				
Flt Protected		0.984			0.979		0.950			0.950		
Satd. Flow (prot)	0	1566	0	0	1511	0	1397	3141	0	1397	3167	0
Flt Permitted		0.984			0.979		0.950			0.950		
Satd. Flow (perm)	0	1566	0	0	1511	0	1397	3141	0	1397	3167	0
Link Speed (mph)		25			25			28			28	
Link Distance (ft)		388			303			281			556	
Travel Time (s)		10.6			8.3			6.8			13.5	
Confl. Peds. (#/hr)							2		1	1		2
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.86	0.85	0.90	0.89	0.85	0.95	0.85
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	1	1	1	36	1	45	1	1214	71	52	1269	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	3	0	0	82	0	1	1285	0	52	1270	0
Sign Control		Stop			Stop			Free			Free	

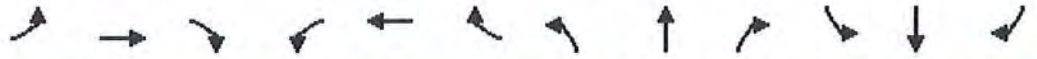
Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 57.5% ICU Level of Service B
Analysis Period (min) 15

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	11	1	157	13	1	11	54	348	21	6	432	23
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95
Frt		0.875			0.942			0.992			0.992	
Flt Protected		0.997			0.974			0.994			0.999	
Satd. Flow (prot)	0	1412	0	0	1485	0	0	3033	0	0	3049	0
Flt Permitted		0.997			0.974			0.994			0.999	
Satd. Flow (perm)	0	1412	0	0	1485	0	0	3033	0	0	3049	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		279			330			336			504	
Travel Time (s)		7.6			9.0			9.2			13.7	
Peak Hour Factor	0.85	0.85	0.89	0.85	0.85	0.88	0.85	0.85	0.85	0.85	0.92	0.85
Adj. Flow (vph)	13	1	176	15	1	13	64	409	25	7	470	27
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	190	0	0	28	0	0	498	0	0	504	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 49.2% ICU Level of Service A
Analysis Period (min) 15



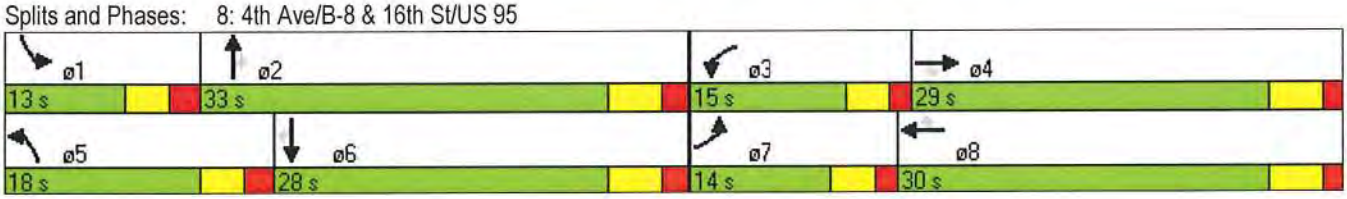
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	272	1129	148	306	780	410	405	1115	220	254	752	148
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Storage Length (ft)	200		150	200		150	300		150	250		150
Storage Lanes	2		1	2		1	2		1	2		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.91	1.00
Ped Bike Factor	1.00					0.99	1.00		0.99	1.00		0.98
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	2633	4420	1376	2633	4420	1376	2710	4550	1417	2710	4550	1417
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	2632	4420	1376	2633	4420	1358	2707	4550	1398	2710	4550	1394
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			146			235			240			170
Link Speed (mph)		32			32			28			28	
Link Distance (ft)		488			660			429			381	
Travel Time (s)		10.4			14.1			10.4			9.3	
Confl. Peds. (#/hr)	1					1	3		1	1		3
Peak Hour Factor	0.93	0.91	0.85	0.85	0.85	0.85	0.94	0.94	0.85	0.86	0.95	0.87
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	292	1241	174	360	918	482	431	1186	259	295	792	170
Shared Lane Traffic (%)												
Lane Group Flow (vph)	292	1241	174	360	918	482	431	1186	259	295	792	170
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	3.0	15.0	15.0	3.0	15.0	15.0	3.0	5.0	5.0	3.0	5.0	5.0
Minimum Split (s)	8.0	27.0	27.0	8.0	25.0	25.0	8.0	30.0	30.0	8.0	26.0	26.0
Total Split (s)	14.0	29.0	29.0	15.0	30.0	30.0	18.0	33.0	33.0	13.0	28.0	28.0
Total Split (%)	15.6%	32.2%	32.2%	16.7%	33.3%	33.3%	20.0%	36.7%	36.7%	14.4%	31.1%	31.1%
Yellow Time (s)	3.0	3.6	3.6	3.0	3.6	3.6	3.0	3.6	3.6	3.0	3.6	3.6
All-Red Time (s)	1.5	1.5	1.5	1.5	1.5	1.5	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	0.0	-2.0	-2.0	-2.0	-2.0	-2.0	0.0	-2.0	-2.0	0.0
Total Lost Time (s)	2.5	3.1	5.1	2.5	3.1	3.1	3.0	3.6	5.6	3.0	3.6	5.6
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
Recall Mode	None	None	None	None	None	None	None	Min	Min	None	Min	Min
Act Effct Green (s)	11.5	25.9	23.9	12.5	26.9	26.9	15.0	28.0	26.0	10.0	23.0	21.0
Actuated g/C Ratio	0.13	0.29	0.27	0.14	0.30	0.30	0.17	0.32	0.29	0.11	0.26	0.24
v/c Ratio	0.86	0.96	0.36	0.97	0.68	0.84	0.94	0.82	0.45	0.96	0.67	0.37
Control Delay	62.7	49.4	9.3	79.8	30.5	29.6	67.7	33.7	7.0	85.0	32.5	7.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	62.7	49.4	9.3	79.8	30.5	29.6	67.7	33.7	7.0	85.0	32.5	7.1
LOS	E	D	A	E	C	C	E	C	A	F	C	A
Approach Delay		47.6			40.4			37.8			41.4	
Approach LOS		D			D			D			D	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Stops (vph)	239	995	32	263	661	202	351	990	33	216	647	22
Fuel Used(gal)	6	23	1	8	13	6	9	18	2	7	12	1
CO Emissions (g/hr)	439	1611	83	570	901	404	660	1284	115	475	847	78
NOx Emissions (g/hr)	85	313	16	111	175	79	128	250	22	92	165	15
VOC Emissions (g/hr)	102	373	19	132	209	94	153	298	27	110	196	18
Dilemma Vehicles (#)	0	0	0	0	0	0	0	0	0	0	0	0
Queue Length 50th (ft)	85	255	12	106	168	137	126	222	8	87	145	0
Queue Length 95th (ft)	#157	#354	54	#178	199	#279	#219	278	53	#158	188	44
Internal Link Dist (ft)		408			580			349			301	
Turn Bay Length (ft)	200		150	200		150	300		150	250		150
Base Capacity (vph)	341	1292	478	371	1341	576	459	1509	598	306	1253	480
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.86	0.96	0.36	0.97	0.68	0.84	0.94	0.79	0.43	0.96	0.63	0.35

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 88.7
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.97
Intersection Signal Delay: 41.7 — Intersection LOS: D
Intersection Capacity Utilization 82.0% — ICU Level of Service E
Analysis Period (min) 15
\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 8: 4th Ave/B-8 & 16th St/US 95



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	88	1696	1828	16	4	41
Ideal Flow (vphpl)	1500	1700	1700	1700	1500	1700
Storage Length (ft)	75			0	0	0
Storage Lanes	1			0	1	0
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Frt			0.999		0.878	
Flt Protected	0.950				0.995	
Satd. Flow (prot)	1357	3076	3073	0	1248	0
Flt Permitted	0.950				0.995	
Satd. Flow (perm)	1357	3076	3073	0	1248	0
Link Speed (mph)		32	32		25	
Link Distance (ft)		495	108		549	
Travel Time (s)		10.5	2.3		15.0	
Peak Hour Factor	0.94	0.94	0.94	0.85	0.85	0.89
Adj. Flow (vph)	94	1804	1945	19	5	46
Shared Lane Traffic (%)						
Lane Group Flow (vph)	94	1804	1964	0	51	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 76.7% ICU Level of Service D
Analysis Period (min) 15

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	43	1885	90	100	1966	72	0	0	67	11	5	35
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Storage Length (ft)	85		0	135		0	0		0	0		0
Storage Lanes	1		0	1		1	0		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.993				0.850			0.865		0.906	
Flt Protected	0.950			0.950							0.990	
Satd. Flow (prot)	1357	3055	0	1357	3076	1376	0	0	1400	0	1452	0
Flt Permitted	0.950			0.950							0.990	
Satd. Flow (perm)	1357	3055	0	1357	3076	1376	0	0	1400	0	1452	0
Link Speed (mph)		32			32			25			25	
Link Distance (ft)		661			483			555			306	
Travel Time (s)		14.1			10.3			15.1			8.3	
Confl. Peds. (#/hr)			2	2								
Peak Hour Factor	0.85	0.93	0.85	0.85	0.97	0.85	0.85	0.85	0.85	0.88	0.85	0.85
Adj. Flow (vph)	51	2027	106	118	2027	85	0	0	79	13	6	41
Shared Lane Traffic (%)												
Lane Group Flow (vph)	51	2133	0	118	2027	85	0	0	79	0	59	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 81.8% ICU Level of Service D
Analysis Period (min) 15

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	4	4	52	1	6	98	34	1425	18	35	1259	21
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Storage Length (ft)	0		0	0		0	85		0	85		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor												
Frt		0.884			0.874			0.998			0.997	
Flt Protected		0.996					0.950			0.950		
Satd. Flow (prot)	0	1467	0	0	1457	0	1397	3160	0	1397	3157	0
Flt Permitted		0.996					0.950			0.950		
Satd. Flow (perm)	0	1467	0	0	1457	0	1397	3160	0	1397	3157	0
Link Speed (mph)		25			25			28			28	
Link Distance (ft)		222			285			640			233	
Travel Time (s)		6.1			7.8			15.6			5.7	
Confl. Peds. (#/hr)	1					1	2		3	3		2
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.94	0.85	0.85	0.97	0.85
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	5	5	61	1	7	115	40	1516	21	41	1298	25
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	71	0	0	123	0	40	1537	0	41	1323	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 59.1% ICU Level of Service B
Analysis Period (min) 15

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	38	21	34	18	10	13	20	317	13	28	361	28
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Storage Length (ft)	0		0	0		0	85		0	85		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.951			0.958			0.994			0.988	
Flt Protected		0.980			0.979		0.950			0.950		
Satd. Flow (prot)	0	1509	0	0	1518	0	1357	1609	0	1357	1600	0
Flt Permitted		0.980			0.979		0.950			0.950		
Satd. Flow (perm)	0	1509	0	0	1518	0	1357	1609	0	1357	1600	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		395			415			452			660	
Travel Time (s)		10.8			11.3			12.3			18.0	
Confl. Peds. (#/hr)			2	2			2		1	1		2
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.95	0.85
Adj. Flow (vph)	45	25	40	21	12	15	24	373	15	33	380	33
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	110	0	0	48	0	24	388	0	33	413	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 44.0% ICU Level of Service A
Analysis Period (min) 15

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	1699	13	18	1823	0	33
Ideal Flow (vphpl)	1700	1700	1500	1700	1500	1700
Storage Length (ft)		0	75		0	0
Storage Lanes		0	1		0	1
Taper Length (ft)			25		25	
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00
Frt	0.999					0.865
Flt Protected			0.950			
Satd. Flow (prot)	3073	0	1357	3076	0	1400
Flt Permitted			0.950			
Satd. Flow (perm)	3073	0	1357	3076	0	1400
Link Speed (mph)	32			32	25	
Link Distance (ft)	108			149	553	
Travel Time (s)	2.3			3.2	15.1	
Peak Hour Factor	0.94	0.85	0.92	0.94	0.85	0.85
Adj. Flow (vph)	1807	15	20	1939	0	39
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1822	0	20	1939	0	39
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 63.0%		ICU Level of Service B	
Analysis Period (min) 15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	49	1692	83	56	1808	51	0	0	41	0	0	66
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Storage Length (ft)	115		0	125		0	0		0	0		0
Storage Lanes	1		1	1		0	0		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt			0.850		0.996				0.865			0.865
Flt Protected	0.950			0.950								
Satd. Flow (prot)	1357	3076	1376	1357	3064	0	0	0	1400	0	0	1400
Flt Permitted	0.950			0.950								
Satd. Flow (perm)	1357	3076	1376	1357	3064	0	0	0	1400	0	0	1400
Link Speed (mph)		32			32			25			25	
Link Distance (ft)		660			648			652			636	
Travel Time (s)		14.1			13.8			17.8			17.3	
Confl. Peds. (#/hr)	1		1	1		1						
Peak Hour Factor	0.85	0.90	0.85	0.85	0.93	0.86	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	58	1880	98	66	1944	59	0	0	48	0	0	78
Shared Lane Traffic (%)												
Lane Group Flow (vph)	58	1880	98	66	2003	0	0	0	48	0	0	78
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 68.9% ICU Level of Service C
Analysis Period (min) 15

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	73	1635	52	194	1596	116	159	196	172	268	157	72
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Storage Length (ft)	65		0	100		100	360		165	0		115
Storage Lanes	1		0	1		1	1		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00				0.97	1.00		0.99	1.00		0.98
Frt		0.995				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1357	3059	0	1357	3076	1376	1357	1619	1376	1357	1619	1376
Flt Permitted	0.065			0.062			0.382			0.303		
Satd. Flow (perm)	93	3059	0	89	3076	1335	543	1619	1356	432	1619	1350
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4				45			93			85
Link Speed (mph)		32			32			25			25	
Link Distance (ft)		648			661			660			400	
Travel Time (s)		13.8			14.1			18.0			10.9	
Confl. Peds. (#/hr)	3		1	1		3	4		2	2		4
Peak Hour Factor	0.85	0.94	0.89	0.90	0.93	0.89	0.85	0.85	0.91	0.85	0.86	0.85
Adj. Flow (vph)	86	1739	58	216	1716	130	187	231	189	315	183	85
Shared Lane Traffic (%)												
Lane Group Flow (vph)	86	1797	0	216	1716	130	187	231	189	315	183	85
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases	6			2		2	8		8	4		4
Detector Phase	1	6		5	2	2	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	3.0	15.0		7.0	15.0	15.0	3.0	5.0	5.0	3.0	5.0	5.0
Minimum Split (s)	7.5	30.1		13.0	30.0	30.0	8.0	30.0	30.0	8.0	25.0	25.0
Total Split (s)	8.0	65.0		14.0	71.0	71.0	17.0	30.0	30.0	16.0	29.0	29.0
Total Split (%)	6.4%	52.0%		11.2%	56.8%	56.8%	13.6%	24.0%	24.0%	12.8%	23.2%	23.2%
Yellow Time (s)	3.0	3.6		3.0	3.6	3.6	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.5	2.0		1.5	1.5	1.5	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	2.5	3.6		2.5	3.1	3.1	3.0	3.0	3.0	3.0	3.0	3.0
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
Recall Mode	None	C-Max		None	C-Max	C-Max	None	None	None	None	None	None
Act Effct Green (s)	69.7	61.4		80.5	70.2	70.2	36.7	23.0	23.0	35.3	22.3	22.3
Actuated g/C Ratio	0.56	0.49		0.64	0.56	0.56	0.29	0.18	0.18	0.28	0.18	0.18
v/c Ratio	0.69	1.19		1.01	0.99	0.17	0.75	0.78	0.58	1.44	0.63	0.27
Control Delay	49.9	124.6		100.4	48.1	9.7	53.9	65.9	29.9	253.8	57.3	10.7
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	49.9	124.6		100.4	48.1	9.7	53.9	65.9	29.9	253.8	57.3	10.7
LOS	D	F		F	D	A	D	E	C	F	E	B
Approach Delay		121.1			51.1			51.0			156.7	
Approach LOS		F			D			D			F	
Stops (vph)	32	1405		104	1333	37	126	182	80	182	142	12

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Fuel Used(gal)	1	60		6	32	1	3	4	2	16	3	1
CO Emissions (g/hr)	91	4182		390	2235	73	218	310	162	1134	235	46
NOx Emissions (g/hr)	18	814		76	435	14	42	60	32	221	46	9
VOC Emissions (g/hr)	21	969		90	518	17	51	72	38	263	54	11
Dilemma Vehicles (#)	0	0		0	0	0	0	0	0	0	0	0
Queue Length 50th (ft)	27	~927		~153	~778	32	119	178	69	~274	137	0
Queue Length 95th (ft)	#112	#1068		#343	#918	65	172	245	145	#400	200	38
Internal Link Dist (ft)		568			581			580			320	
Turn Bay Length (ft)	65			100		100	360		165			115
Base Capacity (vph)	125	1505		214	1727	770	252	350	366	218	337	348
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.69	1.19		1.01	0.99	0.17	0.74	0.66	0.52	1.44	0.54	0.24

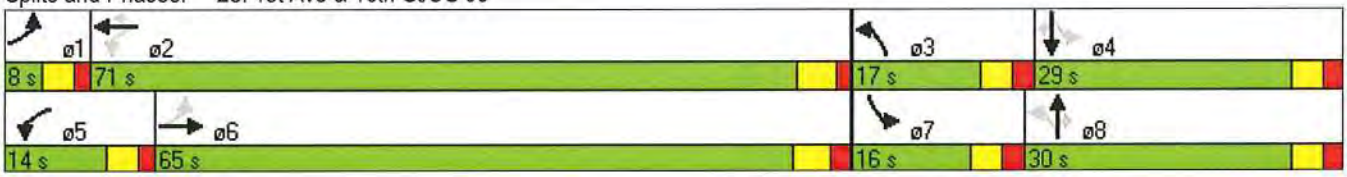
Intersection Summary

Area Type: Other
Cycle Length: 125
Actuated Cycle Length: 125
Offset: 38.5 (31%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow
Natural Cycle: 115
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.44
Intersection Signal Delay: 88.8 Intersection LOS: F
Intersection Capacity Utilization 110.2% ICU Level of Service H
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 28: 1st Ave & 16th St/US 95



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	14	1	21	79	1	42	9	1109	64	71	1226	15
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Storage Length (ft)	0		0	0		0	30		0	85		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor												
Frt		0.920			0.954			0.992			0.998	
Flt Protected		0.981			0.969		0.950			0.950		
Satd. Flow (prot)	0	1504	0	0	1541	0	1397	3141	0	1397	3160	0
Flt Permitted		0.981			0.969		0.950			0.950		
Satd. Flow (perm)	0	1504	0	0	1541	0	1397	3141	0	1397	3160	0
Link Speed (mph)		25			25			28			28	
Link Distance (ft)		388			303			281			556	
Travel Time (s)		10.6			8.3			6.8			13.5	
Confl. Peds. (#/hr)							2		1	1		2
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.86	0.85	0.90	0.89	0.85	0.95	0.85
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	16	1	25	93	1	49	11	1232	72	84	1291	18
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	42	0	0	143	0	11	1304	0	84	1309	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 64.7% ICU Level of Service C
Analysis Period (min) 15

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	11	1	157	13	1	11	54	348	21	6	432	23
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95
Frt		0.875			0.942			0.992			0.992	
Flt Protected		0.997			0.974			0.994			0.999	
Satd. Flow (prot)	0	1412	0	0	1485	0	0	3033	0	0	3049	0
Flt Permitted		0.997			0.974			0.994			0.999	
Satd. Flow (perm)	0	1412	0	0	1485	0	0	3033	0	0	3049	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		279			330			336			504	
Travel Time (s)		7.6			9.0			9.2			13.7	
Peak Hour Factor	0.85	0.85	0.89	0.85	0.85	0.88	0.85	0.85	0.85	0.85	0.92	0.85
Adj. Flow (vph)	13	1	176	15	1	13	64	409	25	7	470	27
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	190	0	0	28	0	0	498	0	0	504	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 49.2% ICU Level of Service A
Analysis Period (min) 15

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	304	1161	148	331	827	413	456	1133	227	300	789	155
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Storage Length (ft)	200		150	200		150	300		150	250		150
Storage Lanes	2		1	2		1	2		1	2		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.91	1.00
Ped Bike Factor	1.00					0.99	1.00		0.99	1.00		0.98
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	2633	4420	1376	2633	4420	1376	2710	4550	1417	2710	4550	1417
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	2632	4420	1376	2633	4420	1358	2707	4550	1398	2710	4550	1394
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			142			282			233			178
Link Speed (mph)		32			32			28			28	
Link Distance (ft)		488			660			429			381	
Travel Time (s)		10.4			14.1			10.4			9.3	
Confl. Peds. (#/hr)	1					1	3		1	1		3
Peak Hour Factor	0.93	0.91	0.85	0.85	0.85	0.85	0.94	0.94	0.85	0.86	0.95	0.87
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	327	1276	174	389	973	486	485	1205	267	349	831	178
Shared Lane Traffic (%)												
Lane Group Flow (vph)	327	1276	174	389	973	486	485	1205	267	349	831	178
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	3.0	15.0	15.0	3.0	15.0	15.0	3.0	5.0	5.0	3.0	5.0	5.0
Minimum Split (s)	8.0	27.0	27.0	8.0	25.0	25.0	8.0	30.0	30.0	8.0	26.0	26.0
Total Split (s)	17.0	29.0	29.0	16.0	28.0	28.0	19.0	30.0	30.0	15.0	26.0	26.0
Total Split (%)	18.9%	32.2%	32.2%	17.8%	31.1%	31.1%	21.1%	33.3%	33.3%	16.7%	28.9%	28.9%
Yellow Time (s)	3.0	3.6	3.6	3.0	3.6	3.6	3.0	3.6	3.6	3.0	3.6	3.6
All-Red Time (s)	1.5	1.5	1.5	1.5	1.5	1.5	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	0.0	-2.0	-2.0	-2.0	-2.0	-2.0	0.0	-2.0	-2.0	0.0
Total Lost Time (s)	2.5	3.1	5.1	2.5	3.1	3.1	3.0	3.6	5.6	3.0	3.6	5.6
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
Recall Mode	None	None	None	None	None	None	None	Min	Min	None	Min	Min
Act Effct Green (s)	14.0	25.9	23.9	13.5	25.4	25.4	16.0	26.3	24.3	12.0	22.3	20.3
Actuated g/C Ratio	0.16	0.29	0.27	0.15	0.28	0.28	0.18	0.29	0.27	0.13	0.25	0.23
v/c Ratio	0.80	1.00	0.37	0.98	0.78	0.83	1.01	0.91	0.49	0.97	0.74	0.39
Control Delay	52.4	58.9	9.8	81.5	35.0	26.5	81.0	41.6	8.9	80.1	35.7	7.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.4	58.9	9.8	81.5	35.0	26.5	81.0	41.6	8.9	80.1	35.7	7.5
LOS	D	E	A	F	C	C	F	D	A	F	D	A
Approach Delay		52.9			42.5			46.9			43.4	
Approach LOS		D			D			D			D	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Stops (vph)	276	1029	34	286	737	172	395	1018	42	260	703	23
Fuel Used(gal)	6	26	1	9	15	5	12	21	2	8	13	1
CO Emissions (g/hr)	450	1815	85	625	1024	375	829	1437	128	542	932	82
NOx Emissions (g/hr)	88	353	17	122	199	73	161	280	25	105	181	16
VOC Emissions (g/hr)	104	421	20	145	237	87	192	333	30	126	216	19
Dilemma Vehicles (#)	0	0	0	0	0	0	0	0	0	0	0	0
Queue Length 50th (ft)	92	~266	14	115	187	112	~145	240	14	103	159	0
Queue Length 95th (ft)	#155	#370	56	#189	220	#254	#247	#324	65	#176	205	47
Internal Link Dist (ft)		408			580			349			301	
Turn Bay Length (ft)	200		150	200		150	300		150	250		150
Base Capacity (vph)	425	1273	470	395	1250	587	482	1336	549	361	1133	454
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.77	1.00	0.37	0.98	0.78	0.83	1.01	0.90	0.49	0.97	0.73	0.39

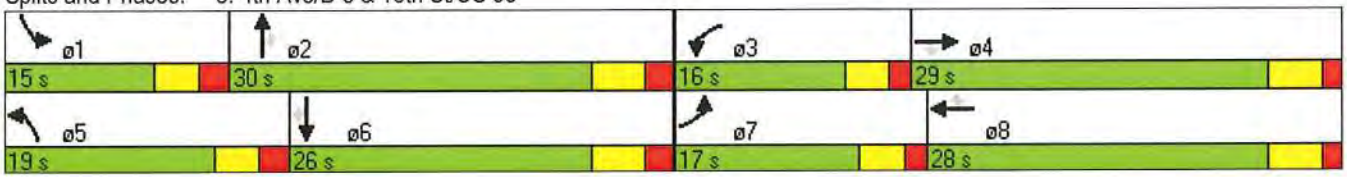
Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 89.9
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 1.01
Intersection Signal Delay: 46.6 Intersection LOS: D
Intersection Capacity Utilization 85.7% ICU Level of Service E
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 8: 4th Ave/B-8 & 16th St/US 95



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	109	1739	1874	16	7	41
Ideal Flow (vphpl)	1500	1700	1700	1700	1500	1700
Storage Length (ft)	75			0	0	0
Storage Lanes	1			0	1	0
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Frt			0.999		0.885	
Flt Protected	0.950				0.993	
Satd. Flow (prot)	1357	3076	3073	0	1255	0
Flt Permitted	0.950				0.993	
Satd. Flow (perm)	1357	3076	3073	0	1255	0
Link Speed (mph)		32	32		25	
Link Distance (ft)		495	108		549	
Travel Time (s)		10.5	2.3		15.0	
Peak Hour Factor	0.94	0.94	0.94	0.85	0.85	0.89
Adj. Flow (vph)	116	1850	1994	19	8	46
Shared Lane Traffic (%)						
Lane Group Flow (vph)	116	1850	2013	0	54	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 79.8% ICU Level of Service D
Analysis Period (min) 15

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	43	1885	90	100	1966	72	0	0	67	11	5	35
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Storage Length (ft)	85		0	135		0	0		0	0		0
Storage Lanes	1		0	1		1	0		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.993				0.850			0.865		0.906	
Flt Protected	0.950			0.950							0.990	
Satd. Flow (prot)	1357	3055	0	1357	3076	1376	0	0	1400	0	1452	0
Flt Permitted	0.950			0.950							0.990	
Satd. Flow (perm)	1357	3055	0	1357	3076	1376	0	0	1400	0	1452	0
Link Speed (mph)		32			32			25			25	
Link Distance (ft)		661			483			555			306	
Travel Time (s)		14.1			10.3			15.1			8.3	
Confl. Peds. (#/hr)			2	2								
Peak Hour Factor	0.85	0.93	0.85	0.85	0.97	0.85	0.85	0.85	0.85	0.88	0.85	0.85
Adj. Flow (vph)	51	2027	106	118	2027	85	0	0	79	13	6	41
Shared Lane Traffic (%)												
Lane Group Flow (vph)	51	2133	0	118	2027	85	0	0	79	0	59	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 81.8% ICU Level of Service D
Analysis Period (min) 15

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	29	4	55	28	6	99	61	1458	18	66	1291	21
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Storage Length (ft)	0		0	0		0	85		0	85		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor												
Frt		0.916			0.900			0.998			0.997	
Flt Protected		0.984			0.990		0.950			0.950		
Satd. Flow (prot)	0	1502	0	0	1485	0	1397	3160	0	1397	3157	0
Flt Permitted		0.984			0.990		0.950			0.950		
Satd. Flow (perm)	0	1502	0	0	1485	0	1397	3160	0	1397	3157	0
Link Speed (mph)		25			25			28			28	
Link Distance (ft)		222			285			640			233	
Travel Time (s)		6.1			7.8			15.6			5.7	
Confl. Peds. (#/hr)	1					1	2		3	3		2
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.94	0.85	0.85	0.97	0.85
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	34	5	65	33	7	116	72	1551	21	78	1331	25
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	104	0	0	156	0	72	1572	0	78	1356	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 70.8% ICU Level of Service C
Analysis Period (min) 15

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	38	21	34	18	10	13	20	317	13	28	361	28
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Storage Length (ft)	0		0	0		0	85		0	85		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.951			0.958			0.994			0.988	
Flt Protected		0.980			0.979		0.950			0.950		
Satd. Flow (prot)	0	1509	0	0	1518	0	1357	1609	0	1357	1600	0
Flt Permitted		0.980			0.979		0.950			0.950		
Satd. Flow (perm)	0	1509	0	0	1518	0	1357	1609	0	1357	1600	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		395			415			452			660	
Travel Time (s)		10.8			11.3			12.3			18.0	
Confl. Peds. (#/hr)			2	2			2		1	1		2
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.95	0.85
Adj. Flow (vph)	45	25	40	21	12	15	24	373	15	33	380	33
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	110	0	0	48	0	24	388	0	33	413	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 44.0% ICU Level of Service A
Analysis Period (min) 15

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	1700	58	69	1869	0	85
Ideal Flow (vphpl)	1700	1700	1500	1700	1500	1700
Storage Length (ft)		0	75		0	0
Storage Lanes		0	1		0	1
Taper Length (ft)			25		25	
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00
Frt	0.995					0.865
Flt Protected			0.950			
Satd. Flow (prot)	3061	0	1357	3076	0	1400
Flt Permitted			0.950			
Satd. Flow (perm)	3061	0	1357	3076	0	1400
Link Speed (mph)	32			32	25	
Link Distance (ft)	108			149	553	
Travel Time (s)	2.3			3.2	15.1	
Peak Hour Factor	0.94	0.85	0.92	0.94	0.85	0.85
Adj. Flow (vph)	1809	68	75	1988	0	100
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1877	0	75	1988	0	100
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 67.1%		ICU Level of Service C	
Analysis Period (min) 15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	61	1762	84	76	1887	54	0	0	44	0	0	68
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Storage Length (ft)	115		0	125		0	0		0	0		0
Storage Lanes	1		1	1		0	0		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt			0.850		0.995				0.865			0.865
Flt Protected	0.950			0.950								
Satd. Flow (prot)	1357	3076	1376	1357	3061	0	0	0	1400	0	0	1400
Flt Permitted	0.950			0.950								
Satd. Flow (perm)	1357	3076	1376	1357	3061	0	0	0	1400	0	0	1400
Link Speed (mph)		32			32			25			25	
Link Distance (ft)		660			648			652			636	
Travel Time (s)		14.1			13.8			17.8			17.3	
Confl. Peds. (#/hr)	1		1	1		1						
Peak Hour Factor	0.85	0.90	0.85	0.85	0.93	0.86	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	72	1958	99	89	2029	63	0	0	52	0	0	80
Shared Lane Traffic (%)												
Lane Group Flow (vph)	72	1958	99	89	2092	0	0	0	52	0	0	80
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 71.6% ICU Level of Service C
Analysis Period (min) 15

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	73	1635	52	194	1596	116	159	196	172	268	157	72
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Storage Length (ft)	65		0	100		100	360		165	0		115
Storage Lanes	1		0	1		1	1		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00				0.97	1.00		0.99	1.00		0.98
Frt		0.995				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1357	3059	0	1357	3076	1376	1357	1619	1376	1357	1619	1376
Flt Permitted	0.065			0.062			0.382			0.303		
Satd. Flow (perm)	93	3059	0	89	3076	1335	543	1619	1356	432	1619	1350
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4				45			93			85
Link Speed (mph)		32			32			25			25	
Link Distance (ft)		648			661			660			400	
Travel Time (s)		13.8			14.1			18.0			10.9	
Confl. Peds. (#/hr)	3		1	1		3	4		2	2		4
Peak Hour Factor	0.85	0.94	0.89	0.90	0.93	0.89	0.85	0.85	0.91	0.85	0.86	0.85
Adj. Flow (vph)	86	1739	58	216	1716	130	187	231	189	315	183	85
Shared Lane Traffic (%)												
Lane Group Flow (vph)	86	1797	0	216	1716	130	187	231	189	315	183	85
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases	6			2		2	8		8	4		4
Detector Phase	1	6		5	2	2	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	3.0	15.0		7.0	15.0	15.0	3.0	5.0	5.0	3.0	5.0	5.0
Minimum Split (s)	7.5	30.1		13.0	30.0	30.0	8.0	30.0	30.0	8.0	25.0	25.0
Total Split (s)	8.0	65.0		14.0	71.0	71.0	17.0	30.0	30.0	16.0	29.0	29.0
Total Split (%)	6.4%	52.0%		11.2%	56.8%	56.8%	13.6%	24.0%	24.0%	12.8%	23.2%	23.2%
Yellow Time (s)	3.0	3.6		3.0	3.6	3.6	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.5	2.0		1.5	1.5	1.5	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	2.5	3.6		2.5	3.1	3.1	3.0	3.0	3.0	3.0	3.0	3.0
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
Recall Mode	None	C-Max		None	C-Max	C-Max	None	None	None	None	None	None
Act Effct Green (s)	69.7	61.4		80.5	70.2	70.2	36.7	23.0	23.0	35.3	22.3	22.3
Actuated g/C Ratio	0.56	0.49		0.64	0.56	0.56	0.29	0.18	0.18	0.28	0.18	0.18
v/c Ratio	0.69	1.19		1.01	0.99	0.17	0.75	0.78	0.58	1.44	0.63	0.27
Control Delay	49.9	124.6		100.4	48.1	9.7	53.9	65.9	29.9	253.8	57.3	10.7
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	49.9	124.6		100.4	48.1	9.7	53.9	65.9	29.9	253.8	57.3	10.7
LOS	D	F		F	D	A	D	E	C	F	E	B
Approach Delay		121.1			51.1			51.0			156.7	
Approach LOS		F			D			D			F	
Stops (vph)	32	1405		104	1333	37	126	182	80	182	142	12

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Fuel Used(gal)	1	60		6	32	1	3	4	2	16	3	1
CO Emissions (g/hr)	91	4182		390	2235	73	218	310	162	1134	235	46
NOx Emissions (g/hr)	18	814		76	435	14	42	60	32	221	46	9
VOC Emissions (g/hr)	21	969		90	518	17	51	72	38	263	54	11
Dilemma Vehicles (#)	0	0		0	0	0	0	0	0	0	0	0
Queue Length 50th (ft)	27	~927		~153	~778	32	119	178	69	~274	137	0
Queue Length 95th (ft)	#112	#1068		#343	#918	65	172	245	145	#400	200	38
Internal Link Dist (ft)		568			581			580			320	
Turn Bay Length (ft)	65			100		100	360		165			115
Base Capacity (vph)	125	1505		214	1727	770	252	350	366	218	337	348
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.69	1.19		1.01	0.99	0.17	0.74	0.66	0.52	1.44	0.54	0.24

Intersection Summary

Area Type: Other
Cycle Length: 125
Actuated Cycle Length: 125
Offset: 38.5 (31%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow
Natural Cycle: 115
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.44
Intersection Signal Delay: 88.8 Intersection LOS: F
Intersection Capacity Utilization 110.2% ICU Level of Service H
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 28: 1st Ave & 16th St/US 95

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	1	1	1	21	1	46	1	880	36	21	1018	1
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Storage Length (ft)	0		0	0		0	85		0	85		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor												
Frt		0.955			0.927			0.993			0.999	
Flt Protected		0.984			0.979		0.950			0.950		
Satd. Flow (prot)	0	1566	0	0	1513	0	1397	3144	0	1397	3163	0
Flt Permitted		0.984			0.979		0.950			0.950		
Satd. Flow (perm)	0	1566	0	0	1513	0	1397	3144	0	1397	3163	0
Link Speed (mph)		25			25			28			28	
Link Distance (ft)		410			303			662			528	
Travel Time (s)		11.2			8.3			16.1			12.9	
Confl. Peds. (#/hr)							4					4
Peak Hour Factor	0.25	0.25	0.25	0.50	0.25	0.85	0.25	0.86	0.68	0.80	0.93	0.25
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	4	4	4	42	4	54	4	1023	53	26	1095	4
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	12	0	0	100	0	4	1076	0	26	1099	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 43.9% ICU Level of Service A
Analysis Period (min) 15

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	1	1	143	5	1	1	34	244	4	5	300	8
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95
Frt		0.870			0.970			0.996			0.994	
Flt Protected		0.999			0.973			0.990			0.998	
Satd. Flow (prot)	0	1407	0	0	1528	0	0	3033	0	0	3052	0
Flt Permitted		0.999			0.973			0.990			0.998	
Satd. Flow (perm)	0	1407	0	0	1528	0	0	3033	0	0	3052	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		279			330			336			488	
Travel Time (s)		7.6			9.0			9.2			13.3	
Peak Hour Factor	0.25	0.25	0.64	0.50	0.25	0.25	0.42	0.83	0.38	0.33	0.84	0.50
Adj. Flow (vph)	4	4	223	10	4	4	81	294	11	15	357	16
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	231	0	0	18	0	0	386	0	0	388	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 38.5% ICU Level of Service A
Analysis Period (min) 15

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	131	967	151	261	1333	129	310	588	299	163	630	155
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Storage Length (ft)	150		0	205		325	240		0	250		0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor								1.00				
Frt		0.978				0.850		0.954			0.970	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1357	3009	0	1357	3076	1376	1397	3008	0	1397	3072	0
Flt Permitted	0.095			0.091			0.108			0.100		
Satd. Flow (perm)	136	3009	0	130	3076	1376	159	3008	0	147	3072	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		16				129		56			25	
Link Speed (mph)		32			32			28			28	
Link Distance (ft)		399			660			662			662	
Travel Time (s)		8.5			14.1			16.1			16.1	
Confl. Peds. (#/hr)									1	1		
Peak Hour Factor	0.79	0.90	0.83	0.90	0.92	0.75	0.84	0.75	0.87	0.87	0.91	0.88
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	166	1074	182	290	1449	172	369	784	344	187	692	176
Shared Lane Traffic (%)												
Lane Group Flow (vph)	166	1256	0	290	1449	172	369	1128	0	187	868	0
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8	2			6		
Detector Phase	7	4		3	8	8	5	2		1	6	
Switch Phase												
Minimum Initial (s)	3.0	15.0		3.0	15.0	15.0	3.0	5.0		3.0	5.0	
Minimum Split (s)	8.0	27.0		8.0	25.0	25.0	8.0	30.0		8.0	26.0	
Total Split (s)	20.0	45.0		20.0	45.0	45.0	20.0	45.0		20.0	45.0	
Total Split (%)	15.4%	34.6%		15.4%	34.6%	34.6%	15.4%	34.6%		15.4%	34.6%	
Yellow Time (s)	3.0	3.6		3.0	3.6	3.6	3.0	3.6		3.0	3.6	
All-Red Time (s)	1.5	1.5		1.5	1.5	1.5	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	
Total Lost Time (s)	2.5	3.1		2.5	3.1	3.1	3.0	3.6		3.0	3.6	
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Recall Mode	None	None		None	None	None	None	Min		None	Min	
Act Effct Green (s)	57.8	41.9		61.0	44.1	44.1	58.6	41.4		56.6	40.2	
Actuated g/C Ratio	0.45	0.33		0.47	0.34	0.34	0.45	0.32		0.44	0.31	
v/c Ratio	0.81	1.27		1.27	1.37	0.31	1.56	1.12		0.86	0.89	
Control Delay	58.9	165.6		184.6	209.1	11.2	302.4	107.1		65.5	53.2	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	58.9	165.6		184.6	209.1	11.2	302.4	107.1		65.5	53.2	
LOS	E	F		F	F	B	F	F		E	D	
Approach Delay		153.2			187.6			155.2			55.4	
Approach LOS		F			F			F			E	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Stops (vph)	90	892		161	1012	29	179	725		110	697	
Fuel Used(gal)	3	49		12	70	1	22	28		4	16	
CO Emissions (g/hr)	195	3418		847	4876	78	1510	1927		250	1122	
NOx Emissions (g/hr)	38	665		165	949	15	294	375		49	218	
VOC Emissions (g/hr)	45	792		196	1130	18	350	447		58	260	
Dilemma Vehicles (#)	0	0		0	0	0	0	0		0	0	
Queue Length 50th (ft)	94	~704		~274	~878	25	~399	~564		111	354	
Queue Length 95th (ft)	146	#845		#457	#1018	52	#541	#504		#221	#465	
Internal Link Dist (ft)		319			580			582			582	
Turn Bay Length (ft)	150			205		325	240			250		
Base Capacity (vph)	229	990		228	1054	556	236	1005		231	1004	
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	
Reduced v/c Ratio	0.72	1.27		1.27	1.37	0.31	1.56	1.12		0.81	0.86	

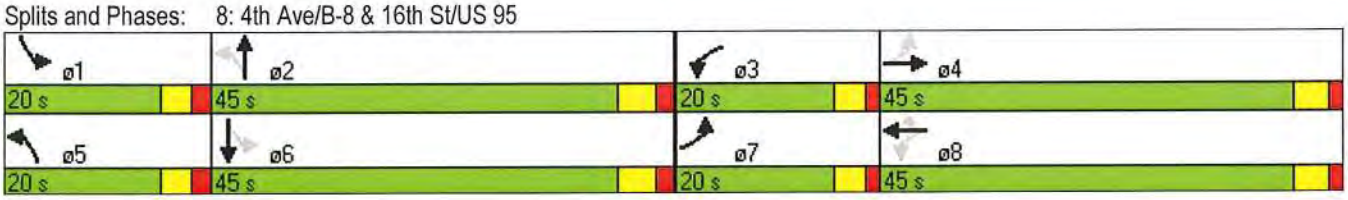
Intersection Summary

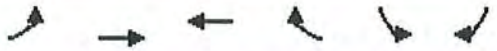
Area Type: Other
Cycle Length: 130
Actuated Cycle Length: 128.8
Natural Cycle: 110
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 1.56
Intersection Signal Delay: 147.3 — Intersection LOS: F
Intersection Capacity Utilization 113.7% — ICU Level of Service H
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 8: 4th Ave/B-8 & 16th St/US 95





Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	34	1311	2045	19	1	36
Ideal Flow (vphpl)	1500	1700	1700	1700	1500	1700
Storage Length (ft)	75			0	0	0
Storage Lanes	1			0	1	0
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Frt			0.999		0.875	
Flt Protected	0.950				0.996	
Satd. Flow (prot)	1357	3076	3073	0	1245	0
Flt Permitted	0.950				0.996	
Satd. Flow (perm)	1357	3076	3073	0	1245	0
Link Speed (mph)		32	32		25	
Link Distance (ft)		368	103		565	
Travel Time (s)		7.8	2.2		15.4	
Peak Hour Factor	0.57	0.99	0.93	0.88	0.25	0.75
Adj. Flow (vph)	60	1324	2199	22	4	48
Shared Lane Traffic (%)						
Lane Group Flow (vph)	60	1324	2221	0	52	0
Sign Control		Free	Free		Stop	

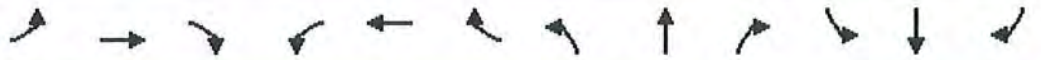
Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 73.9% ICU Level of Service D
Analysis Period (min) 15

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	32	1481	27	56	1822	79	0	0	38	4	1	35
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Storage Length (ft)	85		0	135		0	0		0	0		0
Storage Lanes	1		0	1		1	0		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.997				0.850			0.865		0.900	
Flt Protected	0.950			0.950							0.991	
Satd. Flow (prot)	1357	3067	0	1357	3076	1376	0	0	1400	0	1444	0
Flt Permitted	0.950			0.950							0.991	
Satd. Flow (perm)	1357	3067	0	1357	3076	1376	0	0	1400	0	1444	0
Link Speed (mph)		32			32			25			25	
Link Distance (ft)		661			435			555			306	
Travel Time (s)		14.1			9.3			15.1			8.3	
Confl. Peds. (#/hr)	1					1						
Peak Hour Factor	0.75	0.92	0.71	0.81	0.95	0.82	0.25	0.25	0.58	0.38	0.25	0.81
Adj. Flow (vph)	43	1610	38	69	1918	96	0	0	66	11	4	43
Shared Lane Traffic (%)												
Lane Group Flow (vph)	43	1648	0	69	1918	96	0	0	66	0	58	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 68.9% ICU Level of Service C
Analysis Period (min) 15



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	5	1	28	4	3	71	15	1160	15	34	998	21
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Storage Length (ft)	0		0	0		0	85		0	85		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor												
Frt		0.902			0.886			0.997			0.997	
Flt Protected		0.990			0.995		0.950			0.950		
Satd. Flow (prot)	0	1488	0	0	1469	0	1397	3157	0	1397	3157	0
Flt Permitted		0.990			0.995		0.950			0.950		
Satd. Flow (perm)	0	1488	0	0	1469	0	1397	3157	0	1397	3157	0
Link Speed (mph)		25			25			28			28	
Link Distance (ft)		222			308			596			662	
Travel Time (s)		6.1			8.4			14.5			16.1	
Confl. Peds. (#/hr)							2		2	2		2
Peak Hour Factor	0.50	0.25	0.75	0.38	0.50	0.78	0.69	0.90	0.69	0.78	0.90	0.80
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	10	4	37	11	6	91	22	1289	22	44	1109	26
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	51	0	0	108	0	22	1311	0	44	1135	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 48.9% ICU Level of Service A
Analysis Period (min) 15

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	21	16	15	11	8	15	11	225	5	9	291	12
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Storage Length (ft)	0		0	0		0	85		0	85		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.960			0.938			0.992			0.993	
Flt Protected		0.980			0.987		0.950			0.950		
Satd. Flow (prot)	0	1523	0	0	1499	0	1357	1606	0	1357	1608	0
Flt Permitted		0.980			0.987		0.950			0.950		
Satd. Flow (perm)	0	1523	0	0	1499	0	1357	1606	0	1357	1608	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		369			451			484			660	
Travel Time (s)		10.1			12.3			13.2			18.0	
Confl. Peds. (#/hr)			3	3			2		2	2		2
Peak Hour Factor	0.57	0.60	0.55	0.67	0.50	0.55	0.67	0.88	0.33	0.58	0.92	0.75
Adj. Flow (vph)	37	27	27	16	16	27	16	256	15	16	316	16
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	91	0	0	59	0	16	271	0	16	332	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 30.2% ICU Level of Service A
Analysis Period (min) 15

