

# Queensbury Adaptive Signal Control Technologies: Feasibility Study

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Department of  
Transportation



# **Queensbury Adaptive Signal Control Technologies: Feasibility Study**

*Final Report*

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## Notice

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## **Abstract**

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This study identified innovative signal-timing solutions to reduce congestion in and around the Aviation Road/Quaker Road corridor in Queensbury, NY. The study analyzed the feasibility of Adaptive Signal Control Technologies (ASCT), comparing ASCT to traditional coordinated signal timing improvements. The analysis was performed by the consultant project team of AKRF and Barton & Loguidice. This included a thorough exploration of the applicability, benefits, and drawbacks of an adaptive signal control system in comparison to other signal control schema.

This project was sponsored by the Town of Queensbury, NY and the Adirondack/Glens Falls Transportation Council.

## **Keywords**

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Adaptive Signal Control Technologies, traffic signal coordination, benefit cost analysis

## **Acknowledgments**

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## Table of Contents

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<b>Notice</b> .....	<b>ii</b>
<b>Disclaimer</b> .....	<b>ii</b>
<b>Technical Report Documentation Page</b> .....	<b>iii</b>
<b>Abstract</b> .....	<b>iv</b>
<b>Keywords</b> .....	<b>iv</b>
<b>Acknowledgments</b> .....	<b>iv</b>
<b>List of Figures</b> .....	<b>vii</b>
<b>List of Tables</b> .....	<b>viii</b>
<b>Acronyms and Abbreviations</b> .....	<b>ix</b>
<b>Summary</b> .....	<b>S-1</b>
<b>1 Introduction</b> .....	<b>1</b>
1.1 Statement of Purpose .....	1
1.2 Background .....	1
1.3 Approach .....	2
<b>2 Existing Conditions</b> .....	<b>4</b>
2.1 Study Area.....	4
2.2 Roadway Characteristics .....	7
2.3 Pedestrian and Bicycle Overview.....	8
2.4 Data Collection .....	8
2.5 Signal Inventory .....	9
2.6 Existing Traffic Operations .....	9
2.6.1 Cluster 1 Existing Traffic Operations.....	9
2.6.2 Cluster 2 Existing Traffic Operations.....	10
2.6.3 Cluster 3 Existing Traffic Operations.....	11
<b>3 Pedestrian and Bicycle Improvements</b> .....	<b>12</b>

3.1	Existing Pedestrian and Bicycle Conditions.....	13
3.1.1	Aviation Road, Aviation Mall Road (West), and Greenway North.....	13
3.1.2	Aviation Road and Aviation Mall Road (East).....	14
3.1.3	Aviation Road, Quaker Road, and Upper Glen Street (Route 9).....	15
3.1.4	Quaker Road and Meadowbrook Road .....	16
3.1.5	Quaker Road and Dix Avenue .....	17
3.2	Bicycle/Pedestrian Recommendations and Design Concepts.....	18
3.2.1	Pedestrian Improvement Options.....	18
3.2.2	Bicycle Improvement Options .....	22
3.2.2.1	Bike Lanes (Recommended) .....	22
3.2.2.2	Two-Way Protected Cycle Track (Optional).....	23
3.2.3	Recommended Bicycle/Pedestrian Improvements by Intersection.....	23
<b>4</b>	<b>Signal Comparison .....</b>	<b>25</b>
4.1	Coordinated Signal System Traffic Operations.....	25
4.1.1	Cluster 1 Traffic Operations: Coordinated System .....	25
4.1.2	Cluster 2 Traffic Operations: Coordinated System .....	26
4.1.3	Cluster 3 Traffic Operations: Coordinated System .....	26
4.2	Adaptive Signal Control Technology.....	27
4.2.1	Synchrogreen System Overview.....	27
4.2.1.1	ASCT System Requirements .....	28
4.2.1.2	ASCT Traffic Operations .....	29
4.2.2	Cluster 1 Traffic Operations: ASCT.....	29
4.2.3	Cluster 2 Traffic Operations: ASCT.....	30
4.2.4	Cluster 3 Traffic Operations: ASCT.....	32
4.3	Coordinated versus ASCT Comparison Conclusion.....	33
<b>5</b>	<b>Operations and Maintenance .....</b>	<b>34</b>
5.1	Signal Equipment Upgrades .....	34
5.2	Operations and Maintenance Considerations.....	38
5.2.1	Jurisdiction .....	39
5.2.1.1	Cluster 1 .....	39
5.2.1.2	Cluster 2 .....	40
5.2.1.3	Cluster 3 .....	40
5.2.1.4	Coordinated Signal Timing Operations .....	40
<b>6</b>	<b>Benefit-Cost Analysis .....</b>	<b>41</b>
6.1	Benefit-Cost Analysis Methodology .....	41

6.1.1	Project Alternatives .....	41
6.1.2	General Assumptions .....	41
6.1.3	Estimation of Signal System Upgrade Benefits .....	42
6.1.3.1	Safety Benefits .....	42
6.1.3.2	Mobility (Travel Time) Benefits .....	43
6.1.3.3	Pedestrian Facility Benefits .....	44
6.1.3.4	Energy and Environment (Emissions) Benefits .....	44
6.1.4	Estimation of Signal System Upgrade Costs .....	45
6.1.4.1	Capital Costs .....	45
6.1.4.2	O&M Costs .....	46
6.2	Summary of Findings and BCA Outcomes .....	46
6.2.1	BCA Findings .....	47
6.2.2	Evaluation of BCR at All Signal Clusters .....	48
<b>7</b>	<b>Public Participation, Recommendations, and Implementation .....</b>	<b>49</b>
7.1	Public Outreach .....	49
7.2	Stakeholder Coordination .....	49
7.3	Signal Improvement Recommendations .....	50
7.4	Funding .....	50
<b>8</b>	<b>Bibliography .....</b>	<b>52</b>
	<b>Appendix A. Signal Inventory Data Collection Sheet .....</b>	<b>A-1</b>
	<b>Appendix B. Existing Conditions Simulation Reports .....</b>	<b>B-1</b>
	<b>Appendix C. Bicycle/Pedestrian Figures and Cost Estimates .....</b>	<b>C-1</b>
	<b>Appendix D. Coordinated Signal Timing System Conditions Simulation .....</b>	<b>D-1</b>
	<b>Appendix E. ASCT Conditions Simulation .....</b>	<b>E-1</b>
	<b>Appendix F. Cost-Benefit Analysis Calculations .....</b>	<b>F-1</b>
	<b>Appendix G. Detailed Cost Estimates .....</b>	<b>G-1</b>

## List of Figures

---

Figure 1. Regional Context and Project Site Map .....	4
Figure 2. Signal Cluster 1 Map .....	6
Figure 3. Signal Cluster 2 Map .....	6
Figure 4. Signal Cluster 3 Map .....	7
Figure 5. Pedestrian and Bicycle Improvement Locations .....	12
Figure 6. Aviation Mall Road West .....	13

Figure 7. Aviation Road and Aviation Mall (East) .....	14
Figure 8. Aviation Road, Quaker Road, and Glen Street (Route 9) .....	16
Figure 9. Quaker Road and Meadowbrook Road .....	17
Figure 10. Quaker Road and Dix Avenue.....	18
Figure 11. Pedestrian Pushbutton and Signal .....	19
Figure 12. High-Visibility Crosswalk Striping Diagram .....	20
Figure 13. Imprinted Thermoplastic Crosswalks.....	20
Figure 14. Turning Vehicles Yield to Pedestrians—Sign Diagram .....	21
Figure 15. Overhead sign: "No Turn on Red" .....	21
Figure 16. Bike Lane Example .....	22

## List of Tables

---

Table 1. Proposed Data Collection and Analysis Periods.....	7
Table 2. Cluster 1 Network Wide MOEs .....	10
Table 3. Cluster 2 Network Wide MOEs .....	11
Table 4. Cluster 3 Network Wide MOEs .....	11
Table 5. Cluster 1 Coordinated Signal System Alternative Network Wide MOEs.....	25
Table 6. Cluster 2 Coordinated Signal System Alternative Network Wide MOEs.....	26
Table 7. Cluster 3 Coordinated Signal System Alternative Network Wide MOEs.....	27
Table 8. Cluster 1 Microsimulation Model Travel Time Comparison .....	29
Table 9. Cluster 1 System Wide Measures of Effectiveness (MOEs) Comparison .....	30
Table 10. Cluster 2 Microsimulation Model Travel Time Comparison .....	31
Table 11. Cluster 2 System Wide Measures of Effectiveness (MOEs) Comparison .....	31
Table 12. Cluster 3 Microsimulation Model Travel Time Comparison .....	32
Table 13. Cluster 3 System Wide Measures of Effectiveness (MOEs) Comparison .....	32
Table 14. Coordinated Signal System Recommended Equipment Upgrades .....	35
Table 15. ASCT Signal System Recommended Equipment Upgrades .....	37
Table 16. Expected Safety Benefits—All Signal Clusters.....	43
Table 17. Expected Mobility (Travel Time) Benefits—All Signal Clusters .....	43
Table 18. Expected Pedestrian Facility Benefits—All Signal Clusters .....	44
Table 19. Expected Emission Benefits—All Signal Clusters .....	45
Table 20. Expected Capital Costs—All Signal Clusters.....	46
Table 21. Expected Operation and Maintenance Costs—All Signal Clusters .....	46
Table 22. BCA Results—All Clusters .....	48
Table 23. BCR Comparison—All Signal Clusters .....	48

## Acronyms and Abbreviations

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ADA	Americans with Disabilities Act
A/GFTC	Adirondack–Glens Falls Transportation Council
ASCT	Adaptive Signal Control Technologies
BCA	Benefit-Cost Analysis
BCR	Benefit-Cost Ratio
CMF	Crash Modification Factors
FHWA	Federal Highway Administration
LCCE	Life-Cycle Cost Estimate Tool
LOS	Level of Service
LPI	Leading Pedestrian Interval
MOE	Measure(s) of Effectiveness
MUTCD	Manual of Uniform Traffic Control Devices
NYSDOT	New York State Department of Transportation
NHS	National Highway System
NYSERDA	New York State Energy Research and Development Authority
O&M	Operations and Maintenance
ROI	Return on Investment
TMC	Turning Movement Count
U.S. DOT	United States Department of Transportation

# Summary

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The Aviation Road/Quaker Road corridor is a crucial transportation conduit for the Town of Queensbury and the Warren County region as a whole. As an urban principal arterial which can carry upwards of 30,000 cars per day, the National Highway System (NHS) corridor provides access to the Queensbury Central School District, several regional recreation facilities, retail and employment centers, State University of New York (SUNY) Adirondack, Lake George, and downtown Glens Falls.

This feasibility study is intended to identify innovative signal-timing solutions and to reduce congestion in and around the Aviation Road/Quaker Road corridor in Queensbury, NY. The study analyzed the feasibility of Adaptive Signal Control Technologies (ASCT), comparing ASCT to traditional coordinated signal timing improvements. This analysis was performed by the consultant project team of AKRF, an environmental planning and engineering company, and Barton & Loguidice. This included a thorough exploration of the applicability, benefits, and drawbacks of an adaptive signal control system in comparison to other signal control schema.

Adaptive signal control technologies adjust to accommodate current traffic patterns by dynamically controlling when the green lights start and end. This offers several benefits over conventional signal systems, including:

- Automatically adapting to unexpected changes in traffic conditions.
- Improved travel time reliability.
- Reduced congestion and fuel consumption.
- Prolonging the effectiveness of traffic signal timing.
- Reduction of complaints that agencies receive in response to outdated signal timing.
- Making traffic signal operations proactive by monitoring and responding to gaps in performance.

## S.1 Existing Conditions

Within this corridor, the signals have been clustered into three groups. For each cluster, specific peak periods were identified based on land uses and periods of fluctuating traffic where ASCT may provide benefit.

- Signal Cluster 1 includes the signals on Aviation Road between the Queensbury Union Free School District campus and Upper Glen St. Peak periods included weekday a.m., weekday p.m., and Saturday.



- Signal Cluster 2 includes the signals on Quaker Road from Lafayette St. to Ridge Rd. Peak periods included weekday p.m. and Saturday.
- Signal Cluster 3 includes the signals on Quaker Road from Quaker Ridge Rd. to River St. Peak period includes weekday p.m.

Traffic counts and observations for each cluster’s specific analysis periods were collected in September and October 2022 during a typical weekday and Saturday. Turning movement counts (TMC) with pedestrian crossing counts were collected during peak hours for each signal cluster. In July 2022 field visits were conducted to inventory the signal equipment at each study intersection.