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	1312	7	13	2039	7	19
Ideal Flow (vphpl)	1700	1700	1500	1700	1500	1700
Storage Length (ft)		0	75		0	0
Storage Lanes		0	1		1	0
Taper Length (ft)			25		25	
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00
Frt	0.999				0.911	
Flt Protected			0.950		0.983	
Satd. Flow (prot)	3073	0	1357	3076	1279	0
Flt Permitted			0.950		0.983	
Satd. Flow (perm)	3073	0	1357	3076	1279	0
Link Speed (mph)	32			32	25	
Link Distance (ft)	103			264	514	
Travel Time (s)	2.2			5.6	14.0	
Peak Hour Factor	0.99	0.63	0.83	0.93	0.50	0.70
Adj. Flow (vph)	1325	11	16	2192	14	27
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1336	0	16	2192	41	0
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 73.0%		ICU Level of Service C	
Analysis Period (min) 15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	16	1277	42	40	1765	35	0	0	58	0	0	52
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Storage Length (ft)	85		0	85		0	0		0	0		0
Storage Lanes	1		0	1		0	0		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.993			0.996				0.865			0.865
Flt Protected	0.950			0.950								
Satd. Flow (prot)	1357	3055	0	1357	3064	0	0	0	1400	0	0	1400
Flt Permitted	0.950			0.950								
Satd. Flow (perm)	1357	3055	0	1357	3064	0	0	0	1400	0	0	1400
Link Speed (mph)		32			32			25			25	
Link Distance (ft)		660			648			638			636	
Travel Time (s)		14.1			13.8			17.4			17.3	
Confl. Peds. (#/hr)	2		2	2		2	1		1	1		1
Peak Hour Factor	0.38	0.98	0.70	0.58	0.97	0.72	0.25	0.25	0.77	0.25	0.25	0.89
Adj. Flow (vph)	42	1303	60	69	1820	49	0	0	75	0	0	58
Shared Lane Traffic (%)												
Lane Group Flow (vph)	42	1363	0	69	1869	0	0	0	75	0	0	58
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 66.5% ICU Level of Service C
Analysis Period (min) 15

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	48	1348	39	106	1564	84	149	134	137	193	154	72
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Storage Length (ft)	65		0	100		100	360		165	0		115
Storage Lanes	1		0	1		1	1		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						0.98						
Frt		0.995				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1357	3061	0	1357	3076	1376	1357	1619	1376	1357	1619	1376
Flt Permitted	0.063			0.060			0.299			0.398		
Satd. Flow (perm)	90	3061	0	86	3076	1344	427	1619	1376	569	1619	1376
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4				31			193			109
Link Speed (mph)		32			32			25			25	
Link Distance (ft)		648			661			660			400	
Travel Time (s)		13.8			14.1			18.0			10.9	
Confl. Peds. (#/hr)	1					1						
Peak Hour Factor	0.82	0.94	0.73	0.94	0.94	0.79	0.84	0.71	0.71	0.88	0.76	0.64
Adj. Flow (vph)	59	1434	53	113	1664	106	177	189	193	219	203	112
Shared Lane Traffic (%)												
Lane Group Flow (vph)	59	1487	0	113	1664	106	177	189	193	219	203	112
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases	6			2		2	8		8	4		4
Detector Phase	1	6		5	2	2	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	3.0	15.0		7.0	15.0	15.0	3.0	5.0	5.0	3.0	5.0	5.0
Minimum Split (s)	7.5	30.1		13.0	30.0	30.0	8.0	30.0	30.0	8.0	25.0	25.0
Total Split (s)	18.0	58.0		18.0	58.0	58.0	23.0	30.0	30.0	19.0	26.0	26.0
Total Split (%)	14.4%	46.4%		14.4%	46.4%	46.4%	18.4%	24.0%	24.0%	15.2%	20.8%	20.8%
Yellow Time (s)	3.0	3.6		3.0	3.6	3.6	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.5	2.0		1.5	1.5	1.5	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	2.5	3.6		2.5	3.1	3.1	3.0	3.0	3.0	3.0	3.0	3.0
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
Recall Mode	None	C-Max		None	C-Max	C-Max	None	None	None	None	None	None
Act Effct Green (s)	72.7	63.5		78.7	69.2	69.2	38.7	22.0	22.0	36.5	20.7	20.7
Actuated g/C Ratio	0.58	0.51		0.63	0.55	0.55	0.31	0.18	0.18	0.29	0.17	0.17
v/c Ratio	0.44	0.95		0.66	0.98	0.14	0.68	0.66	0.48	0.83	0.76	0.35
Control Delay	26.7	45.0		42.7	46.0	12.3	45.4	58.6	9.8	59.7	67.8	11.8
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.7	45.0		42.7	46.0	12.3	45.4	58.6	9.8	59.7	67.8	11.8
LOS	C	D		D	D	B	D	E	A	E	E	B
Approach Delay		44.3			43.9			37.6			52.7	
Approach LOS		D			D			D			D	
Stops (vph)	23	1087		64	1198	31	113	121	16	158	144	12

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Fuel Used(gal)	1	26		2	30	1	3	3	1	4	4	1
CO Emissions (g/hr)	45	1840		130	2096	58	185	197	77	291	255	47
NOx Emissions (g/hr)	9	358		25	408	11	36	38	15	57	50	9
VOC Emissions (g/hr)	10	427		30	486	13	43	46	18	67	59	11
Dilemma Vehicles (#)	0	0		0	0	0	0	0	0	0	0	0
Queue Length 50th (ft)	18	596		50	~756	29	108	141	0	138	156	2
Queue Length 95th (ft)	47	#867		115	#970	57	153	163	20	#233	197	15
Internal Link Dist (ft)		568			581			580			320	
Turn Bay Length (ft)	65			100		100	360		165			115
Base Capacity (vph)	213	1558		212	1703	758	288	350	449	267	298	342
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.28	0.95		0.53	0.98	0.14	0.61	0.54	0.43	0.82	0.68	0.33

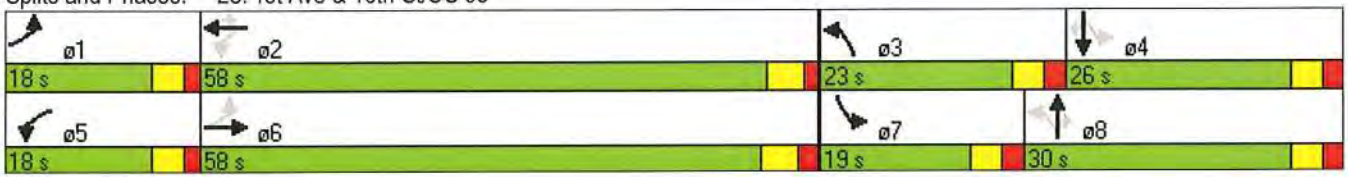
Intersection Summary

Area Type: Other
Cycle Length: 125
Actuated Cycle Length: 125
Offset: 37.5 (30%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow
Natural Cycle: 105
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.98
Intersection Signal Delay: 44.3 Intersection LOS: D
Intersection Capacity Utilization 86.4% ICU Level of Service E
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 28: 1st Ave & 16th St/US 95



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	1	1	1	22	1	48	1	925	38	22	1070	1
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Storage Length (ft)	0		0	0		0	30		0	85		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor												
Frt		0.955			0.927			0.993			0.999	
Flt Protected		0.984			0.979		0.950			0.950		
Satd. Flow (prot)	0	1566	0	0	1513	0	1397	3144	0	1397	3163	0
Flt Permitted		0.984			0.979		0.950			0.950		
Satd. Flow (perm)	0	1566	0	0	1513	0	1397	3144	0	1397	3163	0
Link Speed (mph)		25			25			28			28	
Link Distance (ft)		388			303			281			556	
Travel Time (s)		10.6			8.3			6.8			13.5	
Confl. Peds. (#/hr)							2		1	1		2
Peak Hour Factor	0.25	0.25	0.25	0.50	0.25	0.85	0.25	0.86	0.68	0.80	0.93	0.25
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	4	4	4	44	4	56	4	1076	56	28	1151	4
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	12	0	0	104	0	4	1132	0	28	1155	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 45.8% ICU Level of Service A
Analysis Period (min) 15

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	1	1	150	5	1	1	36	256	4	5	315	8
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95
Frt		0.869			0.970			0.996			0.994	
Flt Protected		0.999			0.973			0.989			0.998	
Satd. Flow (prot)	0	1406	0	0	1528	0	0	3030	0	0	3052	0
Flt Permitted		0.999			0.973			0.989			0.998	
Satd. Flow (perm)	0	1406	0	0	1528	0	0	3030	0	0	3052	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		279			330			336			504	
Travel Time (s)		7.6			9.0			9.2			13.7	
Peak Hour Factor	0.25	0.25	0.64	0.50	0.25	0.25	0.42	0.83	0.38	0.33	0.84	0.50
Adj. Flow (vph)	4	4	234	10	4	4	86	308	11	15	375	16
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	242	0	0	18	0	0	405	0	0	406	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 39.9% ICU Level of Service A
Analysis Period (min) 15

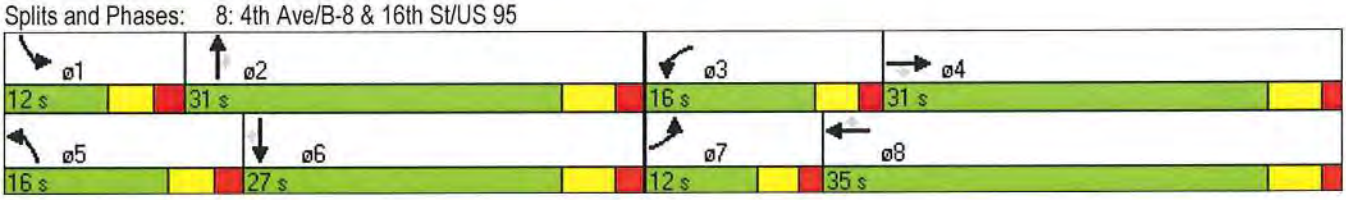
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	233	1016	159	274	1401	136	326	618	314	171	662	163
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Storage Length (ft)	200		150	200		150	300		150	250		150
Storage Lanes	2		1	2		1	2		1	2		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.91	1.00
Ped Bike Factor	1.00					0.99	1.00		0.99	1.00		0.98
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	2633	4420	1376	2633	4420	1376	2710	4550	1417	2710	4550	1417
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	2632	4420	1376	2633	4420	1358	2706	4550	1398	2709	4550	1394
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			182			141			221			185
Link Speed (mph)		32			32			28			28	
Link Distance (ft)		488			660			429			381	
Travel Time (s)		10.4			14.1			10.4			9.3	
Confl. Peds. (#/hr)	1					1	3		1	1		3
Peak Hour Factor	0.85	0.90	0.83	0.90	0.92	0.75	0.84	0.75	0.87	0.87	0.91	0.88
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	274	1129	192	304	1523	181	388	824	361	197	727	185
Shared Lane Traffic (%)												
Lane Group Flow (vph)	274	1129	192	304	1523	181	388	824	361	197	727	185
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	3.0	15.0	15.0	3.0	15.0	15.0	3.0	5.0	5.0	3.0	5.0	5.0
Minimum Split (s)	8.0	27.0	27.0	8.0	25.0	25.0	8.0	30.0	30.0	8.0	26.0	26.0
Total Split (s)	12.0	31.0	31.0	16.0	35.0	35.0	16.0	31.0	31.0	12.0	27.0	27.0
Total Split (%)	13.3%	34.4%	34.4%	17.8%	38.9%	38.9%	17.8%	34.4%	34.4%	13.3%	30.0%	30.0%
Yellow Time (s)	3.0	3.6	3.6	3.0	3.6	3.6	3.0	3.6	3.6	3.0	3.6	3.6
All-Red Time (s)	1.5	1.5	1.5	1.5	1.5	1.5	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	0.0	-2.0	-2.0	-2.0	-2.0	-2.0	0.0	-2.0	-2.0	0.0
Total Lost Time (s)	2.5	3.1	5.1	2.5	3.1	3.1	3.0	3.6	5.6	3.0	3.6	5.6
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
Recall Mode	None	None	None	None	None	None	None	Min	Min	None	Min	Min
Act Effct Green (s)	9.5	28.5	26.5	13.0	32.0	32.0	13.0	24.4	22.4	8.9	20.3	18.3
Actuated g/C Ratio	0.11	0.33	0.30	0.15	0.37	0.37	0.15	0.28	0.26	0.10	0.23	0.21
v/c Ratio	0.95	0.78	0.35	0.77	0.94	0.31	0.96	0.64	0.69	0.71	0.69	0.42
Control Delay	83.3	31.6	6.7	50.7	39.7	7.6	74.2	30.0	18.6	54.1	34.0	7.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	83.3	31.6	6.7	50.7	39.7	7.6	74.2	30.0	18.6	54.1	34.0	7.7
LOS	F	C	A	D	D	A	E	C	B	D	C	A
Approach Delay		37.5			38.5			38.3			33.2	
Approach LOS		D			D			D			C	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Stops (vph)	196	880	24	248	1210	29	278	518	120	154	577	23
Fuel Used(gal)	6	17	1	6	26	1	8	10	3	4	11	1
CO Emissions (g/hr)	439	1180	78	402	1812	75	560	669	241	247	762	87
NOx Emissions (g/hr)	85	230	15	78	353	15	109	130	47	48	148	17
VOC Emissions (g/hr)	102	273	18	93	420	17	130	155	56	57	177	20
Dilemma Vehicles (#)	0	0	0	0	0	0	0	0	0	0	0	0
Queue Length 50th (ft)	78	207	4	83	293	14	111	145	64	55	133	0
Queue Length 95th (ft)	#147	272	42	#147	#417	39	#186	148	152	#100	174	48
Internal Link Dist (ft)		408			580			349			301	
Turn Bay Length (ft)	200		150	200		150	300		150	250		150
Base Capacity (vph)	288	1448	546	409	1623	588	406	1435	565	281	1226	483
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.95	0.78	0.35	0.74	0.94	0.31	0.96	0.57	0.64	0.70	0.59	0.38

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 87
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.96
Intersection Signal Delay: 37.3 Intersection LOS: D
Intersection Capacity Utilization 78.3% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 8: 4th Ave/B-8 & 16th St/US 95



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	100	1378	2149	20	1	38
Ideal Flow (vphpl)	1700	1700	1700	1700	1700	1700
Storage Length (ft)	125			0	0	0
Storage Lanes	1			0	1	0
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Frt			0.999		0.875	
Flt Protected	0.950				0.996	
Satd. Flow (prot)	1538	3076	3073	0	1411	0
Flt Permitted	0.950				0.996	
Satd. Flow (perm)	1538	3076	3073	0	1411	0
Link Speed (mph)		32	32		25	
Link Distance (ft)		477	103		557	
Travel Time (s)		10.2	2.2		15.2	
Peak Hour Factor	0.85	0.99	0.93	0.88	0.25	0.75
Adj. Flow (vph)	118	1392	2311	23	4	51
Shared Lane Traffic (%)						
Lane Group Flow (vph)	118	1392	2334	0	55	0
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 86.6%		ICU Level of Service E	
Analysis Period (min) 15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	34	1557	28	59	1915	83	0	0	40	4	1	37
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Storage Length (ft)	85		0	135		0	0		0	0		0
Storage Lanes	1		0	1		1	0		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.997				0.850			0.865		0.898	
Flt Protected	0.950			0.950							0.991	
Satd. Flow (prot)	1357	3067	0	1357	3076	1376	0	0	1400	0	1441	0
Flt Permitted	0.950			0.950							0.991	
Satd. Flow (perm)	1357	3067	0	1357	3076	1376	0	0	1400	0	1441	0
Link Speed (mph)		32			32			25			25	
Link Distance (ft)		661			483			555			306	
Travel Time (s)		14.1			10.3			15.1			8.3	
Confl. Peds. (#/hr)			2	2								
Peak Hour Factor	0.75	0.92	0.71	0.81	0.95	0.82	0.25	0.25	0.58	0.38	0.25	0.81
Adj. Flow (vph)	45	1692	39	73	2016	101	0	0	69	11	4	46
Shared Lane Traffic (%)												
Lane Group Flow (vph)	45	1731	0	73	2016	101	0	0	69	0	61	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 72.1% ICU Level of Service C
Analysis Period (min) 15

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	5	1	29	4	3	75	16	1219	16	36	1049	22
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Storage Length (ft)	0		0	0		0	85		0	85		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor												
Frt		0.901			0.885			0.997			0.996	
Flt Protected		0.991			0.995		0.950			0.950		
Satd. Flow (prot)	0	1488	0	0	1468	0	1397	3157	0	1397	3154	0
Flt Permitted		0.991			0.995		0.950			0.950		
Satd. Flow (perm)	0	1488	0	0	1468	0	1397	3157	0	1397	3154	0
Link Speed (mph)		25			25			28			28	
Link Distance (ft)		222			285			640			233	
Travel Time (s)		6.1			7.8			15.6			5.7	
Confl. Peds. (#/hr)	1					1	2		3	3		2
Peak Hour Factor	0.50	0.25	0.75	0.38	0.50	0.78	0.69	0.90	0.69	0.78	0.90	0.80
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	10	4	39	11	6	96	23	1354	23	46	1166	28
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	53	0	0	113	0	23	1377	0	46	1194	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 51.4% ICU Level of Service A
Analysis Period (min) 15

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	22	17	16	12	8	16	12	236	5	9	306	13
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Storage Length (ft)	0		0	0		0	85		0	85		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.959			0.938			0.992			0.993	
Flt Protected		0.980			0.986		0.950			0.950		
Satd. Flow (prot)	0	1522	0	0	1497	0	1357	1606	0	1357	1608	0
Flt Permitted		0.980			0.986		0.950			0.950		
Satd. Flow (perm)	0	1522	0	0	1497	0	1357	1606	0	1357	1608	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		395			415			452			660	
Travel Time (s)		10.8			11.3			12.3			18.0	
Confl. Peds. (#/hr)			2	2			2		1	1		2
Peak Hour Factor	0.57	0.60	0.55	0.67	0.50	0.55	0.67	0.88	0.33	0.58	0.92	0.75
Adj. Flow (vph)	39	28	29	18	16	29	18	268	15	16	333	17
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	96	0	0	63	0	18	283	0	16	350	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 31.0% ICU Level of Service A
Analysis Period (min) 15

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	1379	7	14	2143	0	20
Ideal Flow (vphpl)	1700	1700	1700	1700	1700	1700
Storage Length (ft)		0	75		0	0
Storage Lanes		0	1		0	1
Taper Length (ft)			25		25	
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00
Frt	0.999					0.865
Flt Protected			0.950			
Satd. Flow (prot)	3073	0	1538	3076	0	1400
Flt Permitted			0.950			
Satd. Flow (perm)	3073	0	1538	3076	0	1400
Link Speed (mph)	32			32	30	
Link Distance (ft)	103			139	557	
Travel Time (s)	2.2			3.0	12.7	
Peak Hour Factor	0.99	0.63	0.83	0.93	0.50	0.70
Adj. Flow (vph)	1393	11	17	2304	0	29
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1404	0	17	2304	0	29
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 69.5%		ICU Level of Service C	
Analysis Period (min) 15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	17	1342	44	42	1855	37	0	0	61	0	0	55
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Storage Length (ft)	115		0	125		0	0		0	0		0
Storage Lanes	1		1	1		0	0		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt			0.850		0.996				0.865			0.865
Flt Protected	0.950			0.950								
Satd. Flow (prot)	1357	3076	1376	1357	3064	0	0	0	1400	0	0	1400
Flt Permitted	0.950			0.950								
Satd. Flow (perm)	1357	3076	1376	1357	3064	0	0	0	1400	0	0	1400
Link Speed (mph)		32			32			25			25	
Link Distance (ft)		660			648			652			636	
Travel Time (s)		14.1			13.8			17.8			17.3	
Confl. Peds. (#/hr)	1		1	1		1						
Peak Hour Factor	0.38	0.98	0.70	0.58	0.97	0.72	0.25	0.25	0.77	0.25	0.25	0.89
Adj. Flow (vph)	45	1369	63	72	1912	51	0	0	79	0	0	62
Shared Lane Traffic (%)												
Lane Group Flow (vph)	45	1369	63	72	1963	0	0	0	79	0	0	62
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 69.1% ICU Level of Service C
Analysis Period (min) 15

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	50	1417	41	111	1644	88	157	141	144	203	162	76
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Storage Length (ft)	65		0	100		100	360		165	0		115
Storage Lanes	1		0	1		1	1		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00				0.97	1.00		0.99	1.00		0.98
Frt		0.995				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1357	3058	0	1357	3076	1376	1357	1619	1376	1357	1619	1376
Flt Permitted	0.058			0.059			0.282			0.409		
Satd. Flow (perm)	83	3058	0	84	3076	1335	401	1619	1356	583	1619	1350
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4				40			95			83
Link Speed (mph)		32			32			25			25	
Link Distance (ft)		648			661			660			400	
Travel Time (s)		13.8			14.1			18.0			10.9	
Confl. Peds. (#/hr)	3		1	1		3	4		2	2		4
Peak Hour Factor	0.82	0.94	0.73	0.94	0.94	0.79	0.84	0.71	0.71	0.88	0.76	0.64
Adj. Flow (vph)	61	1507	56	118	1749	111	187	199	203	231	213	119
Shared Lane Traffic (%)												
Lane Group Flow (vph)	61	1563	0	118	1749	111	187	199	203	231	213	119
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases	6			2		2	8		8	4		4
Detector Phase	1	6		5	2	2	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	3.0	15.0		7.0	15.0	15.0	3.0	5.0	5.0	3.0	5.0	5.0
Minimum Split (s)	7.5	30.1		13.0	30.0	30.0	8.0	30.0	30.0	8.0	25.0	25.0
Total Split (s)	7.5	69.0		13.0	74.5	74.5	15.0	30.0	30.0	13.0	28.0	28.0
Total Split (%)	6.0%	55.2%		10.4%	59.6%	59.6%	12.0%	24.0%	24.0%	10.4%	22.4%	22.4%
Yellow Time (s)	3.0	3.6		3.0	3.6	3.6	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.5	2.0		1.5	1.5	1.5	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	2.5	3.6		2.5	3.1	3.1	3.0	3.0	3.0	3.0	3.0	3.0
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
Recall Mode	None	C-Max		None	C-Max	C-Max	None	None	None	None	None	None
Act Effct Green (s)	76.2	69.0		83.0	75.6	75.6	35.5	23.5	23.5	31.5	21.5	21.5
Actuated g/C Ratio	0.61	0.55		0.66	0.60	0.60	0.28	0.19	0.19	0.25	0.17	0.17
v/c Ratio	0.54	0.92		0.73	0.94	0.13	0.91	0.65	0.61	1.11	0.77	0.40
Control Delay	35.7	37.0		50.6	35.3	8.3	81.2	57.1	32.0	132.8	67.0	19.8
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	35.7	37.0		50.6	35.3	8.3	81.2	57.1	32.0	132.8	67.0	19.8
LOS	D	D		D	D	A	F	E	C	F	E	B
Approach Delay		37.0			34.7			56.1			84.0	
Approach LOS		D			C			E			F	
Stops (vph)	20	1200		58	1327	25	118	128	72	171	152	24

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Fuel Used(gal)	1	26		2	28	1	4	3	2	7	4	1
CO Emissions (g/hr)	51	1793		144	1983	52	275	204	141	518	266	61
NOx Emissions (g/hr)	10	349		28	386	10	53	40	28	101	52	12
VOC Emissions (g/hr)	12	416		33	460	12	64	47	33	120	62	14
Dilemma Vehicles (#)	0	0		0	0	0	0	0	0	0	0	0
Queue Length 50th (ft)	17	622		51	705	25	123	149	79	~173	164	25
Queue Length 95th (ft)	#59	#815		#150	#909	44	#179	171	103	#332	202	38
Internal Link Dist (ft)		568			581			580			320	
Turn Bay Length (ft)	65			100		100	360		165			115
Base Capacity (vph)	112	1690		167	1859	823	206	350	367	209	324	336
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.54	0.92		0.71	0.94	0.13	0.91	0.57	0.55	1.11	0.66	0.35

Intersection Summary

Area Type: Other
Cycle Length: 125
Actuated Cycle Length: 125
Offset: 37.5 (30%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow
Natural Cycle: 115
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.11
Intersection Signal Delay: 44.0 Intersection LOS: D
Intersection Capacity Utilization 91.0% ICU Level of Service E
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 28: 1st Ave & 16th St/US 95

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	14	1	21	70	1	51	9	941	39	49	1090	15
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Storage Length (ft)	0		0	0		0	30		0	85		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor												
Frt		0.920			0.943			0.994			0.998	
Flt Protected		0.981			0.972		0.950			0.950		
Satd. Flow (prot)	0	1504	0	0	1528	0	1397	3148	0	1397	3160	0
Flt Permitted		0.981			0.972		0.950			0.950		
Satd. Flow (perm)	0	1504	0	0	1528	0	1397	3148	0	1397	3160	0
Link Speed (mph)		25			25			28			28	
Link Distance (ft)		388			303			281			556	
Travel Time (s)		10.6			8.3			6.8			13.5	
Confl. Peds. (#/hr)							2		1	1		2
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.86	0.85	0.85	0.93	0.85
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	16	1	25	82	1	60	11	1094	46	58	1172	18
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	42	0	0	143	0	11	1140	0	58	1190	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 59.7% ICU Level of Service B
Analysis Period (min) 15

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	1	1	150	5	1	1	36	256	4	5	315	8
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95
Frt		0.869			0.970			0.996			0.994	
Flt Protected		0.999			0.973			0.989			0.998	
Satd. Flow (prot)	0	1406	0	0	1528	0	0	3030	0	0	3052	0
Flt Permitted		0.999			0.973			0.989			0.998	
Satd. Flow (perm)	0	1406	0	0	1528	0	0	3030	0	0	3052	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		279			330			336			504	
Travel Time (s)		7.6			9.0			9.2			13.7	
Peak Hour Factor	0.25	0.25	0.64	0.50	0.25	0.25	0.42	0.83	0.38	0.33	0.84	0.50
Adj. Flow (vph)	4	4	234	10	4	4	86	308	11	15	375	16
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	242	0	0	18	0	0	405	0	0	406	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 39.9% ICU Level of Service A
Analysis Period (min) 15

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	265	1048	159	299	1448	139	377	636	321	217	699	170
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Storage Length (ft)	200		150	200		150	300		150	250		150
Storage Lanes	2		1	2		1	2		1	2		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.91	1.00
Ped Bike Factor	1.00					0.99	1.00		0.99	1.00		0.98
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	2633	4420	1376	2633	4420	1376	2710	4550	1417	2710	4550	1417
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	2632	4420	1376	2633	4420	1358	2707	4550	1398	2709	4550	1394
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			173			121			233			193
Link Speed (mph)		32			32			28			28	
Link Distance (ft)		488			660			429			381	
Travel Time (s)		10.4			14.1			10.4			9.3	
Confl. Peds. (#/hr)	1					1	3		1	1		3
Peak Hour Factor	0.85	0.90	0.85	0.90	0.92	0.85	0.85	0.75	0.87	0.87	0.91	0.88
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	312	1164	187	332	1574	164	444	848	369	249	768	193
Shared Lane Traffic (%)												
Lane Group Flow (vph)	312	1164	187	332	1574	164	444	848	369	249	768	193
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	3.0	15.0	15.0	3.0	15.0	15.0	3.0	5.0	5.0	3.0	5.0	5.0
Minimum Split (s)	8.0	27.0	27.0	8.0	25.0	25.0	8.0	30.0	30.0	8.0	26.0	26.0
Total Split (s)	13.0	31.0	31.0	16.0	34.0	34.0	17.0	30.0	30.0	13.0	26.0	26.0
Total Split (%)	14.4%	34.4%	34.4%	17.8%	37.8%	37.8%	18.9%	33.3%	33.3%	14.4%	28.9%	28.9%
Yellow Time (s)	3.0	3.6	3.6	3.0	3.6	3.6	3.0	3.6	3.6	3.0	3.6	3.6
All-Red Time (s)	1.5	1.5	1.5	1.5	1.5	1.5	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	0.0	-2.0	-2.0	-2.0	-2.0	-2.0	0.0	-2.0	-2.0	0.0
Total Lost Time (s)	2.5	3.1	5.1	2.5	3.1	3.1	3.0	3.6	5.6	3.0	3.6	5.6
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
Recall Mode	None	None	None	None	None	None	None	Min	Min	None	Min	Min
Act Effct Green (s)	10.5	28.2	26.2	13.2	30.9	30.9	14.0	24.6	22.6	10.0	20.6	18.6
Actuated g/C Ratio	0.12	0.32	0.30	0.15	0.35	0.35	0.16	0.28	0.26	0.11	0.23	0.21
v/c Ratio	0.99	0.82	0.35	0.84	1.02	0.30	1.03	0.67	0.69	0.81	0.72	0.43
Control Delay	91.1	34.2	7.1	57.0	56.9	8.6	90.3	31.1	18.5	60.2	35.6	7.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	91.1	34.2	7.1	57.0	56.9	8.6	90.3	31.1	18.5	60.2	35.6	7.9
LOS	F	C	A	E	E	A	F	C	B	E	D	A
Approach Delay		41.8			53.1			44.2			36.2	
Approach LOS		D			D			D			D	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Stops (vph)	222	918	26	267	1250	34	317	540	119	193	620	24
Fuel Used(gal)	8	18	1	7	32	1	10	10	3	5	12	1
CO Emissions (g/hr)	529	1260	80	464	2225	80	732	701	245	332	824	91
NOx Emissions (g/hr)	103	245	16	90	433	16	142	136	48	65	160	18
VOC Emissions (g/hr)	123	292	19	108	516	19	170	162	57	77	191	21
Dilemma Vehicles (#)	0	0	0	0	0	0	0	0	0	0	0	0
Queue Length 50th (ft)	~94	224	6	95	~354	16	~142	152	63	72	144	0
Queue Length 95th (ft)	#165	282	47	#168	#450	54	#217	156	153	#128	188	50
Internal Link Dist (ft)		408			580			349			301	
Turn Bay Length (ft)	200		150	200		150	300		150	250		150
Base Capacity (vph)	314	1413	530	403	1550	555	431	1363	555	307	1156	471
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.99	0.82	0.35	0.82	1.02	0.30	1.03	0.62	0.66	0.81	0.66	0.41

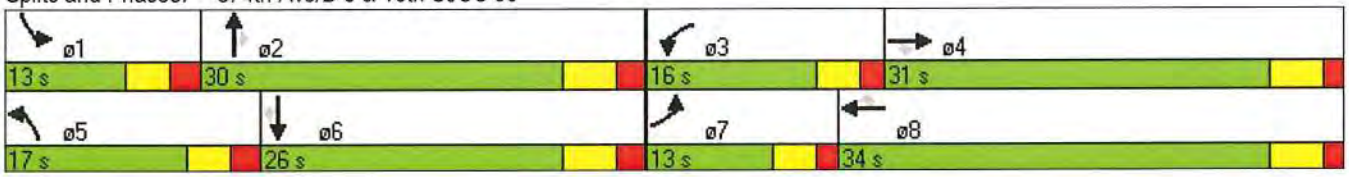
Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 88.2
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 1.03
Intersection Signal Delay: 44.9 Intersection LOS: D
Intersection Capacity Utilization 83.0% ICU Level of Service E
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 8: 4th Ave/B-8 & 16th St/US 95



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	121	1421	2195	20	4	38
Ideal Flow (vphpl)	1500	1700	1700	1700	1500	1700
Storage Length (ft)	150			0	0	0
Storage Lanes	1			0	1	0
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Frt			0.999		0.878	
Flt Protected	0.950				0.995	
Satd. Flow (prot)	1357	3076	3073	0	1248	0
Flt Permitted	0.950				0.995	
Satd. Flow (perm)	1357	3076	3073	0	1248	0
Link Speed (mph)		32	32		25	
Link Distance (ft)		477	102		557	
Travel Time (s)		10.2	2.2		15.2	
Peak Hour Factor	0.85	0.99	0.93	0.88	0.85	0.85
Adj. Flow (vph)	142	1435	2360	23	5	45
Shared Lane Traffic (%)						
Lane Group Flow (vph)	142	1435	2383	0	50	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 90.3% ICU Level of Service E
Analysis Period (min) 15

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	34	1557	28	59	1915	83	0	0	40	4	1	37
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Storage Length (ft)	85		0	135		0	0		0	0		0
Storage Lanes	1		0	1		1	0		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.997				0.850			0.865		0.898	
Flt Protected	0.950			0.950							0.991	
Satd. Flow (prot)	1357	3067	0	1357	3076	1376	0	0	1400	0	1441	0
Flt Permitted	0.950			0.950							0.991	
Satd. Flow (perm)	1357	3067	0	1357	3076	1376	0	0	1400	0	1441	0
Link Speed (mph)		32			32			25			25	
Link Distance (ft)		661			483			555			306	
Travel Time (s)		14.1			10.3			15.1			8.3	
Confl. Peds. (#/hr)			2	2								
Peak Hour Factor	0.75	0.92	0.71	0.81	0.95	0.82	0.25	0.25	0.58	0.38	0.25	0.81
Adj. Flow (vph)	45	1692	39	73	2016	101	0	0	69	11	4	46
Shared Lane Traffic (%)												
Lane Group Flow (vph)	45	1731	0	73	2016	101	0	0	69	0	61	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 72.1% ICU Level of Service C
Analysis Period (min) 15

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	30	1	32	31	3	76	43	1252	16	67	1081	22
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Storage Length (ft)	0		0	0		0	85		0	85		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor												
Frt		0.931			0.907			0.998			0.997	
Flt Protected		0.977			0.986		0.950			0.950		
Satd. Flow (prot)	0	1516	0	0	1491	0	1397	3160	0	1397	3157	0
Flt Permitted		0.977			0.986		0.950			0.950		
Satd. Flow (perm)	0	1516	0	0	1491	0	1397	3160	0	1397	3157	0
Link Speed (mph)		25			25			28			28	
Link Distance (ft)		222			285			640			233	
Travel Time (s)		6.1			7.8			15.6			5.7	
Confl. Peds. (#/hr)	1					1	2		3	3		2
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.90	0.85	0.85	0.90	0.85
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	35	1	38	36	4	89	51	1391	19	79	1201	26
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	74	0	0	129	0	51	1410	0	79	1227	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 62.3% ICU Level of Service B
Analysis Period (min) 15

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	22	17	16	12	8	16	12	236	5	9	306	13
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Storage Length (ft)	0		0	0		0	85		0	85		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.959			0.938			0.992			0.993	
Flt Protected		0.980			0.986		0.950			0.950		
Satd. Flow (prot)	0	1522	0	0	1497	0	1357	1606	0	1357	1608	0
Flt Permitted		0.980			0.986		0.950			0.950		
Satd. Flow (perm)	0	1522	0	0	1497	0	1357	1606	0	1357	1608	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		395			415			452			660	
Travel Time (s)		10.8			11.3			12.3			18.0	
Confl. Peds. (#/hr)			2	2			2		1	1		2
Peak Hour Factor	0.57	0.60	0.55	0.67	0.50	0.55	0.67	0.88	0.33	0.58	0.92	0.75
Adj. Flow (vph)	39	28	29	18	16	29	18	268	15	16	333	17
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	96	0	0	63	0	18	283	0	16	350	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 31.0% ICU Level of Service A
Analysis Period (min) 15

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	1380	52	65	2189	0	72
Ideal Flow (vphpl)	1700	1700	1500	1700	1500	1700
Storage Length (ft)		0	75		0	0
Storage Lanes		0	1		0	1
Taper Length (ft)			25		25	
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00
Frt	0.994					0.865
Flt Protected			0.950			
Satd. Flow (prot)	3058	0	1357	3076	0	1400
Flt Permitted			0.950			
Satd. Flow (perm)	3058	0	1357	3076	0	1400
Link Speed (mph)	32			32	30	
Link Distance (ft)	102			139	557	
Travel Time (s)	2.2			3.0	12.7	
Peak Hour Factor	0.99	0.85	0.85	0.93	0.85	0.85
Adj. Flow (vph)	1394	61	76	2354	0	85
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1455	0	76	2354	0	85
Sign Control	Free			Free	Stop	

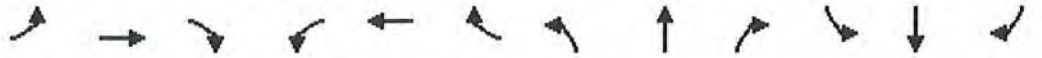
Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 71.0% ICU Level of Service C
Analysis Period (min) 15

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	29	1412	45	62	1934	40	0	0	64	0	0	57
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Storage Length (ft)	115		0	125		0	0		0	0		0
Storage Lanes	1		1	1		0	0		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt			0.850		0.997				0.865			0.865
Flt Protected	0.950			0.950								
Satd. Flow (prot)	1357	3076	1376	1357	3067	0	0	0	1400	0	0	1400
Flt Permitted	0.950			0.950								
Satd. Flow (perm)	1357	3076	1376	1357	3067	0	0	0	1400	0	0	1400
Link Speed (mph)		32			32			25			25	
Link Distance (ft)		660			648			652			636	
Travel Time (s)		14.1			13.8			17.8			17.3	
Confl. Peds. (#/hr)	1		1	1		1						
Peak Hour Factor	0.85	0.98	0.85	0.85	0.97	0.85	0.85	0.85	0.85	0.85	0.85	0.89
Adj. Flow (vph)	34	1441	53	73	1994	47	0	0	75	0	0	64
Shared Lane Traffic (%)												
Lane Group Flow (vph)	34	1441	53	73	2041	0	0	0	75	0	0	64
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 71.8% ICU Level of Service C
Analysis Period (min) 15



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	50	1417	41	111	1644	88	157	141	144	203	162	76
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Storage Length (ft)	65		0	100		100	360		165	0		115
Storage Lanes	1		0	1		1	1		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00				0.97	1.00		0.99	1.00		0.98
Frt		0.995				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1357	3058	0	1357	3076	1376	1357	1619	1376	1357	1619	1376
Flt Permitted	0.058			0.059			0.282			0.409		
Satd. Flow (perm)	83	3058	0	84	3076	1335	401	1619	1356	583	1619	1350
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4				40			95			89
Link Speed (mph)		32			32			25			25	
Link Distance (ft)		648			661			660			400	
Travel Time (s)		13.8			14.1			18.0			10.9	
Confl. Peds. (#/hr)	3		1	1		3	4		2	2		4
Peak Hour Factor	0.82	0.94	0.73	0.94	0.94	0.79	0.84	0.71	0.71	0.88	0.76	0.64
Adj. Flow (vph)	61	1507	56	118	1749	111	187	199	203	231	213	119
Shared Lane Traffic (%)												
Lane Group Flow (vph)	61	1563	0	118	1749	111	187	199	203	231	213	119
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases	6			2		2	8		8	4		4
Detector Phase	1	6		5	2	2	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	3.0	15.0		7.0	15.0	15.0	3.0	5.0	5.0	3.0	5.0	5.0
Minimum Split (s)	7.5	30.1		13.0	30.0	30.0	8.0	30.0	30.0	8.0	25.0	25.0
Total Split (s)	8.0	69.0		13.0	74.0	74.0	15.0	30.0	30.0	13.0	28.0	28.0
Total Split (%)	6.4%	55.2%		10.4%	59.2%	59.2%	12.0%	24.0%	24.0%	10.4%	22.4%	22.4%
Yellow Time (s)	3.0	3.6		3.0	3.6	3.6	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.5	2.0		1.5	1.5	1.5	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	2.5	3.6		2.5	3.1	3.1	3.0	3.0	3.0	3.0	3.0	3.0
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
Recall Mode	None	C-Max		None	C-Max	C-Max	None	None	None	None	None	None
Act Effct Green (s)	76.4	69.0		83.0	75.3	75.3	35.5	23.5	23.5	31.5	21.5	21.5
Actuated g/C Ratio	0.61	0.55		0.66	0.60	0.60	0.28	0.19	0.19	0.25	0.17	0.17
v/c Ratio	0.53	0.92		0.73	0.94	0.14	0.91	0.65	0.61	1.11	0.77	0.39
Control Delay	34.3	37.0		50.6	36.0	8.4	81.2	57.1	32.0	132.8	67.0	17.9
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.3	37.0		50.6	36.0	8.4	81.2	57.1	32.0	132.8	67.0	17.9
LOS	C	D		D	D	A	F	E	C	F	E	B
Approach Delay		36.9			35.3			56.1			83.6	
Approach LOS		D			D			E			F	
Stops (vph)	21	1200		58	1324	25	118	128	72	171	152	22

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Fuel Used(gal)	1	26		2	29	1	4	3	2	7	4	1
CO Emissions (g/hr)	51	1793		144	1997	52	275	204	141	518	266	59
NOx Emissions (g/hr)	10	349		28	389	10	53	40	28	101	52	11
VOC Emissions (g/hr)	12	416		33	463	12	64	47	33	120	62	14
Dilemma Vehicles (#)	0	0		0	0	0	0	0	0	0	0	0
Queue Length 50th (ft)	17	622		51	~713	25	123	149	79	~173	164	21
Queue Length 95th (ft)	#54	#815		#150	#914	44	#179	171	103	#332	202	33
Internal Link Dist (ft)		568			581			580			320	
Turn Bay Length (ft)	65			100		100	360		165			115
Base Capacity (vph)	115	1690		167	1853	820	206	350	367	209	324	341
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.53	0.92		0.71	0.94	0.14	0.91	0.57	0.55	1.11	0.66	0.35

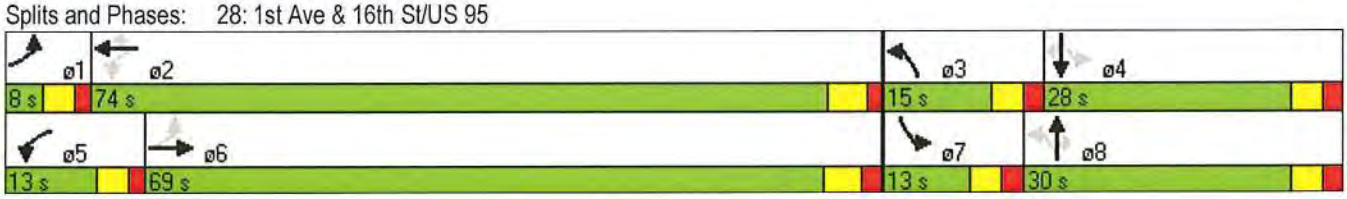
Intersection Summary

Area Type: Other
Cycle Length: 125
Actuated Cycle Length: 125
Offset: 37.5 (30%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow
Natural Cycle: 115
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.11
Intersection Signal Delay: 44.2 Intersection LOS: D
Intersection Capacity Utilization 91.0% ICU Level of Service E
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 28: 1st Ave & 16th St/US 95



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	1	1	1	26	1	56	1	1074	44	26	1242	1
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Storage Length (ft)	0		0	0		0	30		0	85		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor												
Frt		0.955			0.909			0.994				
Flt Protected		0.984			0.984		0.950			0.950		
Satd. Flow (prot)	0	1566	0	0	1491	0	1397	3148	0	1397	3167	0
Flt Permitted		0.984			0.984		0.950			0.950		
Satd. Flow (perm)	0	1566	0	0	1491	0	1397	3148	0	1397	3167	0
Link Speed (mph)		25			25			28			28	
Link Distance (ft)		388			303			281			556	
Travel Time (s)		10.6			8.3			6.8			13.5	
Confl. Peds. (#/hr)							2		1	1		2
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.86	0.85	0.85	0.93	0.85
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	1	1	1	31	1	66	1	1249	52	31	1335	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	3	0	0	98	0	1	1301	0	31	1336	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 52.2% ICU Level of Service A
Analysis Period (min) 15

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	1	1	174	6	1	1	41	298	5	6	366	10
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95
Frt		0.866			0.985			0.998			0.996	
Flt Protected					0.963			0.994			0.999	
Satd. Flow (prot)	0	1402	0	0	1536	0	0	3052	0	0	3061	0
Flt Permitted					0.963			0.994			0.999	
Satd. Flow (perm)	0	1402	0	0	1536	0	0	3052	0	0	3061	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		279			330			336			504	
Travel Time (s)		7.6			9.0			9.2			13.7	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	1	1	205	7	1	1	48	351	6	7	431	12
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	207	0	0	9	0	0	405	0	0	450	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 44.7% ICU Level of Service A
Analysis Period (min) 15