### **S.1.1 Existing Traffic Operation Summary**

Utilizing the Synchro/SimTraffic software, microsimulation models for each of the signal clusters were developed to determine the following measures of effectiveness (MOEs) which are defined in greater detail in Section 2.6: Percent Demand Served, Average Travel Speed, Number of Stops, Vehicle Hours of Delay, Travel Time, and Buffer Time Index. Results of the existing traffic operations analysis for each cluster are summarized below:

- Cluster 1: The Saturday midday peak hour and weekday p.m. peak hour experience notable congestion and delay with a 10% Buffer Time Index, indicating significant variability in travel times.
- Cluster 2: Both the Saturday midday peak hour and weekday p.m. peak hour experience notable congestion and delay. The Buffer Time Index indicates that the travel time variation is minimal from day to day.
- Cluster 3: weekday p.m. peak hour has fewer stops and less vehicle hours of delay as compared to Clusters 1 and 2; Buffer Time Index notes a degree of variation in the travel time with less reliability than Cluster 2 but more than Cluster 1.

## **S.2 Pedestrian and Bicycle Improvements**

Pedestrian and bicycle facilities in the corridor are limited. To accommodate current and future bicycle and pedestrian activity at the target intersections, design recommendations and concepts were developed for the following locations:

- Aviation Road and Aviation Mall Road (west)
- Aviation Road and Aviation Mall Road (east)
- Aviation Road and Upper Glen Street (Route 9)
- Quaker Road and Meadowbrook Road
- Quaker Road and Dix Avenue

These proposed improvements include elements such as crosswalks, curb ramps, pedestrian signals with countdown timers, signage, and bicycle lanes. These concepts have been integrated into the simulation model used in the comparisons of conventional versus ASCT signals.

### **S.3 Signal Comparison: Coordinated System versus ASCT**

The calibrated existing conditions Synchro/SimTraffic models were used to develop a fully actuated coordinated signal system model to optimize traffic operations along the corridor. Timing plans were developed for each cluster and each peak period. To determine where ASCT can provide additional operational benefits for each signal cluster, SynchroGreen Software-in-the-Loop Simulation Tool was used with Synchro/SimTraffic to accurately simulate the operations of a SynchroGreen adaptive system. Under both conditions, the Measures of Effectiveness (MOEs) were determined for each signal cluster and peak period.

Based solely on operations, Signal Cluster 1 is an ideal corridor for ASCT deployment. The range of land uses, spacing of the intersections, and the vehicle volumes demonstrated a notable improvement for all peak periods. Clusters 2 and 3 have larger signal spacing between many of the intersections, requiring additional midblock detection to function optimally. In addition, it becomes more challenging to keep a platoon of vehicles together over longer distances to maximize arrival on green opportunities. ASCT for Cluster 2 is mostly beneficial for the critical westbound direction for the weekday p.m. peak hour. If the additional reduction in travel time is desired, then an ASCT would be well suited for this cluster. Regarding Cluster 3, the standard coordination system offers a greater benefit to travel time with the consistent longer cycle length. Vehicle hours of delay are reduced due to the shorter cycle length for the ASCT but the reduction may not warrant a full ASCT installation.

### **S.4 Operations and Maintenance**

The traffic signals throughout the study area are a mix of town, private, and New York State Department of Transportation (NYSDOT) jurisdictions, which present several alternatives for operations and maintenance. The key to an effective operation and maintenance agreement is clear lines of responsibility and an ability to keep the system operational.

To facilitate either of the upgraded signal system alternatives, the existing signal equipment will require a variety of upgrades. For example, the coordinated signal system will require GPS Time Synchronization system, while the ASCT system will require Advanced System Detection and

Signal Interconnect/Communication. Both alternatives will require adjustments to the stop bar locations as well as upgrades to traffic signal controllers and cabinets.

In addition, the ASCT system, if selected, would need to be installed at each intersection and in a central location such as a local server or the cloud. This software and licensing will depend on whether the system is owned by the town or NYSDOT.

## S.5 Benefit-Cost Analysis

A Benefit-Cost Analysis (BCA) measures benefits and costs throughout a period of analysis beginning at the base year and ending after the expected useful service life of an upgraded signal system. Calculated benefits include safety in terms of reduced crashes, mobility in terms of travel time, pedestrian benefits, and reduced emissions. Costs included capital costs for construction and ongoing maintenance and operation for the project lifecycle.

The Benefit-Cost Ratio (BCR) is a method to evaluate the return on investment for an alternative; a BCR greater than or equal to 1.0 indicates that an alternative’s benefits outweigh the costs. Three BCRs were calculated for each cluster: one for the Coordinated System and one each for the ASCT system under town or NYSDOT ownership.

**Table S-1. BCR Comparison–All Signal Clusters**

<b>Alternatives</b>	<b>Signal Cluster 1</b>	<b>Signal Cluster 2</b>	<b>Signal Cluster 3</b>
Coordinated Signal Timing Improvements	19.47	8.57	23.18
ASCT (NYSDOT Operated)	21.59	12.35	9.69
ASCT (Town Operated)	16.90	9.81	7.29

## S.6 Recommendations

Based on the BCA and public/stakeholder input, the following recommendations for each cluster have been made:

- Cluster 1: ASCT improvements.
- Cluster 2: Either ASCT or coordinated signal timing, depending on operational agreements.
- Cluster 3: Coordinated signal timing improvements.

# 1 Introduction

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## 1.1 Statement of Purpose

This feasibility study is intended to identify innovative signal-timing solutions to improve congestion management in and around the Aviation Road/Quaker Road corridor in Queensbury, NY. The study will analyze the feasibility of Adaptive Signal Control Technologies (ASCT), comparing ASCT to traditional signal timing improvements in terms of efficacy (changes in starts/stops, wait and travel times, etc.), potential reduction in greenhouse gases, ease of implementation, co-benefits, life-cycle costs, and sustainability regarding operations and maintenance.

This study provides the necessary research for the feasibility and subsequent implementation of an ASCT pilot program in the Town of Queensbury, thus showing proof-of-concept that this technology might be widely applicable to similar corridors in Upstate New York.

## 1.2 Background

The Aviation Road/Quaker Avenue corridor is an urban principal arterial which can carry upwards of 30,000 cars per day. The corridor, part of the National Highway System (NHS), links Exit 19 of I-87 to US Route 9, then continues east, connecting to NYS routes 9L and 32, ending at River Street/NYS 911E. There are a high concentration of retail uses on the western and eastern ends of the corridor and several of the crossing roadways provide access to regional recreation facilities, State University of New York (SUNY) Adirondack, Lake George, and downtown Glens Falls. This corridor also provides freight access to Vermont via NYS 32 to US 4.

There are sixteen traffic primary signals along the study area corridor. Within this corridor, the signals are clustered into three groups, based on previous signal timing efforts: Signal Cluster 1 includes the signals on Aviation Road between the Queensbury Union Free School District campus to Upper Glen St.; Signal Cluster 2 includes the signals on Quaker Road from Lafayette St. to Ridge Rd.; and Signal Cluster 3 includes the signals on Quaker Road from Quaker Ridge Rd. to River St. (see Figures 1-3).

The most recent effort to improve signal timing in the area was implemented in 2007, a cooperative project spearheaded by New York State Department of Transportation (NYSDOT) Region 1. This produced a robust signal timing plan for the traffic lights along Aviation and Quaker Roads between

Exit 19 of I-87 and River Street. Since that time, the system no longer consistently functions in a coordinated manner. The primary reason is that every time an individual signal is taken offline (for example, during a power outage or for maintenance) the timing defaults to the recall state. As the entire system relies on a time-based schema, it is difficult to re-establish the coordination without re-timing all the lights at once. Given competing priorities for maintenance, this has not occurred on a reliable basis. In addition, traffic patterns have shifted, and new lights have been installed, further eroding the applicability of the 2007 timing plan. Local efforts to improve bicycle and pedestrian connections have also increased demand for accommodations such as crosswalks, pedestrian countdown timers, and bicycle facilities.

In terms of the performance of the system, statistics collected for the National Performance Management Research Data Set indicate that in 2022, the Aviation/Quaker corridor experienced over 143,000 Hours of Excessive Delay.<sup>1</sup> As such, improving travel flow and reducing bottlenecks in this corridor are a high priority both locally and regionally.

In addition to quantitative measures, the qualitative experience of traveling through this corridor also supports the need for improved signal coordination. Drivers frequently complain of “catching all the reds” on Quaker Road even when traveling the speed limit, leading to increased frustration. There is also observed and anecdotal evidence of excessive queue lengths, some of which fail to clear during standard cycles of the signals.

### **1.3 Approach**

Improved signal timing is likely a viable means to reduce unnecessary delay and its associated greenhouse gas emissions. Rather than continue to repair an outdated system or pursue isolated improvements, the Town of Queensbury is eager to explore long-term solutions, including upgrades to the signal hardware, additional actuation, and improved pedestrian/bicycle accommodations. Exploring whether ASCT can provide greater benefits to these improvements will ensure that the town has the most complete available analysis with which to inform future capital program decisions.

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<sup>1</sup> Data obtained from NPMRDS dashboard created by AVAIL Labs in SUNY Albany, March 2023. <https://nprds.availabs.org/>

There have been a variety of studies completed for portions of the corridor, to address conditions at specific intersections. It should be noted that these previous studies did not address overall coordination of signals or the use of ASCT in the corridor. These studies include:

- Quaker Road to Queensbury Avenue Connector Road Study, completed for the Adirondack/Glens Falls Transportation Council (A/GFTC) in 2012, which included an analysis of the Quaker Ridge and Dix Avenue intersections in Signal Cluster 3.
- Dix Avenue Corridor Study Update, completed for A/GFTC in 2016, which included an analysis of the Quaker/Dix intersection in Signal Cluster 3.
- Aviation Road/QUFSD Access Operations Analysis, completed for A/GFTC in 2017, which included an analysis of the signal(s) just west of exit 19 off I-87 (Signal Cluster 1).
- DRAFT Traffic Signal Evaluations and Recommendations, a technical memo prepared for the Town of Queensbury in 2019, which analyzed several signals within Signal Clusters 2 and 3.

Similarly, the Adirondack/Glens Falls Transportation Council has identified the corridor as a priority in the Long-Range Transportation Plan, *2040 Ahead*, both in terms of recurring congestion and freight bottlenecks on the National Highway System (NHS).

ASCT systems are not widely deployed in New York State despite successful applications in other states. This has resulted in a knowledge gap regarding the applicability of this technology, further exacerbated by the wide variety of vendors offering proprietary software and/or hardware. Many small-to-medium sized communities, such as Queensbury, do not have the in-house expertise to determine the geographic scope of a potential ASCT deployment, the potential benefits of such a system over traditional signal timing coordination efforts, nor to judge which specific technology would be the best fit. As such, careful system planning and research is required.

In general terms, the scope of work for the research study was influenced by Federal Highway Authority (FHWA) Guidance Document Model Systems Engineering Documents for Adaptive Signal Control Technology Systems. In addition, the following sources were used to develop Benefit-Cost Analyses:

- U.S. DOT. “A Guide for Leveraging ITS Evaluation Tools for Benefit-Cost Analysis (BCA) and Return-on-Investment (ROI).” July 2022.
- U.S. DOT. “Use Case: Adaptive Signal Control Benefit-Cost Analysis.” July 2022.
- U.S. DOT. “Benefit-Cost Analysis Guidance for Discretionary Grant Programs.” January 2023.

This approach will allow for a thorough exploration of the applicability, benefits, and drawbacks of an adaptive signal control system in comparison to other signal control schema.