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	255	1180	184	318	1627	157	378	717	365	199	769	189
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Storage Length (ft)	200		150	200		150	300		150	250		150
Storage Lanes	2		1	2		1	2		1	2		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.91	1.00
Ped Bike Factor	1.00					0.99	1.00		0.99	1.00		0.98
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	2633	4420	1376	2633	4420	1376	2710	4550	1417	2710	4550	1417
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	2633	4420	1376	2633	4420	1358	2707	4550	1398	2709	4550	1393
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			164			116			216			198
Link Speed (mph)		32			32			28			28	
Link Distance (ft)		488			660			429			381	
Travel Time (s)		10.4			14.1			10.4			9.3	
Confl. Peds. (#/hr)	1					1	3		1	1		3
Peak Hour Factor	0.85	0.90	0.85	0.90	0.92	0.85	0.85	0.85	0.87	0.87	0.91	0.88
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	300	1311	216	353	1768	185	445	844	420	229	845	215
Shared Lane Traffic (%)												
Lane Group Flow (vph)	300	1311	216	353	1768	185	445	844	420	229	845	215
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	3.0	15.0	15.0	3.0	15.0	15.0	3.0	5.0	5.0	3.0	5.0	5.0
Minimum Split (s)	8.0	27.0	27.0	8.0	25.0	25.0	8.0	30.0	30.0	8.0	26.0	26.0
Total Split (s)	13.0	36.0	36.0	18.0	41.0	41.0	18.0	33.0	33.0	13.0	28.0	28.0
Total Split (%)	13.0%	36.0%	36.0%	18.0%	41.0%	41.0%	18.0%	33.0%	33.0%	13.0%	28.0%	28.0%
Yellow Time (s)	3.0	3.6	3.6	3.0	3.6	3.6	3.0	3.6	3.6	3.0	3.6	3.6
All-Red Time (s)	1.5	1.5	1.5	1.5	1.5	1.5	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	0.0	-2.0	-2.0	-2.0	-2.0	-2.0	0.0	-2.0	-2.0	0.0
Total Lost Time (s)	2.5	3.1	5.1	2.5	3.1	3.1	3.0	3.6	5.6	3.0	3.6	5.6
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
Recall Mode	None	None	None	None	None	None	None	Min	Min	None	Min	Min
Act Effct Green (s)	10.5	33.2	31.2	15.2	37.9	37.9	15.0	28.1	26.1	10.0	23.1	21.1
Actuated g/C Ratio	0.11	0.34	0.32	0.15	0.38	0.38	0.15	0.28	0.26	0.10	0.23	0.21
v/c Ratio	1.07	0.88	0.39	0.87	1.04	0.31	1.08	0.65	0.80	0.83	0.79	0.47
Control Delay	117.6	39.6	10.0	63.8	64.5	10.2	108.4	33.7	28.5	69.7	41.9	10.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	117.6	39.6	10.0	63.8	64.5	10.2	108.4	33.7	28.5	69.7	41.9	10.0
LOS	F	D	B	E	E	B	F	C	C	E	D	A
Approach Delay		48.9			60.0			51.9			41.5	
Approach LOS		D			E			D			D	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Stops (vph)	211	1047	43	286	1411	44	317	606	174	179	701	33
Fuel Used(gal)	9	22	2	8	38	1	12	12	5	5	14	2
CO Emissions (g/hr)	604	1515	106	525	2680	97	831	816	343	332	981	108
NOx Emissions (g/hr)	117	295	21	102	521	19	162	159	67	65	191	21
VOC Emissions (g/hr)	140	351	25	122	621	22	193	189	79	77	227	25
Dilemma Vehicles (#)	0	0	0	0	0	0	0	0	0	0	0	0
Queue Length 50th (ft)	~111	289	24	114	~454	28	~166	170	122	75	183	9
Queue Length 95th (ft)	#179	#378	72	#192	#550	69	#241	200	#232	#132	232	66
Internal Link Dist (ft)		408			580			349			301	
Turn Bay Length (ft)	200		150	200		150	300		150	250		150
Base Capacity (vph)	280	1488	548	414	1698	593	412	1356	544	275	1125	470
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.07	0.88	0.39	0.85	1.04	0.31	1.08	0.62	0.77	0.83	0.75	0.46

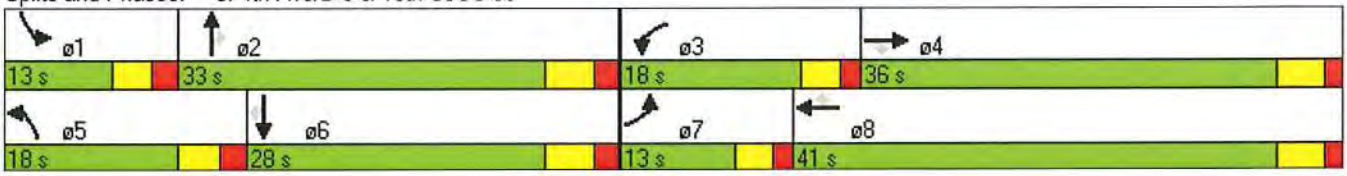
Intersection Summary

Area Type: Other
Cycle Length: 100
Actuated Cycle Length: 98.7
Natural Cycle: 100
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 1.08
Intersection Signal Delay: 51.9 Intersection LOS: D
Intersection Capacity Utilization 88.0% ICU Level of Service E
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 8: 4th Ave/B-8 & 16th St/US 95



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	105	1600	2495	23	1	44
Ideal Flow (vphpl)	1500	1700	1700	1700	1500	1700
Storage Length (ft)	225			0	0	0
Storage Lanes	1			0	1	0
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Frt			0.999		0.868	
Flt Protected	0.950				0.999	
Satd. Flow (prot)	1357	3076	3073	0	1239	0
Flt Permitted	0.950				0.999	
Satd. Flow (perm)	1357	3076	3073	0	1239	0
Link Speed (mph)		32	32		25	
Link Distance (ft)		477	102		557	
Travel Time (s)		10.2	2.2		15.2	
Peak Hour Factor	0.85	0.99	0.93	0.88	0.85	0.85
Adj. Flow (vph)	124	1616	2683	26	1	52
Shared Lane Traffic (%)						
Lane Group Flow (vph)	124	1616	2709	0	53	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 98.8% ICU Level of Service F
Analysis Period (min) 15

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	39	1807	33	68	2223	96	0	0	46	5	1	43
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Storage Length (ft)	85		0	135		0	0		0	0		0
Storage Lanes	1		0	1		1	0		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.997				0.850			0.865		0.881	
Flt Protected	0.950			0.950							0.995	
Satd. Flow (prot)	1357	3067	0	1357	3076	1376	0	0	1400	0	1419	0
Flt Permitted	0.950			0.950							0.995	
Satd. Flow (perm)	1357	3067	0	1357	3076	1376	0	0	1400	0	1419	0
Link Speed (mph)		32			32			25			25	
Link Distance (ft)		661			483			555			306	
Travel Time (s)		14.1			10.3			15.1			8.3	
Confl. Peds. (#/hr)			2	2								
Peak Hour Factor	0.85	0.92	0.85	0.85	0.95	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	46	1964	39	80	2340	113	0	0	54	6	1	51
Shared Lane Traffic (%)												
Lane Group Flow (vph)	46	2003	0	80	2340	113	0	0	54	0	58	0
Sign Control		Free			Free			Stop			Stop	

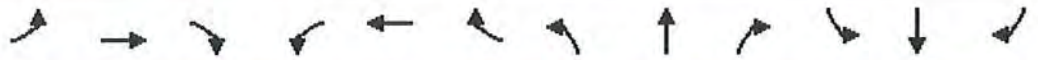
Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 81.6% ICU Level of Service D
Analysis Period (min) 15

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	6	1	34	5	4	87	18	1415	18	41	1218	26
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Storage Length (ft)	0		0	0		0	85		0	85		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor												
Frt		0.887			0.878			0.998			0.997	
Flt Protected		0.993			0.997		0.950			0.950		
Satd. Flow (prot)	0	1468	0	0	1459	0	1397	3160	0	1397	3157	0
Flt Permitted		0.993			0.997		0.950			0.950		
Satd. Flow (perm)	0	1468	0	0	1459	0	1397	3160	0	1397	3157	0
Link Speed (mph)		25			25			28			28	
Link Distance (ft)		222			285			640			233	
Travel Time (s)		6.1			7.8			15.6			5.7	
Confl. Peds. (#/hr)	1					1	2		3	3		2
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.90	0.85	0.85	0.90	0.85
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	7	1	40	6	5	102	21	1572	21	48	1353	31
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	48	0	0	113	0	21	1593	0	48	1384	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 58.6% ICU Level of Service B
Analysis Period (min) 15



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	26	20	18	13	10	18	13	275	6	11	355	15
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Storage Length (ft)	0		0	0		0	85		0	85		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.963			0.941			0.997			0.993	
Flt Protected		0.980			0.985		0.950			0.950		
Satd. Flow (prot)	0	1528	0	0	1501	0	1357	1614	0	1357	1608	0
Flt Permitted		0.980			0.985		0.950			0.950		
Satd. Flow (perm)	0	1528	0	0	1501	0	1357	1614	0	1357	1608	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		395			415			452			660	
Travel Time (s)		10.8			11.3			12.3			18.0	
Confl. Peds. (#/hr)			2	2			2		1	1		2
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.88	0.85	0.85	0.92	0.85
Adj. Flow (vph)	31	24	21	15	12	21	15	313	7	13	386	18
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	76	0	0	48	0	15	319	0	13	404	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 35.0% ICU Level of Service A
Analysis Period (min) 15

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	1601	9	16	2488	0	23
Ideal Flow (vphpl)	1700	1700	1500	1700	1500	1700
Storage Length (ft)		0	75		0	0
Storage Lanes		0	1		0	1
Taper Length (ft)			25		25	
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00
Frt	0.999					0.865
Flt Protected			0.950			
Satd. Flow (prot)	3073	0	1357	3076	0	1400
Flt Permitted			0.950			
Satd. Flow (perm)	3073	0	1357	3076	0	1400
Link Speed (mph)	32			32	30	
Link Distance (ft)	102			139	557	
Travel Time (s)	2.2			3.0	12.7	
Peak Hour Factor	0.99	0.85	0.85	0.93	0.85	0.85
Adj. Flow (vph)	1617	11	19	2675	0	27
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1628	0	19	2675	0	27
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 80.2%		ICU Level of Service D	
Analysis Period (min) 15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	20	1558	51	49	2154	43	0	0	71	0	0	63
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Storage Length (ft)	115		0	125		0	0		0	0		0
Storage Lanes	1		1	1		0	0		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt			0.850		0.997				0.865			0.865
Flt Protected	0.950			0.950								
Satd. Flow (prot)	1357	3076	1376	1357	3067	0	0	0	1400	0	0	1400
Flt Permitted	0.950			0.950								
Satd. Flow (perm)	1357	3076	1376	1357	3067	0	0	0	1400	0	0	1400
Link Speed (mph)		32			32			25			25	
Link Distance (ft)		660			648			652			636	
Travel Time (s)		14.1			13.8			17.8			17.3	
Confl. Peds. (#/hr)	1		1	1		1						
Peak Hour Factor	0.85	0.98	0.85	0.85	0.97	0.85	0.85	0.85	0.85	0.85	0.85	0.89
Adj. Flow (vph)	24	1590	60	58	2221	51	0	0	84	0	0	71
Shared Lane Traffic (%)												
Lane Group Flow (vph)	24	1590	60	58	2272	0	0	0	84	0	0	71
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 79.1% ICU Level of Service D
Analysis Period (min) 15

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	59	1645	48	129	1908	102	182	164	167	235	188	88
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Storage Length (ft)	65		0	100		100	360		165	0		115
Storage Lanes	1		0	1		1	1		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00				0.97	1.00		0.99	1.00		0.98
Frt		0.995				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1357	3059	0	1357	3076	1376	1357	1619	1376	1357	1619	1376
Flt Permitted	0.057			0.055			0.236			0.515		
Satd. Flow (perm)	81	3059	0	79	3076	1335	336	1619	1356	734	1619	1350
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4				40			77			70
Link Speed (mph)		32			32			25			25	
Link Distance (ft)		648			661			660			400	
Travel Time (s)		13.8			14.1			18.0			10.9	
Confl. Peds. (#/hr)	3		1	1		3	4		2	2		4
Peak Hour Factor	0.85	0.94	0.85	0.94	0.94	0.85	0.85	0.85	0.85	0.88	0.85	0.85
Adj. Flow (vph)	69	1750	56	137	2030	120	214	193	196	267	221	104
Shared Lane Traffic (%)												
Lane Group Flow (vph)	69	1806	0	137	2030	120	214	193	196	267	221	104
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases	6			2		2	8		8	4		4
Detector Phase	1	6		5	2	2	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	3.0	15.0		7.0	15.0	15.0	3.0	5.0	5.0	3.0	5.0	5.0
Minimum Split (s)	7.5	30.1		13.0	30.0	30.0	8.0	30.0	30.0	8.0	25.0	25.0
Total Split (s)	8.0	72.0		13.0	77.0	77.0	15.0	30.0	30.0	10.0	25.0	25.0
Total Split (%)	6.4%	57.6%		10.4%	61.6%	61.6%	12.0%	24.0%	24.0%	8.0%	20.0%	20.0%
Yellow Time (s)	3.0	3.6		3.0	3.6	3.6	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.5	2.0		1.5	1.5	1.5	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	2.5	3.6		2.5	3.1	3.1	3.0	3.0	3.0	3.0	3.0	3.0
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
Recall Mode	None	C-Max		None	C-Max	C-Max	None	None	None	None	None	None
Act Effct Green (s)	76.8	69.8		83.9	76.6	76.6	35.6	25.6	25.6	27.6	20.6	20.6
Actuated g/C Ratio	0.61	0.56		0.67	0.61	0.61	0.28	0.20	0.20	0.22	0.16	0.16
v/c Ratio	0.63	1.06		0.86	1.08	0.14	1.11	0.58	0.58	1.36	0.83	0.37
Control Delay	43.9	66.3		71.6	70.0	8.0	133.8	52.3	33.8	224.7	75.2	21.6
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.9	66.3		71.6	70.0	8.0	133.8	52.3	33.8	224.7	75.2	21.6
LOS	D	E		E	E	A	F	D	C	F	E	C
Approach Delay		65.5			66.8			75.2			133.2	
Approach LOS		E			E			E			F	
Stops (vph)	27	1425		72	1525	29	124	145	93	210	173	31

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Fuel Used(gal)	1	40		3	46	1	6	3	2	13	5	1
CO Emissions (g/hr)	69	2803		208	3236	60	451	225	171	911	330	74
NOx Emissions (g/hr)	13	545		40	630	12	88	44	33	177	64	14
VOC Emissions (g/hr)	16	650		48	750	14	105	52	40	211	76	17
Dilemma Vehicles (#)	0	0		0	0	0	0	0	0	0	0	0
Queue Length 50th (ft)	18	~857		71	~991	27	~161	140	85	~252	172	24
Queue Length 95th (ft)	#77	#998		#191	#1128	51	#266	206	152	#436	#263	70
Internal Link Dist (ft)		568			581			580			320	
Turn Bay Length (ft)	65			100		100	360		165			115
Base Capacity (vph)	110	1710		163	1886	834	193	350	353	197	285	295
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.63	1.06		0.84	1.08	0.14	1.11	0.55	0.56	1.36	0.78	0.35

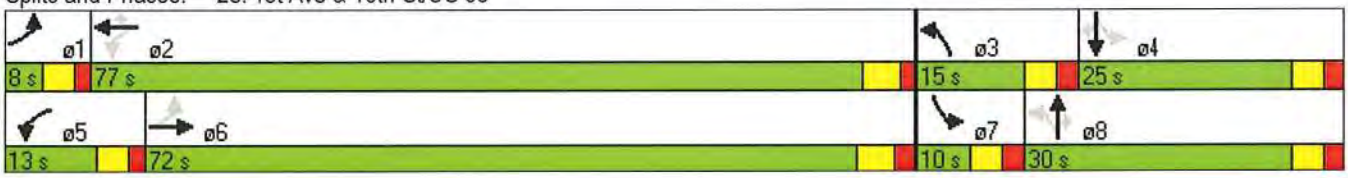
Intersection Summary

Area Type: Other
Cycle Length: 125
Actuated Cycle Length: 125
Offset: 37.5 (30%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow
Natural Cycle: 115
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.36
Intersection Signal Delay: 74.6 Intersection LOS: E
Intersection Capacity Utilization 103.3% ICU Level of Service G
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 28: 1st Ave & 16th St/US 95



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	14	1	21	74	1	59	9	1090	45	53	1262	15
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Storage Length (ft)	0		0	0		0	30		0	85		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor												
Frt		0.920			0.941			0.994			0.998	
Flt Protected		0.981			0.973		0.950			0.950		
Satd. Flow (prot)	0	1504	0	0	1526	0	1397	3148	0	1397	3160	0
Flt Permitted		0.981			0.973		0.950			0.950		
Satd. Flow (perm)	0	1504	0	0	1526	0	1397	3148	0	1397	3160	0
Link Speed (mph)		25			25			28			28	
Link Distance (ft)		388			303			281			556	
Travel Time (s)		10.6			8.3			6.8			13.5	
Confl. Peds. (#/hr)							2		1	1		2
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.86	0.85	0.85	0.93	0.85
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	16	1	25	87	1	69	11	1267	53	62	1357	18
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	42	0	0	157	0	11	1320	0	62	1375	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 66.0% ICU Level of Service C
Analysis Period (min) 15

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	1	1	174	6	1	1	41	298	5	6	366	10
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95
Frt		0.866			0.985			0.998			0.996	
Flt Protected					0.963			0.994			0.999	
Satd. Flow (prot)	0	1402	0	0	1536	0	0	3052	0	0	3061	0
Flt Permitted					0.963			0.994			0.999	
Satd. Flow (perm)	0	1402	0	0	1536	0	0	3052	0	0	3061	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		279			330			336			504	
Travel Time (s)		7.6			9.0			9.2			13.7	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	1	1	205	7	1	1	48	351	6	7	431	12
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	207	0	0	9	0	0	405	0	0	450	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 44.7% ICU Level of Service A
Analysis Period (min) 15

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	287	1212	184	343	1674	160	429	735	372	245	806	196
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Storage Length (ft)	200		150	200		150	300		150	250		150
Storage Lanes	2		1	2		1	2		1	2		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.91	1.00
Ped Bike Factor	1.00					0.99	1.00		0.99	1.00		0.98
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	2633	4420	1376	2633	4420	1376	2710	4550	1417	2710	4550	1417
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	2632	4420	1376	2633	4420	1357	2706	4550	1398	2709	4550	1393
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			149			106			233			193
Link Speed (mph)		32			32			28			28	
Link Distance (ft)		488			660			429			381	
Travel Time (s)		10.4			14.1			10.4			9.3	
Confl. Peds. (#/hr)	1					1	3		1	1		3
Peak Hour Factor	0.85	0.90	0.85	0.90	0.92	0.85	0.85	0.85	0.87	0.87	0.91	0.88
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	338	1347	216	381	1820	188	505	865	428	282	886	223
Shared Lane Traffic (%)												
Lane Group Flow (vph)	338	1347	216	381	1820	188	505	865	428	282	886	223
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	3.0	15.0	15.0	3.0	15.0	15.0	3.0	5.0	5.0	3.0	5.0	5.0
Minimum Split (s)	8.0	27.0	27.0	8.0	25.0	25.0	8.0	30.0	30.0	8.0	26.0	26.0
Total Split (s)	16.0	41.0	41.0	21.0	46.0	46.0	22.0	32.0	32.0	16.0	26.0	26.0
Total Split (%)	14.5%	37.3%	37.3%	19.1%	41.8%	41.8%	20.0%	29.1%	29.1%	14.5%	23.6%	23.6%
Yellow Time (s)	3.0	3.6	3.6	3.0	3.6	3.6	3.0	3.6	3.6	3.0	3.6	3.6
All-Red Time (s)	1.5	1.5	1.5	1.5	1.5	1.5	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	0.0	-2.0	-2.0	-2.0	-2.0	-2.0	0.0	-2.0	-2.0	0.0
Total Lost Time (s)	2.5	3.1	5.1	2.5	3.1	3.1	3.0	3.6	5.6	3.0	3.6	5.6
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Min	Min	None	Min	Min
Act Effct Green (s)	13.5	38.3	36.3	18.1	42.9	42.9	19.0	28.4	26.4	13.0	22.4	20.4
Actuated g/C Ratio	0.12	0.35	0.33	0.16	0.39	0.39	0.17	0.26	0.24	0.12	0.20	0.19
v/c Ratio	1.05	0.87	0.39	0.88	1.06	0.32	1.08	0.74	0.83	0.88	0.96	0.54
Control Delay	110.0	41.4	11.8	67.2	71.4	11.9	108.1	41.8	33.4	76.0	64.4	13.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	110.0	41.4	11.8	67.2	71.4	11.9	108.1	41.8	33.4	76.0	64.4	13.7
LOS	F	D	B	E	E	B	F	D	C	E	E	B
Approach Delay		50.2			66.0			58.4			58.6	
Approach LOS		D			E			E			E	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Stops (vph)	245	1083	50	313	1477	50	367	655	168	220	732	41
Fuel Used(gal)	9	23	2	8	42	1	13	13	5	6	18	2
CO Emissions (g/hr)	652	1591	114	585	2933	105	944	932	372	431	1286	125
NOx Emissions (g/hr)	127	309	22	114	571	20	184	181	72	84	250	24
VOC Emissions (g/hr)	151	369	26	136	680	24	219	216	86	100	298	29
Dilemma Vehicles (#)	0	0	0	0	0	0	0	0	0	0	0	0
Queue Length 50th (ft)	~134	326	33	136	~516	37	~205	205	138	102	228	18
Queue Length 95th (ft)	#206	#391	84	#218	#613	81	#284	237	#286	#169	#316	85
Internal Link Dist (ft)		408			580			349			301	
Turn Bay Length (ft)	200		150	200		150	300		150	250		150
Base Capacity (vph)	323	1540	554	443	1724	594	468	1175	513	320	927	416
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.05	0.87	0.39	0.86	1.06	0.32	1.08	0.74	0.83	0.88	0.96	0.54

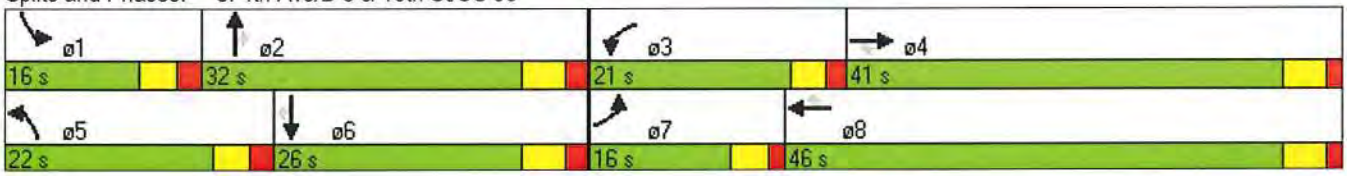
Intersection Summary

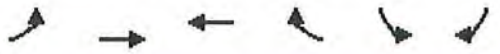
Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green, Master Intersection
Natural Cycle: 110
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.08
Intersection Signal Delay: 58.8 Intersection LOS: E
Intersection Capacity Utilization 92.8% ICU Level of Service F
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 8: 4th Ave/B-8 & 16th St/US 95





Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	126	1643	2541	23	4	44
Ideal Flow (vphpl)	1500	1700	1700	1700	1500	1700
Storage Length (ft)	300			0	0	0
Storage Lanes	1			0	1	0
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Frt			0.999		0.877	
Flt Protected	0.950				0.996	
Satd. Flow (prot)	1357	3076	3073	0	1248	0
Flt Permitted	0.950				0.996	
Satd. Flow (perm)	1357	3076	3073	0	1248	0
Link Speed (mph)		32	32		25	
Link Distance (ft)		477	108		557	
Travel Time (s)		10.2	2.3		15.2	
Peak Hour Factor	0.85	0.99	0.93	0.88	0.85	0.85
Adj. Flow (vph)	148	1660	2732	26	5	52
Shared Lane Traffic (%)						
Lane Group Flow (vph)	148	1660	2758	0	57	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 101.9% ICU Level of Service G
Analysis Period (min) 15

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	39	1807	33	68	2223	96	0	0	46	5	1	43
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Storage Length (ft)	85		0	135		0	0		0	0		0
Storage Lanes	1		0	1		1	0		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.997				0.850			0.865		0.881	
Flt Protected	0.950			0.950							0.995	
Satd. Flow (prot)	1357	3067	0	1357	3076	1376	0	0	1400	0	1419	0
Flt Permitted	0.950			0.950							0.995	
Satd. Flow (perm)	1357	3067	0	1357	3076	1376	0	0	1400	0	1419	0
Link Speed (mph)		32			32			25			25	
Link Distance (ft)		661			483			555			306	
Travel Time (s)		14.1			10.3			15.1			8.3	
Confl. Peds. (#/hr)			2	2								
Peak Hour Factor	0.85	0.92	0.85	0.85	0.95	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	46	1964	39	80	2340	113	0	0	54	6	1	51
Shared Lane Traffic (%)												
Lane Group Flow (vph)	46	2003	0	80	2340	113	0	0	54	0	58	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 81.6% ICU Level of Service D
Analysis Period (min) 15

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	31	1	37	32	4	88	45	1448	18	72	1250	26
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Storage Length (ft)	0		0	0		0	85		0	85		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor												
Frt		0.927			0.904			0.998			0.997	
Flt Protected		0.978			0.987		0.950			0.950		
Satd. Flow (prot)	0	1511	0	0	1487	0	1397	3160	0	1397	3157	0
Flt Permitted		0.978			0.987		0.950			0.950		
Satd. Flow (perm)	0	1511	0	0	1487	0	1397	3160	0	1397	3157	0
Link Speed (mph)		25			25			28			28	
Link Distance (ft)		222			285			640			233	
Travel Time (s)		6.1			7.8			15.6			5.7	
Confl. Peds. (#/hr)	1					1	2		3	3		2
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.90	0.85	0.85	0.90	0.85
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	36	1	44	38	5	104	53	1609	21	85	1389	31
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	81	0	0	147	0	53	1630	0	85	1420	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 69.8% ICU Level of Service C
Analysis Period (min) 15

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	26	20	18	13	10	18	13	275	6	11	355	15
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Storage Length (ft)	0		0	0		0	85		0	85		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.963			0.941			0.997			0.993	
Flt Protected		0.980			0.985		0.950			0.950		
Satd. Flow (prot)	0	1528	0	0	1501	0	1357	1614	0	1357	1608	0
Flt Permitted		0.980			0.985		0.950			0.950		
Satd. Flow (perm)	0	1528	0	0	1501	0	1357	1614	0	1357	1608	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		395			415			452			660	
Travel Time (s)		10.8			11.3			12.3			18.0	
Confl. Peds. (#/hr)			2	2			2		1	1		2
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.88	0.85	0.85	0.92	0.85
Adj. Flow (vph)	31	24	21	15	12	21	15	313	7	13	386	18
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	76	0	0	48	0	15	319	0	13	404	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 35.0% ICU Level of Service A
Analysis Period (min) 15

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	1602	54	67	2534	0	75
Ideal Flow (vphpl)	1700	1700	1500	1700	1500	1700
Storage Length (ft)		0	75		0	0
Storage Lanes		0	1		0	1
Taper Length (ft)			25		25	
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00
Frt	0.994					0.865
Flt Protected			0.950			
Satd. Flow (prot)	3058	0	1357	3076	0	1400
Flt Permitted			0.950			
Satd. Flow (perm)	3058	0	1357	3076	0	1400
Link Speed (mph)	32			32	30	
Link Distance (ft)	108			139	557	
Travel Time (s)	2.3			3.0	12.7	
Peak Hour Factor	0.99	0.85	0.85	0.93	0.85	0.85
Adj. Flow (vph)	1618	64	79	2725	0	88
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1682	0	79	2725	0	88
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 81.6% ICU Level of Service D
Analysis Period (min) 15

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	32	1628	52	69	2233	46	0	0	74	0	0	65
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Storage Length (ft)	115		0	125		0	0		0	0		0
Storage Lanes	1		1	1		0	0		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt			0.850		0.997				0.865			0.865
Flt Protected	0.950			0.950								
Satd. Flow (prot)	1357	3076	1376	1357	3067	0	0	0	1400	0	0	1400
Flt Permitted	0.950			0.950								
Satd. Flow (perm)	1357	3076	1376	1357	3067	0	0	0	1400	0	0	1400
Link Speed (mph)		32			32			25			25	
Link Distance (ft)		660			648			652			636	
Travel Time (s)		14.1			13.8			17.8			17.3	
Confl. Peds. (#/hr)	1		1	1		1						
Peak Hour Factor	0.85	0.98	0.85	0.85	0.97	0.85	0.85	0.85	0.85	0.85	0.85	0.89
Adj. Flow (vph)	38	1661	61	81	2302	54	0	0	87	0	0	73
Shared Lane Traffic (%)												
Lane Group Flow (vph)	38	1661	61	81	2356	0	0	0	87	0	0	73
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 81.8% ICU Level of Service D
Analysis Period (min) 15

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	59	1645	48	129	1908	102	182	164	167	235	188	88
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Storage Length (ft)	65		0	100		100	360		165	0		115
Storage Lanes	1		0	1		1	1		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00				0.97	1.00		0.99	1.00		0.98
Frt		0.995				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1357	3059	0	1357	3076	1376	1357	1619	1376	1357	1619	1376
Flt Permitted	0.057			0.055			0.236			0.515		
Satd. Flow (perm)	81	3059	0	79	3076	1335	336	1619	1356	734	1619	1350
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4				40			77			70
Link Speed (mph)		32			32			25			25	
Link Distance (ft)		648			661			660			400	
Travel Time (s)		13.8			14.1			18.0			10.9	
Confl. Peds. (#/hr)	3		1	1		3	4		2	2		4
Peak Hour Factor	0.85	0.94	0.85	0.94	0.94	0.85	0.85	0.85	0.85	0.88	0.85	0.85
Adj. Flow (vph)	69	1750	56	137	2030	120	214	193	196	267	221	104
Shared Lane Traffic (%)												
Lane Group Flow (vph)	69	1806	0	137	2030	120	214	193	196	267	221	104
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases	6			2		2	8		8	4		4
Detector Phase	1	6		5	2	2	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	3.0	15.0		7.0	15.0	15.0	3.0	5.0	5.0	3.0	5.0	5.0
Minimum Split (s)	7.5	30.1		13.0	30.0	30.0	8.0	30.0	30.0	8.0	25.0	25.0
Total Split (s)	8.0	72.0		13.0	77.0	77.0	15.0	30.0	30.0	10.0	25.0	25.0
Total Split (%)	6.4%	57.6%		10.4%	61.6%	61.6%	12.0%	24.0%	24.0%	8.0%	20.0%	20.0%
Yellow Time (s)	3.0	3.6		3.0	3.6	3.6	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.5	2.0		1.5	1.5	1.5	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	2.5	3.6		2.5	3.1	3.1	3.0	3.0	3.0	3.0	3.0	3.0
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
Recall Mode	None	C-Max		None	C-Max	C-Max	None	None	None	None	None	None
Act Effct Green (s)	76.8	69.8		83.9	76.6	76.6	35.6	25.6	25.6	27.6	20.6	20.6
Actuated g/C Ratio	0.61	0.56		0.67	0.61	0.61	0.28	0.20	0.20	0.22	0.16	0.16
v/c Ratio	0.63	1.06		0.86	1.08	0.14	1.11	0.58	0.58	1.36	0.83	0.37
Control Delay	43.9	66.3		71.6	70.0	8.0	133.8	52.3	33.8	224.7	75.2	21.6
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.9	66.3		71.6	70.0	8.0	133.8	52.3	33.8	224.7	75.2	21.6
LOS	D	E		E	E	A	F	D	C	F	E	C
Approach Delay		65.5			66.8			75.2			133.2	
Approach LOS		E			E			E			F	
Stops (vph)	27	1425		72	1525	29	124	145	93	210	173	31

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Fuel Used(gal)	1	40		3	46	1	6	3	2	13	5	1
CO Emissions (g/hr)	69	2803		208	3236	60	451	225	171	911	330	74
NOx Emissions (g/hr)	13	545		40	630	12	88	44	33	177	64	14
VOC Emissions (g/hr)	16	650		48	750	14	105	52	40	211	76	17
Dilemma Vehicles (#)	0	0		0	0	0	0	0	0	0	0	0
Queue Length 50th (ft)	18	~857		71	~991	27	~161	140	85	~252	172	24
Queue Length 95th (ft)	#77	#998		#191	#1128	51	#266	206	152	#436	#263	70
Internal Link Dist (ft)		568			581			580			320	
Turn Bay Length (ft)	65			100		100	360		165			115
Base Capacity (vph)	110	1710		163	1886	834	193	350	353	197	285	295
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.63	1.06		0.84	1.08	0.14	1.11	0.55	0.56	1.36	0.78	0.35

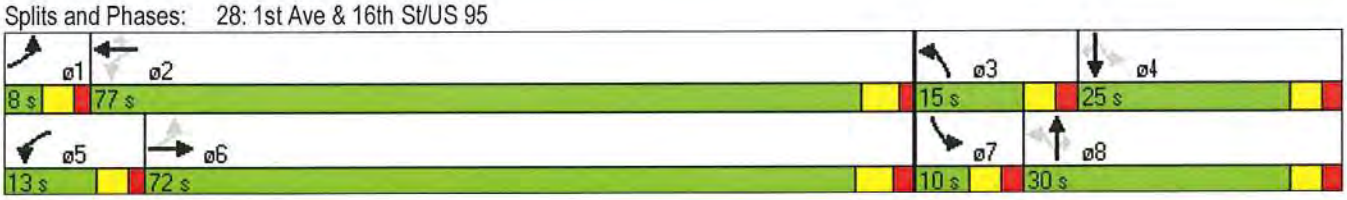
Intersection Summary

Area Type: Other
Cycle Length: 125
Actuated Cycle Length: 125
Offset: 37.5 (30%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow
Natural Cycle: 115
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.36
Intersection Signal Delay: 74.6 Intersection LOS: E
Intersection Capacity Utilization 103.3% ICU Level of Service G
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 28: 1st Ave & 16th St/US 95



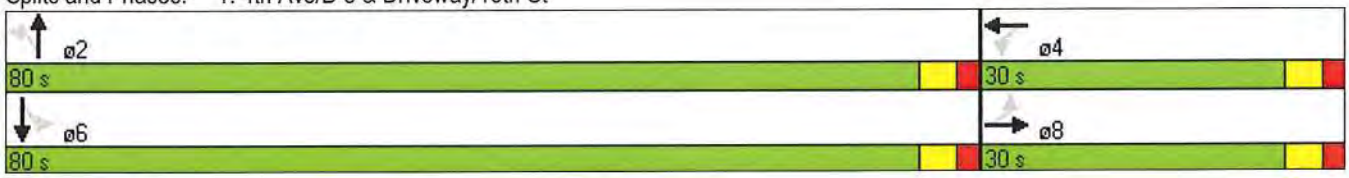
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	14	1	21	74	1	59	9	1090	45	53	1262	15
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Storage Length (ft)	0		0	0		0	30		0	85		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor								1.00			1.00	
Frt		0.920			0.941			0.994			0.998	
Flt Protected		0.981			0.973		0.950			0.950		
Satd. Flow (prot)	0	1504	0	0	1526	0	1397	3145	0	1397	3159	0
Flt Permitted		0.869			0.808		0.167			0.179		
Satd. Flow (perm)	0	1332	0	0	1267	0	246	3145	0	263	3159	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		25			33			8			3	
Link Speed (mph)		25			25			28			28	
Link Distance (ft)		388			303			281			556	
Travel Time (s)		10.6			8.3			6.8			13.5	
Confl. Peds. (#/hr)							2		1	1		2
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.86	0.85	0.85	0.93	0.85
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	16	1	25	87	1	69	11	1267	53	62	1357	18
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	42	0	0	157	0	11	1320	0	62	1375	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2			6		
Detector Phase	8	8		4	4		2	2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	25.0	25.0		25.0	25.0		24.0	24.0		24.0	24.0	
Total Split (s)	30.0	30.0		30.0	30.0		80.0	80.0		80.0	80.0	
Total Split (%)	27.3%	27.3%		27.3%	27.3%		72.7%	72.7%		72.7%	72.7%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		C-Max	C-Max		C-Max	C-Max	
Act Effct Green (s)		16.3			16.3		83.7	83.7		83.7	83.7	
Actuated g/C Ratio		0.15			0.15		0.76	0.76		0.76	0.76	
v/c Ratio		0.19			0.73		0.06	0.55		0.31	0.57	
Control Delay		22.0			53.1		1.1	4.0		10.6	7.5	
Queue Delay		0.0			0.0		0.0	0.3		0.0	0.0	
Total Delay		22.0			53.1		1.1	4.2		10.6	7.5	
LOS		C			D		A	A		B	A	
Approach Delay		22.0			53.1			4.2			7.6	
Approach LOS		C			D			A			A	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Stops (vph)		16			98		0	334		21	520	
Fuel Used(gal)		0			2		0	9		0	10	
CO Emissions (g/hr)		24			151		3	602		32	712	
NOx Emissions (g/hr)		5			29		1	117		6	138	
VOC Emissions (g/hr)		6			35		1	140		7	165	
Dilemma Vehicles (#)		0			0		0	0		0	0	
Queue Length 50th (ft)		10			85		0	98		11	180	
Queue Length 95th (ft)		37			135		m1	m47		41	314	
Internal Link Dist (ft)		308			223			201			476	
Turn Bay Length (ft)							30			85		
Base Capacity (vph)		322			313		187	2395		200	2404	
Starvation Cap Reductn		0			0		0	415		0	0	
Spillback Cap Reductn		0			0		0	0		0	0	
Storage Cap Reductn		0			0		0	0		0	0	
Reduced v/c Ratio		0.13			0.50		0.06	0.67		0.31	0.57	

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 54 (49%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.73
Intersection Signal Delay: 8.7 Intersection LOS: A
Intersection Capacity Utilization 71.0% ICU Level of Service C
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: 4th Ave/B-8 & Driveway/15th St



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	1	1	174	6	1	1	41	298	5	6	366	10
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95
Frt		0.866			0.985			0.998			0.996	
Flt Protected					0.963			0.994			0.999	
Satd. Flow (prot)	0	1402	0	0	1536	0	0	3052	0	0	3061	0
Flt Permitted					0.963			0.994			0.999	
Satd. Flow (perm)	0	1402	0	0	1536	0	0	3052	0	0	3061	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		279			330			336			504	
Travel Time (s)		7.6			9.0			9.2			13.7	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	1	1	205	7	1	1	48	351	6	7	431	12
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	207	0	0	9	0	0	405	0	0	450	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 44.7% ICU Level of Service A
Analysis Period (min) 15

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	287	1212	184	343	1674	160	429	735	372	245	806	196
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Storage Length (ft)	200		150	200		150	300		150	250		150
Storage Lanes	2		1	2		1	2		1	2		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.91	1.00
Ped Bike Factor	1.00					0.99	1.00		0.99	1.00		0.98
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	2633	4420	1376	2633	4420	1376	2710	4550	1417	2710	4550	1417
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	2632	4420	1376	2633	4420	1357	2706	4550	1398	2709	4550	1393
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			149			106			233			193
Link Speed (mph)		32			32			28			28	
Link Distance (ft)		488			660			429			381	
Travel Time (s)		10.4			14.1			10.4			9.3	
Confl. Peds. (#/hr)	1					1	3		1	1		3
Peak Hour Factor	0.85	0.90	0.85	0.90	0.92	0.85	0.85	0.85	0.87	0.87	0.91	0.88
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	338	1347	216	381	1820	188	505	865	428	282	886	223
Shared Lane Traffic (%)												
Lane Group Flow (vph)	338	1347	216	381	1820	188	505	865	428	282	886	223
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	3.0	15.0	15.0	3.0	15.0	15.0	3.0	5.0	5.0	3.0	5.0	5.0
Minimum Split (s)	8.0	27.0	27.0	8.0	25.0	25.0	8.0	30.0	30.0	8.0	26.0	26.0
Total Split (s)	16.0	41.0	41.0	21.0	46.0	46.0	22.0	32.0	32.0	16.0	26.0	26.0
Total Split (%)	14.5%	37.3%	37.3%	19.1%	41.8%	41.8%	20.0%	29.1%	29.1%	14.5%	23.6%	23.6%
Yellow Time (s)	3.0	3.6	3.6	3.0	3.6	3.6	3.0	3.6	3.6	3.0	3.6	3.6
All-Red Time (s)	1.5	1.5	1.5	1.5	1.5	1.5	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	0.0	-2.0	-2.0	-2.0	-2.0	-2.0	0.0	-2.0	-2.0	0.0
Total Lost Time (s)	2.5	3.1	5.1	2.5	3.1	3.1	3.0	3.6	5.6	3.0	3.6	5.6
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Min	Min	None	Min	Min
Act Effct Green (s)	13.5	38.3	36.3	18.1	42.9	42.9	19.0	28.4	26.4	13.0	22.4	20.4
Actuated g/C Ratio	0.12	0.35	0.33	0.16	0.39	0.39	0.17	0.26	0.24	0.12	0.20	0.19
v/c Ratio	1.05	0.87	0.39	0.88	1.06	0.32	1.08	0.74	0.83	0.88	0.96	0.54
Control Delay	110.0	41.4	11.8	61.1	62.1	8.8	109.7	38.4	28.6	80.9	60.7	15.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	110.0	41.4	11.8	61.1	62.1	8.8	109.7	38.4	28.6	80.9	60.7	15.2
LOS	F	D	B	E	E	A	F	D	C	F	E	B
Approach Delay		50.2			57.7			56.1			57.5	
Approach LOS		D			E			E			E	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Stops (vph)	245	1083	50	307	1453	76	353	625	203	228	712	41
Fuel Used(gal)	9	23	2	8	39	2	14	13	5	6	18	2
CO Emissions (g/hr)	652	1591	114	553	2701	109	949	886	359	450	1237	129
NOx Emissions (g/hr)	127	309	22	108	525	21	185	172	70	88	241	25
VOC Emissions (g/hr)	151	369	26	128	626	25	220	205	83	104	287	30
Dilemma Vehicles (#)	0	0	0	0	0	0	0	0	0	0	0	0
Queue Length 50th (ft)	~134	326	33	132	~512	19	~200	186	81	108	207	7
Queue Length 95th (ft)	#206	#391	84	m146	m#597	m29	#292	211	#196	#174	#308	90
Internal Link Dist (ft)		408			580			349			301	
Turn Bay Length (ft)	200		150	200		150	300		150	250		150
Base Capacity (vph)	323	1540	554	443	1724	594	468	1175	513	320	927	416
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.05	0.87	0.39	0.86	1.06	0.32	1.08	0.74	0.83	0.88	0.96	0.54

Intersection Summary

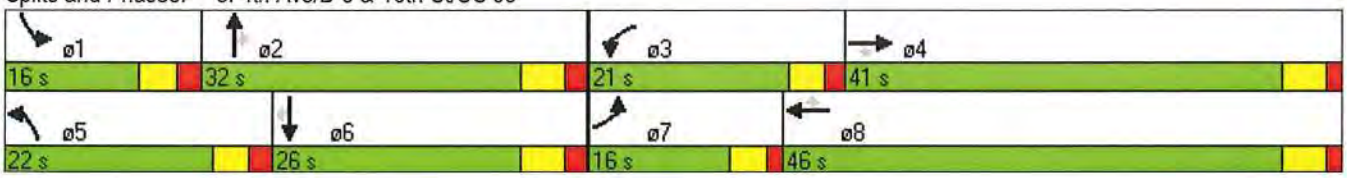
Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green, Master Intersection
Natural Cycle: 110
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.08
Intersection Signal Delay: 55.4 Intersection LOS: E
Intersection Capacity Utilization 92.8% ICU Level of Service F
Analysis Period (min) 15

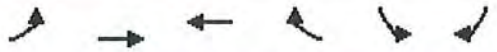
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 8: 4th Ave/B-8 & 16th St/US 95

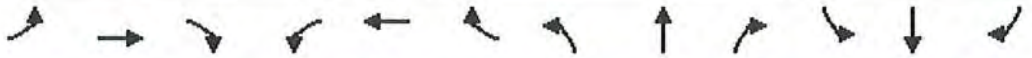




Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	126	1643	2541	23	4	44
Ideal Flow (vphpl)	1500	1700	1700	1700	1500	1700
Storage Length (ft)	75			0	0	0
Storage Lanes	1			0	1	0
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Frt			0.999		0.877	
Flt Protected	0.950				0.996	
Satd. Flow (prot)	1357	3076	3073	0	1248	0
Flt Permitted	0.950				0.996	
Satd. Flow (perm)	1357	3076	3073	0	1248	0
Link Speed (mph)		32	32		25	
Link Distance (ft)		477	106		557	
Travel Time (s)		10.2	2.3		15.2	
Peak Hour Factor	0.85	0.99	0.93	0.88	0.85	0.85
Adj. Flow (vph)	148	1660	2732	26	5	52
Shared Lane Traffic (%)						
Lane Group Flow (vph)	148	1660	2758	0	57	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 101.9% ICU Level of Service G
Analysis Period (min) 15



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	39	1807	33	68	2223	96	0	0	46	5	1	43
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Storage Length (ft)	85		0	135		0	0		0	0		0
Storage Lanes	1		0	1		1	0		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.997				0.850			0.865		0.881	
Flt Protected	0.950			0.950							0.995	
Satd. Flow (prot)	1357	3067	0	1357	3076	1376	0	0	1400	0	1419	0
Flt Permitted	0.950			0.950							0.995	
Satd. Flow (perm)	1357	3067	0	1357	3076	1376	0	0	1400	0	1419	0
Link Speed (mph)		32			32			25			25	
Link Distance (ft)		661			483			555			306	
Travel Time (s)		14.1			10.3			15.1			8.3	
Confl. Peds. (#/hr)			2	2								
Peak Hour Factor	0.85	0.92	0.85	0.85	0.95	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	46	1964	39	80	2340	113	0	0	54	6	1	51
Shared Lane Traffic (%)												
Lane Group Flow (vph)	46	2003	0	80	2340	113	0	0	54	0	58	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 81.6% ICU Level of Service D
Analysis Period (min) 15

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	31	1	37	32	4	88	45	1448	18	72	1250	26
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Storage Length (ft)	0		0	0		0	85		0	85		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor		1.00			0.99			1.00			1.00	
Frt		0.927			0.904			0.998			0.997	
Flt Protected		0.978			0.987		0.950			0.950		
Satd. Flow (prot)	0	1511	0	0	1473	0	1397	3159	0	1397	3155	0
Flt Permitted		0.652			0.890		0.163			0.124		
Satd. Flow (perm)	0	1007	0	0	1328	0	240	3159	0	182	3155	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		44			56			3			5	
Link Speed (mph)		25			25			28			28	
Link Distance (ft)		222			285			640			233	
Travel Time (s)		6.1			7.8			15.6			5.7	
Confl. Peds. (#/hr)	1					1	2		3	3		2
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.90	0.85	0.85	0.90	0.85
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	36	1	44	38	5	104	53	1609	21	85	1389	31
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	81	0	0	147	0	53	1630	0	85	1420	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2			6		
Detector Phase	8	8		4	4		2	2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	25.0	25.0		25.0	25.0		24.0	24.0		24.0	24.0	
Total Split (s)	25.0	25.0		25.0	25.0		85.0	85.0		85.0	85.0	
Total Split (%)	22.7%	22.7%		22.7%	22.7%		77.3%	77.3%		77.3%	77.3%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		C-Max	C-Max		C-Max	C-Max	
Act Effct Green (s)		13.2			13.2		86.8	86.8		86.8	86.8	
Actuated g/C Ratio		0.12			0.12		0.79	0.79		0.79	0.79	
v/c Ratio		0.51			0.70		0.28	0.65		0.59	0.57	
Control Delay		33.5			45.7		8.7	7.3		27.6	7.3	
Queue Delay		0.0			0.0		0.0	0.0		0.0	0.1	
Total Delay		33.5			45.7		8.7	7.3		27.6	7.4	
LOS		C			D		A	A		C	A	
Approach Delay		33.5			45.7			7.3			8.5	
Approach LOS		C			D			A			A	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Stops (vph)		34			73		14	612		53	623	
Fuel Used(gal)		1			2		0	13		1	12	
CO Emissions (g/hr)		51			122		27	887		73	819	
NOx Emissions (g/hr)		10			24		5	173		14	159	
VOC Emissions (g/hr)		12			28		6	206		17	190	
Dilemma Vehicles (#)		0			0		0	0		0	0	
Queue Length 50th (ft)		24			62		8	208		13	107	
Queue Length 95th (ft)		64			114		31	371		m39	m135	
Internal Link Dist (ft)		142			205			560			153	
Turn Bay Length (ft)							85			85		
Base Capacity (vph)		219			287		189	2493		144	2490	
Starvation Cap Reductn		0			0		0	0		0	205	
Spillback Cap Reductn		0			0		0	0		0	0	
Storage Cap Reductn		0			0		0	0		0	0	
Reduced v/c Ratio		0.37			0.51		0.28	0.65		0.59	0.62	

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 43 (39%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.70
Intersection Signal Delay: 10.1 Intersection LOS: B
Intersection Capacity Utilization 73.2% ICU Level of Service D
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 14: 4th Ave/B-8 & 17th St/Driveway

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	26	20	18	13	10	18	13	275	6	11	355	15
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Storage Length (ft)	0		0	0		0	85		0	85		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.963			0.941			0.997			0.993	
Flt Protected		0.980			0.985		0.950			0.950		
Satd. Flow (prot)	0	1528	0	0	1501	0	1357	1614	0	1357	1608	0
Flt Permitted		0.980			0.985		0.950			0.950		
Satd. Flow (perm)	0	1528	0	0	1501	0	1357	1614	0	1357	1608	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		395			415			452			660	
Travel Time (s)		10.8			11.3			12.3			18.0	
Confl. Peds. (#/hr)			2	2			2		1	1		2
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.88	0.85	0.85	0.92	0.85
Adj. Flow (vph)	31	24	21	15	12	21	15	313	7	13	386	18
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	76	0	0	48	0	15	319	0	13	404	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 35.0% ICU Level of Service A
Analysis Period (min) 15

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	1602	54	67	2534	0	75
Ideal Flow (vphpl)	1700	1700	1500	1700	1500	1700
Storage Length (ft)		0	75		0	0
Storage Lanes		0	1		0	1
Taper Length (ft)			25		25	
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00
Frt	0.994					0.865
Flt Protected			0.950			
Satd. Flow (prot)	3058	0	1357	3076	0	1400
Flt Permitted			0.950			
Satd. Flow (perm)	3058	0	1357	3076	0	1400
Link Speed (mph)	32			32	30	
Link Distance (ft)	106			139	557	
Travel Time (s)	2.3			3.0	12.7	
Peak Hour Factor	0.99	0.85	0.85	0.93	0.85	0.85
Adj. Flow (vph)	1618	64	79	2725	0	88
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1682	0	79	2725	0	88
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 81.6%		ICU Level of Service D	
Analysis Period (min) 15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	32	1628	52	69	2233	46	25	5	74	25	5	65
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Storage Length (ft)	115		0	125		0	100		0	100		0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.98		1.00							
Frt			0.850		0.997			0.860			0.861	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1357	3076	1376	1357	3065	0	1357	1392	0	1357	1394	0
Flt Permitted	0.045			0.124			0.706			0.668		
Satd. Flow (perm)	64	3076	1344	177	3065	0	1009	1392	0	954	1394	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			61		5			51			14	
Link Speed (mph)		32			32			25			25	
Link Distance (ft)		660			648			652			636	
Travel Time (s)		14.1			13.8			17.8			17.3	
Confl. Peds. (#/hr)	1		1	1		1						
Peak Hour Factor	0.85	0.98	0.85	0.85	0.97	0.85	0.85	0.85	0.85	0.85	0.85	0.89
Adj. Flow (vph)	38	1661	61	81	2302	54	29	6	87	29	6	73
Shared Lane Traffic (%)												
Lane Group Flow (vph)	38	1661	61	81	2356	0	29	93	0	29	79	0
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8			2			6		
Detector Phase	4	4	4	8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	24.0	24.0	24.0	24.0	24.0		25.0	25.0		25.0	25.0	
Total Split (s)	85.0	85.0	85.0	85.0	85.0		25.0	25.0		25.0	25.0	
Total Split (%)	77.3%	77.3%	77.3%	77.3%	77.3%		22.7%	22.7%		22.7%	22.7%	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max	C-Max	C-Max	C-Max		None	None		None	None	
Act Effct Green (s)	91.7	91.7	91.7	91.7	91.7		11.7	11.7		11.7	11.7	
Actuated g/C Ratio	0.83	0.83	0.83	0.83	0.83		0.11	0.11		0.11	0.11	
v/c Ratio	0.72	0.65	0.05	0.55	0.92		0.27	0.48		0.29	0.49	
Control Delay	59.0	9.6	1.0	23.9	17.6		49.2	30.5		50.2	46.9	
Queue Delay	0.0	0.0	0.0	0.0	7.1		0.0	0.0		0.0	0.0	
Total Delay	59.0	9.6	1.0	23.9	24.6		49.2	30.5		50.2	46.9	
LOS	E	A	A	C	C		D	C		D	D	
Approach Delay		10.3			24.6			35.0			47.8	
Approach LOS		B			C			C			D	
Stops (vph)	19	686	3	34	1337		23	37		23	52	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Fuel Used(gal)	1	16	0	1	28		0	1		0	1	
CO Emissions (g/hr)	46	1090	20	62	1936		33	75		33	87	
NOx Emissions (g/hr)	9	212	4	12	377		6	15		7	17	
VOC Emissions (g/hr)	11	253	5	14	449		8	17		8	20	
Dilemma Vehicles (#)	0	0	0	0	0		0	0		0	0	
Queue Length 50th (ft)	11	194	1	15	541		19	28		19	44	
Queue Length 95th (ft)	m16	300	m1	#113	#1102		43	67		43	80	
Internal Link Dist (ft)		580			568			572			556	
Turn Bay Length (ft)	115			125			100			100		
Base Capacity (vph)	53	2564	1130	148	2556		183	295		173	265	
Starvation Cap Reductn	0	0	0	0	192		0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	
Reduced v/c Ratio	0.72	0.65	0.05	0.55	1.00		0.16	0.32		0.17	0.30	

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 82 (75%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green
Natural Cycle: 120
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.92
Intersection Signal Delay: 19.8 Intersection LOS: B
Intersection Capacity Utilization 89.4% ICU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 27: 2nd Ave/3rd Ave & 16th St/US 95

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	59	1645	48	129	1908	102	182	164	167	235	188	88
Ideal Flow (vphpl)	1500	1700	1700	1500	1700	1700	1500	1700	1700	1500	1700	1700
Storage Length (ft)	65		0	100		100	360		165	0		115
Storage Lanes	1		0	1		1	1		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00				0.97	1.00		0.99	1.00		0.98
Frt		0.995				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1357	3059	0	1357	3076	1376	1357	1619	1376	1357	1619	1376
Flt Permitted	0.057			0.055			0.236			0.515		
Satd. Flow (perm)	81	3059	0	79	3076	1335	336	1619	1356	734	1619	1350
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4				40			77			70
Link Speed (mph)		32			32			25			25	
Link Distance (ft)		648			661			660			400	
Travel Time (s)		13.8			14.1			18.0			10.9	
Confl. Peds. (#/hr)	3		1	1		3	4		2	2		4
Peak Hour Factor	0.85	0.94	0.85	0.94	0.94	0.85	0.85	0.85	0.85	0.88	0.85	0.85
Adj. Flow (vph)	69	1750	56	137	2030	120	214	193	196	267	221	104
Shared Lane Traffic (%)												
Lane Group Flow (vph)	69	1806	0	137	2030	120	214	193	196	267	221	104
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases	6			2		2	8		8	4		4
Detector Phase	1	6		5	2	2	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	3.0	15.0		7.0	15.0	15.0	3.0	5.0	5.0	3.0	5.0	5.0
Minimum Split (s)	7.5	30.1		13.0	30.0	30.0	8.0	30.0	30.0	8.0	25.0	25.0
Total Split (s)	8.0	72.0		13.0	77.0	77.0	15.0	30.0	30.0	10.0	25.0	25.0
Total Split (%)	6.4%	57.6%		10.4%	61.6%	61.6%	12.0%	24.0%	24.0%	8.0%	20.0%	20.0%
Yellow Time (s)	3.0	3.6		3.0	3.6	3.6	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.5	2.0		1.5	1.5	1.5	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	2.5	3.6		2.5	3.1	3.1	3.0	3.0	3.0	3.0	3.0	3.0
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
Recall Mode	None	C-Max		None	C-Max	C-Max	None	None	None	None	None	None
Act Effct Green (s)	76.8	69.8		83.9	76.6	76.6	35.6	25.6	25.6	27.6	20.6	20.6
Actuated g/C Ratio	0.61	0.56		0.67	0.61	0.61	0.28	0.20	0.20	0.22	0.16	0.16
v/c Ratio	0.63	1.06		0.86	1.08	0.14	1.11	0.58	0.58	1.36	0.83	0.37
Control Delay	43.9	66.3		71.6	70.0	8.0	133.8	52.3	33.8	224.7	75.2	21.6
Queue Delay	0.0	44.2		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.9	110.5		71.6	70.0	8.0	133.8	52.3	33.8	224.7	75.2	21.6
LOS	D	F		E	E	A	F	D	C	F	E	C
Approach Delay		108.0			66.8			75.2			133.2	
Approach LOS		F			E			E			F	
Stops (vph)	27	1425		72	1525	29	124	145	93	210	173	31

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Fuel Used(gal)	1	40		3	46	1	6	3	2	13	5	1
CO Emissions (g/hr)	69	2803		208	3236	60	451	225	171	911	330	74
NOx Emissions (g/hr)	13	545		40	630	12	88	44	33	177	64	14
VOC Emissions (g/hr)	16	650		48	750	14	105	52	40	211	76	17
Dilemma Vehicles (#)	0	0		0	0	0	0	0	0	0	0	0
Queue Length 50th (ft)	18	~857		71	~991	27	~161	140	85	~252	172	24
Queue Length 95th (ft)	#77	#998		#191	#1128	51	#266	206	152	#436	#263	70
Internal Link Dist (ft)		568			581			580			320	
Turn Bay Length (ft)	65			100		100	360		165			115
Base Capacity (vph)	110	1710		163	1886	834	193	350	353	197	285	295
Starvation Cap Reductn	0	153		0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.63	1.16		0.84	1.08	0.14	1.11	0.55	0.56	1.36	0.78	0.35

Intersection Summary

Area Type: Other
Cycle Length: 125
Actuated Cycle Length: 125
Offset: 37.5 (30%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow
Natural Cycle: 115
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.36
Intersection Signal Delay: 89.5 Intersection LOS: F
Intersection Capacity Utilization 103.3% ICU Level of Service G
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 28: 1st Ave & 16th St/US 95

Appendix F – *Synchro* Output Sheets – HCM Unsignalized Intersection Capacity Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	1	1	1	13	1	21	1	616	46	13	634	1
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.25	0.25	0.25	0.63	0.25	0.57	0.25	0.94	0.65	0.63	0.84	0.25
Hourly flow rate (vph)	4	4	4	21	4	37	4	655	71	21	755	4
Pedestrians		2			1							
Lane Width (ft)		12.0			12.0							
Walking Speed (ft/s)		4.0			4.0							
Percent Blockage		0			0							
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage veh)								2			2	
Upstream signal (ft)								662				
pX, platoon unblocked												
vC, conflicting volume	1175	1535	381	1124	1502	364	761			727		
vC1, stage 1 conf vol	800	800		700	700							
vC2, stage 2 conf vol	375	735		425	802							
vCu, unblocked vol	1175	1535	381	1124	1502	364	761			727		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	99	99	99	94	99	94	100			98		
cM capacity (veh/h)	301	292	616	341	302	632	846			871		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	12	61	4	437	289	21	503	256
Volume Left	4	21	4	0	0	21	0	0
Volume Right	4	37	0	0	71	0	0	4
cSH	358	466	846	1700	1700	871	1700	1700
Volume to Capacity	0.03	0.13	0.00	0.26	0.17	0.02	0.30	0.15
Queue Length 95th (ft)	3	11	0	0	0	2	0	0
Control Delay (s)	15.4	13.9	9.3	0.0	0.0	9.2	0.0	0.0
Lane LOS	C	B	A			A		
Approach Delay (s)	15.4	13.9	0.1			0.2		
Approach LOS	C	B						

Intersection Summary				
Average Delay	0.8			
Intersection Capacity Utilization	30.7%	ICU Level of Service		A
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	5	1	60	7	1	4	35	194	12	4	206	11
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.50	0.25	0.80	0.42	0.25	0.25	0.81	0.88	0.56	0.38	0.94	0.50
Hourly flow rate (vph)	10	4	75	17	4	16	43	220	21	11	219	22
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								736				
pX, platoon unblocked												
vC, conflicting volume	466	580	121	525	580	121	241			242		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	466	580	121	525	580	121	241			242		
tC, single (s)	7.6	6.6	7.0	7.6	6.6	7.0	4.2			4.2		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	98	99	92	96	99	98	97			99		
cM capacity (veh/h)	447	401	899	378	401	898	1301			1300		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	89	37	153	132	120	132
Volume Left	10	17	43	0	11	0
Volume Right	75	16	0	21	0	22
cSH	768	510	1301	1700	1300	1700
Volume to Capacity	0.12	0.07	0.03	0.08	0.01	0.08
Queue Length 95th (ft)	10	6	3	0	1	0
Control Delay (s)	10.3	12.6	2.4	0.0	0.7	0.0
Lane LOS	B	B	A		A	
Approach Delay (s)	10.3	12.6	1.3		0.4	
Approach LOS	B	B				

Intersection Summary				
Average Delay	2.8			
Intersection Capacity Utilization	28.9%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	27	1564	898	3	9	21
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.83	0.90	0.81	0.50	0.63	0.57
Hourly flow rate (vph)	33	1738	1109	6	14	37
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		TWLTL	TWLTL			
Median storage veh)		2	2			
Upstream signal (ft)			738			
pX, platoon unblocked	0.79				0.79	0.79
vC, conflicting volume	1115				2046	557
vC1, stage 1 conf vol					1112	
vC2, stage 2 conf vol					934	
vCu, unblocked vol	616				1793	0
tC, single (s)	4.2				6.9	7.0
tC, 2 stage (s)					5.9	
tF (s)	2.2				3.5	3.3
p0 queue free %	96				94	96
cM capacity (veh/h)	743				246	850

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	33	869	869	739	376	51
Volume Left	33	0	0	0	0	14
Volume Right	0	0	0	0	6	37
cSH	743	1700	1700	1700	1700	504
Volume to Capacity	0.04	0.51	0.51	0.43	0.22	0.10
Queue Length 95th (ft)	3	0	0	0	0	8
Control Delay (s)	10.1	0.0	0.0	0.0	0.0	13.0
Lane LOS	B					B
Approach Delay (s)	0.2			0.0		13.0
Approach LOS						B

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	58.3%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	9	1134	54	42	1101	21	0	0	21	3	4	9
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.58	0.87	0.48	0.78	0.86	0.67	0.25	0.25	0.67	0.50	0.38	0.58
Hourly flow rate (vph)	16	1303	112	54	1280	31	0	0	31	6	11	16
Pedestrians								2				
Lane Width (ft)								12.0				
Walking Speed (ft/s)								4.0				
Percent Blockage								0				
Right turn flare (veh)												
Median type		TWLTL			None							
Median storage veh)		2										
Upstream signal (ft)		661										
pX, platoon unblocked				0.68			0.68	0.68	0.68	0.68	0.68	
vC, conflicting volume	1312			1418			2161	2812	710	2071	2837	640
vC1, stage 1 conf vol							1393	1393		1388	1388	
vC2, stage 2 conf vol							769	1419		683	1449	
vCu, unblocked vol	1312			659			1759	2722	0	1625	2759	640
tC, single (s)	4.2			4.2			7.6	6.6	7.0	7.6	6.6	7.0
tC, 2 stage (s)							6.6	5.6		6.6	5.6	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			91			100	100	96	95	92	96
cM capacity (veh/h)	508			611			192	137	725	128	136	411

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	WB 4	NB 1	SB 1
Volume Total	16	869	547	54	640	640	31	31	32
Volume Left	16	0	0	54	0	0	0	0	6
Volume Right	0	0	112	0	0	0	31	31	16
cSH	508	1700	1700	611	1700	1700	1700	725	197
Volume to Capacity	0.03	0.51	0.32	0.09	0.38	0.38	0.02	0.04	0.16
Queue Length 95th (ft)	2	0	0	7	0	0	0	3	14
Control Delay (s)	12.3	0.0	0.0	11.5	0.0	0.0	0.0	10.2	26.7
Lane LOS	B			B				B	D
Approach Delay (s)	0.1			0.5				10.2	26.7
Approach LOS								B	D

Intersection Summary				
Average Delay	0.7			
Intersection Capacity Utilization	53.6%	ICU Level of Service		A
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	1	1	16	3	4	35	15	641	7	23	649	9
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.25	0.25	0.75	0.50	0.38	0.59	0.69	0.89	0.42	0.71	0.95	0.58
Hourly flow rate (vph)	4	4	21	6	11	59	22	720	17	32	683	16
Pedestrians		2			3						1	
Lane Width (ft)		12.0			12.0						12.0	
Walking Speed (ft/s)		4.0			4.0						4.0	
Percent Blockage		0			0						0	
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage veh)								2			2	
Upstream signal (ft)											662	
pX, platoon unblocked	0.92	0.92	0.92	0.92	0.92		0.92					
vC, conflicting volume	1227	1541	351	1205	1541	372	701			740		
vC1, stage 1 conf vol	758	758		775	775							
vC2, stage 2 conf vol	469	783		430	765							
vCu, unblocked vol	1071	1413	119	1047	1412	372	499			740		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	99	99	97	98	97	90	98			96		
cM capacity (veh/h)	323	296	835	320	304	623	974			860		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	29	76	22	480	257	32	455	243
Volume Left	4	6	22	0	0	32	0	0
Volume Right	21	59	0	0	17	0	0	16
cSH	570	511	974	1700	1700	860	1700	1700
Volume to Capacity	0.05	0.15	0.02	0.28	0.15	0.04	0.27	0.14
Queue Length 95th (ft)	4	13	2	0	0	3	0	0
Control Delay (s)	11.7	13.3	8.8	0.0	0.0	9.3	0.0	0.0
Lane LOS	B	B	A			A		
Approach Delay (s)	11.7	13.3	0.3			0.4		
Approach LOS	B	B						

Intersection Summary				
Average Delay	1.2			
Intersection Capacity Utilization	35.1%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	11	13	12	11	7	15	7	185	4	16	206	9
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.50	0.63	0.45	0.67	0.42	0.46	0.63	0.93	0.75	0.75	0.90	0.58
Hourly flow rate (vph)	22	21	27	16	17	33	11	199	5	21	229	16
Pedestrians		2			1			2				
Lane Width (ft)		12.0			12.0			12.0				
Walking Speed (ft/s)		4.0			4.0			4.0				
Percent Blockage		0			0			0				
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage veh)								2			2	
Upstream signal (ft)											660	
pX, platoon unblocked												
vC, conflicting volume	543	509	241	535	514	203	246			205		
vC1, stage 1 conf vol	281	281		225	225							
vC2, stage 2 conf vol	262	227		311	289							
vCu, unblocked vol	543	509	241	535	514	203	246			205		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)	6.1	5.5		6.1	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	96	96	97	97	97	96	99			98		
cM capacity (veh/h)	578	583	788	573	582	830	1300			1347		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	69	66	11	204	21	244
Volume Left	22	16	11	0	21	0
Volume Right	27	33	0	5	0	16
cSH	646	680	1300	1700	1347	1700
Volume to Capacity	0.11	0.10	0.01	0.12	0.02	0.14
Queue Length 95th (ft)	9	8	1	0	1	0
Control Delay (s)	11.2	10.9	7.8	0.0	7.7	0.0
Lane LOS	B	B	A		A	
Approach Delay (s)	11.2	10.9	0.4		0.6	
Approach LOS	B	B				

Intersection Summary				
Average Delay	2.8			
Intersection Capacity Utilization	27.5%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	1570	8	9	895	3	19
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.30	0.58	0.81	0.25	0.88
Hourly flow rate (vph)	1744	27	16	1105	12	22
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)				632		
pX, platoon unblocked					0.79	
vC, conflicting volume			1771		2341	886
vC1, stage 1 conf vol					1758	
vC2, stage 2 conf vol					584	
vCu, unblocked vol			1771		2164	886
tC, single (s)			4.2		6.9	7.0
tC, 2 stage (s)					5.9	
tF (s)			2.2		3.5	3.3
p0 queue free %			95		90	92
cM capacity (veh/h)			335		116	282

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	1163	608	16	552	552	34
Volume Left	0	0	16	0	0	12
Volume Right	0	27	0	0	0	22
cSH	1700	1700	335	1700	1700	186
Volume to Capacity	0.68	0.36	0.05	0.32	0.32	0.18
Queue Length 95th (ft)	0	0	4	0	0	16
Control Delay (s)	0.0	0.0	16.3	0.0	0.0	28.5
Lane LOS			C			D
Approach Delay (s)	0.0		0.2			28.5
Approach LOS						D

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	58.8%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	44	1164	54	32	868	44	0	0	24	0	0	32
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.75	0.82	0.63	0.67	0.84	0.75	0.25	0.25	0.64	0.25	0.25	0.60
Hourly flow rate (vph)	59	1420	86	48	1033	59	0	0	38	0	0	53
Pedestrians								1			1	
Lane Width (ft)								12.0			12.0	
Walking Speed (ft/s)								4.0			4.0	
Percent Blockage								0			0	
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (ft)		660			648							
pX, platoon unblocked	0.81			0.64			0.74	0.74	0.64	0.74	0.74	0.81
vC, conflicting volume	1093			1506			2246	2769	754	2024	2783	547
vC1, stage 1 conf vol							1581	1581		1159	1159	
vC2, stage 2 conf vol							666	1189		865	1624	
vCu, unblocked vol	632			684			805	1509	0	505	1527	0
tC, single (s)	4.2			4.2			7.6	6.6	7.0	7.6	6.6	7.0
tC, 2 stage (s)							6.6	5.6		6.6	5.6	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	92			92			100	100	95	100	100	94
cM capacity (veh/h)	745			571			196	178	693	274	154	865

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	59	946	559	48	689	403	38	53
Volume Left	59	0	0	48	0	0	0	0
Volume Right	0	0	86	0	0	59	38	53
cSH	745	1700	1700	571	1700	1700	693	865
Volume to Capacity	0.08	0.56	0.33	0.08	0.41	0.24	0.05	0.06
Queue Length 95th (ft)	6	0	0	7	0	0	4	5
Control Delay (s)	10.2	0.0	0.0	11.9	0.0	0.0	10.5	9.4
Lane LOS	B			B			B	A
Approach Delay (s)	0.4			0.5			10.5	9.4
Approach LOS							B	A

Intersection Summary				
Average Delay	0.7			
Intersection Capacity Utilization	47.9%	ICU Level of Service		A
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	1	1	1	14	1	22	1	647	48	14	666	1
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.25	0.25	0.25	0.63	0.25	0.57	0.25	0.94	0.65	0.63	0.84	0.25
Hourly flow rate (vph)	4	4	4	22	4	39	4	688	74	22	793	4
Pedestrians		2			1							
Lane Width (ft)		12.0			12.0							
Walking Speed (ft/s)		4.0			4.0							
Percent Blockage		0			0							
Right turn flare (veh)												
Median type								None			TWLTL	
Median storage veh)											2	
Upstream signal (ft)								662				
pX, platoon unblocked	0.93	0.93		0.93	0.93	0.93				0.93		
vC, conflicting volume	1234	1612	400	1181	1578	382	799			763		
vC1, stage 1 conf vol	841	841		734	734							
vC2, stage 2 conf vol	393	771		447	843							
vCu, unblocked vol	1103	1510	400	1046	1472	188	799			597		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	99	99	99	94	99	95	100			98		
cM capacity (veh/h)	296	291	598	364	300	765	818			907		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	12	65	4	459	303	22	529	268
Volume Left	4	22	4	0	0	22	0	0
Volume Right	4	39	0	0	74	0	0	4
cSH	354	519	818	1700	1700	907	1700	1700
Volume to Capacity	0.03	0.12	0.00	0.27	0.18	0.02	0.31	0.16
Queue Length 95th (ft)	3	11	0	0	0	2	0	0
Control Delay (s)	15.5	12.9	9.4	0.0	0.0	9.1	0.0	0.0
Lane LOS	C	B	A			A		
Approach Delay (s)	15.5	12.9	0.0			0.2		
Approach LOS	C	B						

Intersection Summary				
Average Delay	0.8			
Intersection Capacity Utilization	31.7%	ICU Level of Service		A
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	5	1	63	7	1	4	37	204	13	4	217	12
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.50	0.25	0.80	0.42	0.25	0.25	0.81	0.88	0.56	0.38	0.94	0.50
Hourly flow rate (vph)	10	4	79	17	4	16	46	232	23	11	231	24
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								736				
pX, platoon unblocked												
vC, conflicting volume	489	610	127	552	611	128	255			255		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	489	610	127	552	611	128	255			255		
tC, single (s)	7.6	6.6	7.0	7.6	6.6	7.0	4.2			4.2		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	98	99	91	95	99	98	96			99		
cM capacity (veh/h)	429	384	889	358	384	889	1286			1285		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	93	37	162	139	126	139
Volume Left	10	17	46	0	11	0
Volume Right	79	16	0	23	0	24
cSH	759	489	1286	1700	1285	1700
Volume to Capacity	0.12	0.07	0.04	0.08	0.01	0.08
Queue Length 95th (ft)	10	6	3	0	1	0
Control Delay (s)	10.4	12.9	2.5	0.0	0.7	0.0
Lane LOS	B	B	A		A	
Approach Delay (s)	10.4	12.9	1.3		0.3	
Approach LOS	B	B				

Intersection Summary				
Average Delay	2.8			
Intersection Capacity Utilization	29.9%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	92	1644	944	3	9	22
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.85	0.90	0.81	0.50	0.63	0.57
Hourly flow rate (vph)	108	1827	1165	6	14	39
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		TWLTL	TWLTL			
Median storage veh)		2	2			
Upstream signal (ft)			772			
pX, platoon unblocked	0.81				0.81	0.81
vC, conflicting volume	1171				2298	586
vC1, stage 1 conf vol					1168	
vC2, stage 2 conf vol					1130	
vCu, unblocked vol	742				2134	19
tC, single (s)	4.2				6.9	7.0
tC, 2 stage (s)					5.9	
tF (s)	2.2				3.5	3.3
p0 queue free %	84				92	95
cM capacity (veh/h)	681				181	846

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	108	913	913	777	394	53
Volume Left	108	0	0	0	0	14
Volume Right	0	0	0	0	6	39
cSH	681	1700	1700	1700	1700	424
Volume to Capacity	0.16	0.54	0.54	0.46	0.23	0.12
Queue Length 95th (ft)	14	0	0	0	0	11
Control Delay (s)	11.3	0.0	0.0	0.0	0.0	14.7
Lane LOS	B					B
Approach Delay (s)	0.6			0.0		14.7
Approach LOS						B

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	60.8%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	9	1192	57	44	1157	22	0	0	22	3	4	9
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.58	0.87	0.48	0.78	0.86	0.67	0.25	0.25	0.67	0.50	0.38	0.58
Hourly flow rate (vph)	16	1370	119	56	1345	33	0	0	33	6	11	16
Pedestrians								2				
Lane Width (ft)								12.0				
Walking Speed (ft/s)								4.0				
Percent Blockage								0				
Right turn flare (veh)												
Median type		TWLTL			None							
Median storage veh)		2										
Upstream signal (ft)		661										
pX, platoon unblocked				0.70			0.70	0.70	0.70	0.70	0.70	
vC, conflicting volume	1378			1491			2269	2954	746	2174	2980	673
vC1, stage 1 conf vol							1463	1463		1458	1458	
vC2, stage 2 conf vol							806	1491		716	1522	
vCu, unblocked vol	1378			840			1954	2934	0	1818	2971	673
tC, single (s)	4.2			4.2			7.6	6.6	7.0	7.6	6.6	7.0
tC, 2 stage (s)							6.6	5.6		6.6	5.6	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			90			100	100	96	95	91	96
cM capacity (veh/h)	478			538			163	121	750	113	116	391

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	WB 4	NB 1	SB 1
Volume Total	16	913	575	56	673	673	33	33	32
Volume Left	16	0	0	56	0	0	0	0	6
Volume Right	0	0	119	0	0	0	33	33	16
cSH	478	1700	1700	538	1700	1700	1700	750	175
Volume to Capacity	0.03	0.54	0.34	0.10	0.40	0.40	0.02	0.04	0.18
Queue Length 95th (ft)	3	0	0	9	0	0	0	3	16
Control Delay (s)	12.8	0.0	0.0	12.5	0.0	0.0	0.0	10.0	30.1
Lane LOS	B			B				B	D
Approach Delay (s)	0.1			0.5				10.0	30.1
Approach LOS								B	D

Intersection Summary				
Average Delay	0.7			
Intersection Capacity Utilization	55.5%	ICU Level of Service		B
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	1	1	17	3	4	37	16	674	7	24	682	9
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.25	0.25	0.75	0.50	0.38	0.59	0.69	0.89	0.42	0.71	0.95	0.58
Hourly flow rate (vph)	4	4	23	6	11	63	23	757	17	34	718	16
Pedestrians		2			3						1	
Lane Width (ft)		12.0			12.0						12.0	
Walking Speed (ft/s)		4.0			4.0						4.0	
Percent Blockage		0			0						0	
Right turn flare (veh)												
Median type								TWLTL			None	
Median storage veh)								2				
Upstream signal (ft)											662	
pX, platoon unblocked	0.92	0.92	0.92	0.92	0.92		0.92					
vC, conflicting volume	1289	1619	369	1266	1618	391	735			777		
vC1, stage 1 conf vol	795	795		815	815							
vC2, stage 2 conf vol	494	823		451	803							
vCu, unblocked vol	1133	1493	129	1108	1492	391	529			777		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	99	99	97	98	96	90	98			96		
cM capacity (veh/h)	304	279	821	302	288	606	946			833		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	31	79	23	505	269	34	479	255
Volume Left	4	6	23	0	0	34	0	0
Volume Right	23	63	0	0	17	0	0	16
cSH	556	495	946	1700	1700	833	1700	1700
Volume to Capacity	0.06	0.16	0.02	0.30	0.16	0.04	0.28	0.15
Queue Length 95th (ft)	4	14	2	0	0	3	0	0
Control Delay (s)	11.8	13.6	8.9	0.0	0.0	9.5	0.0	0.0
Lane LOS	B	B	A			A		
Approach Delay (s)	11.8	13.6	0.3			0.4		
Approach LOS	B	B						

Intersection Summary				
Average Delay	1.2			
Intersection Capacity Utilization	36.4%	ICU Level of Service		A
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	12	14	13	12	7	16	7	194	4	17	217	9
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.50	0.63	0.45	0.67	0.42	0.46	0.63	0.93	0.75	0.75	0.90	0.58
Hourly flow rate (vph)	24	22	29	18	17	35	11	209	5	23	241	16
Pedestrians		2			1			2				
Lane Width (ft)		12.0			12.0			12.0				
Walking Speed (ft/s)		4.0			4.0			4.0				
Percent Blockage		0			0			0				
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage veh)								2			2	
Upstream signal (ft)											660	
pX, platoon unblocked	1.00	1.00	1.00	1.00	1.00		1.00					
vC, conflicting volume	570	533	253	563	538	212	259			215		
vC1, stage 1 conf vol	296	296		234	234							
vC2, stage 2 conf vol	274	237		328	304							
vCu, unblocked vol	566	529	248	559	534	212	253			215		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)	6.1	5.5		6.1	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	96	96	96	97	97	96	99			98		
cM capacity (veh/h)	563	573	778	557	571	820	1287			1336		

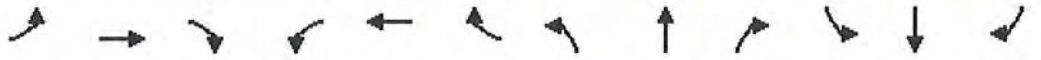
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	75	69	11	214	23	257
Volume Left	24	18	11	0	23	0
Volume Right	29	35	0	5	0	16
cSH	634	668	1287	1700	1336	1700
Volume to Capacity	0.12	0.10	0.01	0.13	0.02	0.15
Queue Length 95th (ft)	10	9	1	0	1	0
Control Delay (s)	11.4	11.0	7.8	0.0	7.7	0.0
Lane LOS	B	B	A		A	
Approach Delay (s)	11.4	11.0	0.4		0.6	
Approach LOS	B	B				

Intersection Summary				
Average Delay	2.9			
Intersection Capacity Utilization	28.5%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	1650	8	9	941	0	20
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.30	0.58	0.81	0.25	0.88
Hourly flow rate (vph)	1833	27	16	1162	0	23
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)				667		
pX, platoon unblocked					0.81	
vC, conflicting volume			1860		2459	930
vC1, stage 1 conf vol					1847	
vC2, stage 2 conf vol					612	
vCu, unblocked vol			1860		2333	930
tC, single (s)			4.2		6.9	7.0
tC, 2 stage (s)					5.9	
tF (s)			2.2		3.5	3.3
p0 queue free %			95		100	91
cM capacity (veh/h)			309		103	263

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	1222	638	16	581	581	23
Volume Left	0	0	16	0	0	0
Volume Right	0	27	0	0	0	23
cSH	1700	1700	309	1700	1700	263
Volume to Capacity	0.72	0.38	0.05	0.34	0.34	0.09
Queue Length 95th (ft)	0	0	4	0	0	7
Control Delay (s)	0.0	0.0	17.3	0.0	0.0	20.0
Lane LOS			C			C
Approach Delay (s)	0.0		0.2			20.0
Approach LOS						C

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	61.3%	ICU Level of Service	B
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	46	1223	57	34	912	46	0	0	25	0	0	34
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.75	0.82	0.63	0.67	0.84	0.75	0.25	0.25	0.64	0.25	0.25	0.60
Hourly flow rate (vph)	61	1491	90	51	1086	61	0	0	39	0	0	57
Pedestrians								1			1	
Lane Width (ft)								12.0			12.0	
Walking Speed (ft/s)								4.0			4.0	
Percent Blockage								0			0	
Right turn flare (veh)												
Median type		None			TWLTL							
Median storage veh)					2							
Upstream signal (ft)		660			648							
pX, platoon unblocked	0.82			0.70			0.79	0.79	0.70	0.79	0.79	0.82
vC, conflicting volume	1148			1583			2316	2865	747	2126	2924	575
vC1, stage 1 conf vol							1615	1615		1219	1219	
vC2, stage 2 conf vol							701	1250		907	1706	
vCu, unblocked vol	753			986			1137	1830	0	897	1906	58
tC, single (s)	4.2			4.2			7.6	6.6	7.0	7.6	6.6	7.0
tC, 2 stage (s)							6.6	5.6		6.6	5.6	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	91			89			100	100	95	100	100	93
cM capacity (veh/h)	686			477			151	144	756	227	109	813

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	61	746	746	90	51	724	423	39	57
Volume Left	61	0	0	0	51	0	0	0	0
Volume Right	0	0	0	90	0	0	61	39	57
cSH	686	1700	1700	1700	477	1700	1700	756	813
Volume to Capacity	0.09	0.44	0.44	0.05	0.11	0.43	0.25	0.05	0.07
Queue Length 95th (ft)	7	0	0	0	9	0	0	4	6
Control Delay (s)	10.8	0.0	0.0	0.0	13.4	0.0	0.0	10.0	9.8
Lane LOS	B				B			B	A
Approach Delay (s)	0.4				0.6			10.0	9.8
Approach LOS								B	A

Intersection Summary				
Average Delay	0.8			
Intersection Capacity Utilization	47.8%	ICU Level of Service		A
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	14	1	23	59	1	25	9	670	49	44	690	16
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.94	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	16	1	27	69	1	29	11	713	58	52	812	19
Pedestrians		2			1							
Lane Width (ft)		12.0			12.0							
Walking Speed (ft/s)		4.0			4.0							
Percent Blockage		0			0							
Right turn flare (veh)												
Median type								None			TWLTL	
Median storage veh)											2	
Upstream signal (ft)								662				
pX, platoon unblocked	0.93	0.93		0.93	0.93	0.93				0.93		
vC, conflicting volume	1334	1719	417	1301	1700	386	833			771		
vC1, stage 1 conf vol	927	927		764	764							
vC2, stage 2 conf vol	408	793		537	936							
vCu, unblocked vol	1210	1624	417	1174	1603	191	833			605		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	94	100	95	78	100	96	99			94		
cM capacity (veh/h)	255	256	583	317	263	761	795			901		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	45	100	11	475	295	52	541	289
Volume Left	16	69	11	0	0	52	0	0
Volume Right	27	29	0	0	58	0	0	19
cSH	387	382	795	1700	1700	901	1700	1700
Volume to Capacity	0.12	0.26	0.01	0.28	0.17	0.06	0.32	0.17
Queue Length 95th (ft)	10	26	1	0	0	5	0	0
Control Delay (s)	15.5	17.8	9.6	0.0	0.0	9.2	0.0	0.0
Lane LOS	C	C	A			A		
Approach Delay (s)	15.5	17.8	0.1			0.5		
Approach LOS	C	C						

Intersection Summary				
Average Delay	1.7			
Intersection Capacity Utilization	45.5%	ICU Level of Service		A
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	5	1	63	7	1	4	37	204	13	4	217	12
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.50	0.25	0.80	0.42	0.25	0.25	0.81	0.88	0.56	0.38	0.94	0.50
Hourly flow rate (vph)	10	4	79	17	4	16	46	232	23	11	231	24
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								736				
pX, platoon unblocked												
vC, conflicting volume	489	610	127	552	611	128	255			255		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	489	610	127	552	611	128	255			255		
tC, single (s)	7.6	6.6	7.0	7.6	6.6	7.0	4.2			4.2		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	98	99	91	95	99	98	96			99		
cM capacity (veh/h)	429	384	889	358	384	889	1286			1285		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	93	37	162	139	126	139
Volume Left	10	17	46	0	11	0
Volume Right	79	16	0	23	0	24
cSH	759	489	1286	1700	1285	1700
Volume to Capacity	0.12	0.07	0.04	0.08	0.01	0.08
Queue Length 95th (ft)	10	6	3	0	1	0
Control Delay (s)	10.4	12.9	2.5	0.0	0.7	0.0
Lane LOS	B	B	A		A	
Approach Delay (s)	10.4	12.9	1.3		0.3	
Approach LOS	B	B				

Intersection Summary				
Average Delay	2.8			
Intersection Capacity Utilization	29.9%	ICU Level of Service		A
Analysis Period (min)	15			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	115	1699	996	3	12	22
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.85	0.90	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	135	1888	1172	4	14	26
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		TWLTL	TWLTL			
Median storage veh)		2	2			
Upstream signal (ft)			769			
pX, platoon unblocked	0.80				0.80	0.80
vC, conflicting volume	1175				2388	588
vC1, stage 1 conf vol					1174	
vC2, stage 2 conf vol					1214	
vCu, unblocked vol	728				2238	0
tC, single (s)	4.2				6.9	7.0
tC, 2 stage (s)					5.9	
tF (s)	2.2				3.5	3.3
p0 queue free %	80				91	97
cM capacity (veh/h)	684				161	863

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	135	944	944	781	394	40
Volume Left	135	0	0	0	0	14
Volume Right	0	0	0	0	4	26
cSH	684	1700	1700	1700	1700	341
Volume to Capacity	0.20	0.56	0.56	0.46	0.23	0.12
Queue Length 95th (ft)	18	0	0	0	0	10
Control Delay (s)	11.6	0.0	0.0	0.0	0.0	17.0
Lane LOS	B					C
Approach Delay (s)	0.8			0.0		17.0
Approach LOS						C

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	62.5%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	9	1192	57	44	1157	22	0	0	22	3	4	9
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.58	0.87	0.48	0.78	0.86	0.67	0.25	0.25	0.67	0.50	0.38	0.58
Hourly flow rate (vph)	16	1370	119	56	1345	33	0	0	33	6	11	16
Pedestrians								2				
Lane Width (ft)								12.0				
Walking Speed (ft/s)								4.0				
Percent Blockage								0				
Right turn flare (veh)												
Median type		TWLTL			None							
Median storage veh)		2										
Upstream signal (ft)		661										
pX, platoon unblocked				0.70			0.70	0.70	0.70	0.70	0.70	
vC, conflicting volume	1378			1491			2269	2954	746	2174	2980	673
vC1, stage 1 conf vol							1463	1463		1458	1458	
vC2, stage 2 conf vol							806	1491		716	1522	
vCu, unblocked vol	1378			840			1954	2934	0	1818	2971	673
tC, single (s)	4.2			4.2			7.6	6.6	7.0	7.6	6.6	7.0
tC, 2 stage (s)							6.6	5.6		6.6	5.6	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			90			100	100	96	95	91	96
cM capacity (veh/h)	478			538			163	121	750	113	116	391

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	WB 4	NB 1	SB 1
Volume Total	16	913	575	56	673	673	33	33	32
Volume Left	16	0	0	56	0	0	0	0	6
Volume Right	0	0	119	0	0	0	33	33	16
cSH	478	1700	1700	538	1700	1700	1700	750	175
Volume to Capacity	0.03	0.54	0.34	0.10	0.40	0.40	0.02	0.04	0.18
Queue Length 95th (ft)	3	0	0	9	0	0	0	3	16
Control Delay (s)	12.8	0.0	0.0	12.5	0.0	0.0	0.0	10.0	30.1
Lane LOS	B			B				B	D
Approach Delay (s)	0.1			0.5				10.0	30.1
Approach LOS								B	D

Intersection Summary				
Average Delay	0.7			
Intersection Capacity Utilization	55.5%	ICU Level of Service		B
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	27	1	20	30	4	39	44	716	7	62	718	9
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.89	0.85	0.85	0.95	0.85
Hourly flow rate (vph)	32	1	24	35	5	46	52	804	8	73	756	11
Pedestrians		2			3						1	
Lane Width (ft)		12.0			12.0						12.0	
Walking Speed (ft/s)		4.0			4.0						4.0	
Percent Blockage		0			0						0	
Right turn flare (veh)												
Median type								TWLTL			None	
Median storage veh)								2				
Upstream signal (ft)											662	
pX, platoon unblocked	0.91	0.91	0.91	0.91	0.91		0.91					
vC, conflicting volume	1464	1828	385	1463	1829	410	768			816		
vC1, stage 1 conf vol	909	909		915	915							
vC2, stage 2 conf vol	555	919		548	914							
vCu, unblocked vol	1306	1708	117	1305	1709	410	539			816		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	87	99	97	86	98	92	94			91		
cM capacity (veh/h)	246	214	827	247	230	588	928			806		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	56	86	52	536	276	73	504	263
Volume Left	32	35	52	0	0	73	0	0
Volume Right	24	46	0	0	8	0	0	11
cSH	346	356	928	1700	1700	806	1700	1700
Volume to Capacity	0.16	0.24	0.06	0.32	0.16	0.09	0.30	0.15
Queue Length 95th (ft)	14	23	4	0	0	7	0	0
Control Delay (s)	17.4	18.3	9.1	0.0	0.0	9.9	0.0	0.0
Lane LOS	C	C	A			A		
Approach Delay (s)	17.4	18.3	0.5			0.9		
Approach LOS	C	C						

Intersection Summary				
Average Delay	2.0			
Intersection Capacity Utilization	42.4%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	12	14	13	12	7	16	7	194	4	17	217	9
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.50	0.63	0.45	0.67	0.42	0.46	0.63	0.93	0.75	0.75	0.90	0.58
Hourly flow rate (vph)	24	22	29	18	17	35	11	209	5	23	241	16
Pedestrians		2			1			2				
Lane Width (ft)		12.0			12.0			12.0				
Walking Speed (ft/s)		4.0			4.0			4.0				
Percent Blockage		0			0			0				
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage veh)								2			2	
Upstream signal (ft)											660	
pX, platoon unblocked	1.00	1.00	1.00	1.00	1.00		1.00					
vC, conflicting volume	570	533	253	563	538	212	259			215		
vC1, stage 1 conf vol	296	296		234	234							
vC2, stage 2 conf vol	274	237		328	304							
vCu, unblocked vol	566	529	248	559	534	212	253			215		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)	6.1	5.5		6.1	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	96	96	96	97	97	96	99			98		
cM capacity (veh/h)	563	573	778	557	571	820	1287			1336		