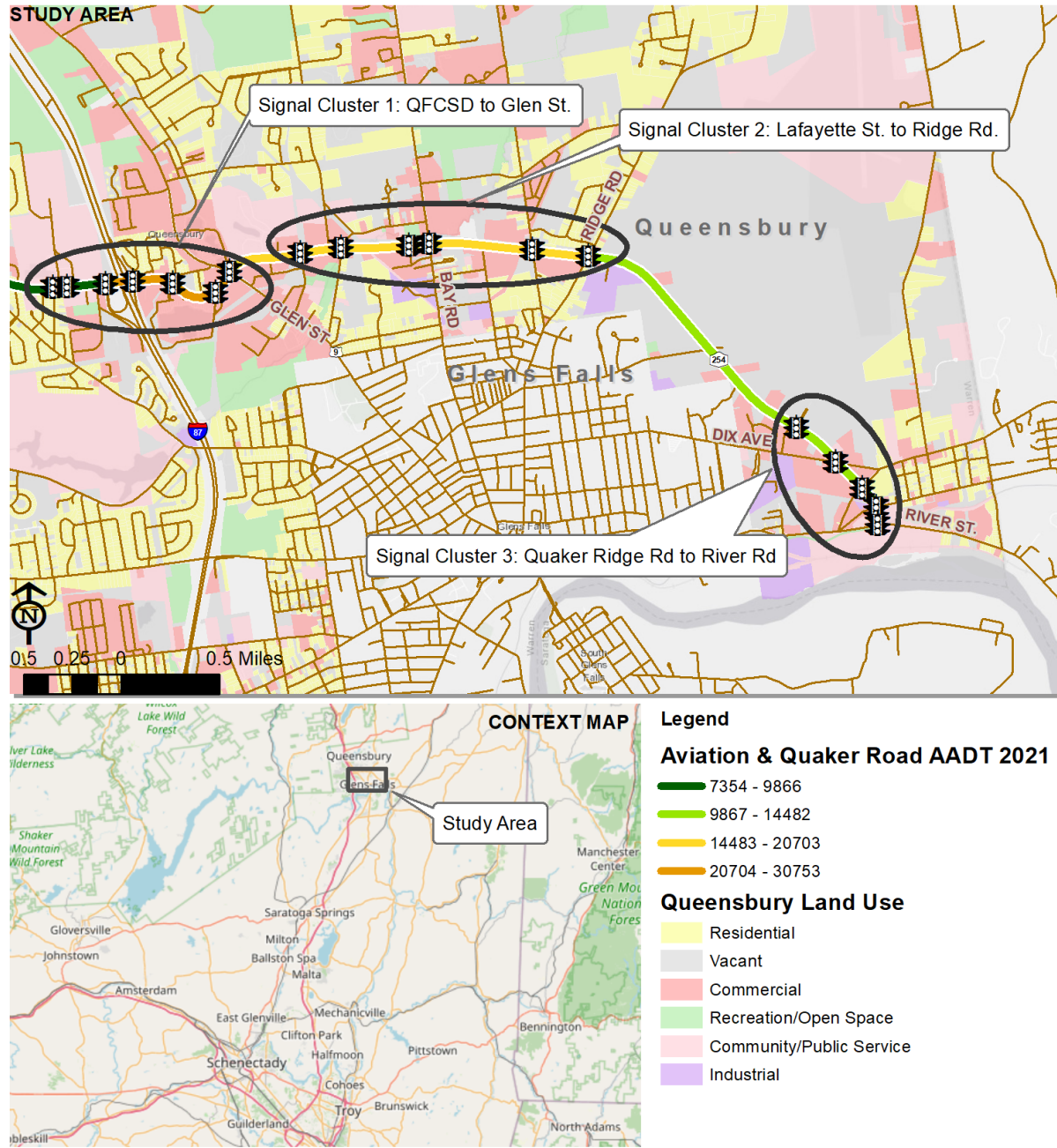
# 2 Existing Conditions

## 2.1 Study Area

The overall study area and regional context can be seen in Figure 1.

**Figure 1. Regional Context and Project Site Map**

Source: A/GFTC



The study area was subdivided into three groups of intersections, referred to as clusters, for analysis:

**Signal Cluster 1 (Figure 2)**

1. Aviation Road and QUFSD Secondary Driveway/Cottage Hill Road
2. Aviation Road and QUFSD Main Entrance Driveway
3. Aviation Road and I-87
  - Southbound Ramps
  - Northbound Ramps
4. Aviation Road and Aviation Mall Road (west)
5. Aviation Road and Aviation Mall Road (east)
6. Aviation Road/Quaker Road and Glen Street/US Route 9

**Signal Cluster 2 (Figure 3)**

1. Quaker Road and Lafayette Street
2. Quaker Road and Glenwood Avenue
3. Quaker Road and Hannaford Driveway
4. Quaker Road and Bay Road
5. Quaker Road and Meadowbrook Road
6. Quaker Road and Ridge Road

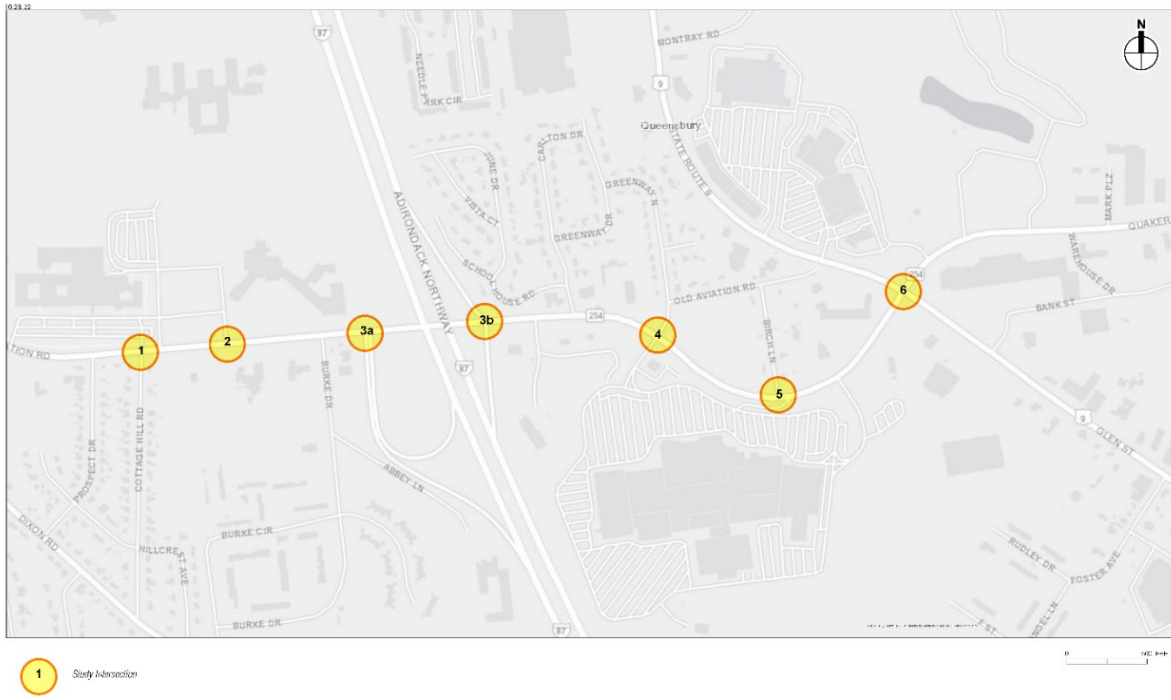
**Signal Cluster 3 (Figure 4)**

1. Quaker Road and Quaker Ridge Boulevard
2. Quaker Road and Dix Avenue
3. Quaker Road and Highland Avenue
4. Quaker Road and Boulevard
5. Quaker Road and River Street



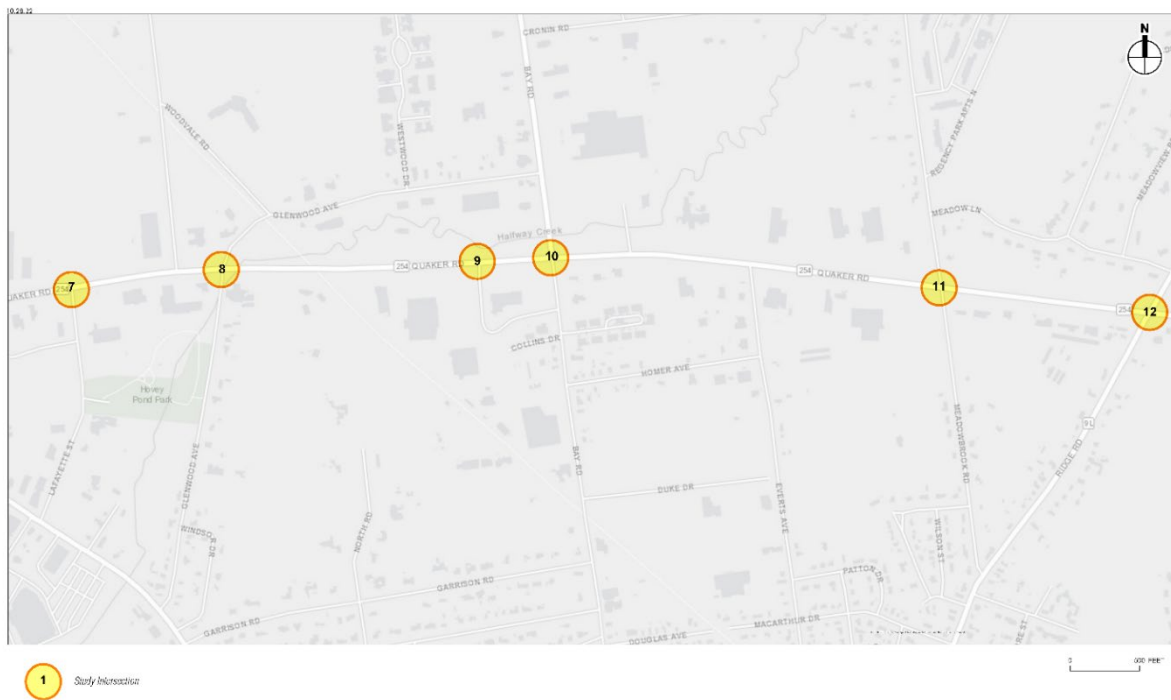
**Figure 2. Signal Cluster 1 Map**

Source: AKRF



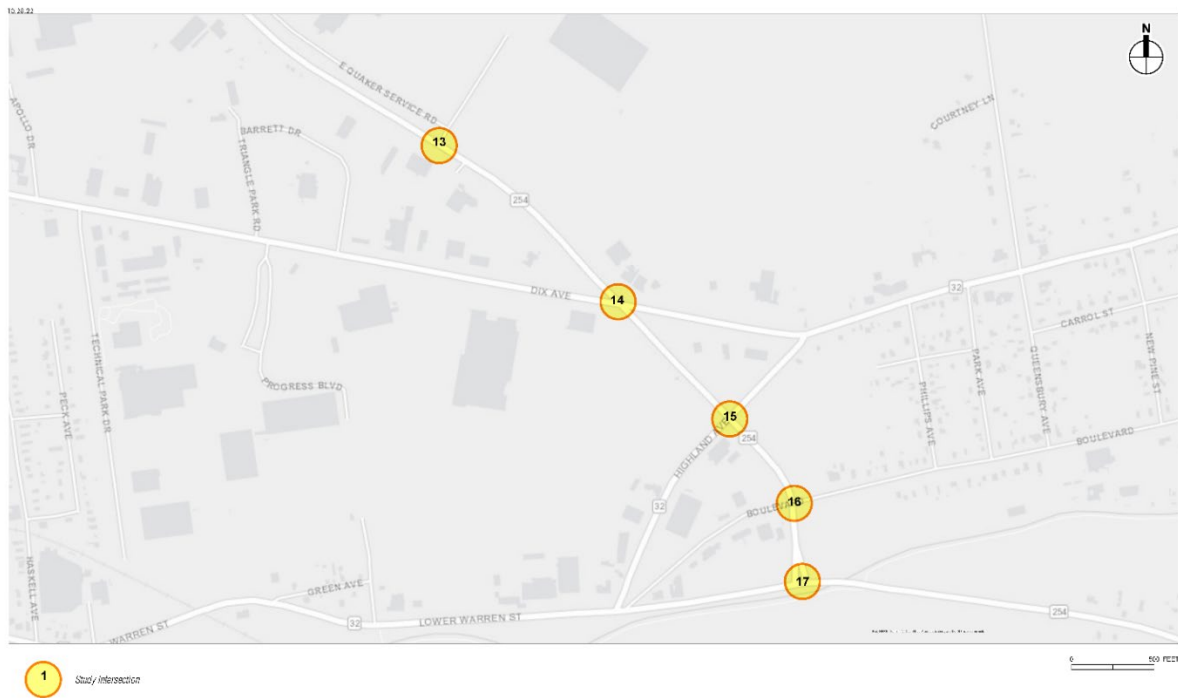
**Figure 3. Signal Cluster 2 Map**

Source: AKRF



**Figure 4. Signal Cluster 3 Map**

Source: AKRF



For each cluster, specific peak periods were identified based on land uses and periods of fluctuating traffic where Adaptive Signal Control Technologies (ASCT) may provide benefit. The analysis time periods for each cluster are summarized in Table 1.