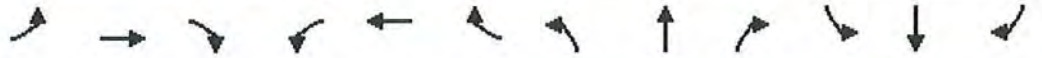
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	75	69	11	214	23	257
Volume Left	24	18	11	0	23	0
Volume Right	29	35	0	5	0	16
cSH	634	668	1287	1700	1336	1700
Volume to Capacity	0.12	0.10	0.01	0.13	0.02	0.15
Queue Length 95th (ft)	10	9	1	0	1	0
Control Delay (s)	11.4	11.0	7.8	0.0	7.7	0.0
Lane LOS	B	B	A		A	
Approach Delay (s)	11.4	11.0	0.4		0.6	
Approach LOS	B	B				

Intersection Summary				
Average Delay	2.9			
Intersection Capacity Utilization	28.5%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	1669	48	61	993	3	69
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.85	0.85	0.85	0.85	0.88
Hourly flow rate (vph)	1854	56	72	1168	4	78
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)				667		
pX, platoon unblocked					0.80	
vC, conflicting volume			1911		2610	955
vC1, stage 1 conf vol					1883	
vC2, stage 2 conf vol					728	
vCu, unblocked vol			1911		2515	955
tC, single (s)			4.2		6.9	7.0
tC, 2 stage (s)					5.9	
tF (s)			2.2		3.5	3.3
p0 queue free %			76		96	69
cM capacity (veh/h)			295		97	253

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	1236	675	72	584	584	82
Volume Left	0	0	72	0	0	4
Volume Right	0	56	0	0	0	78
cSH	1700	1700	295	1700	1700	237
Volume to Capacity	0.73	0.40	0.24	0.34	0.34	0.35
Queue Length 95th (ft)	0	0	23	0	0	37
Control Delay (s)	0.0	0.0	21.1	0.0	0.0	28.0
Lane LOS			C			D
Approach Delay (s)	0.0		1.2			28.0
Approach LOS						D

Intersection Summary			
Average Delay	1.2		
Intersection Capacity Utilization	Err%	ICU Level of Service	H
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	59	1300	58	54	1007	50	0	0	27	0	0	36
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.85	0.82	0.85	0.85	0.84	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	69	1585	68	64	1199	59	0	0	32	0	0	42
Pedestrians								1			1	
Lane Width (ft)								12.0			12.0	
Walking Speed (ft/s)								4.0			4.0	
Percent Blockage								0			0	
Right turn flare (veh)												
Median type		None			TWLTL							
Median storage veh)					2							
Upstream signal (ft)		660			648							
pX, platoon unblocked	0.82			0.68			0.77	0.77	0.68	0.77	0.77	0.82
vC, conflicting volume	1259			1655			2494	3111	794	2320	3150	630
vC1, stage 1 conf vol							1725	1725		1356	1356	
vC2, stage 2 conf vol							769	1386		963	1793	
vCu, unblocked vol	874			1034			1296	2092	0	1070	2142	106
tC, single (s)	4.2			4.2			7.6	6.6	7.0	7.6	6.6	7.0
tC, 2 stage (s)							6.6	5.6		6.6	5.6	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	89			86			100	100	96	100	100	94
cM capacity (veh/h)	613			445			123	108	735	174	77	751

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	69	793	793	68	64	799	458	32	42
Volume Left	69	0	0	0	64	0	0	0	0
Volume Right	0	0	0	68	0	0	59	32	42
cSH	613	1700	1700	1700	445	1700	1700	735	751
Volume to Capacity	0.11	0.47	0.47	0.04	0.14	0.47	0.27	0.04	0.06
Queue Length 95th (ft)	10	0	0	0	12	0	0	3	4
Control Delay (s)	11.6	0.0	0.0	0.0	14.4	0.0	0.0	10.1	10.1
Lane LOS	B				B			B	B
Approach Delay (s)	0.5				0.7			10.1	10.1
Approach LOS								B	B

Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	50.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	1	1	1	16	1	26	1	752	56	16	774	1
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.94	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	1	1	1	19	1	31	1	800	66	19	911	1
Pedestrians		2			1							
Lane Width (ft)		12.0			12.0							
Walking Speed (ft/s)		4.0			4.0							
Percent Blockage		0			0							
Right turn flare (veh)												
Median type								None			TWLTL	
Median storage veh)											2	
Upstream signal (ft)								662				
pX, platoon unblocked	0.91	0.91		0.91	0.91	0.91				0.91		
vC, conflicting volume	1384	1820	458	1331	1788	434	914			867		
vC1, stage 1 conf vol	951	951		836	836							
vC2, stage 2 conf vol	434	869		495	951							
vCu, unblocked vol	1220	1700	458	1161	1665	173	914			650		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	94	100	96	100			98		
cM capacity (veh/h)	257	259	549	332	267	762	740			845		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	4	51	1	533	333	19	607	305
Volume Left	1	19	1	0	0	19	0	0
Volume Right	1	31	0	0	66	0	0	1
cSH	314	500	740	1700	1700	845	1700	1700
Volume to Capacity	0.01	0.10	0.00	0.31	0.20	0.02	0.36	0.18
Queue Length 95th (ft)	1	8	0	0	0	2	0	0
Control Delay (s)	16.6	13.0	9.9	0.0	0.0	9.4	0.0	0.0
Lane LOS	C	B	A			A		
Approach Delay (s)	16.6	13.0	0.0			0.2		
Approach LOS	C	B						

Intersection Summary				
Average Delay	0.5			
Intersection Capacity Utilization	35.8%	ICU Level of Service		A
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	6	1	73	9	1	5	43	237	15	5	251	13
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.88	0.85	0.85	0.94	0.85
Hourly flow rate (vph)	7	1	86	11	1	6	51	269	18	6	267	15
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								736				
pX, platoon unblocked												
vC, conflicting volume	529	675	141	611	673	143	282			287		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	529	675	141	611	673	143	282			287		
tC, single (s)	7.6	6.6	7.0	7.6	6.6	7.0	4.2			4.2		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	98	100	90	97	100	99	96			100		
cM capacity (veh/h)	408	352	871	323	352	868	1256			1251		

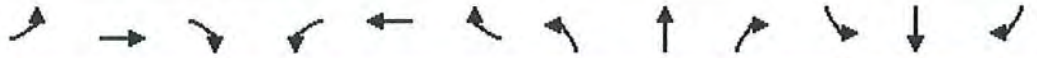
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	94	18	185	152	139	149
Volume Left	7	11	51	0	6	0
Volume Right	86	6	0	18	0	15
cSH	790	411	1256	1700	1251	1700
Volume to Capacity	0.12	0.04	0.04	0.09	0.00	0.09
Queue Length 95th (ft)	10	3	3	0	0	0
Control Delay (s)	10.2	14.1	2.4	0.0	0.4	0.0
Lane LOS	B	B	A		A	
Approach Delay (s)	10.2	14.1	1.3		0.2	
Approach LOS	B	B				

Intersection Summary				
Average Delay	2.3			
Intersection Capacity Utilization	33.1%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	97	1908	1096	4	11	26
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.85	0.90	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	114	2120	1289	5	13	31
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		TWLTL	TWLTL			
Median storage veh)		2	2			
Upstream signal (ft)			772			
pX, platoon unblocked	0.81				0.81	0.81
vC, conflicting volume	1294				2580	647
vC1, stage 1 conf vol					1292	
vC2, stage 2 conf vol					1288	
vCu, unblocked vol	894				2481	95
tC, single (s)	4.2				6.9	7.0
tC, 2 stage (s)					5.9	
tF (s)	2.2				3.5	3.3
p0 queue free %	81				91	96
cM capacity (veh/h)	596				143	756

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	114	1060	1060	860	435	44
Volume Left	114	0	0	0	0	13
Volume Right	0	0	0	0	5	31
cSH	596	1700	1700	1700	1700	333
Volume to Capacity	0.19	0.62	0.62	0.51	0.26	0.13
Queue Length 95th (ft)	18	0	0	0	0	11
Control Delay (s)	12.5	0.0	0.0	0.0	0.0	17.4
Lane LOS	B					C
Approach Delay (s)	0.6			0.0		17.4
Approach LOS						C

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	68.9%	ICU Level of Service	C
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	11	1384	66	51	1343	26	0	0	26	4	5	11
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.85	0.87	0.85	0.85	0.86	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	13	1591	78	60	1562	31	0	0	31	5	6	13
Pedestrians								2				
Lane Width (ft)								12.0				
Walking Speed (ft/s)								4.0				
Percent Blockage								0				
Right turn flare (veh)												
Median type		TWLTL			None							
Median storage veh)		2										
Upstream signal (ft)		661										
pX, platoon unblocked				0.58			0.58	0.58	0.58	0.58	0.58	
vC, conflicting volume	1592			1670			2574	3370	836	2503	3378	781
vC1, stage 1 conf vol							1658	1658		1682	1682	
vC2, stage 2 conf vol							917	1712		821	1696	
vCu, unblocked vol	1592			690			2260	3642	0	2136	3657	781
tC, single (s)	4.2			4.2			7.6	6.6	7.0	7.6	6.6	7.0
tC, 2 stage (s)							6.6	5.6		6.6	5.6	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			88			100	100	95	94	94	96
cM capacity (veh/h)	394			506			148	95	617	81	95	331

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	WB 4	NB 1	SB 1
Volume Total	13	1061	608	60	781	781	31	31	24
Volume Left	13	0	0	60	0	0	0	0	5
Volume Right	0	0	78	0	0	0	31	31	13
cSH	394	1700	1700	506	1700	1700	1700	617	148
Volume to Capacity	0.03	0.62	0.36	0.12	0.46	0.46	0.02	0.05	0.16
Queue Length 95th (ft)	3	0	0	10	0	0	0	4	14
Control Delay (s)	14.4	0.0	0.0	13.1	0.0	0.0	0.0	11.1	33.9
Lane LOS	B			B				B	D
Approach Delay (s)	0.1			0.5				11.1	33.9
Approach LOS								B	D

Intersection Summary				
Average Delay	0.6			
Intersection Capacity Utilization	62.0%	ICU Level of Service		B
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	1	1	20	4	5	43	18	782	9	28	792	11
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.89	0.85	0.85	0.95	0.85
Hourly flow rate (vph)	1	1	24	5	6	51	21	879	11	33	834	13
Pedestrians		2			3						1	
Lane Width (ft)		12.0			12.0						12.0	
Walking Speed (ft/s)		4.0			4.0						4.0	
Percent Blockage		0			0						0	
Right turn flare (veh)												
Median type								TWLTL			None	
Median storage veh)								2				
Upstream signal (ft)											662	
pX, platoon unblocked	0.90	0.90	0.90	0.90	0.90		0.90					
vC, conflicting volume	1444	1843	425	1436	1844	449	849			892		
vC1, stage 1 conf vol	908	908		929	929							
vC2, stage 2 conf vol	536	935		507	915							
vCu, unblocked vol	1263	1708	125	1254	1709	449	598			892		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	97	98	98	91	98			96		
cM capacity (veh/h)	275	243	806	260	252	556	872			754		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	26	61	21	586	303	33	556	291
Volume Left	1	5	21	0	0	33	0	0
Volume Right	24	51	0	0	11	0	0	13
cSH	676	462	872	1700	1700	754	1700	1700
Volume to Capacity	0.04	0.13	0.02	0.34	0.18	0.04	0.33	0.17
Queue Length 95th (ft)	3	11	2	0	0	3	0	0
Control Delay (s)	10.5	14.0	9.2	0.0	0.0	10.0	0.0	0.0
Lane LOS	B	B	A			A		
Approach Delay (s)	10.5	14.0	0.2			0.4		
Approach LOS	B	B						

Intersection Summary				
Average Delay	0.9			
Intersection Capacity Utilization	41.6%	ICU Level of Service		A
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	13	16	15	13	9	18	9	226	5	20	251	11
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.90	0.85
Hourly flow rate (vph)	15	19	18	15	11	21	11	266	6	24	279	13
Pedestrians		2			1			2				
Lane Width (ft)		12.0			12.0			12.0				
Walking Speed (ft/s)		4.0			4.0			4.0				
Percent Blockage		0			0			0				
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage veh)								2			2	
Upstream signal (ft)											660	
pX, platoon unblocked	0.98	0.98	0.98	0.98	0.98		0.98					
vC, conflicting volume	648	628	289	646	632	270	294			273		
vC1, stage 1 conf vol	334	334		291	291							
vC2, stage 2 conf vol	314	294		355	341							
vCu, unblocked vol	631	611	265	629	615	270	270			273		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)	6.1	5.5		6.1	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	97	96	98	97	98	97	99			98		
cM capacity (veh/h)	537	536	749	534	537	761	1250			1272		

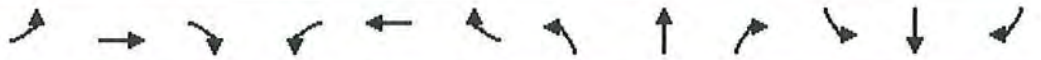
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	52	47	11	272	24	292
Volume Left	15	15	11	0	24	0
Volume Right	18	21	0	6	0	13
cSH	594	618	1250	1700	1272	1700
Volume to Capacity	0.09	0.08	0.01	0.16	0.02	0.17
Queue Length 95th (ft)	7	6	1	0	1	0
Control Delay (s)	11.6	11.3	7.9	0.0	7.9	0.0
Lane LOS	B	B	A		A	
Approach Delay (s)	11.6	11.3	0.3		0.6	
Approach LOS	B	B				

Intersection Summary				
Average Delay	2.0			
Intersection Capacity Utilization	31.9%	ICU Level of Service		A
Analysis Period (min)	15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	1916	10	11	1092	0	23
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.85	0.85	0.85	0.85	0.88
Hourly flow rate (vph)	2129	12	13	1285	0	26
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)				667		
pX, platoon unblocked					0.81	
vC, conflicting volume			2141		2803	1070
vC1, stage 1 conf vol					2135	
vC2, stage 2 conf vol					668	
vCu, unblocked vol			2141		2757	1070
tC, single (s)			4.2		6.9	7.0
tC, 2 stage (s)					5.9	
tF (s)			2.2		3.5	3.3
p0 queue free %			95		100	88
cM capacity (veh/h)			239		71	212

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	1419	721	13	642	642	26
Volume Left	0	0	13	0	0	0
Volume Right	0	12	0	0	0	26
cSH	1700	1700	239	1700	1700	212
Volume to Capacity	0.83	0.42	0.05	0.38	0.38	0.12
Queue Length 95th (ft)	0	0	4	0	0	10
Control Delay (s)	0.0	0.0	20.9	0.0	0.0	24.4
Lane LOS			C			C
Approach Delay (s)	0.0		0.2			24.4
Approach LOS						C

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	69.5%	ICU Level of Service	C
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	54	1420	66	39	1059	54	0	0	29	0	0	39
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	64	1671	78	46	1246	64	0	0	34	0	0	46
Pedestrians								1			1	
Lane Width (ft)								12.0			12.0	
Walking Speed (ft/s)								4.0			4.0	
Percent Blockage								0			0	
Right turn flare (veh)												
Median type		None			TWLTL							
Median storage veh)					2							
Upstream signal (ft)		660			648							
pX, platoon unblocked	0.76			0.68			0.81	0.81	0.68	0.81	0.81	0.76
vC, conflicting volume	1310			1749			2559	3201	836	2367	3247	656
vC1, stage 1 conf vol							1799	1799		1370	1370	
vC2, stage 2 conf vol							761	1402		996	1876	
vCu, unblocked vol	764			1172			1089	1884	0	850	1941	0
tC, single (s)	4.2			4.2			7.6	6.6	7.0	7.6	6.6	7.0
tC, 2 stage (s)							6.6	5.6		6.6	5.6	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	90			88			100	100	95	100	100	94
cM capacity (veh/h)	623			393			108	117	734	206	80	811

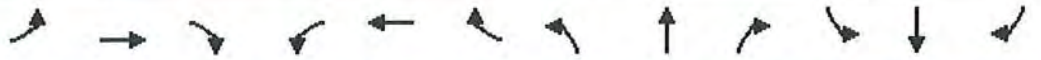
Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	64	835	835	78	46	831	479	34	46
Volume Left	64	0	0	0	46	0	0	0	0
Volume Right	0	0	0	78	0	0	64	34	46
cSH	623	1700	1700	1700	393	1700	1700	734	811
Volume to Capacity	0.10	0.49	0.49	0.05	0.12	0.49	0.28	0.05	0.06
Queue Length 95th (ft)	8	0	0	0	10	0	0	4	4
Control Delay (s)	11.4	0.0	0.0	0.0	15.4	0.0	0.0	10.1	9.7
Lane LOS	B				C			B	A
Approach Delay (s)	0.4				0.5			10.1	9.7
Approach LOS								B	A

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	53.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	14	1	23	61	1	29	9	775	57	46	798	16
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.94	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	16	1	27	72	1	34	11	824	67	54	939	19
Pedestrians		2			1							
Lane Width (ft)		12.0			12.0							
Walking Speed (ft/s)		4.0			4.0							
Percent Blockage		0			0							
Right turn flare (veh)												
Median type								None			TWLTL	
Median storage veh)											2	
Upstream signal (ft)								662				
pX, platoon unblocked	0.91	0.91		0.91	0.91	0.91				0.91		
vC, conflicting volume	1527	1972	481	1485	1948	447	960			893		
vC1, stage 1 conf vol	1058	1058		880	880							
vC2, stage 2 conf vol	468	914		605	1068							
vCu, unblocked vol	1374	1866	481	1328	1839	182	960			674		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	92	99	95	74	99	95	99			93		
cM capacity (veh/h)	211	218	530	277	224	751	711			827		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	45	107	11	550	342	54	626	332
Volume Left	16	72	11	0	0	54	0	0
Volume Right	27	34	0	0	67	0	0	19
cSH	333	346	711	1700	1700	827	1700	1700
Volume to Capacity	0.13	0.31	0.01	0.32	0.20	0.07	0.37	0.20
Queue Length 95th (ft)	11	32	1	0	0	5	0	0
Control Delay (s)	17.5	20.0	10.1	0.0	0.0	9.7	0.0	0.0
Lane LOS	C	C	B			A		
Approach Delay (s)	17.5	20.0	0.1			0.5		
Approach LOS	C	C						

Intersection Summary				
Average Delay	1.7			
Intersection Capacity Utilization	49.5%	ICU Level of Service		A
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	6	1	73	9	1	5	43	237	15	5	251	13
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.88	0.85	0.85	0.94	0.85
Hourly flow rate (vph)	7	1	86	11	1	6	51	269	18	6	267	15
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								736				
pX, platoon unblocked												
vC, conflicting volume	529	675	141	611	673	143	282			287		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	529	675	141	611	673	143	282			287		
tC, single (s)	7.6	6.6	7.0	7.6	6.6	7.0	4.2			4.2		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	98	100	90	97	100	99	96			100		
cM capacity (veh/h)	408	352	871	323	352	868	1256			1251		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	94	18	185	152	139	149
Volume Left	7	11	51	0	6	0
Volume Right	86	6	0	18	0	15
cSH	790	411	1256	1700	1251	1700
Volume to Capacity	0.12	0.04	0.04	0.09	0.00	0.09
Queue Length 95th (ft)	10	3	3	0	0	0
Control Delay (s)	10.2	14.1	2.4	0.0	0.4	0.0
Lane LOS	B	B	A		A	
Approach Delay (s)	10.2	14.1	1.3		0.2	
Approach LOS	B	B				

Intersection Summary				
Average Delay	2.3			
Intersection Capacity Utilization	33.1%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	120	1963	1148	4	14	26
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.85	0.90	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	141	2181	1351	5	16	31
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		TWLTL	TWLTL			
Median storage veh)		2	2			
Upstream signal (ft)			775			
pX, platoon unblocked	0.79				0.79	0.79
vC, conflicting volume	1355				2726	678
vC1, stage 1 conf vol					1353	
vC2, stage 2 conf vol					1373	
vCu, unblocked vol	925				2654	69
tC, single (s)	4.2				6.9	7.0
tC, 2 stage (s)					5.9	
tF (s)	2.2				3.5	3.3
p0 queue free %	75				87	96
cM capacity (veh/h)	568				123	768

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	141	1091	1091	900	455	47
Volume Left	141	0	0	0	0	16
Volume Right	0	0	0	0	5	31
cSH	568	1700	1700	1700	1700	271
Volume to Capacity	0.25	0.64	0.64	0.53	0.27	0.17
Queue Length 95th (ft)	24	0	0	0	0	15
Control Delay (s)	13.4	0.0	0.0	0.0	0.0	21.1
Lane LOS	B					C
Approach Delay (s)	0.8			0.0		21.1
Approach LOS						C

Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	70.6%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	11	1384	66	51	1343	26	0	0	26	4	5	11
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.85	0.87	0.85	0.85	0.86	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	13	1591	78	60	1562	31	0	0	31	5	6	13
Pedestrians								2				
Lane Width (ft)								12.0				
Walking Speed (ft/s)								4.0				
Percent Blockage								0				
Right turn flare (veh)												
Median type		TWLTL			None							
Median storage veh)		2										
Upstream signal (ft)		661										
pX, platoon unblocked				0.58			0.58	0.58	0.58	0.58	0.58	
vC, conflicting volume	1592			1670			2574	3370	836	2503	3378	781
vC1, stage 1 conf vol							1658	1658		1682	1682	
vC2, stage 2 conf vol							917	1712		821	1696	
vCu, unblocked vol	1592			690			2260	3642	0	2136	3657	781
tC, single (s)	4.2			4.2			7.6	6.6	7.0	7.6	6.6	7.0
tC, 2 stage (s)							6.6	5.6		6.6	5.6	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			88			100	100	95	94	94	96
cM capacity (veh/h)	394			506			148	95	617	81	95	331

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	WB 4	NB 1	SB 1
Volume Total	13	1061	608	60	781	781	31	31	24
Volume Left	13	0	0	60	0	0	0	0	5
Volume Right	0	0	78	0	0	0	31	31	13
cSH	394	1700	1700	506	1700	1700	1700	617	148
Volume to Capacity	0.03	0.62	0.36	0.12	0.46	0.46	0.02	0.05	0.16
Queue Length 95th (ft)	3	0	0	10	0	0	0	4	14
Control Delay (s)	14.4	0.0	0.0	13.1	0.0	0.0	0.0	11.1	33.9
Lane LOS	B			B				B	D
Approach Delay (s)	0.1			0.5				11.1	33.9
Approach LOS								B	D

Intersection Summary				
Average Delay	0.6			
Intersection Capacity Utilization	62.0%	ICU Level of Service		B
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	27	1	23	31	5	45	46	824	9	66	828	11
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.89	0.85	0.85	0.95	0.85
Hourly flow rate (vph)	32	1	27	36	6	53	54	926	11	78	872	13
Pedestrians		2			3						1	
Lane Width (ft)		12.0			12.0						12.0	
Walking Speed (ft/s)		4.0			4.0						4.0	
Percent Blockage		0			0						0	
Right turn flare (veh)												
Median type								TWLTL			None	
Median storage veh)								2				
Upstream signal (ft)											662	
pX, platoon unblocked	0.89	0.89	0.89	0.89	0.89		0.89					
vC, conflicting volume	1663	2083	444	1661	2084	472	887			939		
vC1, stage 1 conf vol	1035	1035		1042	1042							
vC2, stage 2 conf vol	628	1048		619	1042							
vCu, unblocked vol	1492	1966	117	1490	1967	472	616			939		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	84	99	97	82	97	90	94			89		
cM capacity (veh/h)	202	173	808	206	192	536	849			723		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	60	95	54	617	319	78	581	303
Volume Left	32	36	54	0	0	78	0	0
Volume Right	27	53	0	0	11	0	0	13
cSH	303	311	849	1700	1700	723	1700	1700
Volume to Capacity	0.20	0.31	0.06	0.36	0.19	0.11	0.34	0.18
Queue Length 95th (ft)	18	32	5	0	0	9	0	0
Control Delay (s)	19.8	21.6	9.5	0.0	0.0	10.6	0.0	0.0
Lane LOS	C	C	A			B		
Approach Delay (s)	19.8	21.6	0.5			0.9		
Approach LOS	C	C						

Intersection Summary				
Average Delay	2.2			
Intersection Capacity Utilization	46.7%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	13	16	15	13	9	18	9	226	5	20	251	11
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.93	0.85	0.85	0.90	0.85
Hourly flow rate (vph)	15	19	18	15	11	21	11	243	6	24	279	13
Pedestrians		2			1			2				
Lane Width (ft)		12.0			12.0			12.0				
Walking Speed (ft/s)		4.0			4.0			4.0				
Percent Blockage		0			0			0				
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage veh)								2			2	
Upstream signal (ft)											660	
pX, platoon unblocked	0.98	0.98	0.98	0.98	0.98		0.98					
vC, conflicting volume	625	605	289	623	609	247	294			250		
vC1, stage 1 conf vol	334	334		268	268							
vC2, stage 2 conf vol	291	271		355	341							
vCu, unblocked vol	608	588	265	606	591	247	270			250		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)	6.1	5.5		6.1	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	97	97	98	97	98	97	99			98		
cM capacity (veh/h)	549	545	749	542	544	784	1250			1297		

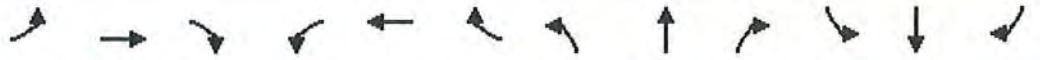
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	52	47	11	249	24	292
Volume Left	15	15	11	0	24	0
Volume Right	18	21	0	6	0	13
cSH	602	630	1250	1700	1297	1700
Volume to Capacity	0.09	0.07	0.01	0.15	0.02	0.17
Queue Length 95th (ft)	7	6	1	0	1	0
Control Delay (s)	11.5	11.2	7.9	0.0	7.8	0.0
Lane LOS	B	B	A		A	
Approach Delay (s)	11.5	11.2	0.3		0.6	
Approach LOS	B	B				

Intersection Summary				
Average Delay	2.1			
Intersection Capacity Utilization	31.9%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	1935	50	63	1144	0	72
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.85	0.85	0.85	0.85	0.88
Hourly flow rate (vph)	2150	59	74	1346	0	82
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)				667		
pX, platoon unblocked					0.79	
vC, conflicting volume			2209		3001	1104
vC1, stage 1 conf vol					2179	
vC2, stage 2 conf vol					821	
vCu, unblocked vol			2209		3001	1104
tC, single (s)			4.2		6.9	7.0
tC, 2 stage (s)					5.9	
tF (s)			2.2		3.5	3.3
p0 queue free %			67		100	59
cM capacity (veh/h)			224		66	201

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	1433	775	74	673	673	82
Volume Left	0	0	74	0	0	0
Volume Right	0	59	0	0	0	82
cSH	1700	1700	224	1700	1700	201
Volume to Capacity	0.84	0.46	0.33	0.40	0.40	0.41
Queue Length 95th (ft)	0	0	34	0	0	46
Control Delay (s)	0.0	0.0	28.8	0.0	0.0	34.7
Lane LOS			D			D
Approach Delay (s)	0.0		1.5			34.7
Approach LOS						D

Intersection Summary			
Average Delay	1.3		
Intersection Capacity Utilization	73.2%	ICU Level of Service	D
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	67	1497	67	59	1154	58	0	0	31	0	0	41
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	79	1761	79	69	1358	68	0	0	36	0	0	48
Pedestrians								1			1	
Lane Width (ft)								12.0			12.0	
Walking Speed (ft/s)								4.0			4.0	
Percent Blockage								0			0	
Right turn flare (veh)												
Median type		None			TWLTL							
Median storage veh)					2							
Upstream signal (ft)		660			648							
pX, platoon unblocked	0.75			0.66			0.79	0.79	0.66	0.79	0.79	0.75
vC, conflicting volume	1427			1841			2786	3486	882	2606	3530	714
vC1, stage 1 conf vol							1920	1920		1532	1532	
vC2, stage 2 conf vol							866	1566		1075	1999	
vCu, unblocked vol	910			1255			1315	2203	0	1087	2260	0
tC, single (s)	4.2			4.2			7.6	6.6	7.0	7.6	6.6	7.0
tC, 2 stage (s)							6.6	5.6		6.6	5.6	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	86			80			100	100	95	100	100	94
cM capacity (veh/h)	546			354			83	74	713	139	32	808

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	79	881	881	79	69	905	521	36	48
Volume Left	79	0	0	0	69	0	0	0	0
Volume Right	0	0	0	79	0	0	68	36	48
cSH	546	1700	1700	1700	354	1700	1700	713	808
Volume to Capacity	0.14	0.52	0.52	0.05	0.20	0.53	0.31	0.05	0.06
Queue Length 95th (ft)	13	0	0	0	18	0	0	4	5
Control Delay (s)	12.7	0.0	0.0	0.0	17.6	0.0	0.0	10.3	9.7
Lane LOS	B				C			B	A
Approach Delay (s)	0.5				0.8			10.3	9.7
Approach LOS								B	A

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	57.1%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	1	1	1	25	1	32	1	896	52	36	988	1
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.25	0.25	0.25	0.79	0.25	0.86	0.25	0.90	0.89	0.68	0.95	0.25
Hourly flow rate (vph)	4	4	4	32	4	37	4	996	58	53	1040	4
Pedestrians		1			6			1			1	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		0			1			0			0	
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage veh)								2			2	
Upstream signal (ft)								662				
pX, platoon unblocked	0.79	0.79		0.79	0.79	0.79				0.79		
vC, conflicting volume	1695	2217	524	1672	2190	534	1045			1060		
vC1, stage 1 conf vol	1149	1149		1039	1039							
vC2, stage 2 conf vol	546	1068		633	1151							
vCu, unblocked vol	1347	2008	524	1317	1973	0	1045			542		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	98	98	99	89	98	96	99			93		
cM capacity (veh/h)	189	202	497	284	210	851	661			803		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	12	73	4	664	390	53	693	351
Volume Left	4	32	4	0	0	53	0	0
Volume Right	4	37	0	0	58	0	0	4
cSH	245	419	661	1700	1700	803	1700	1700
Volume to Capacity	0.05	0.17	0.01	0.39	0.23	0.07	0.41	0.21
Queue Length 95th (ft)	4	16	0	0	0	5	0	0
Control Delay (s)	20.5	15.4	10.5	0.0	0.0	9.8	0.0	0.0
Lane LOS	C	C	B			A		
Approach Delay (s)	20.5	15.4	0.0			0.5		
Approach LOS	C	C						

Intersection Summary				
Average Delay	0.9			
Intersection Capacity Utilization	49.8%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	9	1	129	11	1	9	44	285	17	5	354	19
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.58	0.25	0.89	0.67	0.25	0.88	0.83	0.85	0.65	0.33	0.92	0.70
Hourly flow rate (vph)	16	4	145	16	4	10	53	335	26	15	385	27
Pedestrians					4			3				
Lane Width (ft)					12.0			12.0				
Walking Speed (ft/s)					4.0			4.0				
Percent Blockage					0			0				
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								736				
pX, platoon unblocked												
vC, conflicting volume	715	900	209	831	901	185	412			365		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	715	900	209	831	901	185	412			365		
tC, single (s)	7.6	6.6	7.0	7.6	6.6	7.0	4.2			4.2		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	95	98	82	92	98	99	95			99		
cM capacity (veh/h)	290	254	786	196	254	814	1122			1165		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	164	31	221	194	208	220
Volume Left	16	16	53	0	15	0
Volume Right	145	10	0	26	0	27
cSH	648	274	1122	1700	1165	1700
Volume to Capacity	0.25	0.11	0.05	0.11	0.01	0.13
Queue Length 95th (ft)	25	9	4	0	1	0
Control Delay (s)	12.4	19.8	2.3	0.0	0.7	0.0
Lane LOS	B	C	A		A	
Approach Delay (s)	12.4	19.8	1.2		0.3	
Approach LOS	B	C				

Intersection Summary				
Average Delay	3.2			
Intersection Capacity Utilization	43.1%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	20	1390	1498	13	3	34
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.94	0.94	0.94	0.63	0.25	0.89
Hourly flow rate (vph)	21	1479	1594	21	12	38
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		TWLTL	TWLTL			
Median storage veh)		2	2			
Upstream signal (ft)			750			
pX, platoon unblocked	0.80				0.80	0.80
vC, conflicting volume	1614				2386	807
vC1, stage 1 conf vol					1604	
vC2, stage 2 conf vol					782	
vCu, unblocked vol	1266				2232	257
tC, single (s)	4.2				6.9	7.0
tC, 2 stage (s)					5.9	
tF (s)	2.2				3.5	3.3
p0 queue free %	95				92	93
cM capacity (veh/h)	422				159	586

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	21	739	739	1062	552	50
Volume Left	21	0	0	0	0	12
Volume Right	0	0	0	0	21	38
cSH	422	1700	1700	1700	1700	357
Volume to Capacity	0.05	0.43	0.43	0.62	0.32	0.14
Queue Length 95th (ft)	4	0	0	0	0	12
Control Delay (s)	14.0	0.0	0.0	0.0	0.0	16.7
Lane LOS	B					C
Approach Delay (s)	0.2			0.0		16.7
Approach LOS						C

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	56.7%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	35	1545	74	82	1611	59	0	0	55	9	4	29
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.72	0.93	0.76	0.76	0.97	0.85	0.25	0.25	0.79	0.88	0.38	0.79
Hourly flow rate (vph)	49	1661	97	108	1661	69	0	0	70	10	11	37
Pedestrians								2			2	
Lane Width (ft)								12.0			12.0	
Walking Speed (ft/s)								4.0			4.0	
Percent Blockage								0			0	
Right turn flare (veh)												
Median type		TWLTL			None							
Median storage veh)		2										
Upstream signal (ft)		661										
pX, platoon unblocked				0.55			0.55	0.55	0.55	0.55	0.55	
vC, conflicting volume	1732			1761			2897	3757	881	2806	3736	832
vC1, stage 1 conf vol							1809	1809		1879	1879	
vC2, stage 2 conf vol							1088	1948		928	1858	
vCu, unblocked vol	1732			742			2813	4380	0	2647	4342	832
tC, single (s)	4.2			4.2			7.6	6.6	7.0	7.6	6.6	7.0
tC, 2 stage (s)							6.6	5.6		6.6	5.6	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	86			77			100	100	88	80	75	88
cM capacity (veh/h)	347			461			70	31	589	52	42	305

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	WB 4	NB 1	SB 1
Volume Total	49	1108	651	108	830	830	69	70	57
Volume Left	49	0	0	108	0	0	0	0	10
Volume Right	0	0	97	0	0	0	69	70	37
cSH	347	1700	1700	461	1700	1700	1700	589	102
Volume to Capacity	0.14	0.65	0.38	0.23	0.49	0.49	0.04	0.12	0.57
Queue Length 95th (ft)	12	0	0	22	0	0	0	10	66
Control Delay (s)	17.1	0.0	0.0	15.2	0.0	0.0	0.0	11.9	79.0
Lane LOS	C			C				B	F
Approach Delay (s)	0.5			0.9				11.9	79.0
Approach LOS								B	F

Intersection Summary				
Average Delay	2.1			
Intersection Capacity Utilization	69.5%	ICU Level of Service		C
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	3	3	43	1	5	80	28	1168	15	29	1032	17
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.50	0.50	0.73	0.25	0.33	0.79	0.58	0.94	0.69	0.50	0.97	0.65
Hourly flow rate (vph)	6	6	59	4	15	101	48	1243	22	58	1064	26
Pedestrians		2			7			1				
Lane Width (ft)		12.0			12.0			12.0				
Walking Speed (ft/s)		4.0			4.0			4.0				
Percent Blockage		0			1			0				
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage veh)								2			2	
Upstream signal (ft)											662	
pX, platoon unblocked	0.82	0.82	0.82	0.82	0.82		0.82					
vC, conflicting volume	2022	2563	548	2068	2565	639	1092			1271		
vC1, stage 1 conf vol	1195	1195		1357	1357							
vC2, stage 2 conf vol	827	1368		711	1208							
vCu, unblocked vol	1808	2467	11	1864	2470	639	674			1271		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	95	95	93	97	90	76	94			89		
cM capacity (veh/h)	132	123	873	136	147	416	747			539		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	71	120	48	828	436	58	709	381
Volume Left	6	4	48	0	0	58	0	0
Volume Right	59	101	0	0	22	0	0	26
cSH	438	321	747	1700	1700	539	1700	1700
Volume to Capacity	0.16	0.38	0.06	0.49	0.26	0.11	0.42	0.22
Queue Length 95th (ft)	14	42	5	0	0	9	0	0
Control Delay (s)	14.8	22.8	10.1	0.0	0.0	12.5	0.0	0.0
Lane LOS	B	C	B			B		
Approach Delay (s)	14.8	22.8	0.4			0.6		
Approach LOS	B	C						

Intersection Summary				
Average Delay	1.9			
Intersection Capacity Utilization	49.5%	ICU Level of Service		A
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	31	17	28	15	8	11	16	260	11	23	296	23
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.64	0.65	0.75	0.69	0.38	0.67	0.75	0.85	0.67	0.71	0.95	0.61
Hourly flow rate (vph)	48	26	37	22	21	16	21	306	16	32	312	38
Pedestrians		3										
Lane Width (ft)		12.0										
Walking Speed (ft/s)		4.0										
Percent Blockage		0										
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage veh)								2			2	
Upstream signal (ft)											660	
pX, platoon unblocked	0.95	0.95	0.95	0.95	0.95		0.95					
vC, conflicting volume	774	763	333	784	774	314	352			322		
vC1, stage 1 conf vol	398	398		357	357							
vC2, stage 2 conf vol	375	365		427	417							
vCu, unblocked vol	739	728	278	750	739	314	298			322		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)	6.1	5.5		6.1	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	90	95	95	95	96	98	98			97		
cM capacity (veh/h)	473	480	718	455	477	719	1187			1221		

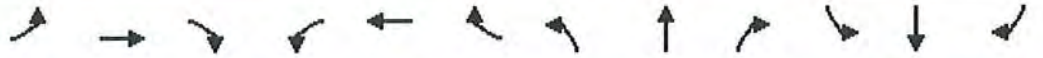
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	112	59	21	322	32	349
Volume Left	48	22	21	0	32	0
Volume Right	37	16	0	16	0	38
cSH	536	516	1187	1700	1221	1700
Volume to Capacity	0.21	0.11	0.02	0.19	0.03	0.21
Queue Length 95th (ft)	20	10	1	0	2	0
Control Delay (s)	13.5	12.9	8.1	0.0	8.0	0.0
Lane LOS	B	B	A		A	
Approach Delay (s)	13.5	12.9	0.5		0.7	
Approach LOS	B	B				

Intersection Summary				
Average Delay	3.0			
Intersection Capacity Utilization	36.9%	ICU Level of Service		A
Analysis Period (min)	15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	1392	11	15	1494	4	27
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.94	0.40	0.92	0.94	0.38	0.56
Hourly flow rate (vph)	1481	28	16	1589	11	48
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)				647		
pX, platoon unblocked					0.80	
vC, conflicting volume			1508		2322	754
vC1, stage 1 conf vol					1495	
vC2, stage 2 conf vol					827	
vCu, unblocked vol			1508		2149	754
tC, single (s)			4.2		6.9	7.0
tC, 2 stage (s)					5.9	
tF (s)			2.2		3.5	3.3
p0 queue free %			96		93	86
cM capacity (veh/h)			425		157	345

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	987	521	16	795	795	59
Volume Left	0	0	16	0	0	11
Volume Right	0	28	0	0	0	48
cSH	1700	1700	425	1700	1700	284
Volume to Capacity	0.58	0.31	0.04	0.47	0.47	0.21
Queue Length 95th (ft)	0	0	3	0	0	19
Control Delay (s)	0.0	0.0	13.8	0.0	0.0	21.0
Lane LOS			B			C
Approach Delay (s)	0.0		0.1			21.0
Approach LOS						C

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	56.2%	ICU Level of Service	B
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	40	1387	68	46	1482	42	0	0	34	0	0	54
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.83	0.90	0.80	0.65	0.93	0.86	0.25	0.25	0.63	0.25	0.25	0.77
Hourly flow rate (vph)	48	1541	85	71	1594	49	0	0	54	0	0	70
Pedestrians								6			3	
Lane Width (ft)								12.0			12.0	
Walking Speed (ft/s)								4.0			4.0	
Percent Blockage								1			0	
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (ft)		660			648							
pX, platoon unblocked	0.61			0.70			0.76	0.76	0.70	0.76	0.76	0.61
vC, conflicting volume	1645			1632			2694	3473	819	2683	3491	824
vC1, stage 1 conf vol							1686	1686		1763	1763	
vC2, stage 2 conf vol							1008	1787		921	1728	
vCu, unblocked vol	773			1044			814	1841	0	800	1865	0
tC, single (s)	4.2			4.2			7.6	6.6	7.0	7.6	6.6	7.0
tC, 2 stage (s)							6.6	5.6		6.6	5.6	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	90			84			100	100	93	100	100	89
cM capacity (veh/h)	497			448			132	97	748	134	83	652

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	48	1027	599	71	1062	580	54	70
Volume Left	48	0	0	71	0	0	0	0
Volume Right	0	0	85	0	0	49	54	70
cSH	497	1700	1700	448	1700	1700	748	652
Volume to Capacity	0.10	0.60	0.35	0.16	0.62	0.34	0.07	0.11
Queue Length 95th (ft)	8	0	0	14	0	0	6	9
Control Delay (s)	13.0	0.0	0.0	14.5	0.0	0.0	10.2	11.2
Lane LOS	B			B			B	B
Approach Delay (s)	0.4			0.6			10.2	11.2
Approach LOS							B	B

Intersection Summary				
Average Delay	0.9			
Intersection Capacity Utilization	57.7%	ICU Level of Service	B	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	1	1	1	26	1	34	1	942	55	38	1038	1
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.25	0.25	0.25	0.79	0.25	0.86	0.25	0.90	0.89	0.68	0.95	0.25
Hourly flow rate (vph)	4	4	4	33	4	40	4	1047	62	56	1093	4
Pedestrians		2			1							
Lane Width (ft)		12.0			12.0							
Walking Speed (ft/s)		4.0			4.0							
Percent Blockage		0			0							
Right turn flare (veh)												
Median type								None			TWLTL	
Median storage veh)											2	
Upstream signal (ft)								662				
pX, platoon unblocked	0.83	0.83		0.83	0.83	0.83				0.83		
vC, conflicting volume	1781	2326	550	1751	2297	555	1099			1109		
vC1, stage 1 conf vol	1208	1208		1087	1087							
vC2, stage 2 conf vol	573	1117		664	1210							
vCu, unblocked vol	1530	2187	550	1493	2152	51	1099			719		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	98	98	99	87	98	95	99			92		
cM capacity (veh/h)	171	180	478	247	190	834	630			727		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	12	76	4	698	411	56	728	368
Volume Left	4	33	4	0	0	56	0	0
Volume Right	4	40	0	0	62	0	0	4
cSH	222	380	630	1700	1700	727	1700	1700
Volume to Capacity	0.05	0.20	0.01	0.41	0.24	0.08	0.43	0.22
Queue Length 95th (ft)	4	19	0	0	0	6	0	0
Control Delay (s)	22.1	16.9	10.8	0.0	0.0	10.4	0.0	0.0
Lane LOS	C	C	B			B		
Approach Delay (s)	22.1	16.9	0.0			0.5		
Approach LOS	C	C						

Intersection Summary				
Average Delay	0.9			
Intersection Capacity Utilization	51.3%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	9	1	136	12	1	9	46	300	18	5	372	20
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.58	0.25	0.89	0.67	0.25	0.88	0.83	0.85	0.65	0.33	0.92	0.70
Hourly flow rate (vph)	16	4	153	18	4	10	55	353	28	15	404	29
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								736				
pX, platoon unblocked												
vC, conflicting volume	748	940	216	865	941	190	433			381		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	748	940	216	865	941	190	433			381		
tC, single (s)	7.6	6.6	7.0	7.6	6.6	7.0	4.2			4.2		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	94	98	80	90	98	99	95			99		
cM capacity (veh/h)	274	241	779	183	241	810	1102			1153		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	172	32	232	204	217	231
Volume Left	16	18	55	0	15	0
Volume Right	153	10	0	28	0	29
cSH	640	253	1102	1700	1153	1700
Volume to Capacity	0.27	0.13	0.05	0.12	0.01	0.14
Queue Length 95th (ft)	27	11	4	0	1	0
Control Delay (s)	12.7	21.3	2.4	0.0	0.7	0.0
Lane LOS	B	C	A		A	
Approach Delay (s)	12.7	21.3	1.3		0.3	
Approach LOS	B	C				

Intersection Summary				
Average Delay	3.3			
Intersection Capacity Utilization	43.7%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	85	1461	1574	14	3	36
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.94	0.94	0.94	0.63	0.25	0.89
Hourly flow rate (vph)	90	1554	1674	22	12	40
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		TWLTL	TWLTL			
Median storage veh)		2	2			
Upstream signal (ft)			742			
pX, platoon unblocked	0.82				0.82	0.82
vC, conflicting volume	1697				2644	848
vC1, stage 1 conf vol					1686	
vC2, stage 2 conf vol					958	
vCu, unblocked vol	1413				2566	381
tC, single (s)	4.2				6.9	7.0
tC, 2 stage (s)					5.9	
tF (s)	2.2				3.5	3.3
p0 queue free %	76				90	92
cM capacity (veh/h)	381				126	500

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	90	777	777	1116	580	52
Volume Left	90	0	0	0	0	12
Volume Right	0	0	0	0	22	40
cSH	381	1700	1700	1700	1700	297
Volume to Capacity	0.24	0.46	0.46	0.66	0.34	0.18
Queue Length 95th (ft)	23	0	0	0	0	16
Control Delay (s)	17.4	0.0	0.0	0.0	0.0	19.7
Lane LOS	C					C
Approach Delay (s)	1.0			0.0		19.7
Approach LOS						C

Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	68.4%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	37	1624	78	86	1693	62	0	0	58	9	4	30
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.72	0.93	0.76	0.76	0.97	0.85	0.25	0.25	0.79	0.88	0.38	0.79
Hourly flow rate (vph)	51	1746	103	113	1745	73	0	0	73	10	11	38
Pedestrians								2				
Lane Width (ft)								12.0				
Walking Speed (ft/s)								4.0				
Percent Blockage								0				
Right turn flare (veh)												
Median type		TWLTL			None							
Median storage veh)		2										
Upstream signal (ft)		661										
pX, platoon unblocked				0.53			0.53	0.53	0.53	0.53	0.53	
vC, conflicting volume	1818			1851			3045	3947	926	2948	3925	873
vC1, stage 1 conf vol							1902	1902		1972	1972	
vC2, stage 2 conf vol							1142	2045		976	1954	
vCu, unblocked vol	1818			850			3083	4771	0	2902	4731	873
tC, single (s)	4.2			4.2			7.6	6.6	7.0	7.6	6.6	7.0
tC, 2 stage (s)							6.6	5.6		6.6	5.6	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	84			72			100	100	87	76	44	87
cM capacity (veh/h)	321			408			51	16	574	43	19	288

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	WB 4	NB 1	SB 1
Volume Total	51	1164	685	113	873	873	73	73	59
Volume Left	51	0	0	113	0	0	0	0	10
Volume Right	0	0	103	0	0	0	73	73	38
cSH	321	1700	1700	408	1700	1700	1700	574	63
Volume to Capacity	0.16	0.68	0.40	0.28	0.51	0.51	0.04	0.13	0.93
Queue Length 95th (ft)	14	0	0	28	0	0	0	11	110
Control Delay (s)	18.3	0.0	0.0	17.2	0.0	0.0	0.0	12.2	199.9
Lane LOS	C			C				B	F
Approach Delay (s)	0.5			1.0				12.2	199.9
Approach LOS								B	F

Intersection Summary				
Average Delay	3.9			
Intersection Capacity Utilization	72.3%	ICU Level of Service		C
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	3	3	45	1	5	84	29	1228	16	30	1085	18
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.50	0.50	0.73	0.25	0.33	0.79	0.58	0.94	0.69	0.50	0.97	0.65
Hourly flow rate (vph)	6	6	62	4	15	106	50	1306	23	60	1119	28
Pedestrians		2			3						1	
Lane Width (ft)		12.0			12.0						12.0	
Walking Speed (ft/s)		4.0			4.0						4.0	
Percent Blockage		0			0						0	
Right turn flare (veh)												
Median type								TWLTL			None	
Median storage veh)								2				
Upstream signal (ft)											662	
pX, platoon unblocked	0.85	0.85	0.85	0.85	0.85		0.85					
vC, conflicting volume	2122	2687	575	2165	2689	669	1148			1333		
vC1, stage 1 conf vol	1254	1254		1421	1421							
vC2, stage 2 conf vol	868	1433		744	1268							
vCu, unblocked vol	1973	2634	163	2023	2636	669	834			1333		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	95	94	92	97	88	73	93			88		
cM capacity (veh/h)	110	107	728	122	130	399	679			512		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	74	125	50	871	459	60	746	401
Volume Left	6	4	50	0	0	60	0	0
Volume Right	62	106	0	0	23	0	0	28
cSH	377	301	679	1700	1700	512	1700	1700
Volume to Capacity	0.20	0.42	0.07	0.51	0.27	0.12	0.44	0.24
Queue Length 95th (ft)	18	49	6	0	0	10	0	0
Control Delay (s)	16.8	25.2	10.7	0.0	0.0	13.0	0.0	0.0
Lane LOS	C	D	B			B		
Approach Delay (s)	16.8	25.2	0.4			0.6		
Approach LOS	C	D						

Intersection Summary				
Average Delay	2.1			
Intersection Capacity Utilization	52.0%	ICU Level of Service		A
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	33	18	29	16	8	12	17	273	12	24	311	24
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.64	0.65	0.75	0.69	0.38	0.67	0.75	0.85	0.67	0.71	0.95	0.61
Hourly flow rate (vph)	52	28	39	23	21	18	23	321	18	34	327	39
Pedestrians		2			1			2				
Lane Width (ft)		12.0			12.0			12.0				
Walking Speed (ft/s)		4.0			4.0			4.0				
Percent Blockage		0			0			0				
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage veh)								2			2	
Upstream signal (ft)											660	
pX, platoon unblocked	0.95	0.95	0.95	0.95	0.95		0.95					
vC, conflicting volume	812	802	351	826	813	331	369			340		
vC1, stage 1 conf vol	417	417		376	376							
vC2, stage 2 conf vol	395	385		449	436							
vCu, unblocked vol	774	764	288	789	775	331	307			340		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)	6.1	5.5		6.1	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	89	94	94	95	95	97	98			97		
cM capacity (veh/h)	457	465	703	435	463	703	1171			1201		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	118	62	23	339	34	367
Volume Left	52	23	23	0	34	0
Volume Right	39	18	0	18	0	39
cSH	518	500	1171	1700	1201	1700
Volume to Capacity	0.23	0.12	0.02	0.20	0.03	0.22
Queue Length 95th (ft)	22	11	1	0	2	0
Control Delay (s)	14.0	13.2	8.1	0.0	8.1	0.0
Lane LOS	B	B	A		A	
Approach Delay (s)	14.0	13.2	0.5		0.7	
Approach LOS	B	B				

Intersection Summary				
Average Delay	3.1			
Intersection Capacity Utilization	38.8%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	1463	12	16	1570	0	28
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.94	0.40	0.92	0.94	0.38	0.56
Hourly flow rate (vph)	1556	30	17	1670	0	50
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			None		
Median storage veh)	2					
Upstream signal (ft)				637		
pX, platoon unblocked					0.82	
vC, conflicting volume			1586		2441	793
vC1, stage 1 conf vol					1571	
vC2, stage 2 conf vol					870	
vCu, unblocked vol			1586		2321	793
tC, single (s)			4.2		6.9	7.0
tC, 2 stage (s)					5.9	
tF (s)			2.2		3.5	3.3
p0 queue free %			96		100	85
cM capacity (veh/h)			396		141	325

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	1038	549	17	835	835	50
Volume Left	0	0	17	0	0	0
Volume Right	0	30	0	0	0	50
cSH	1700	1700	396	1700	1700	325
Volume to Capacity	0.61	0.32	0.04	0.49	0.49	0.15
Queue Length 95th (ft)	0	0	3	0	0	13
Control Delay (s)	0.0	0.0	14.5	0.0	0.0	18.1
Lane LOS			B			C
Approach Delay (s)	0.0		0.1			18.1
Approach LOS						C

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	55.6%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	42	1458	71	48	1558	44	0	0	36	0	0	57
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.83	0.90	0.80	0.65	0.93	0.86	0.25	0.25	0.63	0.25	0.25	0.77
Hourly flow rate (vph)	51	1620	89	74	1675	51	0	0	57	0	0	74
Pedestrians								1			1	
Lane Width (ft)								12.0			12.0	
Walking Speed (ft/s)								4.0			4.0	
Percent Blockage								0			0	
Right turn flare (veh)												
Median type		None			TWLTL							
Median storage veh)					2							
Upstream signal (ft)		660			648							
pX, platoon unblocked	0.60			0.75			0.72	0.72	0.75	0.72	0.72	0.60
vC, conflicting volume	1727			1710			2782	3597	811	2818	3660	864
vC1, stage 1 conf vol							1722	1722		1850	1850	
vC2, stage 2 conf vol							1059	1875		968	1811	
vCu, unblocked vol	879			1282			1151	2277	85	1201	2364	0
tC, single (s)	4.2			4.2			7.6	6.6	7.0	7.6	6.6	7.0
tC, 2 stage (s)							6.6	5.6		6.6	5.6	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	89			81			100	100	92	100	100	89
cM capacity (veh/h)	447			391			108	72	711	107	53	644

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	51	810	810	89	74	1117	610	57	74
Volume Left	51	0	0	0	74	0	0	0	0
Volume Right	0	0	0	89	0	0	51	57	74
cSH	447	1700	1700	1700	391	1700	1700	711	644
Volume to Capacity	0.11	0.48	0.48	0.05	0.19	0.66	0.36	0.08	0.11
Queue Length 95th (ft)	9	0	0	0	17	0	0	7	10
Control Delay (s)	14.1	0.0	0.0	0.0	16.3	0.0	0.0	10.5	11.3
Lane LOS	B				C			B	B
Approach Delay (s)	0.4				0.7			10.5	11.3
Approach LOS								B	B

Intersection Summary				
Average Delay	0.9			
Intersection Capacity Utilization	60.3%	ICU Level of Service		B
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	14	1	21	74	1	37	9	958	56	65	1058	15
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.86	0.85	0.90	0.89	0.85	0.95	0.85
Hourly flow rate (vph)	16	1	25	87	1	43	11	1064	63	76	1114	18
Pedestrians		2			1							
Lane Width (ft)		12.0			12.0							
Walking Speed (ft/s)		4.0			4.0							
Percent Blockage		0			0							
Right turn flare (veh)												
Median type								None			TWLTL	
Median storage veh)											2	
Upstream signal (ft)								662				
pX, platoon unblocked	0.82	0.82		0.82	0.82	0.82				0.82		
vC, conflicting volume	1874	2427	568	1853	2404	565	1133			1128		
vC1, stage 1 conf vol	1277	1277		1118	1118							
vC2, stage 2 conf vol	597	1150		735	1286							
vCu, unblocked vol	1632	2304	568	1607	2276	41	1133			726		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	89	99	95	60	99	95	98			89		
cM capacity (veh/h)	150	159	465	218	167	840	611			718		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	42	131	11	710	418	76	742	389
Volume Left	16	87	11	0	0	76	0	0
Volume Right	25	43	0	0	63	0	0	18
cSH	249	287	611	1700	1700	718	1700	1700
Volume to Capacity	0.17	0.46	0.02	0.42	0.25	0.11	0.44	0.23
Queue Length 95th (ft)	15	57	1	0	0	9	0	0
Control Delay (s)	22.4	27.7	11.0	0.0	0.0	10.6	0.0	0.0
Lane LOS	C	D	B			B		
Approach Delay (s)	22.4	27.7	0.1			0.7		
Approach LOS	C	D						

Intersection Summary				
Average Delay	2.2			
Intersection Capacity Utilization	58.6%	ICU Level of Service	B	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	9	1	136	12	1	9	46	300	18	5	372	20
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.58	0.25	0.89	0.67	0.25	0.88	0.83	0.85	0.65	0.33	0.92	0.70
Hourly flow rate (vph)	16	4	153	18	4	10	55	353	28	15	404	29
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								736				
pX, platoon unblocked												
vC, conflicting volume	748	940	216	865	941	190	433			381		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	748	940	216	865	941	190	433			381		
tC, single (s)	7.6	6.6	7.0	7.6	6.6	7.0	4.2			4.2		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	94	98	80	90	98	99	95			99		
cM capacity (veh/h)	274	241	779	183	241	810	1102			1153		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	172	32	232	204	217	231
Volume Left	16	18	55	0	15	0
Volume Right	153	10	0	28	0	29
cSH	640	253	1102	1700	1153	1700
Volume to Capacity	0.27	0.13	0.05	0.12	0.01	0.14
Queue Length 95th (ft)	27	11	4	0	1	0
Control Delay (s)	12.7	21.3	2.4	0.0	0.7	0.0
Lane LOS	B	C	A		A	
Approach Delay (s)	12.7	21.3	1.3		0.3	
Approach LOS	B	C				

Intersection Summary				
Average Delay	3.3			
Intersection Capacity Utilization	43.7%	ICU Level of Service		A
Analysis Period (min)	15			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	106	1504	1620	14	6	36
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.94	0.94	0.94	0.85	0.85	0.89
Hourly flow rate (vph)	113	1600	1723	16	7	40
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		TWLTL	TWLTL			
Median storage veh)		2	2			
Upstream signal (ft)			745			
pX, platoon unblocked	0.81				0.81	0.81
vC, conflicting volume	1740				2757	870
vC1, stage 1 conf vol					1732	
vC2, stage 2 conf vol					1026	
vCu, unblocked vol	1436				2699	355
tC, single (s)	4.2				6.9	7.0
tC, 2 stage (s)					5.9	
tF (s)	2.2				3.5	3.3
p0 queue free %	69				94	92
cM capacity (veh/h)	366				114	509

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	113	800	800	1149	591	48
Volume Left	113	0	0	0	0	7
Volume Right	0	0	0	0	16	40
cSH	366	1700	1700	1700	1700	336
Volume to Capacity	0.31	0.47	0.47	0.68	0.35	0.14
Queue Length 95th (ft)	32	0	0	0	0	12
Control Delay (s)	19.2	0.0	0.0	0.0	0.0	17.5
Lane LOS	C					C
Approach Delay (s)	1.3			0.0		17.5
Approach LOS						C

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	71.3%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	37	1624	78	86	1693	62	0	0	58	9	4	30
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.72	0.93	0.76	0.76	0.97	0.85	0.25	0.25	0.79	0.88	0.38	0.79
Hourly flow rate (vph)	51	1746	103	113	1745	73	0	0	73	10	11	38
Pedestrians								2				
Lane Width (ft)								12.0				
Walking Speed (ft/s)								4.0				
Percent Blockage								0				
Right turn flare (veh)												
Median type		TWLTL			None							
Median storage veh)		2										
Upstream signal (ft)		661										
pX, platoon unblocked				0.53			0.53	0.53	0.53	0.53	0.53	
vC, conflicting volume	1818			1851			3045	3947	926	2948	3925	873
vC1, stage 1 conf vol							1902	1902		1972	1972	
vC2, stage 2 conf vol							1142	2045		976	1954	
vCu, unblocked vol	1818			850			3083	4771	0	2902	4731	873
tC, single (s)	4.2			4.2			7.6	6.6	7.0	7.6	6.6	7.0
tC, 2 stage (s)							6.6	5.6		6.6	5.6	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	84			72			100	100	87	76	44	87
cM capacity (veh/h)	321			408			51	16	574	43	19	288

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	WB 4	NB 1	SB 1
Volume Total	51	1164	685	113	873	873	73	73	59
Volume Left	51	0	0	113	0	0	0	0	10
Volume Right	0	0	103	0	0	0	73	73	38
cSH	321	1700	1700	408	1700	1700	1700	574	63
Volume to Capacity	0.16	0.68	0.40	0.28	0.51	0.51	0.04	0.13	0.93
Queue Length 95th (ft)	14	0	0	28	0	0	0	11	110
Control Delay (s)	18.3	0.0	0.0	17.2	0.0	0.0	0.0	12.2	199.9
Lane LOS	C			C				B	F
Approach Delay (s)	0.5			1.0				12.2	199.9
Approach LOS								B	F

Intersection Summary			
Average Delay	3.9		
Intersection Capacity Utilization	72.3%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	28	3	48	28	5	85	56	1261	16	61	1117	18
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.94	0.85	0.85	0.97	0.85
Hourly flow rate (vph)	33	4	56	33	6	100	66	1341	19	72	1152	21
Pedestrians		2			3						1	
Lane Width (ft)		12.0			12.0						12.0	
Walking Speed (ft/s)		4.0			4.0						4.0	
Percent Blockage		0			0						0	
Right turn flare (veh)												
Median type								TWLTL			None	
Median storage veh)								2				
Upstream signal (ft)											662	
pX, platoon unblocked	0.84	0.84	0.84	0.84	0.84		0.84					
vC, conflicting volume	2214	2803	588	2263	2804	684	1175			1363		
vC1, stage 1 conf vol	1308	1308		1486	1486							
vC2, stage 2 conf vol	906	1495		778	1318							
vCu, unblocked vol	2069	2766	142	2127	2768	684	837			1363		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	67	96	92	70	95	74	90			86		
cM capacity (veh/h)	98	85	741	108	111	390	668			499		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	93	139	66	894	466	72	768	405
Volume Left	33	33	66	0	0	72	0	0
Volume Right	56	100	0	0	19	0	0	21
cSH	205	226	668	1700	1700	499	1700	1700
Volume to Capacity	0.45	0.61	0.10	0.53	0.27	0.14	0.45	0.24
Queue Length 95th (ft)	54	90	8	0	0	12	0	0
Control Delay (s)	36.2	43.4	11.0	0.0	0.0	13.4	0.0	0.0
Lane LOS	E	E	B			B		
Approach Delay (s)	36.2	43.4	0.5			0.8		
Approach LOS	E	E						

Intersection Summary				
Average Delay	3.8			
Intersection Capacity Utilization	63.2%	ICU Level of Service		B
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	33	18	29	16	8	12	17	273	12	24	311	24
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.64	0.65	0.75	0.69	0.38	0.67	0.75	0.85	0.67	0.71	0.95	0.61
Hourly flow rate (vph)	52	28	39	23	21	18	23	321	18	34	327	39
Pedestrians		2			1			2				
Lane Width (ft)		12.0			12.0			12.0				
Walking Speed (ft/s)		4.0			4.0			4.0				
Percent Blockage		0			0			0				
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage veh)								2			2	
Upstream signal (ft)											660	
pX, platoon unblocked	0.95	0.95	0.95	0.95	0.95		0.95					
vC, conflicting volume	812	802	351	826	813	331	369			340		
vC1, stage 1 conf vol	417	417		376	376							
vC2, stage 2 conf vol	395	385		449	436							
vCu, unblocked vol	774	764	288	789	775	331	307			340		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)	6.1	5.5		6.1	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	89	94	94	95	95	97	98			97		
cM capacity (veh/h)	457	465	703	435	463	703	1171			1201		

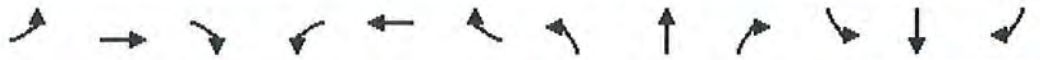
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	118	62	23	339	34	367
Volume Left	52	23	23	0	34	0
Volume Right	39	18	0	18	0	39
cSH	518	500	1171	1700	1201	1700
Volume to Capacity	0.23	0.12	0.02	0.20	0.03	0.22
Queue Length 95th (ft)	22	11	1	0	2	0
Control Delay (s)	14.0	13.2	8.1	0.0	8.1	0.0
Lane LOS	B	B	A		A	
Approach Delay (s)	14.0	13.2	0.5		0.7	
Approach LOS	B	B				

Intersection Summary				
Average Delay	3.1			
Intersection Capacity Utilization	38.8%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	1464	57	67	1616	0	80
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.94	0.85	0.92	0.94	0.85	0.85
Hourly flow rate (vph)	1557	67	73	1719	0	94
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			None		
Median storage veh)	2					
Upstream signal (ft)				637		
pX, platoon unblocked					0.81	
vC, conflicting volume			1625		2596	812
vC1, stage 1 conf vol					1591	
vC2, stage 2 conf vol					1005	
vCu, unblocked vol			1625		2500	812
tC, single (s)			4.2		6.9	7.0
tC, 2 stage (s)					5.9	
tF (s)			2.2		3.5	3.3
p0 queue free %			81		100	70
cM capacity (veh/h)			383		132	316

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	1038	586	73	860	860	94
Volume Left	0	0	73	0	0	0
Volume Right	0	67	0	0	0	94
cSH	1700	1700	383	1700	1700	316
Volume to Capacity	0.61	0.34	0.19	0.51	0.51	0.30
Queue Length 95th (ft)	0	0	17	0	0	31
Control Delay (s)	0.0	0.0	16.6	0.0	0.0	21.2
Lane LOS			C			C
Approach Delay (s)	0.0		0.7			21.2
Approach LOS						C

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	59.5%	ICU Level of Service	B
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	54	1528	72	68	1637	47	0	0	39	0	0	59
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.85	0.90	0.85	0.85	0.93	0.86	0.85	0.25	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	64	1698	85	80	1760	55	0	0	46	0	0	69
Pedestrians								1			1	
Lane Width (ft)								12.0			12.0	
Walking Speed (ft/s)								4.0			4.0	
Percent Blockage								0			0	
Right turn flare (veh)												
Median type		None			TWLTL							
Median storage veh)					2							
Upstream signal (ft)		660			648							
pX, platoon unblocked	0.60			0.75			0.73	0.73	0.75	0.73	0.73	0.60
vC, conflicting volume	1816			1783			2935	3802	850	2970	3859	908
vC1, stage 1 conf vol							1826	1826		1949	1949	
vC2, stage 2 conf vol							1110	1976		1022	1911	
vCu, unblocked vol	1029			1368			1338	2528	116	1386	2607	0
tC, single (s)	4.2			4.2			7.6	6.6	7.0	7.6	6.6	7.0
tC, 2 stage (s)							6.6	5.6		6.6	5.6	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	84			78			100	100	93	100	100	89
cM capacity (veh/h)	392			359			84	39	674	81	26	645

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	64	849	849	85	80	1173	641	46	69
Volume Left	64	0	0	0	80	0	0	0	0
Volume Right	0	0	0	85	0	0	55	46	69
cSH	392	1700	1700	1700	359	1700	1700	674	645
Volume to Capacity	0.16	0.50	0.50	0.05	0.22	0.69	0.38	0.07	0.11
Queue Length 95th (ft)	14	0	0	0	21	0	0	5	9
Control Delay (s)	16.0	0.0	0.0	0.0	17.9	0.0	0.0	10.7	11.3
Lane LOS	C				C			B	B
Approach Delay (s)	0.5				0.8			10.7	11.3
Approach LOS								B	B

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	63.0%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	1	1	1	31	1	39	1	1093	63	44	1206	1
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.86	0.85	0.90	0.89	0.85	0.95	0.85
Hourly flow rate (vph)	1	1	1	36	1	45	1	1214	71	52	1269	1
Pedestrians		2			1							
Lane Width (ft)		12.0			12.0							
Walking Speed (ft/s)		4.0			4.0							
Percent Blockage		0			0							
Right turn flare (veh)												
Median type								None			TWLTL	
Median storage veh)											2	
Upstream signal (ft)								662				
pX, platoon unblocked	0.78	0.78		0.78	0.78	0.78				0.78		
vC, conflicting volume	2031	2664	637	1993	2629	644	1273			1286		
vC1, stage 1 conf vol	1376	1376		1253	1253							
vC2, stage 2 conf vol	656	1289		740	1376							
vCu, unblocked vol	1765	2572	637	1717	2528	0	1273			816		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	99	99	100	83	99	95	100			92		
cM capacity (veh/h)	135	147	419	212	158	850	541			633		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	4	83	1	810	476	52	846	424
Volume Left	1	36	1	0	0	52	0	0
Volume Right	1	45	0	0	71	0	0	1
cSH	181	357	541	1700	1700	633	1700	1700
Volume to Capacity	0.02	0.23	0.00	0.48	0.28	0.08	0.50	0.25
Queue Length 95th (ft)	1	22	0	0	0	7	0	0
Control Delay (s)	25.3	18.1	11.7	0.0	0.0	11.2	0.0	0.0
Lane LOS	D	C	B			B		
Approach Delay (s)	25.3	18.1	0.0			0.4		
Approach LOS	D	C						

Intersection Summary				
Average Delay	0.8			
Intersection Capacity Utilization	57.5%	ICU Level of Service	B	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	11	1	157	13	1	11	54	348	21	6	432	23
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.85	0.85	0.89	0.85	0.85	0.88	0.85	0.85	0.85	0.85	0.92	0.85
Hourly flow rate (vph)	13	1	176	15	1	12	64	409	25	7	470	27
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								736				
pX, platoon unblocked												
vC, conflicting volume	842	1058	248	975	1060	217	497			434		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	842	1058	248	975	1060	217	497			434		
tC, single (s)	7.6	6.6	7.0	7.6	6.6	7.0	4.2			4.2		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	94	99	76	89	99	98	94			99		
cM capacity (veh/h)	235	204	743	145	203	778	1043			1101		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	191	29	268	229	242	262
Volume Left	13	15	64	0	7	0
Volume Right	176	12	0	25	0	27
cSH	638	228	1043	1700	1101	1700
Volume to Capacity	0.30	0.13	0.06	0.13	0.01	0.15
Queue Length 95th (ft)	31	11	5	0	0	0
Control Delay (s)	13.0	23.1	2.5	0.0	0.3	0.0
Lane LOS	B	C	A		A	
Approach Delay (s)	13.0	23.1	1.4		0.1	
Approach LOS	B	C				

Intersection Summary				
Average Delay	3.2			
Intersection Capacity Utilization	49.2%	ICU Level of Service		A
Analysis Period (min)	15			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	88	1696	1828	16	4	41
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.94	0.94	0.94	0.85	0.85	0.89
Hourly flow rate (vph)	94	1804	1945	19	5	46
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		TWLTL	TWLTL			
Median storage veh)		2	2			
Upstream signal (ft)			745			
pX, platoon unblocked	0.79				0.79	0.79
vC, conflicting volume	1964				3043	982
vC1, stage 1 conf vol					1954	
vC2, stage 2 conf vol					1089	
vCu, unblocked vol	1690				3055	449
tC, single (s)	4.2				6.9	7.0
tC, 2 stage (s)					5.9	
tF (s)	2.2				3.5	3.3
p0 queue free %	67				95	89
cM capacity (veh/h)	285				86	434

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	94	902	902	1296	667	51
Volume Left	94	0	0	0	0	5
Volume Right	0	0	0	0	19	46
cSH	285	1700	1700	1700	1700	316
Volume to Capacity	0.33	0.53	0.53	0.76	0.39	0.16
Queue Length 95th (ft)	35	0	0	0	0	14
Control Delay (s)	23.6	0.0	0.0	0.0	0.0	18.5
Lane LOS	C					C
Approach Delay (s)	1.2			0.0		18.5
Approach LOS						C

Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	76.7%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	43	1885	90	100	1966	72	0	0	67	11	5	35
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.85	0.93	0.85	0.85	0.97	0.85	0.85	0.85	0.85	0.88	0.85	0.85
Hourly flow rate (vph)	51	2027	106	118	2027	85	0	0	79	12	6	41
Pedestrians								2				
Lane Width (ft)								12.0				
Walking Speed (ft/s)								4.0				
Percent Blockage								0				
Right turn flare (veh)												
Median type		TWLTL			None							
Median storage veh)		2										
Upstream signal (ft)		661										
pX, platoon unblocked				0.53			0.53	0.53	0.53	0.53	0.53	
vC, conflicting volume	2112			2135			3476	4530	1068	3377	4498	1013
vC1, stage 1 conf vol							2183	2183		2262	2262	
vC2, stage 2 conf vol							1293	2347		1115	2236	
vCu, unblocked vol	2112			1367			3898	5887	0	3711	5827	1013
tC, single (s)	4.2			4.2			7.6	6.6	7.0	7.6	6.6	7.0
tC, 2 stage (s)							6.6	5.6		6.6	5.6	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	79			54			100	100	86	40	0	82
cM capacity (veh/h)	245			255			12	0	568	21	0	231

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	WB 4	NB 1	SB 1
Volume Total	51	1351	782	118	1013	1013	85	79	60
Volume Left	51	0	0	118	0	0	0	0	12
Volume Right	0	0	106	0	0	0	85	79	41
cSH	245	1700	1700	255	1700	1700	1700	568	0
Volume to Capacity	0.21	0.79	0.46	0.46	0.60	0.60	0.05	0.14	194.93
Queue Length 95th (ft)	19	0	0	57	0	0	0	12	Err
Control Delay (s)	23.4	0.0	0.0	30.6	0.0	0.0	0.0	12.4	Err
Lane LOS	C			D				B	F
Approach Delay (s)	0.5			1.6				12.4	Err
Approach LOS								B	F

Intersection Summary				
Average Delay	132.1			
Intersection Capacity Utilization	81.8%	ICU Level of Service		D
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	4	4	52	1	6	98	34	1425	18	35	1259	21
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.94	0.85	0.85	0.97	0.85
Hourly flow rate (vph)	5	5	61	1	7	115	40	1516	21	41	1298	25
Pedestrians		2			3						1	
Lane Width (ft)		12.0			12.0						12.0	
Walking Speed (ft/s)		4.0			4.0						4.0	
Percent Blockage		0			0						0	
Right turn flare (veh)												
Median type								TWLTL			None	
Median storage veh)								2				
Upstream signal (ft)											662	
pX, platoon unblocked	0.82	0.82	0.82	0.82	0.82		0.82					
vC, conflicting volume	2352	3015	663	2404	3017	773	1325			1540		
vC1, stage 1 conf vol	1395	1395		1610	1610							
vC2, stage 2 conf vol	958	1620		795	1407							
vCu, unblocked vol	2212	3018	158	2275	3020	773	962			1540		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	95	95	91	99	94	66	93			90		
cM capacity (veh/h)	96	93	706	96	110	341	584			426		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	71	124	40	1011	526	41	865	457
Volume Left	5	1	40	0	0	41	0	0
Volume Right	61	115	0	0	21	0	0	25
cSH	379	298	584	1700	1700	426	1700	1700
Volume to Capacity	0.19	0.42	0.07	0.59	0.31	0.10	0.51	0.27
Queue Length 95th (ft)	17	49	6	0	0	8	0	0
Control Delay (s)	16.7	25.4	11.6	0.0	0.0	14.3	0.0	0.0
Lane LOS	C	D	B			B		
Approach Delay (s)	16.7	25.4	0.3			0.4		
Approach LOS	C	D						

Intersection Summary				
Average Delay	1.7			
Intersection Capacity Utilization	59.1%	ICU Level of Service	B	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	38	21	34	18	10	13	20	317	13	28	361	28
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.95	0.85
Hourly flow rate (vph)	45	25	40	21	12	15	24	373	15	33	380	33
Pedestrians		2			1			2				
Lane Width (ft)		12.0			12.0			12.0				
Walking Speed (ft/s)		4.0			4.0			4.0				
Percent Blockage		0			0			0				
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage veh)								2			2	
Upstream signal (ft)											660	
pX, platoon unblocked	0.92	0.92	0.92	0.92	0.92		0.92					
vC, conflicting volume	906	901	400	929	909	382	415			389		
vC1, stage 1 conf vol	464	464		429	429							
vC2, stage 2 conf vol	441	436		500	481							
vCu, unblocked vol	857	851	310	882	861	382	325			389		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)	6.1	5.5		6.1	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	90	94	94	95	97	98	98			97		
cM capacity (veh/h)	428	433	666	400	432	658	1123			1152		

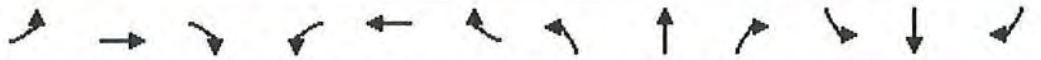
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	109	48	24	388	33	413
Volume Left	45	21	24	0	33	0
Volume Right	40	15	0	15	0	33
cSH	494	466	1123	1700	1152	1700
Volume to Capacity	0.22	0.10	0.02	0.23	0.03	0.24
Queue Length 95th (ft)	21	9	2	0	2	0
Control Delay (s)	14.3	13.6	8.3	0.0	8.2	0.0
Lane LOS	B	B	A		A	
Approach Delay (s)	14.3	13.6	0.5		0.6	
Approach LOS	B	B				

Intersection Summary				
Average Delay	2.7			
Intersection Capacity Utilization	44.0%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	1699	13	18	1823	0	33
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.94	0.85	0.92	0.94	0.85	0.85
Hourly flow rate (vph)	1807	15	20	1939	0	39
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			None		
Median storage veh)	2					
Upstream signal (ft)				637		
pX, platoon unblocked					0.79	
vC, conflicting volume			1823		2824	911
vC1, stage 1 conf vol					1815	
vC2, stage 2 conf vol					1009	
vCu, unblocked vol			1823		2778	911
tC, single (s)			4.2		6.9	7.0
tC, 2 stage (s)					5.9	
tF (s)			2.2		3.5	3.3
p0 queue free %			94		100	86
cM capacity (veh/h)			320		104	271

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	1205	618	20	970	970	39
Volume Left	0	0	20	0	0	0
Volume Right	0	15	0	0	0	39
cSH	1700	1700	320	1700	1700	271
Volume to Capacity	0.71	0.36	0.06	0.57	0.57	0.14
Queue Length 95th (ft)	0	0	5	0	0	12
Control Delay (s)	0.0	0.0	17.0	0.0	0.0	20.5
Lane LOS			C			C
Approach Delay (s)	0.0		0.2			20.5
Approach LOS						C

Intersection Summary				
Average Delay	0.3			
Intersection Capacity Utilization	63.0%	ICU Level of Service		B
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	49	1692	83	56	1808	51	0	0	41	0	0	66
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.85	0.90	0.85	0.85	0.93	0.86	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	58	1880	98	66	1944	59	0	0	48	0	0	78
Pedestrians								1			1	
Lane Width (ft)								12.0			12.0	
Walking Speed (ft/s)								4.0			4.0	
Percent Blockage								0			0	
Right turn flare (veh)												
Median type		None			TWLTL							
Median storage veh)					2							
Upstream signal (ft)		660			648							
pX, platoon unblocked	0.47			0.72			0.61	0.61	0.72	0.61	0.61	0.47
vC, conflicting volume	2004			1979			3178	4132	941	3210	4200	1003
vC1, stage 1 conf vol							1996	1996		2107	2107	
vC2, stage 2 conf vol							1181	2136		1104	2094	
vCu, unblocked vol	859			1575			1193	2767	128	1246	2879	0
tC, single (s)	4.2			4.2			7.6	6.6	7.0	7.6	6.6	7.0
tC, 2 stage (s)							6.6	5.6		6.6	5.6	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	84			77			100	100	92	100	100	84
cM capacity (veh/h)	353			287			63	35	637	79	15	499

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	58	940	940	98	66	1296	707	48	78
Volume Left	58	0	0	0	66	0	0	0	0
Volume Right	0	0	0	98	0	0	59	48	78
cSH	353	1700	1700	1700	287	1700	1700	637	499
Volume to Capacity	0.16	0.55	0.55	0.06	0.23	0.76	0.42	0.08	0.16
Queue Length 95th (ft)	14	0	0	0	22	0	0	6	14
Control Delay (s)	17.2	0.0	0.0	0.0	21.3	0.0	0.0	11.1	13.5
Lane LOS	C				C			B	B
Approach Delay (s)	0.5				0.7			11.1	13.5
Approach LOS								B	B

Intersection Summary				
Average Delay	0.9			
Intersection Capacity Utilization	68.9%	ICU Level of Service		C
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	14	1	21	79	1	42	9	1109	64	71	1226	15
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.86	0.85	0.90	0.89	0.85	0.95	0.85
Hourly flow rate (vph)	16	1	25	93	1	49	11	1232	72	84	1291	18
Pedestrians		2			1							
Lane Width (ft)		12.0			12.0							
Walking Speed (ft/s)		4.0			4.0							
Percent Blockage		0			0							
Right turn flare (veh)												
Median type								None			TWLTL	
Median storage veh)											2	
Upstream signal (ft)								662				
pX, platoon unblocked	0.77	0.77		0.77	0.77	0.77				0.77		
vC, conflicting volume	2155	2795	656	2128	2768	653	1310			1305		
vC1, stage 1 conf vol	1468	1468		1290	1290							
vC2, stage 2 conf vol	687	1326		838	1477							
vCu, unblocked vol	1907	2734	656	1872	2699	0	1310			807		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	85	99	94	48	99	94	98			87		
cM capacity (veh/h)	111	122	407	178	131	837	523			628		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	42	143	11	821	483	84	860	448
Volume Left	16	93	11	0	0	84	0	0
Volume Right	25	49	0	0	72	0	0	18
cSH	194	242	523	1700	1700	628	1700	1700
Volume to Capacity	0.22	0.59	0.02	0.48	0.28	0.13	0.51	0.26
Queue Length 95th (ft)	20	85	2	0	0	11	0	0
Control Delay (s)	28.6	39.2	12.0	0.0	0.0	11.6	0.0	0.0
Lane LOS	D	E	B			B		
Approach Delay (s)	28.6	39.2	0.1			0.7		
Approach LOS	D	E						

Intersection Summary				
Average Delay	2.7			
Intersection Capacity Utilization	64.7%	ICU Level of Service		C
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	11	1	157	13	1	11	54	348	21	6	432	23
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.85	0.85	0.89	0.85	0.85	0.88	0.85	0.85	0.85	0.85	0.92	0.85
Hourly flow rate (vph)	13	1	176	15	1	12	64	409	25	7	470	27
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								736				
pX, platoon unblocked												
vC, conflicting volume	842	1058	248	975	1060	217	497			434		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	842	1058	248	975	1060	217	497			434		
tC, single (s)	7.6	6.6	7.0	7.6	6.6	7.0	4.2			4.2		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	94	99	76	89	99	98	94			99		
cM capacity (veh/h)	235	204	743	145	203	778	1043			1101		

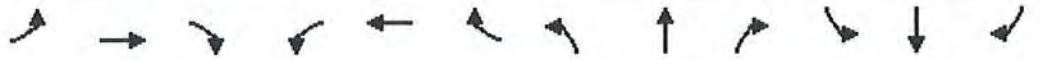
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	191	29	268	229	242	262
Volume Left	13	15	64	0	7	0
Volume Right	176	12	0	25	0	27
cSH	638	228	1043	1700	1101	1700
Volume to Capacity	0.30	0.13	0.06	0.13	0.01	0.15
Queue Length 95th (ft)	31	11	5	0	0	0
Control Delay (s)	13.0	23.1	2.5	0.0	0.3	0.0
Lane LOS	B	C	A		A	
Approach Delay (s)	13.0	23.1	1.4		0.1	
Approach LOS	B	C				

Intersection Summary				
Average Delay	3.2			
Intersection Capacity Utilization	49.2%	ICU Level of Service		A
Analysis Period (min)	15			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	109	1739	1874	16	7	41
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.94	0.94	0.94	0.85	0.85	0.89
Hourly flow rate (vph)	116	1850	1994	19	8	46
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		TWLTL	TWLTL			
Median storage veh)		2	2			
Upstream signal (ft)			745			
pX, platoon unblocked	0.77				0.77	0.77
vC, conflicting volume	2012				3160	1006
vC1, stage 1 conf vol					2003	
vC2, stage 2 conf vol					1157	
vCu, unblocked vol	1722				3207	420
tC, single (s)	4.2				6.9	7.0
tC, 2 stage (s)					5.9	
tF (s)	2.2				3.5	3.3
p0 queue free %	57				89	90
cM capacity (veh/h)	271				76	443

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	116	925	925	1329	683	54
Volume Left	116	0	0	0	0	8
Volume Right	0	0	0	0	19	46
cSH	271	1700	1700	1700	1700	257
Volume to Capacity	0.43	0.54	0.54	0.78	0.40	0.21
Queue Length 95th (ft)	51	0	0	0	0	20
Control Delay (s)	27.9	0.0	0.0	0.0	0.0	22.8
Lane LOS	D					C
Approach Delay (s)	1.6			0.0		22.8
Approach LOS						C

Intersection Summary			
Average Delay	1.1		
Intersection Capacity Utilization	79.8%	ICU Level of Service	D
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	43	1885	90	100	1966	72	0	0	67	11	5	35
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.85	0.93	0.85	0.85	0.97	0.85	0.85	0.85	0.85	0.88	0.85	0.85
Hourly flow rate (vph)	51	2027	106	118	2027	85	0	0	79	12	6	41
Pedestrians								2				
Lane Width (ft)								12.0				
Walking Speed (ft/s)								4.0				
Percent Blockage								0				
Right turn flare (veh)												
Median type		TWLTL			None							
Median storage veh)		2										
Upstream signal (ft)		661										
pX, platoon unblocked				0.53			0.53	0.53	0.53	0.53	0.53	
vC, conflicting volume	2112			2135			3476	4530	1068	3377	4498	1013
vC1, stage 1 conf vol							2183	2183		2262	2262	
vC2, stage 2 conf vol							1293	2347		1115	2236	
vCu, unblocked vol	2112			1367			3898	5887	0	3711	5827	1013
tC, single (s)	4.2			4.2			7.6	6.6	7.0	7.6	6.6	7.0
tC, 2 stage (s)							6.6	5.6		6.6	5.6	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	79			54			100	100	86	40	0	82
cM capacity (veh/h)	245			255			12	0	568	21	0	231

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	WB 4	NB 1	SB 1
Volume Total	51	1351	782	118	1013	1013	85	79	60
Volume Left	51	0	0	118	0	0	0	0	12
Volume Right	0	0	106	0	0	0	85	79	41
cSH	245	1700	1700	255	1700	1700	1700	568	0
Volume to Capacity	0.21	0.79	0.46	0.46	0.60	0.60	0.05	0.14	194.93
Queue Length 95th (ft)	19	0	0	57	0	0	0	12	Err
Control Delay (s)	23.4	0.0	0.0	30.6	0.0	0.0	0.0	12.4	Err
Lane LOS	C			D				B	F
Approach Delay (s)	0.5			1.6				12.4	Err
Approach LOS								B	F

Intersection Summary			
Average Delay	132.1		
Intersection Capacity Utilization	81.8%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	29	4	55	28	6	99	61	1458	18	66	1291	21
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.94	0.85	0.85	0.97	0.85
Hourly flow rate (vph)	34	5	65	33	7	116	72	1551	21	78	1331	25
Pedestrians		2			3						1	
Lane Width (ft)		12.0			12.0						12.0	
Walking Speed (ft/s)		4.0			4.0						4.0	
Percent Blockage		0			0						0	
Right turn flare (veh)												
Median type								TWLTL			None	
Median storage veh)								2				
Upstream signal (ft)											662	
pX, platoon unblocked	0.81	0.81	0.81	0.81	0.81		0.81					
vC, conflicting volume	2541	3219	680	2596	3221	790	1358			1575		
vC1, stage 1 conf vol	1501	1501		1708	1708							
vC2, stage 2 conf vol	1040	1719		888	1513							
vCu, unblocked vol	2434	3270	142	2502	3272	790	977			1575		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	30	89	91	57	91	65	87			81		
cM capacity (veh/h)	49	44	713	76	75	332	569			413		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	104	156	72	1034	538	78	887	468
Volume Left	34	33	72	0	0	78	0	0
Volume Right	65	116	0	0	21	0	0	25
cSH	115	178	569	1700	1700	413	1700	1700
Volume to Capacity	0.90	0.88	0.13	0.61	0.32	0.19	0.52	0.28
Queue Length 95th (ft)	139	160	11	0	0	17	0	0
Control Delay (s)	128.0	90.9	12.2	0.0	0.0	15.7	0.0	0.0
Lane LOS	F	F	B			C		
Approach Delay (s)	128.0	90.9	0.5			0.9		
Approach LOS	F	F						

Intersection Summary				
Average Delay	8.9			
Intersection Capacity Utilization	70.8%	ICU Level of Service	C	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	38	21	34	18	10	13	20	317	13	28	361	28
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.95	0.85
Hourly flow rate (vph)	45	25	40	21	12	15	24	373	15	33	380	33
Pedestrians		2			1			2				
Lane Width (ft)		12.0			12.0			12.0				
Walking Speed (ft/s)		4.0			4.0			4.0				
Percent Blockage		0			0			0				
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage veh)								2			2	
Upstream signal (ft)											660	
pX, platoon unblocked	0.92	0.92	0.92	0.92	0.92		0.92					
vC, conflicting volume	906	901	400	929	909	382	415			389		
vC1, stage 1 conf vol	464	464		429	429							
vC2, stage 2 conf vol	441	436		500	481							
vCu, unblocked vol	857	851	310	882	861	382	325			389		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)	6.1	5.5		6.1	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	90	94	94	95	97	98	98			97		
cM capacity (veh/h)	428	433	666	400	432	658	1123			1152		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	109	48	24	388	33	413
Volume Left	45	21	24	0	33	0
Volume Right	40	15	0	15	0	33
cSH	494	466	1123	1700	1152	1700
Volume to Capacity	0.22	0.10	0.02	0.23	0.03	0.24
Queue Length 95th (ft)	21	9	2	0	2	0
Control Delay (s)	14.3	13.6	8.3	0.0	8.2	0.0
Lane LOS	B	B	A		A	
Approach Delay (s)	14.3	13.6	0.5		0.6	
Approach LOS	B	B				

Intersection Summary				
Average Delay	2.7			
Intersection Capacity Utilization	44.0%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	1700	58	69	1869	0	85
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.94	0.85	0.92	0.94	0.85	0.85
Hourly flow rate (vph)	1809	68	75	1988	0	100
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			None		
Median storage veh)	2					
Upstream signal (ft)				637		
pX, platoon unblocked					0.78	
vC, conflicting volume			1877		2987	938
vC1, stage 1 conf vol					1843	
vC2, stage 2 conf vol					1144	
vCu, unblocked vol			1877		2983	938
tC, single (s)			4.2		6.9	7.0
tC, 2 stage (s)					5.9	
tF (s)			2.2		3.5	3.3
p0 queue free %			75		100	62
cM capacity (veh/h)			304		96	260

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	1206	671	75	994	994	100
Volume Left	0	0	75	0	0	0
Volume Right	0	68	0	0	0	100
cSH	1700	1700	304	1700	1700	260
Volume to Capacity	0.71	0.39	0.25	0.58	0.58	0.38
Queue Length 95th (ft)	0	0	24	0	0	43
Control Delay (s)	0.0	0.0	20.7	0.0	0.0	27.3
Lane LOS			C			D
Approach Delay (s)	0.0		0.8			27.3
Approach LOS						D

Intersection Summary			
Average Delay	1.1		
Intersection Capacity Utilization	67.1%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	61	1762	84	76	1887	54	0	0	44	0	0	68
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.85	0.90	0.85	0.85	0.93	0.86	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	72	1958	99	89	2029	63	0	0	52	0	0	80
Pedestrians								1			1	
Lane Width (ft)								12.0			12.0	
Walking Speed (ft/s)								4.0			4.0	
Percent Blockage								0			0	
Right turn flare (veh)												
Median type		None			TWLTL							
Median storage veh)					2							
Upstream signal (ft)		660			648							
pX, platoon unblocked	0.47			0.71			0.61	0.61	0.71	0.61	0.61	0.47
vC, conflicting volume	2093			2058			3376	4374	980	3414	4441	1047
vC1, stage 1 conf vol							2102	2102		2240	2240	
vC2, stage 2 conf vol							1273	2272		1174	2201	
vCu, unblocked vol	1053			1673			1481	3115	156	1544	3226	0
tC, single (s)	4.2			4.2			7.6	6.6	7.0	7.6	6.6	7.0
tC, 2 stage (s)							6.6	5.6		6.6	5.6	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	76			66			100	100	91	100	100	84
cM capacity (veh/h)	298			260			46	3	605	44	3	500