**Table 1. Proposed Data Collection and Analysis Periods**

Signal Cluster	Weekday a.m. Peak Period (7-9 a.m.)	Weekday p.m. Peak Period (4-6 p.m.)	Saturday Peak Period (11 a.m.–1 p.m.)
Signal Cluster 1	✓	✓	✓
Signal Cluster 2		✓	✓
Signal Cluster 3		✓	

## 2.2 Roadway Characteristics

Within the study area, the Aviation Road/Quaker Road corridor is a principal arterial roadway. The posted speed limit west of Upper Glen Street (U.S. Route 9) is 35 miles per hour; east of Upper Glen the speed limit increases to 40 mph. There are a variety of land uses along the corridor including the Queensbury Union Free School campus, the Aviation Mall, restaurants, retail establishments, and

residential land uses that connect to the arterial via collector roadways. There are generally four travel lanes provided between I-87 (the Northway) and Ridge Road (NYS Route 9L) and two travel lanes provided between Ridge Road and River Street. On-street parking is not provided along the corridor.

## **2.3 Pedestrian and Bicycle Overview**

Within the study limits, Aviation Road includes sidewalks on the north and south side of the road to accommodate pedestrians. Some of the signalized intersections on Aviation Road include accommodations for pedestrians such as marked crosswalks, The Americans with Disabilities Act (ADA) compliant sidewalk ramps, and pedestrian signals.

Quaker Road has intermittent segments of sidewalk resulting in pedestrian travel primarily accommodated on the paved roadway shoulders. The recently completed traffic signal upgrades at Glenwood Avenue and at Bay Road include marked crosswalks, pedestrian push buttons, pedestrian signals with countdown timers, and ADA compliant sidewalk ramps. The other signalized intersections through this segment do not include accommodations for pedestrians.

The entire project corridor is denoted as a Priority Bicycle Network on the Adirondack/Glens Falls Transportation Council's Regional Bicycle Plan Map, although currently there are no formal bicycle accommodations provided.

Additional details concerning bicycle and pedestrian infrastructure are noted in section 3.

## **2.4 Data Collection**

Traffic counts and observations for the specific analysis periods for each cluster were collected in September and October 2022 while school was in session, during a typical weekday and Saturday. Turning movement counts (TMC) with pedestrian crossing counts were collected during the time periods identified in Table 1 above.

Based on a review of the traffic count data, the vehicular traffic peak hours for the study area were determined to be 7:15 a.m. to 8:15 a.m. for the weekday a.m., 4:15 p.m. to 5:15 p.m. for the weekday p.m. and 11:45 a.m. to 12:45 p.m. for the Saturday midday.

## 2.5 Signal Inventory

In July 2022, field visits were conducted to inventory the signal equipment at each study intersection. The inventory included identification of the controller hardware, software, and controller programming at each signal as well as the presence of vehicle detection, the type of signal installation (span wire or mast arm) and general condition of the signal equipment. In addition, it was noted if pedestrian signal heads and pedestrian push buttons were provided and were ADA compliant. The inventory sheets are provided in appendix A.

## 2.6 Existing Traffic Operations

Utilizing the Synchro/SimTraffic software, microsimulation models were developed for each of the signal clusters and their associated analysis periods. SimTraffic is a stochastic model where multiple simulation runs will generate different driver behaviors (i.e., acceptable available gaps for turns, changing lanes, etc.) and system results. As such, an average of 10 runs was used to achieve confidence in the simulation results and to obtain the following measures of effectiveness (MOEs):

- **Percent Demand Served:** a measure of the total throughput of the system. This measure takes into consideration the actual volume served versus the demand. When the system is over capacity, this measure provides a better understanding of overall traffic operations than delay or level of service.
- **Average Travel Speed:** a measure of the overall travel speed through the system. The average travel speed calculation considers the average delay throughout the system and vehicle queues.
- **Number of Stops:** the total number of stops for vehicles during the peak hour of analysis on the full study area.
- **Vehicle Hours of Delay:** the amount of delay incurred during the peak hour as a result of congestion.
- **Travel Time:** the time needed to traverse study area segment.
- **Buffer Time Index:** represents extra time that travelers must add to the average travel time when planning trips to ensure on-time arrival.

### 2.6.1 Cluster 1 Existing Traffic Operations

Table 2 summarizes the systemwide MOEs for Cluster 1. The Cluster 1 simulation reports are provided in appendix B. As presented, the Saturday midday peak hour and weekday p.m. peak hour experience notable congestion and delay in Cluster 1. The average speed for these two critical periods ranges from

13 mph to 17 mph (notably below the posted speed limit of 35 mph), reflecting congested conditions. Furthermore, the Buffer Time Index indicates that a driver needs to plan for an increase in the travel time of up to approximately 10% to ensure on-time arrival given the variations in the travel time due to congestion.

**Table 2. Cluster 1 Network Wide MOEs**

<b>MOE</b>	<b>Weekday a.m. Peak Hour</b>	<b>Weekday p.m. Peak</b>	<b>Saturday Peak Hour</b>
Percent Demand Served	100.2%	100.1%	99.7%
Average Travel Speed	17 mph	13 mph	13 mph
Number of Stops	5,921	10,141	10,423
Vehicles Hours of Delay	62.3 hrs	143.7 hrs	147.6 hrs
Travel Time (mm:ss)			
Eastbound	3:19	4:18	4:25
Westbound	2:58	3:11	3:14
Buffer Time Index (%)			
Eastbound	2.0%	3.8%	5.6%
Westbound	3.1%	10.1%	5.7%

**Notes:** Based on 10 simulation runs.

### **2.6.2 Cluster 2 Existing Traffic Operations**

Table 3 summarizes the systemwide MOEs in Cluster 2. The simulation reports are provided in appendix B. As presented, both the Saturday midday peak hour and weekday p.m. peak hour experience similar congestion and delay in Cluster 2. The average speed is 19 to 20 mph for both periods, indicating improved congestion as compared to Cluster 1 but still notably below the posted speed limit of 40 mph. The Buffer Time Index indicates that the travel time variation in both directions and both periods is minimal from day to day.

**Table 3. Cluster 2 Network Wide MOES**

MOE	Weekday p.m. Peak	Saturday Peak Hour
Percent Demand Served	100.0%	100.1%
Average Travel Speed	19 mph	20 mph
Number of Stops	7,119	6,447
Vehicles Hours of Delay	79.3 hrs	68.8 hrs
Travel Time (mm:ss)		
Eastbound	3:56	3:42
Westbound	4:18	4:09
Buffer Time Index (%)		
Eastbound	4.8%	2.1%
Westbound	5.7%	3.5%

**Notes:** Based on 10 simulation runs.

### 2.6.3 Cluster 3 Existing Traffic Operations

Table 4 summarizes the systemwide MOEs in Cluster 3. The Cluster 3 simulation reports are provided appendix B. As presented, for the weekday p.m. peak hour Cluster 3 has less stops and vehicle hours of delay as compared to Clusters 1 and 2; however, these metrics are over a shorter segment of corridor than Clusters 1 and 2. The average speed is 14 mph, below the 40-mph posted speed limit indicating congestion. The Buffer Time Index notes a degree of variation in the travel time with less reliability than Cluster 2 but more than Cluster 1.

**Table 4. Cluster 3 Network Wide MOEs**

MOE	Weekday p.m. Peak
Percent Demand Served	100.0%
Average Travel Speed	14 mph
Number of Stops	4,151
Vehicles Hours of Delay	56.6 hrs
Travel Time (mm:ss)	
Eastbound	2:24
Westbound	2:45
Buffer Time Index (%)	
Eastbound	10.9%
Westbound	14.0%

**Notes:** Based on 10 simulation runs.

### 3 Pedestrian and Bicycle Improvements

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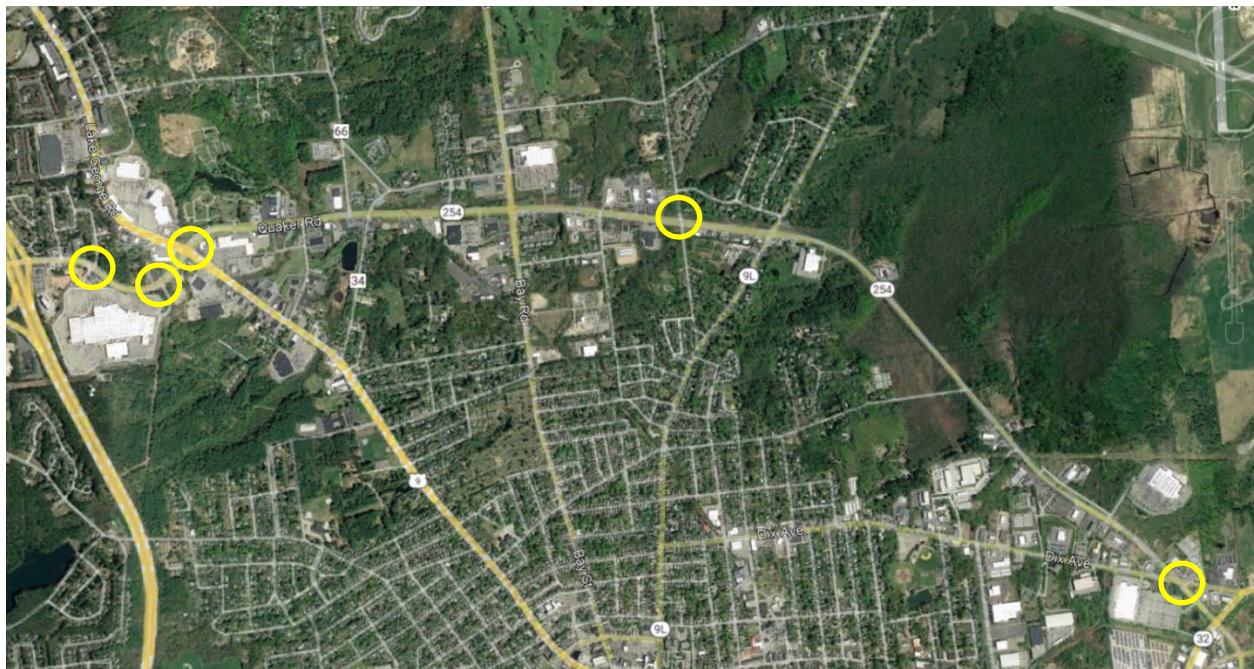
Although the primary goal of this project is to assess the potential for conventional coordinated signal timing versus ASCT systems, the Town of Queensbury also wanted to integrate the potential for bicycle/pedestrian improvements into the analysis. As such, desired improvements to bicycle/pedestrian infrastructure must be identified so that potential changes to the operation of the intersections can be integrated into the development of the traffic analysis models used in the analysis. This allows the analysis to take into account features such as pedestrian pushbuttons and countdown timers which would likely be integrated into future intersection improvement projects.

Five intersections were selected as locations for possible bicycle/pedestrian improvements (see Figure 5). These locations were identified based on existing and anticipated future demand and include:

1. Aviation Road/Aviation Mall Road (west)
2. Aviation Road/Aviation Mall Road (east)
3. Aviation Road/Glen Street
4. Quaker Road/Meadowbrook Road
5. Quaker Road/Dix Avenue

**Figure 5. Pedestrian and Bicycle Improvement Locations**

*Source: Google maps*





### 3.1 Existing Pedestrian and Bicycle Conditions

#### 3.1.1 Aviation Road, Aviation Mall Road (West), and Greenway North

The Aviation Road eastbound intersection approach includes two through travel lanes, a northbound left turn lane, and the roadway widens to the south to provide a free-flowing right turn slip ramp into the Aviation Mall property (see Figure 5). The westbound approach includes two travel lanes and a southbound left-turn lane to access the Aviation Mall west entrance.

Aviation Mall Road (west) is the southern approach to the intersection and serves as the primary entrance to the Aviation Mall property. This approach includes four 12-foot travel lanes: two southbound to access the site and two northbound exiting the property that are separated by a curbed median.

Greenway North is the northern approach to the intersection and is a local road providing access to residential neighborhoods. It is a two-lane road with a single approach to Aviation Road allowing left-through-right turning movements.

Pedestrians are accommodated by four to five feet wide sidewalks on the north and south sides of Aviation Road, directly adjacent to the travel lanes with no vegetative buffer. There are no pedestrian facilities located on Aviation Mall Road (west) or Greenway North. The existing sidewalk curb ramps at the intersection are not ADA compliant, do not include marked crosswalks, and pedestrian signals are not provided. Currently there are no provisions for bicycles through this intersection. See Figure 6 for photos of existing conditions.

**Figure 6. Aviation Mall Road West**

Aerial photo (left) and intersection photo (right)

*Source: Google Maps*





### 3.1.2 Aviation Road and Aviation Mall Road (East)

The Aviation Road eastbound approach includes two through travel lanes, a northbound left-turn lane, and the roadway widens to the south to provide a right-turn lane into the Aviation Mall east access point (see Figure 7). The westbound approach includes a right-turn/through lane, through lane, and two left-turn lanes to access Aviation Mall Road (east).

Aviation Mall Road (east) provides access to the eastern side of the Mall property and includes two southbound entrance lanes and three northbound exit lanes that are separated with a curbed median. The exiting approach includes a left-turn/through lane and two right-turn lanes.

The north approach is a commercial driveway entrance that provides access to a Starbucks Coffee restaurant and a Pearl Vision optometrist. The 32-foot wide driveway is not delineated but primarily acts as a two-lane approach with one entrance and one exit lane.

Pedestrian accommodations at this intersection include pedestrian signals, sidewalk curb ramps, and a marked crosswalk on the west side of the intersection for pedestrians to cross Aviation Road. There are no pedestrian signals or crosswalk striping for the other three intersection approaches. There are concrete sidewalks and curb ramps with detectable warning units present on all four corners of the intersection. The sidewalks do not extend into the Mall or retail entrances. Currently there are no provisions for bicycles through this intersection.

**Figure 7. Aviation Road and Aviation Mall (East)**

Aerial photo (left) and intersection photo (right)

Sources: Google, B&L



### **3.1.3 Aviation Road, Quaker Road, and Upper Glen Street (Route 9)**

The intersection of Aviation Road, Quaker Road, and Upper Glen Street (Route 9) is a high-volume, four-way signalized intersection (see Figure 8). Aviation Road is the western leg of the intersection that includes two 11-foot-wide westbound travel lanes, 2-foot-wide striped medians, 11-foot-wide left-turn lanes, 11-foot-wide through lanes, and a 12-foot-wide right-turn lane. Quaker Road is the eastern approach to the intersection and includes two 11-foot-wide eastbound travel lanes, 2-foot-wide striped medians, 11-foot-wide left turn lanes, 11-foot-wide striped medians, two 11 foot-wide westbound through lanes, and a 12 foot-wide right-turn lane.

North and southbound travel through the intersection is provided by Upper Glen Street (Route 9).

The southern leg of the intersection includes two 11-foot-wide southbound travel lanes, two 11-foot-wide westbound left turn lanes, one northbound 11-foot-wide through lane, and one 13-foot-wide through/right-turn lane. The northern intersection leg consists of a 13-foot westbound right-turn lane, two 11-foot southbound through lanes, 11-foot-wide median area, 11-foot-wide eastbound left turn lane, 2-foot striped median, and two 11-foot-wide northbound travel lanes.

Pedestrian accommodations at this intersection include 5-foot-wide concrete sidewalks along all intersection approaches. The traffic signal includes pushbutton activated pedestrian signals at all four intersection corners that are accompanied by curb ramps with detectable warning units. The crosswalks are approximately 120-feet-long for the north/south crossing and 130 feet for the east/west crossing and are delineated with a red brick asphalt imprinted product across all legs of the intersection. Turning vehicles yield to pedestrian signs are included at this intersection, installed overhead and in line with all of the right-turning lanes.

Currently there are no provisions for bicycles through this intersection.

### Figure 8. Aviation Road, Quaker Road, and Glen Street (Route 9)

Aerial photo (top) and intersection photo (bottom)

Sources: Google, B&L



#### 3.1.4 Quaker Road and Meadowbrook Road

Quaker Road at Meadowbrook Road is a four-way signalized intersection (see Figure 9). East and westbound travel is provided by Quaker Road with four 12-foot-wide through travel lanes, two 12-foot-wide left-turn lanes, 5-foot-wide striped median, and 11-foot-wide shoulders.

Meadowbrook Road provides north and southbound travel with 12-foot-wide through travel lanes, 11-foot-wide left turn lanes, and 2-foot-wide paved shoulders.

Currently there are no pedestrian or bicycle accommodations provided at this intersection.

### Figure 9. Quaker Road and Meadowbrook Road

Aerial photo (left) and intersection photo (right).

Sources: Google, B&L



### 3.1.5 Quaker Road and Dix Avenue

The intersection of Quaker Road and Dix Avenue is a four-way skewed signalized intersection (see Figure 10). Quaker Road provides the East and westbound travel through the intersection and consists of a 12-foot-wide through travel lane, a 12-foot-wide left turn lane, 5-foot-wide striped median, and 6-foot-wide shoulders on both approaches.

The Dix Avenue northbound 3 lane approach includes a 12-foot-wide left turn lane, a 12-foot-wide through lane, and a 12-foot right turn lane. The southbound approach consists of a 12-foot-wide left/through lane and a 12-foot-wide right turn lane. This intersection is heavily skewed with wide radii connecting the approaches on the acute angled corners to allow large trucks to make the right turn movement.

Currently there are no pedestrian or bicycle accommodations provided at this intersection.



## Figure 10. Quaker Road and Dix Avenue

Aerial photo (top) and intersection photo (bottom)

Sources: Google, B&L



## 3.2 Bicycle/Pedestrian Recommendations and Design Concepts

To accommodate current and future bicycle and pedestrian activity at the target intersections, the following recommendations have been made. Where relevant, these recommendations have been taken into account in the simulation model used in the comparisons of conventional versus ASCT signals discussed in section 4 of this plan. Concept plans which integrate the recommended bicycle/pedestrian improvements are located in appendix C.

### 3.2.1 Pedestrian Improvement Options

1. Install ADA compliant Sidewalk Curb Ramps at all intersections. The new curb ramps will include detectable warning units, 5-foot minimum width, 7.5% maximum slope longitudinal slope, and 1.5% maximum cross slope. The ramps should be orientated to guide a pedestrian directly to the marked crosswalk location. The landing area behind the ramp will provide access to the pedestrian pushbuttons.

2. Install ADA compliant Pedestrian Pushbuttons and Signals at all marked crosswalk locations throughout the corridor. The width of Quaker Road at the intersections creates long crossing distances and crossing times. To maintain the efficiency of the traffic signal system, the pedestrian walk cycle would only run when called upon by the push button (see Figure 11).

**Figure 11. Pedestrian Pushbutton and Signal**

Location: Quaker Road and Glenwood Avenue

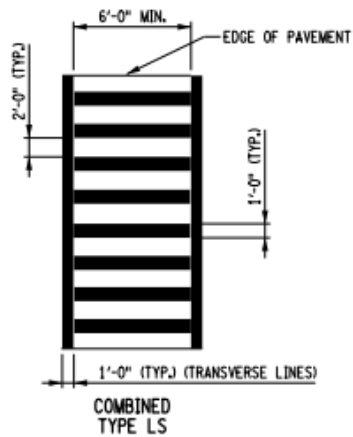
Source: AKRF



3. High-Visibility Crosswalks should be installed at all intersections to provide improved driver awareness of the pedestrian crossing locations. The crosswalks include the ladder bar pattern as shown in the figure below. The pavement markings should be Epoxy paint with glass bead for retro-reflectivity or retro-reflective thermoplastic pavement marking tape (see Figure 12).

## Figure 12. High-Visibility Crosswalk Striping Diagram

Source: NYSDOT



- Imprinted thermoplastic surface treatments could be utilized for the crosswalk locations as an alternative to pavement striping. Imprinted thermoplastic treatments are similar to the crosswalks that were installed at the Aviation Road, Quaker Road, and Glen Street (Route 9) intersection, although it is a different process and material than those that were previously installed. Originally, this intersection included an inlay material where the crosswalk was milled out and the new red pavement was placed, then stamped. Due to the thin inlay, the crosswalks have broken off and been patched over. In contrast, the imprinted thermoplastic heats the existing pavement and stamps in the color and pattern chosen, a more durable option. The color contrast to the pavement will provide a visible cue to drivers similar to the striped crosswalks (see Figure 13).

## Figure 13. Imprinted Thermoplastic Crosswalks

Source: Harbour Roads and Ennis-Flint



4. Install Turning Vehicles Yield to Pedestrians (MUTCD #R10-15) signs on all signalized intersection approaches where marked crosswalks are planned (see Figure 14). Overhead installation on the signal mast arm or span wire will be most effective.

**Figure 14. Turning Vehicles Yield to Pedestrians—Sign Diagram**

*Source: MUTCD*



5. Add Overhead No Turn on Red LED Blank-Out Signs (MUTCD # R10-11) to the new traffic signals (see Figure 15). These dynamic signs provide a dual benefit by allowing the no turn restriction when the pedestrian push button is activated while improving vehicular efficiency by allowing right turns when pedestrians are not present. The signs are installed overhead in line with the right turn movement, wired directly into the signal controller, and activated through the pedestrian push button. When the push button is not activated, the sign is blacked out, allowing right turn movements. These signs currently operate at the east and west exit 18 intersections from I-87.

**Figure 15. Overhead sign: "No Turn on Red"**

*Source: M-Systems Inc.*





## 3.2.2 Bicycle Improvement Options

### 3.2.2.1 Bike Lanes (Recommended)

Bike lanes are a dedicated portion of the roadway for bicycle use only that is identified by striping, signage, and pavement symbols. A common designation is to denote the bike lane with green paint. Conventional bike lanes are intended to operate in the same direction as vehicles and are installed on the existing roadway surface without any physical barrier between the vehicular travel lanes. When additional space is available, a striped buffer space between the vehicular travel and the bike lane should be applied. The layout of bike lanes needs to consider conflict zones where vehicles would be crossing, traffic volume levels, and future enforcement to maintain bicycle use only. Figure 16 is a bike lane installed on Hurley Avenue in the City of Kingston.

Bike lanes on Quaker Road can be installed with some road widening and with geometric alterations, as are shown in the intersection concept plans located in appendix C. In order to maximize the existing pavement width, travel lanes and medians have been re-arranged. It is noted that due to the high volume of vehicles and the multi-lane configuration an additional buffer space between the vehicular travel lane should also be considered. This will also require further roadway construction to provide the additional width.

#### Figure 16. Bike Lane Example

Location: Hurley Avenue, City of Kingston, NY

Source: B&L



### **3.2.2.2 Two-Way Protected Cycle Track (Optional)**

Two-way protected cycle tracks are a type of dedicated bicycle facility that is physically separated from vehicles and pedestrians that will allow bi-directional bicycle travel on one side of the roadway. The separation could be achieved through a curbed median, striped buffer space that would be accentuated with vertical tubular markers or rumble strips. Please refer to Figure 15 for an example cycle track from Syracuse, NY.

The protected cycle track offers the optimal bicycle facility solution with improved bicycle safety and riding comfort level when considering the high-vehicular volume, vehicle speeds, and the multi-lane configuration of Quaker Road. The implementation requires thorough planning and design investigations to develop the cycle track route, details for driveway and intersection crossings, stormwater drainage provisions, and modifications to traffic signals.

Applying a cycle track along the Quaker Road corridor is possible but would require reductions in travel lanes, impacts to vehicular level of service, changes to the traffic signal operations, private property impacts, changes in drainage patterns, federal or State grant to assist with the high-project costs, and generally a new vision for the corridor.

If the town (as well as the County and NYSDOT) is interested in pursuing a protected cycle track along Quaker Road, it would be considered a long-term project. Therefore, the conceptual designs prepared include bike lanes on Quaker Road as implementation could be achieved in the near future—and could be done with less disruption to the current day operation of the corridor.

### **3.2.3 Recommended Bicycle/Pedestrian Improvements by Intersection**

The following summarizes the improvements included in the potential coordinated and ASCT systems, which could affect signal operations. Concept plans and cost estimates for each intersection are located in appendix C.

- **Aviation Road and Aviation Mall Road (West):** The proposed improvements include striping crosswalks across all four approaches with new ADA compliant pedestrian ramps and pedestrian signals. No Turn on Red LED Blank-Out signs would be used to prohibit turns when pedestrians activate the conflicting crosswalk to minimize pedestrian/vehicle conflicts and improve safety while minimizing impacts to vehicle operations during times when pedestrians are not present. Proposed walk and flashing don't walk clearance times were calculated for the proposed crosswalks based on the Manual of Uniform Traffic Control Devices (MUTCD) guidance using a 3.5 ft/sec pedestrian crossing speed. In addition,

the corner radii would be reduced to the maximum extent practical to allow for turning vehicles and to shorten the pedestrian crossing distance. The eastbound channelized right-turn currently yield controlled was proposed to be removed with a smaller corner radius and the right-turn would be placed under control of the traffic signal. These options have an order-of-magnitude cost estimate of \$537,100.