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	72	979	979	99	89	1353	739	52	80
Volume Left	72	0	0	0	89	0	0	0	0
Volume Right	0	0	0	99	0	0	63	52	80
cSH	298	1700	1700	1700	260	1700	1700	605	500
Volume to Capacity	0.24	0.58	0.58	0.06	0.34	0.80	0.43	0.09	0.16
Queue Length 95th (ft)	23	0	0	0	37	0	0	7	14
Control Delay (s)	20.9	0.0	0.0	0.0	25.9	0.0	0.0	11.5	13.6
Lane LOS	C				D			B	B
Approach Delay (s)	0.7				1.1			11.5	13.6
Approach LOS								B	B

Intersection Summary				
Average Delay	1.2			
Intersection Capacity Utilization	71.6%	ICU Level of Service		C
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	1	1	1	21	1	46	1	880	36	21	1018	1
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.25	0.25	0.25	0.50	0.25	0.85	0.25	0.86	0.68	0.80	0.93	0.25
Hourly flow rate (vph)	4	4	4	42	4	54	4	1023	53	26	1095	4
Pedestrians		4										
Lane Width (ft)		12.0										
Walking Speed (ft/s)		4.0										
Percent Blockage		0										
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage veh)								2			2	
Upstream signal (ft)								662				
pX, platoon unblocked	0.74	0.74		0.74	0.74	0.74				0.74		
vC, conflicting volume	1729	2237	553	1664	2213	538	1103			1076		
vC1, stage 1 conf vol	1153	1153		1058	1058							
vC2, stage 2 conf vol	576	1084		606	1155							
vCu, unblocked vol	1289	1973	553	1201	1940	0	1103			410		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	98	98	99	87	98	93	99			97		
cM capacity (veh/h)	194	216	475	316	219	805	627			851		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	12	100	4	682	394	26	730	369
Volume Left	4	42	4	0	0	26	0	0
Volume Right	4	54	0	0	53	0	0	4
cSH	252	458	627	1700	1700	851	1700	1700
Volume to Capacity	0.05	0.22	0.01	0.40	0.23	0.03	0.43	0.22
Queue Length 95th (ft)	4	21	0	0	0	2	0	0
Control Delay (s)	20.0	15.0	10.8	0.0	0.0	9.4	0.0	0.0
Lane LOS	C	C	B			A		
Approach Delay (s)	20.0	15.0	0.0			0.2		
Approach LOS	C	C						

Intersection Summary				
Average Delay	0.9			
Intersection Capacity Utilization	43.9%	ICU Level of Service		A
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	1	1	143	5	1	1	34	244	4	5	300	8
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.25	0.25	0.64	0.50	0.25	0.25	0.42	0.83	0.38	0.33	0.84	0.50
Hourly flow rate (vph)	4	4	223	10	4	4	81	294	11	15	357	16
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								736				
pX, platoon unblocked												
vC, conflicting volume	710	862	187	895	865	152	373			305		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	710	862	187	895	865	152	373			305		
tC, single (s)	7.6	6.6	7.0	7.6	6.6	7.0	4.2			4.2		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	99	98	73	94	98	100	93			99		
cM capacity (veh/h)	291	263	814	155	262	857	1161			1232		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	231	18	228	158	194	195
Volume Left	4	10	81	0	15	0
Volume Right	223	4	0	11	0	16
cSH	763	213	1161	1700	1232	1700
Volume to Capacity	0.30	0.08	0.07	0.09	0.01	0.11
Queue Length 95th (ft)	32	7	6	0	1	0
Control Delay (s)	11.8	23.4	3.4	0.0	0.7	0.0
Lane LOS	B	C	A		A	
Approach Delay (s)	11.8	23.4	2.0		0.4	
Approach LOS	B	C				

Intersection Summary				
Average Delay	4.0			
Intersection Capacity Utilization	38.5%	ICU Level of Service		A
Analysis Period (min)	15			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	34	1311	2045	19	1	36
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.57	0.99	0.93	0.88	0.25	0.75
Hourly flow rate (vph)	60	1324	2199	22	4	48
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		TWLTL	TWLTL			
Median storage veh)		2	2			
Upstream signal (ft)			766			
pX, platoon unblocked	0.68				0.68	0.68
vC, conflicting volume	2221				2991	1110
vC1, stage 1 conf vol					2210	
vC2, stage 2 conf vol					781	
vCu, unblocked vol	1854				2987	222
tC, single (s)	4.2				6.9	7.0
tC, 2 stage (s)					5.9	
tF (s)	2.2				3.5	3.3
p0 queue free %	72				94	91
cM capacity (veh/h)	211				69	525

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	60	662	662	1466	755	52
Volume Left	60	0	0	0	0	4
Volume Right	0	0	0	0	22	48
cSH	211	1700	1700	1700	1700	348
Volume to Capacity	0.28	0.39	0.39	0.86	0.44	0.15
Queue Length 95th (ft)	28	0	0	0	0	13
Control Delay (s)	28.6	0.0	0.0	0.0	0.0	17.2
Lane LOS	D					C
Approach Delay (s)	1.2			0.0		17.2
Approach LOS						C

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	73.9%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	32	1481	27	56	1822	79	0	0	38	4	1	35
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.75	0.92	0.71	0.81	0.95	0.82	0.25	0.25	0.58	0.38	0.25	0.81
Hourly flow rate (vph)	43	1610	38	69	1918	96	0	0	66	11	4	43
Pedestrians											1	
Lane Width (ft)											12.0	
Walking Speed (ft/s)											4.0	
Percent Blockage											0	
Right turn flare (veh)												
Median type		TWLTL			None							
Median storage veh)		2										
Upstream signal (ft)		661										
pX, platoon unblocked				0.56			0.56	0.56	0.56	0.56	0.56	
vC, conflicting volume	2015			1648			2857	3868	824	2947	3790	960
vC1, stage 1 conf vol							1714	1714		2057	2057	
vC2, stage 2 conf vol							1142	2154		890	1733	
vCu, unblocked vol	2015			591			2744	4546	0	2906	4408	960
tC, single (s)	4.2			4.2			7.6	6.6	7.0	7.6	6.6	7.0
tC, 2 stage (s)							6.6	5.6		6.6	5.6	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	84			87			100	100	89	77	94	83
cM capacity (veh/h)	268			539			83	28	603	46	63	251

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	WB 4	NB 1	SB 1
Volume Total	43	1073	575	69	959	959	96	66	58
Volume Left	43	0	0	69	0	0	0	0	11
Volume Right	0	0	38	0	0	0	96	66	43
cSH	268	1700	1700	539	1700	1700	1700	603	124
Volume to Capacity	0.16	0.63	0.34	0.13	0.56	0.56	0.06	0.11	0.47
Queue Length 95th (ft)	14	0	0	11	0	0	0	9	52
Control Delay (s)	21.0	0.0	0.0	12.7	0.0	0.0	0.0	11.7	57.1
Lane LOS	C			B				B	F
Approach Delay (s)	0.5			0.4				11.7	57.1
Approach LOS								B	F

Intersection Summary				
Average Delay	1.5			
Intersection Capacity Utilization	68.9%	ICU Level of Service		C
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	5	1	28	4	3	71	15	1160	15	34	998	21
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.50	0.25	0.75	0.38	0.50	0.78	0.69	0.90	0.69	0.78	0.90	0.80
Hourly flow rate (vph)	10	4	37	11	6	91	22	1289	22	44	1109	26
Pedestrians		2			2							
Lane Width (ft)		12.0			12.0							
Walking Speed (ft/s)		4.0			4.0							
Percent Blockage		0			0							
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage veh)								2			2	
Upstream signal (ft)											662	
pX, platoon unblocked	0.79	0.79	0.79	0.79	0.79		0.79					
vC, conflicting volume	1993	2567	570	2026	2570	657	1137			1313		
vC1, stage 1 conf vol	1211	1211		1345	1345							
vC2, stage 2 conf vol	782	1356		681	1224							
vCu, unblocked vol	1723	2451	0	1765	2454	657	638			1313		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	94	97	96	93	96	78	97			92		
cM capacity (veh/h)	166	141	854	147	162	407	742			522		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	51	108	22	859	451	44	739	396
Volume Left	10	11	22	0	0	44	0	0
Volume Right	37	91	0	0	22	0	0	26
cSH	388	324	742	1700	1700	522	1700	1700
Volume to Capacity	0.13	0.33	0.03	0.51	0.27	0.08	0.43	0.23
Queue Length 95th (ft)	11	35	2	0	0	7	0	0
Control Delay (s)	15.7	21.6	10.0	0.0	0.0	12.5	0.0	0.0
Lane LOS	C	C	B			B		
Approach Delay (s)	15.7	21.6	0.2			0.5		
Approach LOS	C	C						

Intersection Summary				
Average Delay	1.5			
Intersection Capacity Utilization	48.9%	ICU Level of Service		A
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	21	16	15	11	8	15	11	225	5	9	291	12
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.57	0.60	0.55	0.67	0.50	0.55	0.67	0.88	0.33	0.58	0.92	0.75
Hourly flow rate (vph)	37	27	27	16	16	27	16	256	15	16	316	16
Pedestrians		2			2			3				
Lane Width (ft)		12.0			12.0			12.0				
Walking Speed (ft/s)		4.0			4.0			4.0				
Percent Blockage		0			0			0				
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage veh)								2			2	
Upstream signal (ft)											660	
pX, platoon unblocked	0.92	0.92	0.92	0.92	0.92		0.92					
vC, conflicting volume	681	663	329	689	663	265	334			273		
vC1, stage 1 conf vol	357	357		298	298							
vC2, stage 2 conf vol	324	306		391	365							
vCu, unblocked vol	606	587	223	615	587	265	228			273		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)	6.1	5.5		6.1	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	93	95	96	97	97	96	99			99		
cM capacity (veh/h)	529	530	739	511	527	765	1210			1271		

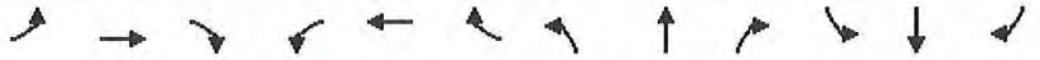
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	91	60	16	271	16	332
Volume Left	37	16	16	0	16	0
Volume Right	27	27	0	15	0	16
cSH	578	608	1210	1700	1271	1700
Volume to Capacity	0.16	0.10	0.01	0.16	0.01	0.20
Queue Length 95th (ft)	14	8	1	0	1	0
Control Delay (s)	12.4	11.6	8.0	0.0	7.9	0.0
Lane LOS	B	B	A		A	
Approach Delay (s)	12.4	11.6	0.5		0.4	
Approach LOS	B	B				

Intersection Summary				
Average Delay	2.6			
Intersection Capacity Utilization	30.2%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	1312	7	13	2039	7	19
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.99	0.63	0.83	0.93	0.50	0.70
Hourly flow rate (vph)	1325	11	16	2192	14	27
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)				663		
pX, platoon unblocked					0.68	
vC, conflicting volume			1336		2458	668
vC1, stage 1 conf vol					1331	
vC2, stage 2 conf vol					1128	
vCu, unblocked vol			1336		2201	668
tC, single (s)			4.2		6.9	7.0
tC, 2 stage (s)					5.9	
tF (s)			2.2		3.5	3.3
p0 queue free %			97		92	93
cM capacity (veh/h)			496		184	394

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	884	453	16	1096	1096	41
Volume Left	0	0	16	0	0	14
Volume Right	0	11	0	0	0	27
cSH	1700	1700	496	1700	1700	284
Volume to Capacity	0.52	0.27	0.03	0.64	0.64	0.14
Queue Length 95th (ft)	0	0	2	0	0	13
Control Delay (s)	0.0	0.0	12.5	0.0	0.0	19.8
Lane LOS			B			C
Approach Delay (s)	0.0		0.1			19.8
Approach LOS						C

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	73.0%	ICU Level of Service	C
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	16	1277	42	40	1765	35	0	0	58	0	0	52
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.38	0.98	0.70	0.58	0.97	0.72	0.25	0.25	0.77	0.25	0.25	0.89
Hourly flow rate (vph)	42	1303	60	69	1820	49	0	0	75	0	0	58
Pedestrians		1			1			2			2	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (ft)		660			648							
pX, platoon unblocked	0.48			0.70			0.63	0.63	0.70	0.63	0.63	0.48
vC, conflicting volume	1870			1365			2526	3427	685	2796	3433	937
vC1, stage 1 conf vol							1419	1419		1984	1984	
vC2, stage 2 conf vol							1107	2008		812	1449	
vCu, unblocked vol	660			678			138	1566	0	565	1575	0
tC, single (s)	4.2			4.2			7.6	6.6	7.0	7.6	6.6	7.0
tC, 2 stage (s)							6.6	5.6		6.6	5.6	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	90			89			100	100	90	100	100	89
cM capacity (veh/h)	436			626			383	96	755	127	123	518

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	42	869	494	69	1213	655	75	58
Volume Left	42	0	0	69	0	0	0	0
Volume Right	0	0	60	0	0	49	75	58
cSH	436	1700	1700	626	1700	1700	755	518
Volume to Capacity	0.10	0.51	0.29	0.11	0.71	0.39	0.10	0.11
Queue Length 95th (ft)	8	0	0	9	0	0	8	9
Control Delay (s)	14.1	0.0	0.0	11.5	0.0	0.0	10.3	12.8
Lane LOS	B			B			B	B
Approach Delay (s)	0.4			0.4			10.3	12.8
Approach LOS							B	B

Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	66.5%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	1	1	1	22	1	48	1	925	38	22	1070	1
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.25	0.25	0.25	0.50	0.25	0.85	0.25	0.86	0.68	0.80	0.93	0.25
Hourly flow rate (vph)	4	4	4	44	4	56	4	1076	56	28	1151	4
Pedestrians		2			1							
Lane Width (ft)		12.0			12.0							
Walking Speed (ft/s)		4.0			4.0							
Percent Blockage		0			0							
Right turn flare (veh)												
Median type								None			TWLTL	
Median storage veh)											2	
Upstream signal (ft)								662				
pX, platoon unblocked	0.83	0.83		0.83	0.83	0.83				0.83		
vC, conflicting volume	1814	2350	579	1749	2324	567	1157			1132		
vC1, stage 1 conf vol	1210	1210		1113	1113							
vC2, stage 2 conf vol	604	1140		636	1212							
vCu, unblocked vol	1571	2217	579	1493	2186	69	1157			750		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	98	98	99	82	98	93	99			96		
cM capacity (veh/h)	176	188	457	249	193	813	599			709		

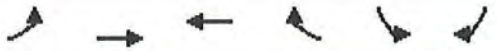
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	12	104	4	717	414	28	767	388
Volume Left	4	44	4	0	0	28	0	0
Volume Right	4	56	0	0	56	0	0	4
cSH	228	392	599	1700	1700	709	1700	1700
Volume to Capacity	0.05	0.27	0.01	0.42	0.24	0.04	0.45	0.23
Queue Length 95th (ft)	4	27	1	0	0	3	0	0
Control Delay (s)	21.7	17.5	11.1	0.0	0.0	10.3	0.0	0.0
Lane LOS	C	C	B			B		
Approach Delay (s)	21.7	17.5	0.0			0.2		
Approach LOS	C	C						

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	45.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	1	1	150	5	1	1	36	256	4	5	315	8
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.25	0.25	0.64	0.50	0.25	0.25	0.42	0.83	0.38	0.33	0.84	0.50
Hourly flow rate (vph)	4	4	234	10	4	4	86	308	11	15	375	16
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								736				
pX, platoon unblocked												
vC, conflicting volume	745	904	196	939	906	159	391			319		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	745	904	196	939	906	159	391			319		
tC, single (s)	7.6	6.6	7.0	7.6	6.6	7.0	4.2			4.2		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	99	98	71	93	98	100	93			99		
cM capacity (veh/h)	273	247	804	140	246	848	1143			1216		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	242	18	240	165	203	204
Volume Left	4	10	86	0	15	0
Volume Right	234	4	0	11	0	16
cSH	752	195	1143	1700	1216	1700
Volume to Capacity	0.32	0.09	0.07	0.10	0.01	0.12
Queue Length 95th (ft)	35	8	6	0	1	0
Control Delay (s)	12.1	25.4	3.4	0.0	0.7	0.0
Lane LOS	B	D	A		A	
Approach Delay (s)	12.1	25.4	2.0		0.4	
Approach LOS	B	D				

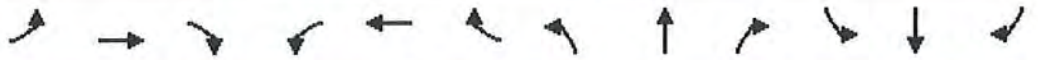
Intersection Summary				
Average Delay	4.1			
Intersection Capacity Utilization	39.9%	ICU Level of Service		A
Analysis Period (min)	15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	100	1378	2149	20	1	38
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.85	0.99	0.93	0.88	0.25	0.75
Hourly flow rate (vph)	118	1392	2311	23	4	51
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		TWLTL	TWLTL			
Median storage veh)		2	2			
Upstream signal (ft)			730			
pX, platoon unblocked	0.64				0.64	0.64
vC, conflicting volume	2333				3253	1167
vC1, stage 1 conf vol					2322	
vC2, stage 2 conf vol					931	
vCu, unblocked vol	1964				3394	151
tC, single (s)	4.2				6.9	7.0
tC, 2 stage (s)					5.9	
tF (s)	2.2				3.5	3.3
p0 queue free %	35				92	91
cM capacity (veh/h)	181				51	553

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	118	696	696	1541	793	55
Volume Left	118	0	0	0	0	4
Volume Right	0	0	0	0	23	51
cSH	181	1700	1700	1700	1700	320
Volume to Capacity	0.65	0.41	0.41	0.91	0.47	0.17
Queue Length 95th (ft)	95	0	0	0	0	15
Control Delay (s)	55.9	0.0	0.0	0.0	0.0	18.6
Lane LOS	F					C
Approach Delay (s)	4.4			0.0		18.6
Approach LOS						C

Intersection Summary			
Average Delay	1.9		
Intersection Capacity Utilization	86.6%	ICU Level of Service	E
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	34	1557	28	59	1915	83	0	0	40	4	1	37
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.75	0.92	0.71	0.81	0.95	0.82	0.25	0.25	0.58	0.38	0.25	0.81
Hourly flow rate (vph)	45	1692	39	73	2016	101	0	0	69	11	4	46
Pedestrians								2				
Lane Width (ft)								12.0				
Walking Speed (ft/s)								4.0				
Percent Blockage								0				
Right turn flare (veh)												
Median type		TWLTL			None							
Median storage veh)		2										
Upstream signal (ft)		661										
pX, platoon unblocked				0.56			0.56	0.56	0.56	0.56	0.56	
vC, conflicting volume	2117			1734			3006	4067	868	3098	3986	1008
vC1, stage 1 conf vol							1805	1805		2161	2161	
vC2, stage 2 conf vol							1201	2263		937	1824	
vCu, unblocked vol	2117			725			3011	4918	0	3177	4771	1008
tC, single (s)	4.2			4.2			7.6	6.6	7.0	7.6	6.6	7.0
tC, 2 stage (s)							6.6	5.6		6.6	5.6	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	81			85			100	100	88	72	92	80
cM capacity (veh/h)	244			474			64	16	597	38	50	233

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	WB 4	NB 1	SB 1
Volume Total	45	1128	604	73	1008	1008	101	69	60
Volume Left	45	0	0	73	0	0	0	0	11
Volume Right	0	0	39	0	0	0	101	69	46
cSH	244	1700	1700	474	1700	1700	1700	597	109
Volume to Capacity	0.19	0.66	0.36	0.15	0.59	0.59	0.06	0.12	0.55
Queue Length 95th (ft)	17	0	0	13	0	0	0	10	65
Control Delay (s)	23.1	0.0	0.0	14.0	0.0	0.0	0.0	11.8	72.7
Lane LOS	C			B				B	F
Approach Delay (s)	0.6			0.5				11.8	72.7
Approach LOS								B	F

Intersection Summary			
Average Delay	1.8		
Intersection Capacity Utilization	72.1%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	5	1	29	4	3	75	16	1219	16	36	1049	22
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.50	0.25	0.75	0.38	0.50	0.78	0.69	0.90	0.69	0.78	0.90	0.80
Hourly flow rate (vph)	10	4	39	11	6	96	23	1354	23	46	1166	28
Pedestrians		2			3						1	
Lane Width (ft)		12.0			12.0						12.0	
Walking Speed (ft/s)		4.0			4.0						4.0	
Percent Blockage		0			0						0	
Right turn flare (veh)												
Median type								TWLTL			None	
Median storage veh)								2				
Upstream signal (ft)											662	
pX, platoon unblocked	0.84	0.84	0.84	0.84	0.84		0.84					
vC, conflicting volume	2097	2701	599	2131	2703	693	1195			1381		
vC1, stage 1 conf vol	1274	1274		1415	1415							
vC2, stage 2 conf vol	824	1427		716	1287							
vCu, unblocked vol	1920	2642	126	1960	2644	693	840			1381		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	93	97	95	92	96	75	96			91		
cM capacity (veh/h)	138	123	752	131	142	385	660			491		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	53	113	23	903	475	46	777	416
Volume Left	10	11	23	0	0	46	0	0
Volume Right	39	96	0	0	23	0	0	28
cSH	336	302	660	1700	1700	491	1700	1700
Volume to Capacity	0.16	0.37	0.04	0.53	0.28	0.09	0.46	0.24
Queue Length 95th (ft)	14	42	3	0	0	8	0	0
Control Delay (s)	17.7	23.8	10.7	0.0	0.0	13.1	0.0	0.0
Lane LOS	C	C	B			B		
Approach Delay (s)	17.7	23.8	0.2			0.5		
Approach LOS	C	C						

Intersection Summary				
Average Delay	1.6			
Intersection Capacity Utilization	51.4%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	22	17	16	12	8	16	12	236	5	9	306	13
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.57	0.60	0.55	0.67	0.50	0.55	0.67	0.88	0.33	0.58	0.92	0.75
Hourly flow rate (vph)	39	28	29	18	16	29	18	268	15	16	333	17
Pedestrians		2			1			2				
Lane Width (ft)		12.0			12.0			12.0				
Walking Speed (ft/s)		4.0			4.0			4.0				
Percent Blockage		0			0			0				
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage veh)								2			2	
Upstream signal (ft)											660	
pX, platoon unblocked	0.91	0.91	0.91	0.91	0.91		0.91					
vC, conflicting volume	715	694	345	721	696	277	352			284		
vC1, stage 1 conf vol	374	374		313	313							
vC2, stage 2 conf vol	341	320		409	383							
vCu, unblocked vol	637	614	230	644	615	277	237			284		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)	6.1	5.5		6.1	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	92	95	96	96	97	96	98			99		
cM capacity (veh/h)	512	518	727	494	515	754	1191			1260		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	96	63	18	283	16	350
Volume Left	39	18	18	0	16	0
Volume Right	29	29	0	15	0	17
cSH	565	595	1191	1700	1260	1700
Volume to Capacity	0.17	0.11	0.02	0.17	0.01	0.21
Queue Length 95th (ft)	15	9	1	0	1	0
Control Delay (s)	12.7	11.8	8.1	0.0	7.9	0.0
Lane LOS	B	B	A		A	
Approach Delay (s)	12.7	11.8	0.5		0.3	
Approach LOS	B	B				

Intersection Summary				
Average Delay	2.7			
Intersection Capacity Utilization	31.0%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	1379	7	14	2143	0	20
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.99	0.63	0.83	0.93	0.50	0.70
Hourly flow rate (vph)	1393	11	17	2304	0	29
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)				627		
pX, platoon unblocked					0.64	
vC, conflicting volume			1404		2584	702
vC1, stage 1 conf vol					1398	
vC2, stage 2 conf vol					1186	
vCu, unblocked vol			1404		2355	702
tC, single (s)			4.2		6.9	7.0
tC, 2 stage (s)					5.9	
tF (s)			2.2		3.5	3.3
p0 queue free %			96		100	92
cM capacity (veh/h)			467		171	374

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	929	475	17	1152	1152	29
Volume Left	0	0	17	0	0	0
Volume Right	0	11	0	0	0	29
cSH	1700	1700	467	1700	1700	374
Volume to Capacity	0.55	0.28	0.04	0.68	0.68	0.08
Queue Length 95th (ft)	0	0	3	0	0	6
Control Delay (s)	0.0	0.0	13.0	0.0	0.0	15.4
Lane LOS			B			C
Approach Delay (s)	0.0		0.1			15.4
Approach LOS						C

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	69.5%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	17	1342	44	42	1855	37	0	0	61	0	0	55
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.38	0.98	0.70	0.58	0.97	0.72	0.25	0.25	0.77	0.25	0.25	0.89
Hourly flow rate (vph)	45	1369	63	72	1912	51	0	0	79	0	0	62
Pedestrians								1			1	
Lane Width (ft)								12.0			12.0	
Walking Speed (ft/s)								4.0			4.0	
Percent Blockage								0			0	
Right turn flare (veh)												
Median type		None			TWLTL							
Median storage veh)					2							
Upstream signal (ft)		660			648							
pX, platoon unblocked	0.46			0.77			0.58	0.58	0.77	0.58	0.58	0.46
vC, conflicting volume	1965			1433			2623	3569	686	2937	3607	983
vC1, stage 1 conf vol							1460	1460		2084	2084	
vC2, stage 2 conf vol							1163	2110		853	1523	
vCu, unblocked vol	759			954			528	2163	0	1071	2227	0
tC, single (s)	4.2			4.2			7.6	6.6	7.0	7.6	6.6	7.0
tC, 2 stage (s)							6.6	5.6		6.6	5.6	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	88			86			100	100	90	100	100	88
cM capacity (veh/h)	383			534			171	66	822	97	86	496

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	45	685	685	63	72	1275	689	79	62
Volume Left	45	0	0	0	72	0	0	0	0
Volume Right	0	0	0	63	0	0	51	79	62
cSH	383	1700	1700	1700	534	1700	1700	822	496
Volume to Capacity	0.12	0.40	0.40	0.04	0.14	0.75	0.41	0.10	0.12
Queue Length 95th (ft)	10	0	0	0	12	0	0	8	11
Control Delay (s)	15.6	0.0	0.0	0.0	12.8	0.0	0.0	9.8	13.3
Lane LOS	C				B			A	B
Approach Delay (s)	0.5				0.5			9.8	13.3
Approach LOS								A	B

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	69.1%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	14	1	21	70	1	51	9	941	39	49	1090	15
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.86	0.85	0.85	0.93	0.85
Hourly flow rate (vph)	16	1	25	82	1	60	11	1094	46	58	1172	18
Pedestrians		2			1							
Lane Width (ft)		12.0			12.0							
Walking Speed (ft/s)		4.0			4.0							
Percent Blockage		0			0							
Right turn flare (veh)												
Median type								None			TWLTL	
Median storage veh)											2	
Upstream signal (ft)								662				
pX, platoon unblocked	0.83	0.83		0.83	0.83	0.83				0.83		
vC, conflicting volume	1927	2460	597	1866	2446	571	1192			1141		
vC1, stage 1 conf vol	1298	1298		1139	1139							
vC2, stage 2 conf vol	629	1162		727	1307							
vCu, unblocked vol	1702	2347	597	1628	2330	62	1192			752		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	89	99	94	62	99	93	98			92		
cM capacity (veh/h)	149	162	445	217	166	817	581			705		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	42	144	11	729	411	58	781	408
Volume Left	16	82	11	0	0	58	0	0
Volume Right	25	60	0	0	46	0	0	18
cSH	244	312	581	1700	1700	705	1700	1700
Volume to Capacity	0.17	0.46	0.02	0.43	0.24	0.08	0.46	0.24
Queue Length 95th (ft)	15	58	1	0	0	7	0	0
Control Delay (s)	22.8	26.0	11.3	0.0	0.0	10.6	0.0	0.0
Lane LOS	C	D	B			B		
Approach Delay (s)	22.8	26.0	0.1			0.5		
Approach LOS	C	D						

Intersection Summary				
Average Delay	2.1			
Intersection Capacity Utilization	59.7%	ICU Level of Service		B
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	1	1	150	5	1	1	36	256	4	5	315	8
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.25	0.25	0.64	0.50	0.25	0.25	0.42	0.83	0.38	0.33	0.84	0.50
Hourly flow rate (vph)	4	4	234	10	4	4	86	308	11	15	375	16
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								736				
pX, platoon unblocked												
vC, conflicting volume	745	904	196	939	906	159	391			319		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	745	904	196	939	906	159	391			319		
tC, single (s)	7.6	6.6	7.0	7.6	6.6	7.0	4.2			4.2		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	99	98	71	93	98	100	93			99		
cM capacity (veh/h)	273	247	804	140	246	848	1143			1216		

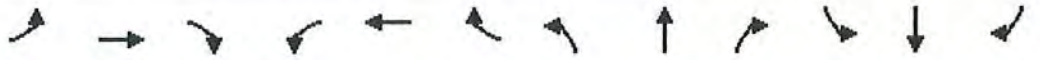
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	242	18	240	165	203	204
Volume Left	4	10	86	0	15	0
Volume Right	234	4	0	11	0	16
cSH	752	195	1143	1700	1216	1700
Volume to Capacity	0.32	0.09	0.07	0.10	0.01	0.12
Queue Length 95th (ft)	35	8	6	0	1	0
Control Delay (s)	12.1	25.4	3.4	0.0	0.7	0.0
Lane LOS	B	D	A		A	
Approach Delay (s)	12.1	25.4	2.0		0.4	
Approach LOS	B	D				

Intersection Summary				
Average Delay	4.1			
Intersection Capacity Utilization	39.9%	ICU Level of Service		A
Analysis Period (min)	15			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	121	1421	2195	20	4	38
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.85	0.99	0.93	0.88	0.85	0.85
Hourly flow rate (vph)	142	1435	2360	23	5	45
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		TWLTL	TWLTL			
Median storage veh)		2	2			
Upstream signal (ft)			729			
pX, platoon unblocked	0.64				0.64	0.64
vC, conflicting volume	2383				3374	1191
vC1, stage 1 conf vol					2372	
vC2, stage 2 conf vol					1002	
vCu, unblocked vol	2038				3583	180
tC, single (s)	4.2				6.9	7.0
tC, 2 stage (s)					5.9	
tF (s)	2.2				3.5	3.3
p0 queue free %	15				86	92
cM capacity (veh/h)	168				33	527

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	142	718	718	1573	809	49
Volume Left	142	0	0	0	0	5
Volume Right	0	0	0	0	23	45
cSH	168	1700	1700	1700	1700	218
Volume to Capacity	0.85	0.42	0.42	0.93	0.48	0.23
Queue Length 95th (ft)	146	0	0	0	0	21
Control Delay (s)	88.3	0.0	0.0	0.0	0.0	26.2
Lane LOS	F					D
Approach Delay (s)	8.0			0.0		26.2
Approach LOS						D

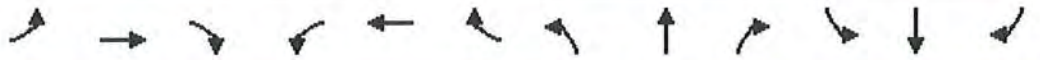
Intersection Summary			
Average Delay	3.5		
Intersection Capacity Utilization	90.3%	ICU Level of Service	E
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	34	1557	28	59	1915	83	0	0	40	4	1	37
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.75	0.92	0.71	0.81	0.95	0.82	0.25	0.25	0.58	0.38	0.25	0.81
Hourly flow rate (vph)	45	1692	39	73	2016	101	0	0	69	11	4	46
Pedestrians								2				
Lane Width (ft)								12.0				
Walking Speed (ft/s)								4.0				
Percent Blockage								0				
Right turn flare (veh)												
Median type		TWLTL			None							
Median storage veh)		2										
Upstream signal (ft)		661										
pX, platoon unblocked				0.56			0.56	0.56	0.56	0.56	0.56	
vC, conflicting volume	2117			1734			3006	4067	868	3098	3986	1008
vC1, stage 1 conf vol							1805	1805		2161	2161	
vC2, stage 2 conf vol							1201	2263		937	1824	
vCu, unblocked vol	2117			725			3011	4918	0	3177	4771	1008
tC, single (s)	4.2			4.2			7.6	6.6	7.0	7.6	6.6	7.0
tC, 2 stage (s)							6.6	5.6		6.6	5.6	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	81			85			100	100	88	72	92	80
cM capacity (veh/h)	244			474			64	16	597	38	50	233

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	WB 4	NB 1	SB 1
Volume Total	45	1128	604	73	1008	1008	101	69	60
Volume Left	45	0	0	73	0	0	0	0	11
Volume Right	0	0	39	0	0	0	101	69	46
cSH	244	1700	1700	474	1700	1700	1700	597	109
Volume to Capacity	0.19	0.66	0.36	0.15	0.59	0.59	0.06	0.12	0.55
Queue Length 95th (ft)	17	0	0	13	0	0	0	10	65
Control Delay (s)	23.1	0.0	0.0	14.0	0.0	0.0	0.0	11.8	72.7
Lane LOS	C			B				B	F
Approach Delay (s)	0.6			0.5				11.8	72.7
Approach LOS								B	F

Intersection Summary			
Average Delay	1.8		
Intersection Capacity Utilization	72.1%	ICU Level of Service	C
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	30	1	32	31	3	76	43	1252	16	67	1081	22
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.90	0.85	0.85	0.90	0.85
Hourly flow rate (vph)	35	1	38	36	4	89	51	1391	19	79	1201	26
Pedestrians		2			3						1	
Lane Width (ft)		12.0			12.0						12.0	
Walking Speed (ft/s)		4.0			4.0						4.0	
Percent Blockage		0			0						0	
Right turn flare (veh)												
Median type								TWLTL			None	
Median storage veh)								2				
Upstream signal (ft)											662	
pX, platoon unblocked	0.83	0.83	0.83	0.83	0.83		0.83					
vC, conflicting volume	2263	2888	615	2301	2891	709	1229			1413		
vC1, stage 1 conf vol	1374	1374		1505	1505							
vC2, stage 2 conf vol	889	1514		796	1387							
vCu, unblocked vol	2108	2864	117	2155	2869	709	859			1413		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	65	98	95	66	97	76	92			83		
cM capacity (veh/h)	100	78	754	108	109	375	642			477		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	74	129	51	927	483	79	801	426
Volume Left	35	36	51	0	0	79	0	0
Volume Right	38	89	0	0	19	0	0	26
cSH	178	213	642	1700	1700	477	1700	1700
Volume to Capacity	0.42	0.61	0.08	0.55	0.28	0.17	0.47	0.25
Queue Length 95th (ft)	47	87	6	0	0	15	0	0
Control Delay (s)	39.0	45.0	11.1	0.0	0.0	14.0	0.0	0.0
Lane LOS	E	E	B			B		
Approach Delay (s)	39.0	45.0	0.4			0.8		
Approach LOS	E	E						

Intersection Summary				
Average Delay	3.5			
Intersection Capacity Utilization	62.3%	ICU Level of Service		B
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	22	17	16	12	8	16	12	236	5	9	306	13
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.57	0.60	0.55	0.67	0.50	0.55	0.67	0.88	0.33	0.58	0.92	0.75
Hourly flow rate (vph)	39	28	29	18	16	29	18	268	15	16	333	17
Pedestrians		2			1			2				
Lane Width (ft)		12.0			12.0			12.0				
Walking Speed (ft/s)		4.0			4.0			4.0				
Percent Blockage		0			0			0				
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage veh)								2			2	
Upstream signal (ft)											660	
pX, platoon unblocked	0.91	0.91	0.91	0.91	0.91		0.91					
vC, conflicting volume	715	694	345	721	696	277	352			284		
vC1, stage 1 conf vol	374	374		313	313							
vC2, stage 2 conf vol	341	320		409	383							
vCu, unblocked vol	637	614	230	644	615	277	237			284		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)	6.1	5.5		6.1	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	92	95	96	96	97	96	98			99		
cM capacity (veh/h)	512	518	727	494	515	754	1191			1260		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	96	63	18	283	16	350
Volume Left	39	18	18	0	16	0
Volume Right	29	29	0	15	0	17
cSH	565	595	1191	1700	1260	1700
Volume to Capacity	0.17	0.11	0.02	0.17	0.01	0.21
Queue Length 95th (ft)	15	9	1	0	1	0
Control Delay (s)	12.7	11.8	8.1	0.0	7.9	0.0
Lane LOS	B	B	A		A	
Approach Delay (s)	12.7	11.8	0.5		0.3	
Approach LOS	B	B				

Intersection Summary			
Average Delay	2.7		
Intersection Capacity Utilization	31.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	1380	52	65	2189	0	72
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.99	0.85	0.85	0.93	0.85	0.85
Hourly flow rate (vph)	1394	61	76	2354	0	85
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)				627		
pX, platoon unblocked					0.64	
vC, conflicting volume			1455		2754	728
vC1, stage 1 conf vol					1425	
vC2, stage 2 conf vol					1330	
vCu, unblocked vol			1455		2618	728
tC, single (s)			4.2		6.9	7.0
tC, 2 stage (s)					5.9	
tF (s)			2.2		3.5	3.3
p0 queue free %			83		100	76
cM capacity (veh/h)			446		153	359

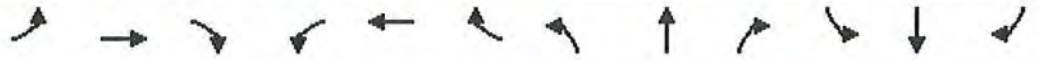
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	929	526	76	1177	1177	85
Volume Left	0	0	76	0	0	0
Volume Right	0	61	0	0	0	85
cSH	1700	1700	446	1700	1700	359
Volume to Capacity	0.55	0.31	0.17	0.69	0.69	0.24
Queue Length 95th (ft)	0	0	15	0	0	23
Control Delay (s)	0.0	0.0	14.7	0.0	0.0	18.1
Lane LOS			B			C
Approach Delay (s)	0.0		0.5			18.1
Approach LOS						C

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	71.0%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	29	1412	45	62	1934	40	0	0	64	0	0	57
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.85	0.98	0.85	0.85	0.97	0.85	0.85	0.85	0.85	0.85	0.85	0.89
Hourly flow rate (vph)	34	1441	53	73	1994	47	0	0	75	0	0	64
Pedestrians								1			1	
Lane Width (ft)								12.0			12.0	
Walking Speed (ft/s)								4.0			4.0	
Percent Blockage								0			0	
Right turn flare (veh)												
Median type		None			TWLTL							
Median storage veh)					2							
Upstream signal (ft)		660			648							
pX, platoon unblocked	0.46			0.75			0.58	0.58	0.75	0.58	0.58	0.46
vC, conflicting volume	2042			1495			2717	3698	721	3028	3727	1021
vC1, stage 1 conf vol							1510	1510		2164	2164	
vC2, stage 2 conf vol							1207	2188		864	1563	
vCu, unblocked vol	903			1001			597	2286	0	1133	2337	0
tC, single (s)	4.2			4.2			7.6	6.6	7.0	7.6	6.6	7.0
tC, 2 stage (s)							6.6	5.6		6.6	5.6	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	90			86			100	100	91	100	100	87
cM capacity (veh/h)	333			504			163	58	808	76	76	491

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	34	720	720	53	73	1329	712	75	64
Volume Left	34	0	0	0	73	0	0	0	0
Volume Right	0	0	0	53	0	0	47	75	64
cSH	333	1700	1700	1700	504	1700	1700	808	491
Volume to Capacity	0.10	0.42	0.42	0.03	0.14	0.78	0.42	0.09	0.13
Queue Length 95th (ft)	8	0	0	0	13	0	0	8	11
Control Delay (s)	17.0	0.0	0.0	0.0	13.4	0.0	0.0	9.9	13.4
Lane LOS	C				B			A	B
Approach Delay (s)	0.4				0.5			9.9	13.4
Approach LOS								A	B

Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	71.8%	ICU Level of Service	C
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	1	1	1	26	1	56	1	1074	44	26	1242	1
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.86	0.85	0.85	0.93	0.85
Hourly flow rate (vph)	1	1	1	31	1	66	1	1249	52	31	1335	1
Pedestrians		2			1							
Lane Width (ft)		12.0			12.0							
Walking Speed (ft/s)		4.0			4.0							
Percent Blockage		0			0							
Right turn flare (veh)												
Median type								None			TWLTL	
Median storage veh)											2	
Upstream signal (ft)								662				
pX, platoon unblocked	0.82	0.82		0.82	0.82	0.82				0.82		
vC, conflicting volume	2092	2703	670	2009	2678	651	1339			1302		
vC1, stage 1 conf vol	1399	1399		1278	1278							
vC2, stage 2 conf vol	693	1304		731	1400							
vCu, unblocked vol	1887	2636	670	1784	2605	118	1339			916		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	99	99	100	85	99	91	100			95		
cM capacity (veh/h)	133	148	399	200	155	742	510			603		

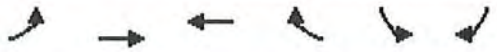
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	4	98	1	833	468	31	890	446
Volume Left	1	31	1	0	0	31	0	0
Volume Right	1	66	0	0	52	0	0	1
cSH	179	392	510	1700	1700	603	1700	1700
Volume to Capacity	0.02	0.25	0.00	0.49	0.28	0.05	0.52	0.26
Queue Length 95th (ft)	2	24	0	0	0	4	0	0
Control Delay (s)	25.5	17.2	12.1	0.0	0.0	11.3	0.0	0.0
Lane LOS	D	C	B			B		
Approach Delay (s)	25.5	17.2	0.0			0.3		
Approach LOS	D	C						

Intersection Summary				
Average Delay	0.8			
Intersection Capacity Utilization	52.2%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	1	1	174	6	1	1	41	298	5	6	366	10
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	1	1	205	7	1	1	48	351	6	7	431	12
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								736				
pX, platoon unblocked												
vC, conflicting volume	724	904	221	885	906	178	442			356		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	724	904	221	885	906	178	442			356		
tC, single (s)	7.6	6.6	7.0	7.6	6.6	7.0	4.2			4.2		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	74	96	100	100	96			99		
cM capacity (veh/h)	294	257	773	165	256	825	1093			1178		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	207	9	224	181	222	227
Volume Left	1	7	48	0	7	0
Volume Right	205	1	0	6	0	12
cSH	758	193	1093	1700	1178	1700
Volume to Capacity	0.27	0.05	0.04	0.11	0.01	0.13
Queue Length 95th (ft)	28	4	3	0	0	0
Control Delay (s)	11.5	24.6	2.1	0.0	0.3	0.0
Lane LOS	B	C	A		A	
Approach Delay (s)	11.5	24.6	1.2		0.2	
Approach LOS	B	C				

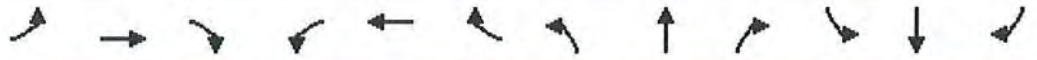
Intersection Summary				
Average Delay	3.0			
Intersection Capacity Utilization	44.7%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	105	1600	2495	23	1	44
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.85	0.99	0.93	0.88	0.85	0.85
Hourly flow rate (vph)	124	1616	2683	26	1	52
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		TWLTL	TWLTL			
Median storage veh)		2	2			
Upstream signal (ft)			729			
pX, platoon unblocked	0.61				0.61	0.61
vC, conflicting volume	2709				3751	1354
vC1, stage 1 conf vol					2696	
vC2, stage 2 conf vol					1055	
vCu, unblocked vol	2521				4237	290
tC, single (s)	4.2				6.9	7.0
tC, 2 stage (s)					5.9	
tF (s)	2.2				3.5	3.3
p0 queue free %	0				0	88
cM capacity (veh/h)	102				0	423

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	124	808	808	1789	920	53
Volume Left	124	0	0	0	0	1
Volume Right	0	0	0	0	26	52
cSH	102	1700	1700	1700	1700	0
Volume to Capacity	1.21	0.48	0.48	1.05	0.54	Err
Queue Length 95th (ft)	207	0	0	0	0	Err
Control Delay (s)	234.6	0.0	0.0	0.0	0.0	Err
Lane LOS	F					F
Approach Delay (s)	16.7			0.0		Err
Approach LOS						F

Intersection Summary			
Average Delay	Err		
Intersection Capacity Utilization	98.8%	ICU Level of Service	F
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	39	1807	33	68	2223	96	0	0	46	5	1	43
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.85	0.92	0.85	0.85	0.95	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	46	1964	39	80	2340	113	0	0	54	6	1	51
Pedestrians								2				
Lane Width (ft)								12.0				
Walking Speed (ft/s)								4.0				
Percent Blockage								0				
Right turn flare (veh)												
Median type		TWLTL			None							
Median storage veh)		2										
Upstream signal (ft)		661										
pX, platoon unblocked				0.47			0.47	0.47	0.47	0.47	0.47	
vC, conflicting volume	2453			2005			3458	4690	1003	3574	4597	1170
vC1, stage 1 conf vol							2077	2077		2500	2500	
vC2, stage 2 conf vol							1381	2613		1074	2097	
vCu, unblocked vol	2453			885			3975	6593	0	4220	6394	1170
tC, single (s)	4.2			4.2			7.6	6.6	7.0	7.6	6.6	7.0
tC, 2 stage (s)							6.6	5.6		6.6	5.6	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	74			77			100	100	89	72	93	72
cM capacity (veh/h)	179			348			30	0	505	21	17	181