- **Aviation Road and Aviation Mall Road (East):** The proposed improvements include striping crosswalks across the Aviation Mall Road (east) and Starbuck's Driveway approaches with new ADA compliant pedestrian ramps and pedestrian signals. No Turn on Red LED Blank-Out signs would be used to prohibit turns when pedestrian activate the conflicting crosswalk to minimize pedestrian/vehicle conflicts and improve safety while minimizing impacts to vehicle operations during times when pedestrians are not present. Proposed walk and flashing don't walk clearance times were calculated for the proposed crosswalks based on the MUTCD guidance using a 3.5 ft/sec pedestrian crossing speed. These options have an order-of-magnitude cost estimate of \$660,400.
- **Aviation Road and Upper Glen Street (Route 9):** The intersection of Aviation Road and Upper Glen Street has existing crosswalks on all four approaches. As such, the Walk and flashing Don't Walk clearance times were adjusted as necessary for the existing crosswalks to comply with the MUTCD guidance using a 3.5 ft/sec pedestrian crossing speed and upgrading all curb ramps and pedestrian signals to meet ADA compliance is recommended. In addition, a 3 second Leading Pedestrian Interval (LPI) for all crossings was recommended to give pedestrians a head start in crossing the roadways and increasing their visibility to turning vehicles. No Turn on Red LED Blank-Out signs would also be used to prohibit turns when pedestrians activate the conflicting crosswalk. These options have an order-of-magnitude cost estimate of \$586,800.
- **Quaker Road and Meadowbrook Road:** The proposed improvements include striping crosswalks across all four approaches with new ADA compliant pedestrian ramps and pedestrian signals. No Turn on Red LED Blank-Out signs would be used to prohibit turns when pedestrians activate the conflicting crosswalk. Proposed walk and flashing don't walk clearance times were calculated for the proposed crosswalks based on the MUTCD guidance using a 3.5 ft/sec pedestrian crossing speed. In addition, the corner radii would be reduced to the maximum extent practical to allow for turning vehicles and to shorten the pedestrian crossing distance. These options have an order-of-magnitude cost estimate of \$272,900.
- **Quaker Road and Dix Avenue:** The intersection of Quaker Road and Dix Avenue is a heavily skewed intersection resulting in a wide intersection with long distances for crossing pedestrians. In order to install new pedestrian crossing with ADA compliant curb ramps and pedestrian signals, both the northbound and southbound Quaker Road right-turns would be reconstructed as channelized, yield controlled with pedestrian refuge islands as shown in the Quaker and Aviation Road Pedestrian and Bicycle Improvements Technical Memorandum dated October 28, 2022. Proposed walk and flashing don't walk clearance times were calculated for the proposed crosswalks based on the MUTCD guidance using a 3.5 ft/sec pedestrian crossing speed and No Turn on Red LED Blank-Out signs would be used to prohibit turns when pedestrians activate the conflicting crosswalk. These options have an order-of-magnitude cost estimate of \$367,300.

## 4 Signal Comparison

### 4.1 Coordinated Signal System Traffic Operations

Based on the calibrated existing conditions Synchro/SimTraffic models, a fully actuated coordinated signal system model was developed to optimize traffic operations along the corridor without the need for advanced signal technology. Upgrades to allow for operation of a fully actuated coordinated signal system are anticipated to include new vehicle detection at a majority of the study area locations, GPS clocks or similar technology to keep signals in synchronization with one another for a time-based coordinated system, and limited traffic signal controller upgrades to better facilitate system coordination and proposed pedestrian facilities. Timing plans were developed to minimize travel times and delays for each cluster and each peak period including optimal cycle length, offsets, and phase splits to progress vehicles along the corridor.

#### 4.1.1 Cluster 1 Traffic Operations: Coordinated System

Table 5 summarizes the systemwide MOEs for Cluster 1. The coordinated simulation reports are provided in appendix D. As presented, all time periods experience measurable improvement with a coordinated signal system in Cluster 1. Travel time improvements range from 7% to greater than 20% improvement in the eastbound weekday p.m. and Saturday peak periods. Vehicle hours of delay are decreased by 18 to 27% and number of stops are reduced by 10 to 20%.

**Table 5. Cluster 1 Coordinated Signal System Alternative Network Wide MOEs**

MOE	Weekday a.m. Peak Hour	Weekday p.m. Peak	Saturday Peak Hour
Percent Demand Served	100.3%	99.8%	100.2%
Average Travel Speed	18 mph	15 mph	15 mph
Number of Stops	5,156	9,151	8,915
Vehicles Hours of Delay	50.7 hrs	113.4 hrs	107.5 hrs
Fuel Efficiency	22.7 mpg	21.4 mpg	21.0 mpg
Travel Time (mm:ss)			
Eastbound	3:00	3:20	3:29
Westbound	2:45	2:59	2:59
Buffer Time Index (%)			
Eastbound	3.0%	2.2%	6.3%
Westbound	3.4%	5.8%	3.3%

Notes: Based on 10 simulation runs.

#### 4.1.2 Cluster 2 Traffic Operations: Coordinated System

Table 6 summarizes the systemwide MOEs in Cluster 2. The simulation reports are provided in appendix D. As presented, the Saturday peak period experiences improved operations with a coordinated signal system for Cluster 2. Travel time improvements range from 10 to 15% during the Saturday peak hour with approximately a 20% reduction in the number of stops and a 9% reduction in vehicle hours of delay. The weekday p.m. peak hour varies with a 13% improvement in eastbound travel times but an approximate 5% increase in travel times (approximately 14 seconds) in the critical westbound direction. The number of stops are reduced by 10%; however, vehicle hours of delay are increased by a nominal 3%.

**Table 6. Cluster 2 Coordinated Signal System Alternative Network Wide MOEs**

MOE	Weekday p.m. Peak	Saturday Peak Hour
Percent Demand Served	100.0%	100.2%
Average Travel Speed	19 mph	21 mph
Number of Stops	6,362	5,067
Vehicles Hours of Delay	81.6 hrs	62.6 hrs
Fuel Efficiency	34.7 mpg	31.0 mpg
Travel Time (mm:ss)		
Eastbound	3:24	3:19
Westbound	4:32	3:33
Buffer Time Index (%)		
Eastbound	4.2%	1.4%
Westbound	2.2%	2.0%

**Notes:** Based on 10 simulation runs

#### 4.1.3 Cluster 3 Traffic Operations: Coordinated System

Table 7 summarizes the systemwide MOEs in Cluster 3. The simulation reports are provided in appendix D.

As presented, for the weekday p.m. peak hour Cluster 3 has notable improvement to the eastbound and westbound travel times of approximately 16% and 26% respectively with the coordinated signal system. In addition, there is a slight reduction in the number of stops and an approximate 10% reduction in vehicle hours of delay.

**Table 7. Cluster 3 Coordinated Signal System Alternative Network Wide MOEs**

<b>MOE</b>	<b>Weekday p.m. Peak</b>
Percent Demand Served	100.0%
Average Travel Speed	15 mph
Number of Stops	4,053
Vehicles Hours of Delay	50.7 hrs
Fuel Efficiency	18.9 mpg
Travel Time (mm:ss)	
Eastbound	2:01
Westbound	2:01
Buffer Time Index (%)	
Eastbound	4.7%
Westbound	1.5%

**Notes:** Based on 10 simulation runs.

## **4.2 Adaptive Signal Control Technology**

To determine where ASCT can provide additional operational benefits for each signal cluster, SynchroGreen Software-in-the-Loop Simulation Tool was used with Synchro/SimTraffic to accurately simulate the operations of a SynchroGreen adaptive system. The SynchroGreen adaptive system was chosen for evaluation because of the availability of the Software-in-the-Loop Simulation Tool and the system's compatibility with ATMS.now Central Management Software, currently used by the New York State Department of Transportation (NYSDOT). Due to existing system compatibility, SynchroGreen is the only ASCT currently owned and operated by NYSDOT. As all three signal clusters include intersections currently owned and operated by NYSDOT, the analysis methodology allows for streamlined coordination with NYSDOT for potential deployment.

Analyzing a potential ASCT signal system using SynchroGreen's Software-in-the-Loop Simulation Tool does not preclude the Town of Queensbury from selecting another system for deployment that can provide the same optimization benefits outlined below.

### **4.2.1 SynchroGreen System Overview**

SynchroGreen is a software-based, real-time ASCT that has three optimization engines designed to optimize the cycle length, splits, and offsets based on current traffic conditions. The primary objective

of the SynchroGreen algorithm is to minimize total network delay while providing reasonable mainline progression bandwidth. The algorithm utilizes non-proprietary detection data to estimate the degree of saturation and nominal green time for each phase. The SynchroGreen server then analyzes these estimates globally for all phases at all intersections and selects the optimal values for phase allocation and period duration that are applied in the field. SynchroGreen then optimizes offsets according to user-defined travel paths based on common platoon patterns (routes) and known travel times.

SynchroGreen allows the user to customize the algorithm to accommodate a variety of scenarios and test different scenarios prior to deployment. The adaptive system allows the user to select the balanced, progression, or critical movement mode to minimize overall network delay, promote mainline bandwidth, or favor critical movements.

#### ***4.2.1.1 ASCT System Requirements***

In order to operate, ASCT would require additional signal infrastructure in addition to the improvements outlined for the actuated, coordinated signal system. Most notably, any ASCT technology would require communication between the intersections included in the adaptive system and from the system to the central server, either at a physical location or in the Cloud. SynchroGreen and most ASCT products can operate using a variety of communication technologies including both hardwired (i.e., copper, fiber) or wireless (i.e. radios) to operate. Generally wireless options are the most affordable but require line of sight and have less bandwidth/reliability than hardwired options. ASCT also requires extensive vehicle detection, both at an intersection and between intersections to track vehicle platoons. Detection can be achieved using loops, wireless pucks/pods, video, or radar devices.

For traffic cabinet hardware, SynchroGreen requires the use of 2070E or ATC controllers operating with Naztec v76 software (or higher). For intersections with existing 2070E or ATC controllers not manufactured by Trafficware, Naztec firmware can be installed on the existing controller. Older models of traffic controllers including 170/179s would require replacement to operate ASCT.

Finally, software-based ASCT such as SynchroGreen requires software licenses for each traffic signal controller that will be part of the system and a central license to operate the ASCT parameters, etc. The central license needs to be located either on a physical server or in the Cloud. It is worth noting that since NYSDOT (1) operates several SynchroGreen systems, (2) already operates a physical server for

SynchroGreen, and (3) has the central license for system operation, many of these elements have already been established if NYSDOT were to host and/or operate the ASCT.

#### 4.2.1.2 ASCT Traffic Operations

The Software-in-the-Loop simulation tool, which utilizes actual signal controller databases, was used to determine the MOEs for the SynchroGreen ATCS. An average of 10 runs with different random seeds was used to achieve confidence in the simulation results. This is especially important when simulating ATCS as it is a real-time system which constantly adapts to traffic demand, with the potential to change each cycle of a traffic signal.

#### 4.2.2 Cluster 1 Traffic Operations: ASCT

Tables 8 and 9 summarize the travel times and systemwide MOEs for Cluster 1. The simulation reports are provided in appendix E. As presented, the ASCT further improves travel times over the coordinated signal system for all peak periods ranging from 8 to 15%. This is in line with expectations when comparing ASCT to a new fully optimized coordinated signal system. Total stops would remain the same or improve with the ASCT as would vehicle hours of delay except in the Saturday peak hour where there is a slight increase as compared to the coordinated condition.

**Table 8. Cluster 1 Microsimulation Model Travel Time Comparison**

Arterial	Travel Time (mins)				
	Existing (mm:ss)	Coordinated Signal System (mm:ss)	Percent Change <sup>a</sup> (%)	ASCT (mm:ss)	Percent Change <sup>b</sup> (%)
Weekday a.m. Peak Hour					
Aviation Road Eastbound	3:19	3:00	-9.2%	2:36	-13.7%
Aviation Road Westbound	2:58	2:45	-7.4%	2:21	-14.5%
Weekday p.m. Peak Hour					
Aviation Road Eastbound	4:18	3:20	-22.5%	3:03	-8.4%
Aviation Road Westbound	3:11	2:59	-6.0%	2:40	-10.7%
Saturday Peak Hour					
Aviation Road Eastbound	4:25	3:29	-21.3%	2:58	-14.7%
Aviation Road Westbound	3:14	2:59	-7.8%	2:37	-12.2%

Notes:

- a Percent Change compares the existing condition to the coordinated signal system condition.
- b Percent Change compares the coordinated signal system condition to the ASCT condition.



**Table 9. Cluster 1 System Wide Measures of Effectiveness (MOEs) Comparison**

Measures of Effectiveness	Existing	Coordinated Signal System	Percent Change <sup>a</sup> (%)	ASCT	Percent Change <sup>b</sup> (%)
Weekday a.m. Peak Hour					
Percent Demand Served	100.2%	100.3%	N/A	100.0%	N/A
Total Stops	5,921	5,156	-12.9%	4,900	-5.0%
Vehicle Hours of Delay	62.3 hrs	50.7 hrs	-18.6%	46.3 hrs	-8.7%
Average Travel Speed	17 mph	18 mph	+6%	19 mph	+5.6%
Fuel Efficiency	22.3 mpg	22.7 mpg	+1.8%	23.5 mpg	+3.5%
Weekday p.m. Peak Hour					
Percent Demand Served	100.1%	99.8%	N/A	100.4%	N/A
Total Stops	10,141	9,151	-9.8%	8,879	-3.0%
Vehicle Hours of Delay	143.7 hrs	113.4 hrs	-21.1%	106.2 hrs	-6.3%
Average Travel Speed	13 mph	15 mph	+15.4%	16 mph	+6.7%
Fuel Efficiency	20.5 mpg	21.4 mpg	+4.4%	21.6 mpg	+0.9%
Saturday Peak Hour					
Percent Demand Served	99.7%	100.2%	N/A	100.0%	N/A
Total Stops	10,423	8,915	-14.5%	8,904	-0.1%
Vehicle Hours of Delay	147.5 hrs	107.5 hrs	-27.2%	111.5 hrs	+3.7%
Average Travel Speed	13 mph	15 mph	+15.4%	15 mph	0%
Fuel Efficiency	20.2 mpg	21.0 mpg	+4.0%	21.4 mpg	+1.9%

Notes:

- a Percent Change compares the existing condition to the coordinated signal system condition.
- b Percent Change compares the coordinated signal system condition to the ASCT condition.

### 4.2.3 Cluster 2 Traffic Operations: ASCT

Tables 10 and 11 summarize the travel times and systemwide MOEs for Cluster 2. The simulation reports are provided in appendix E. As presented for Cluster 2, the most notable improvement with ASCT is the reduction of the critical westbound travel time of 13% during the weekday p.m. peak period. Vehicle hours of delay are also decreased with ASCT while the average travel speed and fuel efficiency increase. For the weekday Saturday peak period the ASCT improvements are nominal with the proposed system parameters.

**Table 10. Cluster 2 Microsimulation Model Travel Time Comparison**

Arterial	Travel Time (mins)				
	Existing (mm:ss)	Coordinated Signal System (mm:ss)	Percent Change <sup>a</sup> (%)	ASCT (mm:ss)	Percent Change <sup>b</sup> (%)
Weekday p.m. Peak Hour					
Aviation Road Eastbound	3:56	3:24	-13.3%	3:31	+3.4%
Aviation Road Westbound	4:18	4:32	+5.6%	3:57	-13.0%
Saturday Peak Hour					
Aviation Road Eastbound	3:42	3:19	-10.5%	3:19	0%
Aviation Road Westbound	4:09	3:33	-14.8%	3:44	+5.3%

Notes:

- a Percent Change compares the existing condition to the coordinated signal system condition.
- b Percent Change compares the coordinated signal system condition to the ASCT condition.

**Table 11. Cluster 2 System Wide Measures of Effectiveness (MOEs) Comparison**

Measures of Effectiveness	Existing	Coordinated Signal System	Percent Change <sup>a</sup> (%)	ASCT	Percent Change <sup>b</sup> (%)
Weekday p.m. Peak Hour					
Percent Demand Served	100.0%	100.0%	N/A	100.4%	N/A
Total Stops	7,119	6,362	-10.6%	6,356	-0.1%
Vehicle Hours of Delay	79.3 hrs	81.6 hrs	+2.9%	74.8	-8.3%
Average Travel Speed	19 mph	19 mph	0%	20 mph	+5.3%
Fuel Efficiency	34.8 mpg	34.7 mpg	-0.3%	33.4 mpg	-3.7%
Saturday Peak Hour					
Percent Demand Served	100.1%	100.2%	N/A	99.9%	N/A
Total Stops	6,447	5,067	-21.4%	5,496	+8.5%
Vehicle Hours of Delay	68.8 hrs	62.6 hrs	-9.0%	61.9 hrs	-1.1%
Average Travel Speed	20 mph	21 mph	+5.0%	21 mph	0%
Fuel Efficiency	31.9 mpg	31.0 mpg	-2.8%	24.3 mpg	-21.6%

Notes:

- a Percent Change compares the existing condition to the coordinated signal system condition.
- b Percent Change compares the coordinated signal system condition to the ASCT condition.

#### 4.2.4 Cluster 3 Traffic Operations: ASCT

Tables 12 and 13 summarize the travel times and systemwide MOEs for Cluster 3. The simulation reports are provided in appendix E. As presented, in Cluster 3 the coordinated signal system generally runs as well or better than the ASCT. This is likely due to the shorter cycle length utilized by the ASCT which creates more stops but can reduce overall delay for vehicles waiting at intersections for the green light.

**Table 12. Cluster 3 Microsimulation Model Travel Time Comparison**

Arterial	Travel Time (mins)				
	Existing (mm:ss)	Coordinated Signal System (mm:ss)	Percent Change <sup>a</sup> (%)	ASCT (mm:ss)	Percent Change <sup>b</sup> (%)
Weekday p.m. Peak Hour					
Aviation Road Eastbound	2:24	2:01	-15.9%	2:12	+9.3%
Aviation Road Westbound	2:45	2:01	-26.6%	2:38	+30.7%

Notes:

- a Percent Change compares the existing condition to the coordinated signal system condition.
- b Percent Change compares the coordinated signal system condition to the ASCT condition.

**Table 13. Cluster 3 System Wide Measures of Effectiveness (MOEs) Comparison**

Measures of Effectiveness	Existing	Coordinated Signal System	Percent Change <sup>a</sup> (%)	ASCT	Percent Change <sup>b</sup> (%)
Weekday p.m. Peak Hour					
Percent Demand Served	100.0%	100.0%	N/A	99.%	N/A
Total Stops	4,151	4,053	-2.4%	4,150	+2.4%
Vehicle Hours of Delay	56.6 hrs	50.7 hrs	-10.4%	47.5 hrs	-6.3%
Average Travel Speed	14 mph	15 mph	+7.0%	14 mph	-6.7%
Fuel Efficiency	14.3 mpg	18.9 mpg	+32.2%	19.2 mpg	+1.6%

Notes:

- a Percent Change compares the existing condition to the coordinated signal system condition.
- b Percent Change compares the coordinated signal system condition to the ASCT condition.

### **4.3 Coordinated versus ASCT Comparison Conclusion**

Based solely on operations, Signal Cluster 1 is an ideal corridor for ASCT deployment. The range of land uses, spacing of the intersections, and the vehicle volumes demonstrated a notable improvement with all peak periods. Clusters 2 and 3 have greater signal spacing between many of the intersections requiring additional midblock detection to function. In addition, it becomes more challenging to keep a platoon of vehicles together over longer distances to maximize arrival on green opportunities. For Cluster 2, ASCT is mostly beneficial for the critical westbound direction in the weekday p.m. peak hour. If this additional reduction in travel time is desired, ASCT would be well suited for Cluster 2. Regarding Cluster 3, the existing traffic signals are outdated, and the standard coordination system offers a greater benefit to travel time with the consistently longer cycle length. Vehicle hours of delay are reduced due to the shorter cycle length for the ASCT, but the reduction may not warrant a full ASCT installation.

## 5 Operations and Maintenance

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### 5.1 Signal Equipment Upgrades

To facilitate either of the upgraded signal system alternatives discussed in section 4.3, the existing signal equipment will require a variety of upgrades. Equipment necessary to operate the signal system alternatives is described below. This list does not include regular signal maintenance for equipment (mast and span poles, LEDs, etc.) that should be replaced based on its condition and service life regardless of whether signal system upgrades are implemented.

- **Stop Bar and Advanced System Detection:** Additional signal detection will be necessary for operations of both signal system alternatives, with advanced system detection required for ASCT. Coordinated signal systems best operate with full actuation, with detectors at the stop bar for each lane or phase. ASCT best operates with detectors for each lane at the stop bar and advanced detection where the nearest adjacent intersection is 1,000 feet or more. Available signal detection technology includes loops, wireless magnetometers (typically known as pucks or pods), video detection (either directional or 360 degree) and radar. It should be noted that NYSDOT has discontinued the use of wireless magnetometers and is moving away from in-ground detection including loops. The ASCT can work with any of these detection solutions; however, camera technology is the preferred option.
- **GPS Time Synchronization System:** GPS time synchronization system consists of a programmable GPS interface module and a GPS antenna. The interface works as a clock to keep each intersection controller synchronized to the same time. This system prevents controllers using time-of-day coordination from “drifting” where each has a different time display, which can cause the programmed offsets to be less successful over time in progressing traffic flow. For a coordinated signal system, a GPS synchronization system is recommended as signal interconnect is not required.
- **Signal Interconnect/Communication:** In order for ASCT to operate, local traffic signals need to be able to communicate information from the local detectors and controller to the central system, either in the Cloud or on a physical server. Available signal communication technology includes buried or aerial fiber optics, wireless radios, cellular modems, and ethernet. Fiber optics offer the most robust communication but are also the most expensive and disruptive to implement as they require extensive trenching or coordination with overhead utilities. Given the length of the proposed adaptive system and the multiple jurisdictions maintaining the traffic signals, a wireless or cellular option is recommended. Cellular will have a reoccurring fee for the cellular service (approximately \$40/month) however the wireless will require line of sight between the radios which will require potentially several additional radios between signals to achieve line of sight which must be maintained for good operations.

- Traffic Signal Controllers and Cabinets:** Traffic signal controllers along the corridor range from older 179 models to common 2070 models to the latest Advanced Transportation Controllers (ATC). Older model 179 controllers should be replaced to best operate a coordinated system. To facilitate ASCT, 2070 or higher models are required. In particular, 2070 controllers must have a 1C module, which includes an ethernet port, to operate the ASCT. Presently, most of the 2070 controllers on the corridor are 2070L and would need to be upgraded to 2070E model or higher for ASCT. Further, the ATC controllers which are the latest model controllers are not yet approved by NYSDOT which will need to be a consideration for operation and maintenance as discussed below. To operate the ASCT NYSDOT currently employs, all controllers will require Naztec v76 software. Cabinets will need to be evaluated for space with the upgraded detection and communication requirements. It is recommended that cabinets be upgraded from standard 330 cabinets to 330 stretch-type for additional space for necessary equipment.
- ASCT:** The ASCT itself will need to be installed at each intersection and in a central location such as the Cloud or a local server. The ASCT NYSDOT employs is a software-based application that does not require additional hardware in the cabinet or elsewhere to maintain. Each intersection would require local controller software to be installed with a one-time license fee for each intersection and a central license for a one-time fee for either the Cloud or server. NYSDOT has an existing server for ASCT which is likely to be utilized for any NYSDOT operated system. The town has an existing third-party hosted cloud server that may be utilized for a town operated system.

Tables 14 and 15 summarize the necessary signal equipment upgrades by cluster and intersection for both the Coordinated and ASCT signal system alternatives, respectively. Order-of-magnitude cost estimates are provided in appendix F.