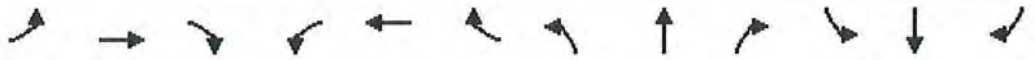
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	WB 4	NB 1	SB 1
Volume Total	46	1309	694	80	1170	1170	113	54	58
Volume Left	46	0	0	80	0	0	0	0	6
Volume Right	0	0	39	0	0	0	113	54	51
cSH	179	1700	1700	348	1700	1700	1700	505	91
Volume to Capacity	0.26	0.77	0.41	0.23	0.69	0.69	0.07	0.11	0.63
Queue Length 95th (ft)	24	0	0	22	0	0	0	9	75
Control Delay (s)	31.9	0.0	0.0	18.4	0.0	0.0	0.0	13.0	95.8
Lane LOS	D			C				B	F
Approach Delay (s)	0.7			0.6				13.0	95.8
Approach LOS								B	F

Intersection Summary			
Average Delay	2.0		
Intersection Capacity Utilization	81.6%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	6	1	34	5	4	87	18	1415	18	41	1218	26
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.90	0.85	0.85	0.90	0.85
Hourly flow rate (vph)	7	1	40	6	5	102	21	1572	21	48	1353	31
Pedestrians		2			3						1	
Lane Width (ft)		12.0			12.0						12.0	
Walking Speed (ft/s)		4.0			4.0						4.0	
Percent Blockage		0			0						0	
Right turn flare (veh)												
Median type								TWLTL			None	
Median storage veh)								2				
Upstream signal (ft)											662	
pX, platoon unblocked	0.80	0.80	0.80	0.80	0.80		0.80					
vC, conflicting volume	2401	3106	694	2442	3111	801	1386			1596		
vC1, stage 1 conf vol	1467	1467		1628	1628							
vC2, stage 2 conf vol	934	1639		814	1482							
vCu, unblocked vol	2255	3132	129	2305	3138	801	990			1596		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	93	99	94	94	96	69	96			88		
cM capacity (veh/h)	99	87	719	97	109	326	556			405		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	48	113	21	1048	545	48	902	482
Volume Left	7	6	21	0	0	48	0	0
Volume Right	40	102	0	0	21	0	0	31
cSH	343	271	556	1700	1700	405	1700	1700
Volume to Capacity	0.14	0.42	0.04	0.62	0.32	0.12	0.53	0.28
Queue Length 95th (ft)	12	49	3	0	0	10	0	0
Control Delay (s)	17.2	27.5	11.7	0.0	0.0	15.1	0.0	0.0
Lane LOS	C	D	B			C		
Approach Delay (s)	17.2	27.5	0.2			0.5		
Approach LOS	C	D						

Intersection Summary				
Average Delay	1.5			
Intersection Capacity Utilization	58.6%	ICU Level of Service	B	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	26	20	18	13	10	18	13	275	6	11	355	15
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.88	0.85	0.85	0.92	0.85
Hourly flow rate (vph)	31	24	21	15	12	21	15	312	7	13	386	18
Pedestrians		2			1			2				
Lane Width (ft)		12.0			12.0			12.0				
Walking Speed (ft/s)		4.0			4.0			4.0				
Percent Blockage		0			0			0				
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage veh)								2			2	
Upstream signal (ft)											660	
pX, platoon unblocked	0.89	0.89	0.89	0.89	0.89		0.89					
vC, conflicting volume	793	774	399	794	779	317	406			321		
vC1, stage 1 conf vol	423	423		348	348							
vC2, stage 2 conf vol	370	351		447	431							
vCu, unblocked vol	707	686	265	709	692	317	273			321		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)	6.1	5.5		6.1	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	94	95	97	97	98	97	99			99		
cM capacity (veh/h)	489	491	681	474	486	716	1134			1222		

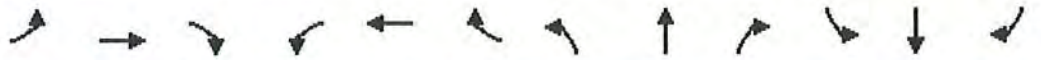
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	75	48	15	320	13	404
Volume Left	31	15	15	0	13	0
Volume Right	21	21	0	7	0	18
cSH	532	561	1134	1700	1222	1700
Volume to Capacity	0.14	0.09	0.01	0.19	0.01	0.24
Queue Length 95th (ft)	12	7	1	0	1	0
Control Delay (s)	12.9	12.0	8.2	0.0	8.0	0.0
Lane LOS	B	B	A		A	
Approach Delay (s)	12.9	12.0	0.4		0.2	
Approach LOS	B	B				

Intersection Summary				
Average Delay	2.0			
Intersection Capacity Utilization	35.0%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	1601	9	16	2488	0	23
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.99	0.85	0.85	0.93	0.85	0.85
Hourly flow rate (vph)	1617	11	19	2675	0	27
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)				627		
pX, platoon unblocked					0.61	
vC, conflicting volume			1628		2998	814
vC1, stage 1 conf vol					1622	
vC2, stage 2 conf vol					1375	
vCu, unblocked vol			1628		2996	814
tC, single (s)			4.2		6.9	7.0
tC, 2 stage (s)					5.9	
tF (s)			2.2		3.5	3.3
p0 queue free %			95		100	91
cM capacity (veh/h)			382		128	315

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	1078	550	19	1338	1338	27
Volume Left	0	0	19	0	0	0
Volume Right	0	11	0	0	0	27
cSH	1700	1700	382	1700	1700	315
Volume to Capacity	0.63	0.32	0.05	0.79	0.79	0.09
Queue Length 95th (ft)	0	0	4	0	0	7
Control Delay (s)	0.0	0.0	14.9	0.0	0.0	17.5
Lane LOS			B			C
Approach Delay (s)	0.0		0.1			17.5
Approach LOS						C

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	80.2%	ICU Level of Service	D
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	20	1558	51	49	2154	43	0	0	71	0	0	63
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.85	0.98	0.85	0.85	0.97	0.85	0.85	0.85	0.85	0.85	0.85	0.89
Hourly flow rate (vph)	24	1590	60	58	2221	51	0	0	84	0	0	71
Pedestrians								1			1	
Lane Width (ft)								12.0			12.0	
Walking Speed (ft/s)								4.0			4.0	
Percent Blockage								0			0	
Right turn flare (veh)												
Median type		None			TWLTL							
Median storage veh)					2							
Upstream signal (ft)		660			648							
pX, platoon unblocked	0.41			0.71			0.56	0.56	0.71	0.56	0.56	0.41
vC, conflicting volume	2272			1651			2934	4025	796	3288	4060	1137
vC1, stage 1 conf vol							1638	1638		2362	2362	
vC2, stage 2 conf vol							1296	2388		925	1698	
vCu, unblocked vol	1241			1107			564	2522	0	1198	2584	0
tC, single (s)	4.2			4.2			7.6	6.6	7.0	7.6	6.6	7.0
tC, 2 stage (s)							6.6	5.6		6.6	5.6	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	89			87			100	100	89	100	100	84
cM capacity (veh/h)	224			434			140	37	765	46	56	444

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	24	795	795	60	58	1480	791	84	71
Volume Left	24	0	0	0	58	0	0	0	0
Volume Right	0	0	0	60	0	0	51	84	71
cSH	224	1700	1700	1700	434	1700	1700	765	444
Volume to Capacity	0.11	0.47	0.47	0.04	0.13	0.87	0.47	0.11	0.16
Queue Length 95th (ft)	9	0	0	0	11	0	0	9	14
Control Delay (s)	23.0	0.0	0.0	0.0	14.6	0.0	0.0	10.3	14.6
Lane LOS	C				B			B	B
Approach Delay (s)	0.3				0.4			10.3	14.6
Approach LOS								B	B

Intersection Summary				
Average Delay	0.8			
Intersection Capacity Utilization	79.1%	ICU Level of Service		D
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	14	1	21	74	1	59	9	1090	45	53	1262	15
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.86	0.85	0.85	0.93	0.85
Hourly flow rate (vph)	16	1	25	87	1	69	11	1267	53	62	1357	18
Pedestrians		2			1							
Lane Width (ft)		12.0			12.0							
Walking Speed (ft/s)		4.0			4.0							
Percent Blockage		0			0							
Right turn flare (veh)												
Median type								None			TWLTL	
Median storage veh)											2	
Upstream signal (ft)								662				
pX, platoon unblocked	0.81	0.81		0.81	0.81	0.81				0.81		
vC, conflicting volume	2217	2835	689	2145	2817	661	1377			1321		
vC1, stage 1 conf vol	1493	1493		1316	1316							
vC2, stage 2 conf vol	725	1343		828	1501							
vCu, unblocked vol	2032	2796	689	1941	2774	106	1377			923		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	85	99	94	49	99	91	98			90		
cM capacity (veh/h)	110	123	387	169	128	749	493			594		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	42	158	11	845	475	62	905	470
Volume Left	16	87	11	0	0	62	0	0
Volume Right	25	69	0	0	53	0	0	18
cSH	190	256	493	1700	1700	594	1700	1700
Volume to Capacity	0.22	0.62	0.02	0.50	0.28	0.10	0.53	0.28
Queue Length 95th (ft)	21	93	2	0	0	9	0	0
Control Delay (s)	29.3	39.3	12.5	0.0	0.0	11.8	0.0	0.0
Lane LOS	D	E	B			B		
Approach Delay (s)	29.3	39.3	0.1			0.5		
Approach LOS	D	E						

Intersection Summary				
Average Delay	2.8			
Intersection Capacity Utilization	66.0%	ICU Level of Service	C	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	1	1	174	6	1	1	41	298	5	6	366	10
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	1	1	205	7	1	1	48	351	6	7	431	12
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								736				
pX, platoon unblocked												
vC, conflicting volume	724	904	221	885	906	178	442			356		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	724	904	221	885	906	178	442			356		
tC, single (s)	7.6	6.6	7.0	7.6	6.6	7.0	4.2			4.2		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	74	96	100	100	96			99		
cM capacity (veh/h)	294	257	773	165	256	825	1093			1178		

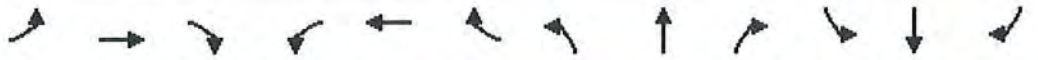
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	207	9	224	181	222	227
Volume Left	1	7	48	0	7	0
Volume Right	205	1	0	6	0	12
cSH	758	193	1093	1700	1178	1700
Volume to Capacity	0.27	0.05	0.04	0.11	0.01	0.13
Queue Length 95th (ft)	28	4	3	0	0	0
Control Delay (s)	11.5	24.6	2.1	0.0	0.3	0.0
Lane LOS	B	C	A		A	
Approach Delay (s)	11.5	24.6	1.2		0.2	
Approach LOS	B	C				

Intersection Summary				
Average Delay	3.0			
Intersection Capacity Utilization	44.7%	ICU Level of Service		A
Analysis Period (min)	15			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	126	1643	2541	23	4	44
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.85	0.99	0.93	0.88	0.85	0.85
Hourly flow rate (vph)	148	1660	2732	26	5	52
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		TWLTL	TWLTL			
Median storage veh)		2	2			
Upstream signal (ft)			735			
pX, platoon unblocked	0.60				0.60	0.60
vC, conflicting volume	2758				3872	1379
vC1, stage 1 conf vol					2745	
vC2, stage 2 conf vol					1126	
vCu, unblocked vol	2599				4448	308
tC, single (s)	4.2				6.9	7.0
tC, 2 stage (s)					5.9	
tF (s)	2.2				3.5	3.3
p0 queue free %	0				0	87
cM capacity (veh/h)	94				0	409

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	148	830	830	1822	937	56
Volume Left	148	0	0	0	0	5
Volume Right	0	0	0	0	26	52
cSH	94	1700	1700	1700	1700	0
Volume to Capacity	1.58	0.49	0.49	1.07	0.55	Err
Queue Length 95th (ft)	290	0	0	0	0	Err
Control Delay (s)	383.1	0.0	0.0	0.0	0.0	Err
Lane LOS	F					F
Approach Delay (s)	31.4			0.0		Err
Approach LOS						F

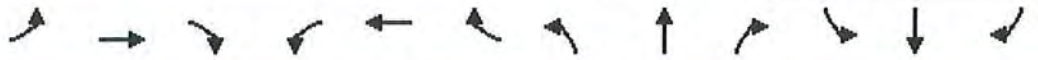
Intersection Summary			
Average Delay	Err		
Intersection Capacity Utilization	101.9%	ICU Level of Service	G
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	39	1807	33	68	2223	96	0	0	46	5	1	43
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.85	0.92	0.85	0.85	0.95	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	46	1964	39	80	2340	113	0	0	54	6	1	51
Pedestrians								2				
Lane Width (ft)								12.0				
Walking Speed (ft/s)								4.0				
Percent Blockage								0				
Right turn flare (veh)												
Median type		TWLTL			None							
Median storage veh)		2										
Upstream signal (ft)		661										
pX, platoon unblocked				0.47			0.47	0.47	0.47	0.47	0.47	
vC, conflicting volume	2453			2005			3458	4690	1003	3574	4597	1170
vC1, stage 1 conf vol							2077	2077		2500	2500	
vC2, stage 2 conf vol							1381	2613		1074	2097	
vCu, unblocked vol	2453			885			3975	6593	0	4220	6394	1170
tC, single (s)	4.2			4.2			7.6	6.6	7.0	7.6	6.6	7.0
tC, 2 stage (s)							6.6	5.6		6.6	5.6	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	74			77			100	100	89	72	93	72
cM capacity (veh/h)	179			348			30	0	505	21	17	181

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	WB 4	NB 1	SB 1
Volume Total	46	1309	694	80	1170	1170	113	54	58
Volume Left	46	0	0	80	0	0	0	0	6
Volume Right	0	0	39	0	0	0	113	54	51
cSH	179	1700	1700	348	1700	1700	1700	505	91
Volume to Capacity	0.26	0.77	0.41	0.23	0.69	0.69	0.07	0.11	0.63
Queue Length 95th (ft)	24	0	0	22	0	0	0	9	75
Control Delay (s)	31.9	0.0	0.0	18.4	0.0	0.0	0.0	13.0	95.8
Lane LOS	D			C				B	F
Approach Delay (s)	0.7			0.6				13.0	95.8
Approach LOS								B	F

Intersection Summary			
Average Delay	2.0		
Intersection Capacity Utilization	81.6%	ICU Level of Service	D
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	31	1	37	32	4	88	45	1448	18	72	1250	26
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.90	0.85	0.85	0.90	0.85
Hourly flow rate (vph)	36	1	44	38	5	104	53	1609	21	85	1389	31
Pedestrians		2			3						1	
Lane Width (ft)		12.0			12.0						12.0	
Walking Speed (ft/s)		4.0			4.0						4.0	
Percent Blockage		0			0						0	
Right turn flare (veh)												
Median type								TWLTL			None	
Median storage veh)								2				
Upstream signal (ft)											662	
pX, platoon unblocked	0.80	0.80	0.80	0.80	0.80		0.80					
vC, conflicting volume	2593	3315	712	2636	3319	819	1421			1633		
vC1, stage 1 conf vol	1576	1576		1728	1728							
vC2, stage 2 conf vol	1017	1739		908	1591							
vCu, unblocked vol	2491	3393	139	2545	3399	819	1026			1633		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	33	97	94	51	94	67	90			78		
cM capacity (veh/h)	54	38	706	77	74	318	537			392		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	81	146	53	1073	557	85	926	494
Volume Left	36	38	53	0	0	85	0	0
Volume Right	44	104	0	0	21	0	0	31
cSH	106	166	537	1700	1700	392	1700	1700
Volume to Capacity	0.77	0.88	0.10	0.63	0.33	0.22	0.54	0.29
Queue Length 95th (ft)	105	156	8	0	0	20	0	0
Control Delay (s)	106.8	95.9	12.4	0.0	0.0	16.7	0.0	0.0
Lane LOS	F	F	B			C		
Approach Delay (s)	106.8	95.9	0.4			0.9		
Approach LOS	F	F						

Intersection Summary				
Average Delay	7.2			
Intersection Capacity Utilization	69.8%	ICU Level of Service	C	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	26	20	18	13	10	18	13	275	6	11	355	15
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.88	0.85	0.85	0.92	0.85
Hourly flow rate (vph)	31	24	21	15	12	21	15	312	7	13	386	18
Pedestrians		2			1			2				
Lane Width (ft)		12.0			12.0			12.0				
Walking Speed (ft/s)		4.0			4.0			4.0				
Percent Blockage		0			0			0				
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage veh)								2			2	
Upstream signal (ft)											660	
pX, platoon unblocked	0.89	0.89	0.89	0.89	0.89		0.89					
vC, conflicting volume	793	774	399	794	779	317	406			321		
vC1, stage 1 conf vol	423	423		348	348							
vC2, stage 2 conf vol	370	351		447	431							
vCu, unblocked vol	707	686	265	709	692	317	273			321		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)	6.1	5.5		6.1	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	94	95	97	97	98	97	99			99		
cM capacity (veh/h)	489	491	681	474	486	716	1134			1222		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	75	48	15	320	13	404
Volume Left	31	15	15	0	13	0
Volume Right	21	21	0	7	0	18
cSH	532	561	1134	1700	1222	1700
Volume to Capacity	0.14	0.09	0.01	0.19	0.01	0.24
Queue Length 95th (ft)	12	7	1	0	1	0
Control Delay (s)	12.9	12.0	8.2	0.0	8.0	0.0
Lane LOS	B	B	A		A	
Approach Delay (s)	12.9	12.0	0.4		0.2	
Approach LOS	B	B				

Intersection Summary				
Average Delay	2.0			
Intersection Capacity Utilization	35.0%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	1602	54	67	2534	0	75
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.99	0.85	0.85	0.93	0.85	0.85
Hourly flow rate (vph)	1618	64	79	2725	0	88
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)				627		
pX, platoon unblocked					0.60	
vC, conflicting volume			1682		3170	841
vC1, stage 1 conf vol					1650	
vC2, stage 2 conf vol					1520	
vCu, unblocked vol			1682		3282	841
tC, single (s)			4.2		6.9	7.0
tC, 2 stage (s)					5.9	
tF (s)			2.2		3.5	3.3
p0 queue free %			78		100	71
cM capacity (veh/h)			363		113	302

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	1079	603	79	1362	1362	88
Volume Left	0	0	79	0	0	0
Volume Right	0	64	0	0	0	88
cSH	1700	1700	363	1700	1700	302
Volume to Capacity	0.63	0.35	0.22	0.80	0.80	0.29
Queue Length 95th (ft)	0	0	20	0	0	30
Control Delay (s)	0.0	0.0	17.6	0.0	0.0	21.8
Lane LOS			C			C
Approach Delay (s)	0.0		0.5			21.8
Approach LOS						C

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	81.6%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	32	1628	52	69	2233	46	0	0	74	0	0	65
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.85	0.98	0.85	0.85	0.97	0.85	0.85	0.85	0.85	0.85	0.85	0.89
Hourly flow rate (vph)	38	1661	61	81	2302	54	0	0	87	0	0	73
Pedestrians								1			1	
Lane Width (ft)								12.0			12.0	
Walking Speed (ft/s)								4.0			4.0	
Percent Blockage								0			0	
Right turn flare (veh)												
Median type		None			TWLTL							
Median storage veh)					2							
Upstream signal (ft)		660			648							
pX, platoon unblocked	0.41			0.71			0.56	0.56	0.71	0.56	0.56	0.41
vC, conflicting volume	2357			1723			3124	4257	832	3485	4291	1179
vC1, stage 1 conf vol							1738	1738		2492	2492	
vC2, stage 2 conf vol							1386	2520		993	1799	
vCu, unblocked vol	1446			1196			871	2895	0	1517	2956	0
tC, single (s)	4.2			4.2			7.6	6.6	7.0	7.6	6.6	7.0
tC, 2 stage (s)							6.6	5.6		6.6	5.6	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	80			80			100	100	89	100	100	84
cM capacity (veh/h)	186			398			103	5	760	27	30	444

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	38	831	831	61	81	1535	821	87	73
Volume Left	38	0	0	0	81	0	0	0	0
Volume Right	0	0	0	61	0	0	54	87	73
cSH	186	1700	1700	1700	398	1700	1700	760	444
Volume to Capacity	0.20	0.49	0.49	0.04	0.20	0.90	0.48	0.11	0.16
Queue Length 95th (ft)	18	0	0	0	19	0	0	10	15
Control Delay (s)	29.2	0.0	0.0	0.0	16.3	0.0	0.0	10.4	14.7
Lane LOS	D				C			B	B
Approach Delay (s)	0.6				0.5			10.4	14.7
Approach LOS								B	B

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	81.8%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	1	1	174	6	1	1	41	298	5	6	366	10
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	1	1	205	7	1	1	48	351	6	7	431	12
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								736				
pX, platoon unblocked												
vC, conflicting volume	724	904	221	885	906	178	442			356		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	724	904	221	885	906	178	442			356		
tC, single (s)	7.6	6.6	7.0	7.6	6.6	7.0	4.2			4.2		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	74	96	100	100	96			99		
cM capacity (veh/h)	294	257	773	165	256	825	1093			1178		

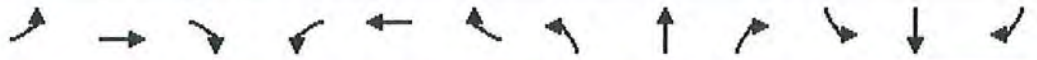
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	207	9	224	181	222	227
Volume Left	1	7	48	0	7	0
Volume Right	205	1	0	6	0	12
cSH	758	193	1093	1700	1178	1700
Volume to Capacity	0.27	0.05	0.04	0.11	0.01	0.13
Queue Length 95th (ft)	28	4	3	0	0	0
Control Delay (s)	11.5	24.6	2.1	0.0	0.3	0.0
Lane LOS	B	C	A		A	
Approach Delay (s)	11.5	24.6	1.2		0.2	
Approach LOS	B	C				

Intersection Summary				
Average Delay	3.0			
Intersection Capacity Utilization	44.7%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	126	1643	2541	23	4	44
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.85	0.99	0.93	0.88	0.85	0.85
Hourly flow rate (vph)	148	1660	2732	26	5	52
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		TWLTL	TWLTL			
Median storage veh)		2	2			
Upstream signal (ft)			733			
pX, platoon unblocked	0.60				0.60	0.60
vC, conflicting volume	2758				3872	1379
vC1, stage 1 conf vol					2745	
vC2, stage 2 conf vol					1126	
vCu, unblocked vol	2599				4448	308
tC, single (s)	4.2				6.9	7.0
tC, 2 stage (s)					5.9	
tF (s)	2.2				3.5	3.3
p0 queue free %	0				0	87
cM capacity (veh/h)	94				0	409

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	148	830	830	1822	937	56
Volume Left	148	0	0	0	0	5
Volume Right	0	0	0	0	26	52
cSH	94	1700	1700	1700	1700	0
Volume to Capacity	1.58	0.49	0.49	1.07	0.55	Err
Queue Length 95th (ft)	290	0	0	0	0	Err
Control Delay (s)	383.1	0.0	0.0	0.0	0.0	Err
Lane LOS	F					F
Approach Delay (s)	31.4			0.0		Err
Approach LOS						F

Intersection Summary			
Average Delay	Err		
Intersection Capacity Utilization	101.9%	ICU Level of Service	G
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	39	1807	33	68	2223	96	0	0	46	5	1	43
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.85	0.92	0.85	0.85	0.95	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	46	1964	39	80	2340	113	0	0	54	6	1	51
Pedestrians								2				
Lane Width (ft)								12.0				
Walking Speed (ft/s)								4.0				
Percent Blockage								0				
Right turn flare (veh)												
Median type		TWLTL			None							
Median storage veh)		2										
Upstream signal (ft)		661										
pX, platoon unblocked				0.47			0.47	0.47	0.47	0.47	0.47	
vC, conflicting volume	2453			2005			3458	4690	1003	3574	4597	1170
vC1, stage 1 conf vol							2077	2077		2500	2500	
vC2, stage 2 conf vol							1381	2613		1074	2097	
vCu, unblocked vol	2453			885			3975	6593	0	4220	6394	1170
tC, single (s)	4.2			4.2			7.6	6.6	7.0	7.6	6.6	7.0
tC, 2 stage (s)							6.6	5.6		6.6	5.6	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	74			77			100	100	89	72	93	72
cM capacity (veh/h)	179			348			30	0	505	21	17	181

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	WB 4	NB 1	SB 1
Volume Total	46	1309	694	80	1170	1170	113	54	58
Volume Left	46	0	0	80	0	0	0	0	6
Volume Right	0	0	39	0	0	0	113	54	51
cSH	179	1700	1700	348	1700	1700	1700	505	91
Volume to Capacity	0.26	0.77	0.41	0.23	0.69	0.69	0.07	0.11	0.63
Queue Length 95th (ft)	24	0	0	22	0	0	0	9	75
Control Delay (s)	31.9	0.0	0.0	18.4	0.0	0.0	0.0	13.0	95.8
Lane LOS	D			C				B	F
Approach Delay (s)	0.7			0.6				13.0	95.8
Approach LOS								B	F

Intersection Summary				
Average Delay	2.0			
Intersection Capacity Utilization	81.6%	ICU Level of Service		D
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	26	20	18	13	10	18	13	275	6	11	355	15
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.88	0.85	0.85	0.92	0.85
Hourly flow rate (vph)	31	24	21	15	12	21	15	312	7	13	386	18
Pedestrians		2			1			2				
Lane Width (ft)		12.0			12.0			12.0				
Walking Speed (ft/s)		4.0			4.0			4.0				
Percent Blockage		0			0			0				
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage veh)								2			2	
Upstream signal (ft)											660	
pX, platoon unblocked	0.89	0.89	0.89	0.89	0.89		0.89					
vC, conflicting volume	793	774	399	794	779	317	406			321		
vC1, stage 1 conf vol	423	423		348	348							
vC2, stage 2 conf vol	370	351		447	431							
vCu, unblocked vol	707	686	265	709	692	317	273			321		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)	6.1	5.5		6.1	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	94	95	97	97	98	97	99			99		
cM capacity (veh/h)	489	491	681	474	486	716	1134			1222		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	75	48	15	320	13	404
Volume Left	31	15	15	0	13	0
Volume Right	21	21	0	7	0	18
cSH	532	561	1134	1700	1222	1700
Volume to Capacity	0.14	0.09	0.01	0.19	0.01	0.24
Queue Length 95th (ft)	12	7	1	0	1	0
Control Delay (s)	12.9	12.0	8.2	0.0	8.0	0.0
Lane LOS	B	B	A		A	
Approach Delay (s)	12.9	12.0	0.4		0.2	
Approach LOS	B	B				

Intersection Summary				
Average Delay	2.0			
Intersection Capacity Utilization	35.0%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	1602	54	67	2534	0	75
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.99	0.85	0.85	0.93	0.85	0.85
Hourly flow rate (vph)	1618	64	79	2725	0	88
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)				627		
pX, platoon unblocked					0.60	
vC, conflicting volume			1682		3170	841
vC1, stage 1 conf vol					1650	
vC2, stage 2 conf vol					1520	
vCu, unblocked vol			1682		3282	841
tC, single (s)			4.2		6.9	7.0
tC, 2 stage (s)					5.9	
tF (s)			2.2		3.5	3.3
p0 queue free %			78		100	71
cM capacity (veh/h)			363		113	302

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	1079	603	79	1362	1362	88
Volume Left	0	0	79	0	0	0
Volume Right	0	64	0	0	0	88
cSH	1700	1700	363	1700	1700	302
Volume to Capacity	0.63	0.35	0.22	0.80	0.80	0.29
Queue Length 95th (ft)	0	0	20	0	0	30
Control Delay (s)	0.0	0.0	17.6	0.0	0.0	21.8
Lane LOS			C			C
Approach Delay (s)	0.0		0.5			21.8
Approach LOS						C

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	81.6%	ICU Level of Service	D
Analysis Period (min)	15		

Appendix G – *SimTraffic* Output Sheets – Measures of Effectiveness

1: 4th Ave/B-8 & Driveway/15th St

Direction	All
Volume (vph)	2643
Control Delay / Veh (s/v)	3
Queue Delay / Veh (s/v)	0
Total Delay / Veh (s/v)	3
Total Delay (hr)	2
Stops / Veh	0.12
Stops (#)	316
Average Speed (mph)	24
Total Travel Time (hr)	12
Distance Traveled (mi)	294
Fuel Consumed (gal)	15
Fuel Economy (mpg)	19.4
CO Emissions (kg)	1.06
NOx Emissions (kg)	0.21
VOC Emissions (kg)	0.25
Unserved Vehicles (#)	0
Vehicles in dilemma zone (#)	0

3: 1st Ave & 15th St/Driveway

Direction	All
Volume (vph)	910
Control Delay / Veh (s/v)	3
Queue Delay / Veh (s/v)	0
Total Delay / Veh (s/v)	3
Total Delay (hr)	1
Stops / Veh	0.29
Stops (#)	262
Average Speed (mph)	21
Total Travel Time (hr)	4
Distance Traveled (mi)	94
Fuel Consumed (gal)	6
Fuel Economy (mpg)	16.3
CO Emissions (kg)	0.40
NOx Emissions (kg)	0.08
VOC Emissions (kg)	0.09
Unserved Vehicles (#)	0
Vehicles in dilemma zone (#)	0

8: 4th Ave/B-8 & 16th St/US 95

Direction	All
Volume (vph)	6643
Control Delay / Veh (s/v)	59
Queue Delay / Veh (s/v)	0
Total Delay / Veh (s/v)	59
Total Delay (hr)	109
Stops / Veh	0.81
Stops (#)	5401
Average Speed (mph)	6
Total Travel Time (hr)	136
Distance Traveled (mi)	821
Fuel Consumed (gal)	144
Fuel Economy (mpg)	5.7
CO Emissions (kg)	10.07
NOx Emissions (kg)	1.96
VOC Emissions (kg)	2.33
Unserved Vehicles (#)	132
Vehicles in dilemma zone (#)	0

11: 16th St/US 95 & 6th Ave N

Direction	All
Volume (vph)	4381
Control Delay / Veh (s/v)	121
Queue Delay / Veh (s/v)	0
Total Delay / Veh (s/v)	121
Total Delay (hr)	147
Stops / Veh	2.21
Stops (#)	9702
Average Speed (mph)	1
Total Travel Time (hr)	154
Distance Traveled (mi)	217
Fuel Consumed (gal)	177
Fuel Economy (mpg)	1.2
CO Emissions (kg)	12.38
NOx Emissions (kg)	2.41
VOC Emissions (kg)	2.87
Unserved Vehicles (#)	0
Vehicles in dilemma zone (#)	0

12: Maple Ave/Driveway & 16th St/US 95

Direction	All
Volume (vph)	4361
Control Delay / Veh (s/v)	2
Queue Delay / Veh (s/v)	0
Total Delay / Veh (s/v)	2
Total Delay (hr)	2
Stops / Veh	0.14
Stops (#)	594
Average Speed (mph)	28
Total Travel Time (hr)	17
Distance Traveled (mi)	461
Fuel Consumed (gal)	24
Fuel Economy (mpg)	19.6
CO Emissions (kg)	1.64
NOx Emissions (kg)	0.32
VOC Emissions (kg)	0.38
Unserved Vehicles (#)	0
Vehicles in dilemma zone (#)	0

14: 4th Ave/B-8 & 17th St/Driveway

Direction	All
Volume (vph)	3053
Control Delay / Veh (s/v)	7
Queue Delay / Veh (s/v)	0
Total Delay / Veh (s/v)	7
Total Delay (hr)	6
Stops / Veh	0.18
Stops (#)	546
Average Speed (mph)	19
Total Travel Time (hr)	19
Distance Traveled (mi)	362
Fuel Consumed (gal)	22
Fuel Economy (mpg)	16.3
CO Emissions (kg)	1.55
NOx Emissions (kg)	0.30
VOC Emissions (kg)	0.36
Unserved Vehicles (#)	0
Vehicles in dilemma zone (#)	0

16: 1st Ave & 17th St

Direction	All
Volume (vph)	781
Control Delay / Veh (s/v)	2
Queue Delay / Veh (s/v)	0
Total Delay / Veh (s/v)	2
Total Delay (hr)	0
Stops / Veh	0.19
Stops (#)	145
Average Speed (mph)	22
Total Travel Time (hr)	4
Distance Traveled (mi)	81
Fuel Consumed (gal)	5
Fuel Economy (mpg)	18.0
CO Emissions (kg)	0.31
NOx Emissions (kg)	0.06
VOC Emissions (kg)	0.07
Unserved Vehicles (#)	0
Vehicles in dilemma zone (#)	0

20: 6th Ave S & 16th St/US 95

Direction	All
Volume (vph)	4332
Control Delay / Veh (s/v)	1
Queue Delay / Veh (s/v)	0
Total Delay / Veh (s/v)	1
Total Delay (hr)	1
Stops / Veh	0.07
Stops (#)	311
Average Speed (mph)	30
Total Travel Time (hr)	12
Distance Traveled (mi)	351
Fuel Consumed (gal)	16
Fuel Economy (mpg)	21.3
CO Emissions (kg)	1.15
NOx Emissions (kg)	0.22
VOC Emissions (kg)	0.27
Unserved Vehicles (#)	0
Vehicles in dilemma zone (#)	0

27: 2nd Ave/3rd Ave & 16th St/US 95

Direction	All
Volume (vph)	4199
Control Delay / Veh (s/v)	1
Queue Delay / Veh (s/v)	0
Total Delay / Veh (s/v)	1
Total Delay (hr)	1
Stops / Veh	0.13
Stops (#)	552
Average Speed (mph)	30
Total Travel Time (hr)	17
Distance Traveled (mi)	519
Fuel Consumed (gal)	25
Fuel Economy (mpg)	21.0
CO Emissions (kg)	1.73
NOx Emissions (kg)	0.34
VOC Emissions (kg)	0.40
Unserved Vehicles (#)	0
Vehicles in dilemma zone (#)	0

28: 1st Ave & 16th St/US 95

Direction	All
Volume (vph)	4915
Control Delay / Veh (s/v)	74
Queue Delay / Veh (s/v)	0
Total Delay / Veh (s/v)	74
Total Delay (hr)	102
Stops / Veh	0.78
Stops (#)	3854
Average Speed (mph)	5
Total Travel Time (hr)	122
Distance Traveled (mi)	618
Fuel Consumed (gal)	122
Fuel Economy (mpg)	5.1
CO Emissions (kg)	8.54
NOx Emissions (kg)	1.66
VOC Emissions (kg)	1.98
Unserved Vehicles (#)	304
Vehicles in dilemma zone (#)	0

16th St/US 95

Direction	EB	WB	All
Control Delay / Veh (s/v)	24	21	22
Queue Delay / Veh (s/v)	0	0	0
Total Delay / Veh (s/v)	24	21	22
Total Delay (hr)	69	81	150
Stops / Veh	1.24	0.29	0.69
Stops (#)	12920	4178	17098
Average Speed (mph)	10	11	11
Total Travel Time (hr)	102	125	227
Distance Traveled (mi)	1058	1408	2466
Fuel Consumed (gal)	174	142	316
Fuel Economy (mpg)	6.1	9.9	7.8
CO Emissions (kg)	12.17	9.91	22.08
NOx Emissions (kg)	2.37	1.93	4.30
VOC Emissions (kg)	2.82	2.30	5.12
Unserved Vehicles (#)	103	224	326
Vehicles in dilemma zone (#)	0	0	0
Performance Index	105.1	92.6	197.7

4th Ave/B-8

Direction	NB	SB	All
Control Delay / Veh (s/v)	22	19	20
Queue Delay / Veh (s/v)	0	0	0
Total Delay / Veh (s/v)	22	19	20
Total Delay (hr)	25	21	46
Stops / Veh	0.32	0.35	0.33
Stops (#)	1324	1358	2682
Average Speed (mph)	12	12	12
Total Travel Time (hr)	43	37	81
Distance Traveled (mi)	519	465	985
Fuel Consumed (gal)	47	42	88
Fuel Economy (mpg)	11.1	11.2	11.2
CO Emissions (kg)	3.26	2.91	6.17
NOx Emissions (kg)	0.63	0.57	1.20
VOC Emissions (kg)	0.76	0.67	1.43
Unserved Vehicles (#)	31	0	31
Vehicles in dilemma zone (#)	0	0	0
Performance Index	28.7	24.6	53.3

Network Totals

Number of Intersections	10
Control Delay / Veh (s/v)	37
Queue Delay / Veh (s/v)	0
Total Delay / Veh (s/v)	37
Total Delay (hr)	370
Stops / Veh	0.60
Stops (#)	21683
Average Speed (mph)	8
Total Travel Time (hr)	497
Distance Traveled (mi)	3818
Fuel Consumed (gal)	556
Fuel Economy (mpg)	6.9
CO Emissions (kg)	38.83
NOx Emissions (kg)	7.56
VOC Emissions (kg)	9.00
Unserved Vehicles (#)	436
Vehicles in dilemma zone (#)	0
Performance Index	430.2

1: 4th Ave/B-8 & Driveway/15th St

Direction	All
Volume (vph)	2643
Control Delay / Veh (s/v)	9
Queue Delay / Veh (s/v)	0
Total Delay / Veh (s/v)	9
Total Delay (hr)	6
Stops / Veh	0.37
Stops (#)	989
Average Speed (mph)	18
Total Travel Time (hr)	16
Distance Traveled (mi)	294
Fuel Consumed (gal)	22
Fuel Economy (mpg)	13.4
CO Emissions (kg)	1.53
NOx Emissions (kg)	0.30
VOC Emissions (kg)	0.35
Unserved Vehicles (#)	0
Vehicles in dilemma zone (#)	0

3: 1st Ave & 15th St/Driveway

Direction	All
Volume (vph)	910
Control Delay / Veh (s/v)	3
Queue Delay / Veh (s/v)	0
Total Delay / Veh (s/v)	3
Total Delay (hr)	1
Stops / Veh	0.29
Stops (#)	262
Average Speed (mph)	21
Total Travel Time (hr)	4
Distance Traveled (mi)	94
Fuel Consumed (gal)	6
Fuel Economy (mpg)	16.3
CO Emissions (kg)	0.40
NOx Emissions (kg)	0.08
VOC Emissions (kg)	0.09
Unserved Vehicles (#)	0
Vehicles in dilemma zone (#)	0

8: 4th Ave/B-8 & 16th St/US 95

Direction	All
Volume (vph)	6643
Control Delay / Veh (s/v)	55
Queue Delay / Veh (s/v)	0
Total Delay / Veh (s/v)	55
Total Delay (hr)	102
Stops / Veh	0.81
Stops (#)	5376
Average Speed (mph)	6
Total Travel Time (hr)	129
Distance Traveled (mi)	821
Fuel Consumed (gal)	139
Fuel Economy (mpg)	5.9
CO Emissions (kg)	9.73
NOx Emissions (kg)	1.89
VOC Emissions (kg)	2.25
Unserved Vehicles (#)	132
Vehicles in dilemma zone (#)	0

11: 16th St/US 95 & 6th Ave N

Direction	All
Volume (vph)	4381
Control Delay / Veh (s/v)	121
Queue Delay / Veh (s/v)	0
Total Delay / Veh (s/v)	121
Total Delay (hr)	147
Stops / Veh	2.21
Stops (#)	9702
Average Speed (mph)	1
Total Travel Time (hr)	154
Distance Traveled (mi)	216
Fuel Consumed (gal)	177
Fuel Economy (mpg)	1.2
CO Emissions (kg)	12.38
NOx Emissions (kg)	2.41
VOC Emissions (kg)	2.87
Unserved Vehicles (#)	0
Vehicles in dilemma zone (#)	0

12: Maple Ave/Driveway & 16th St/US 95

Direction	All
Volume (vph)	4361
Control Delay / Veh (s/v)	2
Queue Delay / Veh (s/v)	0
Total Delay / Veh (s/v)	2
Total Delay (hr)	2
Stops / Veh	0.14
Stops (#)	594
Average Speed (mph)	28
Total Travel Time (hr)	17
Distance Traveled (mi)	461
Fuel Consumed (gal)	24
Fuel Economy (mpg)	19.6
CO Emissions (kg)	1.64
NOx Emissions (kg)	0.32
VOC Emissions (kg)	0.38
Unserved Vehicles (#)	0
Vehicles in dilemma zone (#)	0

14: 4th Ave/B-8 & 17th St/Driveway

Direction	All
Volume (vph)	3053
Control Delay / Veh (s/v)	10
Queue Delay / Veh (s/v)	0
Total Delay / Veh (s/v)	10
Total Delay (hr)	8
Stops / Veh	0.46
Stops (#)	1409
Average Speed (mph)	17
Total Travel Time (hr)	21
Distance Traveled (mi)	362
Fuel Consumed (gal)	28
Fuel Economy (mpg)	12.8
CO Emissions (kg)	1.98
NOx Emissions (kg)	0.39
VOC Emissions (kg)	0.46
Unserved Vehicles (#)	0
Vehicles in dilemma zone (#)	0

16: 1st Ave & 17th St

Direction	All
Volume (vph)	781
Control Delay / Veh (s/v)	2
Queue Delay / Veh (s/v)	0
Total Delay / Veh (s/v)	2
Total Delay (hr)	0
Stops / Veh	0.19
Stops (#)	145
Average Speed (mph)	22
Total Travel Time (hr)	4
Distance Traveled (mi)	81
Fuel Consumed (gal)	5
Fuel Economy (mpg)	18.0
CO Emissions (kg)	0.31
NOx Emissions (kg)	0.06
VOC Emissions (kg)	0.07
Unserved Vehicles (#)	0
Vehicles in dilemma zone (#)	0

20: 6th Ave S & 16th St/US 95

Direction	All
Volume (vph)	4332
Control Delay / Veh (s/v)	1
Queue Delay / Veh (s/v)	0
Total Delay / Veh (s/v)	1
Total Delay (hr)	1
Stops / Veh	0.07
Stops (#)	311
Average Speed (mph)	30
Total Travel Time (hr)	12
Distance Traveled (mi)	350
Fuel Consumed (gal)	16
Fuel Economy (mpg)	21.3
CO Emissions (kg)	1.15
NOx Emissions (kg)	0.22
VOC Emissions (kg)	0.27
Unserved Vehicles (#)	0
Vehicles in dilemma zone (#)	0

27: 2nd Ave/3rd Ave & 16th St/US 95

Direction	All
Volume (vph)	4259
Control Delay / Veh (s/v)	16
Queue Delay / Veh (s/v)	4
Total Delay / Veh (s/v)	20
Total Delay (hr)	23
Stops / Veh	0.52
Stops (#)	2214
Average Speed (mph)	13
Total Travel Time (hr)	40
Distance Traveled (mi)	526
Fuel Consumed (gal)	52
Fuel Economy (mpg)	10.2
CO Emissions (kg)	3.61
NOx Emissions (kg)	0.70
VOC Emissions (kg)	0.84
Unserved Vehicles (#)	0
Vehicles in dilemma zone (#)	0

28: 1st Ave & 16th St/US 95

Direction	All
Volume (vph)	4915
Control Delay / Veh (s/v)	74
Queue Delay / Veh (s/v)	15
Total Delay / Veh (s/v)	90
Total Delay (hr)	122
Stops / Veh	0.78
Stops (#)	3854
Average Speed (mph)	4
Total Travel Time (hr)	143
Distance Traveled (mi)	618
Fuel Consumed (gal)	137
Fuel Economy (mpg)	4.5
CO Emissions (kg)	9.60
NOx Emissions (kg)	1.87
VOC Emissions (kg)	2.23
Unserved Vehicles (#)	304
Vehicles in dilemma zone (#)	0

16th St/US 95

Direction	EB	WB	All
Control Delay / Veh (s/v)	25	22	24
Queue Delay / Veh (s/v)	7	1	4
Total Delay / Veh (s/v)	33	23	27
Total Delay (hr)	95	92	186
Stops / Veh	1.29	0.37	0.76
Stops (#)	13441	5319	18760
Average Speed (mph)	8	10	9
Total Travel Time (hr)	128	136	263
Distance Traveled (mi)	1057	1407	2464
Fuel Consumed (gal)	196	157	353
Fuel Economy (mpg)	5.4	9.0	7.0
CO Emissions (kg)	13.70	10.95	24.65
NOx Emissions (kg)	2.67	2.13	4.80
VOC Emissions (kg)	3.17	2.54	5.71
Unserved Vehicles (#)	103	224	326
Vehicles in dilemma zone (#)	0	0	0
Performance Index	131.9	106.5	238.4

4th Ave/B-8

Direction	NB	SB	All
Control Delay / Veh (s/v)	24	24	24
Queue Delay / Veh (s/v)	0	0	0
Total Delay / Veh (s/v)	24	24	24
Total Delay (hr)	28	26	54
Stops / Veh	0.51	0.56	0.53
Stops (#)	2141	2198	4339
Average Speed (mph)	11	11	11
Total Travel Time (hr)	46	43	89
Distance Traveled (mi)	519	465	985
Fuel Consumed (gal)	53	49	103
Fuel Economy (mpg)	9.8	9.4	9.6
CO Emissions (kg)	3.72	3.45	7.17
NOx Emissions (kg)	0.72	0.67	1.40
VOC Emissions (kg)	0.86	0.80	1.66
Unserved Vehicles (#)	31	0	31
Vehicles in dilemma zone (#)	0	0	0
Performance Index	34.2	32.0	66.3

Network Totals

Number of Intersections	10
Control Delay / Veh (s/v)	39
Queue Delay / Veh (s/v)	3
Total Delay / Veh (s/v)	41
Total Delay (hr)	413
Stops / Veh	0.69
Stops (#)	24856
Average Speed (mph)	7
Total Travel Time (hr)	540
Distance Traveled (mi)	3824
Fuel Consumed (gal)	606
Fuel Economy (mpg)	6.3
CO Emissions (kg)	42.34
NOx Emissions (kg)	8.24
VOC Emissions (kg)	9.81
Unserved Vehicles (#)	436
Vehicles in dilemma zone (#)	0
Performance Index	482.4