**Table 14. Coordinated Signal System Recommended Equipment Upgrades**

Signal	Detection	Communication	Traffic Signal Controllers and Cabinet	ASCT
<b>Cluster 1</b>				
Aviation Road & QUFSD Secondary Driveway/Cottage Hill Road (Town Owned)	N/A	GPS Synchronization System	Install stretch cabinet	N/A
Aviation Road & QUFSD Main Entrance Driveway (Town Owned)	Additional magnetometers on main line	GPS Synchronization System	N/A	N/A
Aviation Road & I-87 Ramps (NYSDOT owned)	Two 360-degree video detection cameras	GPS Synchronization System	Install stretch cabinet	N/A
Aviation Road & Aviation Mall Road (west) (NYSDOT owned)	One 360-degree video detection camera	GPS Synchronization System	Install stretch cabinet	N/A

**Table 14 continued**

<b>Signal</b>	<b>Detection</b>	<b>Communication</b>	<b>Traffic Signal Controllers and Cabinet</b>	<b>ASCT</b>
<b>Cluster 1 continued</b>				
Aviation Road & Aviation Mall Road (east) (NYSDOT owned)	One 360-degree video detection camera	GPS Synchronization System	Install stretch cabinet	N/A
Aviation Road/Quaker Road & Glen Street/US Route 9 (NYSDOT owned)	Two 360-degree video detection cameras	GPS Synchronization System	Install stretch cabinet	N/A
<b>Cluster 2</b>				
Quaker Road & Lafayette Street (Town Owned)	One 360-degree video detection camera	GPS Synchronization System	Upgrade to 2070 controller, install stretch cabinet	N/A
Quaker Road & Glenwood Avenue (Town Owned)	One 360-degree video detection camera	GPS Synchronization System	Install stretch cabinet	N/A
Quaker Road & Hannaford Driveway (Privately Owned)	One 360-degree video detection camera	GPS Synchronization System	Upgrade to 2070 controller, install stretch cabinet	N/A
Quaker Road & Bay Road (Town Owned)	One 360-degree video detection camera	GPS Synchronization System	Install stretch cabinet	N/A
Quaker Road & Meadowbrook Road (Town Owned)	One 360-degree video detection camera	GPS Synchronization System	Upgrade to 2070 controller, install stretch cabinet	N/A
Quaker Road & Ridge Road (NYSDOT Owned)	One 360-degree video detection camera	GPS Synchronization System	Install stretch cabinet	N/A
<b>Cluster 3</b>				
Quaker Road & Quaker Ridge Boulevard (Town Owned)	One 360-degree video detection camera	GPS Synchronization System	Install stretch cabinet	N/A
Quaker Road & Dix Avenue (Town Owned)	One 360-degree video detection camera	GPS Synchronization System	Upgrade to 2070 controller, install stretch cabinet	N/A
Quaker Road & Highland Avenue (Town Owned)	One 360-degree video detection camera	GPS Synchronization System	Install stretch cabinet	N/A
Quaker Road & Boulevard (Town Owned)	One 360-degree video detection camera	GPS Synchronization System	Upgrade to 2070 controller, install stretch cabinet	N/A
Quaker Road and River Street (NYSDOT Owned)	One 360-degree video detection camera	GPS Synchronization System	Install stretch cabinet	N/A

**Table 15. ASCT Signal System Recommended Equipment Upgrades**

<b>Signal</b>	<b>Detection</b>	<b>Communication</b>	<b>Traffic Signal Controllers and Cabinet</b>	<b>ASCT</b>
<b>Cluster 1</b>				
Aviation Road & QUFSD Secondary Driveway/Cottage Hill Road (Town Owned)	One 360-degree video detection cameras	Cellular Modem	Install stretch cabinet, install Naztec v76 software	ASCT local intersection software
Aviation Road & QUFSD Main Entrance Driveway (Town Owned)	One 360-degree video detection cameras	Cellular Modem	Install Naztec v76 software	ASCT local intersection software
Aviation Road & I-87 Ramps (NYSDOT owned)	Two 360-degree video detection cameras	Sisco Cellular Modem	Upgrade 2070L to 2070E, install stretch cabinet, install Naztec v76 software	ASCT local intersection software
Aviation Road & Aviation Mall Road (west) (NYSDOT owned)	One 360-degree video detection camera	Sisco Cellular Modem	Upgrade 2070L to 2070E, install stretch cabinet, install Naztec v76 software	ASCT local intersection software
Aviation Road & Aviation Mall Road (east) (NYSDOT owned)	One 360-degree video detection camera	Sisco Cellular Modem	Upgrade 2070L to 2070E, install stretch cabinet, install Naztec v76 software	ASCT local intersection software
Aviation Road/Quaker Road & Glen Street/US Route 9 (NYSDOT owned)	Two 360-degree video detection cameras	Sisco Cellular Modem	Upgrade 2070L to 2070E, install stretch cabinet, install Naztec v76 software	ASCT local intersection software
<b>Cluster 2</b>				
Quaker Road & Lafayette Street (Town Owned)	One 360-degree video detection camera	Cellular Modem	Upgrade to 2070 controller, install stretch cabinet, install Naztec v76 software	ASCT local intersection software
Quaker Road & Glenwood Avenue (Town Owned)	One 360-degree video detection camera	Cellular Modem	Install stretch cabinet, install Naztec v76 software	ASCT local intersection software
Quaker Road & Hannaford Driveway (Privately Owned)	One 360-degree video detection camera	Cellular Modem	Upgrade to 2070 controller, install stretch cabinet, install Naztec v76 software	ASCT local intersection software
Quaker Road & Bay Road (Town Owned)	One 360-degree video detection camera	Cellular Modem	Install stretch cabinet, install Naztec v76 software	ASCT local intersection software
Quaker Road & Meadowbrook Road (Town Owned)	One 360-degree video detection camera	Cellular Modem	Upgrade to 2070 controller, install stretch cabinet, install Naztec v76 software	ASCT local intersection software
Quaker Road & Ridge Road (NYSDOT Owned)	One 360-degree video detection camera	Sisco Cellular Modem	Upgrade 2070L to 2070E, install stretch cabinet, install Naztec v76 software	ASCT local intersection software



**Table 15 continued**

<b>Signal</b>	<b>Detection</b>	<b>Communication</b>	<b>Traffic Signal Controllers and Cabinet</b>	<b>ASCT</b>
<b>Cluster 3 continued</b>				
Quaker Road & Quaker Ridge Boulevard (Town Owned)	One 360-degree video detection camera	Cellular Modem	Upgrade 2070L to 2070E, install stretch cabinet, install Naztec v76 software	ASCT local intersection software
Quaker Road & Dix Avenue (Town Owned)	One 360-degree video detection camera	Cellular Modem	Upgrade to 2070 controller, install stretch cabinet, install Naztec v76 software	ASCT local intersection software
Quaker Road & Highland Avenue (Town Owned)	One 360-degree video detection camera	Cellular Modem	Upgrade 2070L to 2070E, install stretch cabinet, install Naztec v76 software	ASCT local intersection software
Quaker Road & Boulevard (Town Owned)	One 360-degree video detection camera	Cellular Modem	Upgrade to 2070 controller, install stretch cabinet, install Naztec v76 software	ASCT local intersection software
Quaker Road and River Street (NYSDOT Owned)	One 360-degree video detection camera	Sisco Cellular Modem	Upgrade 2070L to 2070E, install stretch cabinet, install Naztec v76 software	ASCT local intersection software

Note: ASCT will also require at least one central software license.

## **5.2 Operations and Maintenance Considerations**

Coordinated and ASCT signal systems require effective operation and maintenance to maintain improved operations. Both the coordinated and ASCT signal systems require increased detection; this additional equipment can result in increased maintenance. Other equipment such as the upgraded controllers do not require additional maintenance; however, if the user is unfamiliar with the equipment, training may be necessary to continue to properly operate the equipment.

There are two primary differences in operation and maintenance of a coordinated system compared to an ASCT. A coordinated system is based on time-of-day plans designed around current traffic conditions. These plans need to be updated on a regular basis every 3 to 5 years or whenever a notable change in traffic occurs along a corridor to maintain optimal operations. ASCT is actively adjusting to traffic over time so while the adaptive parameters may need to be adjusted, the effort would be less frequent and less intensive than a full-scale retiming. However, ASCT requires communication at all intersections to operate effectively. The communication hardware is therefore an additional maintenance

requirement which is imperative to keep in good operation for ASCT. With these communications an ASCT is viewed as less maintenance intensive and more operational intensive since having remote access to a signal can allow many issues to be diagnosed or adjusted without needing to travel to the signal itself. There may also be additional cost to maintain an ASCT depending on the communication used and whether the system is hosted in the Cloud or on a server. Wireless, cellular, and Cloud services are likely to require a reoccurring fee for operations. It is noted that the town currently utilizes a third-party to host a cloud server which may be utilized for ASCT operations. For a conservative cost estimate, reoccurring fees for a Cloud server were included which may be reduced if utilizing the town's existing infrastructure.

## **5.2.1 Jurisdiction**

As each of the study area clusters have signals with both town and NYSDOT jurisdiction, a formal operation and maintenance agreement will need to be made between both parties to allow for an ASCT signal system. Below is a brief description of the potential agreements for each cluster.

### **5.2.1.1 Cluster 1**

Cluster 1 is made up of six traffic signals with both of the Northway/I-87 ramps operating as one signal. The two signalized school driveways located to the west are operated and maintained by the town and the remaining four intersections from the Northway/I-87 ramps to Route 9 are operated and maintained by NYSDOT. These intersections provide critical access to the interstate; on the eastern end of Cluster 1, the intersection of Aviation Road and Route 9 brings together two NYSDOT controlled roadways. Therefore, it is unlikely that NYSDOT would want to transfer ownership of the traffic signals, or to allow a system they did not have access to, to operate the traffic signals they are owning and maintaining. As such, it is likely that any ASCT in Cluster 1 would need to be hosted on NYSDOT in their ATMS central software. For the remaining traffic signals not owned and operated by NYSDOT there are two primary alternatives for ongoing maintenance:

1. NYSDOT can take ownership of the town's traffic signals to include ongoing maintenance and operations through the state's permit signal agreement for a fee of approximately \$1,200 per year/signal. The traffic signals will need to be fully MUTCD compliant and conform to NYSDOT standards and specifications in order to be transferred.
2. A shared maintenance agreement is reached where the town maintains the signal but NYSDOT maintains the controller for the purpose of adaptive operations as well as the overall adaptive signal system. A key consideration for a shared maintenance agreement is a clear delineation of responsibilities for all parties.

### **5.2.1.2 Cluster 2**

Cluster 2 is made up of six traffic signals, four of which are owned and maintained by the town, one is privately owned at the Hannaford driveway, and one intersection (the intersection of Ridge Road and Quaker Road) is owned and maintained by NYSDOT. The intersection which is privately owned at the Hannaford driveway would need to be turned over to the town for either NYSDOT or town ASCT operations. The one intersection operated by NYSDOT is relatively isolated without nearby adjacent signals owned and operated by NYSDOT. There are three primary alternatives for ongoing maintenance assuming an ASCT program is desired:

1. Either the town or NYSDOT operate and manage the ASCT and a shared maintenance agreement where the town and NYSDOT maintain their respective signals except for the controllers that are maintained by the party operating the ASCT. It is important to note that both parties would need to be responsive and coordinated with any necessary signal maintenance as adjustments to controllers, detection, and communication will impact the operations of the ASCT.
2. NYSDOT operates the ASCT and takes ownership of the town's traffic signals through the State's permit signal agreement for a fee of approximately \$1,200 per year/signal. The traffic signals will need to be fully MUTCD compliant and conform to NYSDOT standards and specifications in order to be transferred.
3. The town operates the ASCT and takes over maintenance of the one NYSDOT signal through a modified arterial agreement specific to the traffic signal.

### **5.2.1.3 Cluster 3**

Cluster 3 consists of five intersections, four of which are town owned and operated and the signal at Quaker Road and River Street is owned and maintained by NYSDOT. Although the intersections in cluster 3 are more closely spaced and the NYSDOT operated traffic signal is less isolated with the adjacent intersection along River Street also being controlled by NYSDOT, the same general options existing for operations of the ASCT as outlined for cluster 2 above.

### **5.2.1.4 Coordinated Signal Timing Operations**

Coordinated signal timing operations will also require coordination between the town and NYSDOT for maintenance and operations but in a less critical manner as the traffic signals do not need to be interconnected to one another. NYSDOT would need to agree to the upgrades outlined in Table 15 above and implementation of the proposed coordinated signal timing plans. In addition, any retiming efforts would need to be coordinated with both parties. However, transfer of maintenance responsibilities or shared maintenance for the signal equipment would not be necessary.

## 6 Benefit-Cost Analysis

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### 6.1 Benefit-Cost Analysis Methodology

The BCA conducted for the Queensbury ASCT Feasibility Study was prepared using the latest available guidance from U.S. DOT:

- U.S. DOT. “A Guide for Leveraging ITS Evaluation Tools for Benefit-Cost Analysis (BCA) and Return-on-Investment (ROI).” July 2022.
- U.S. DOT. “Use Case: Adaptive Signal Control Benefit-Cost Analysis.” July 2022.
- U.S. DOT. “Benefit-Cost Analysis Guidance for Discretionary Grant Programs.” January 2023.

#### 6.1.1 Project Alternatives

The following signal system alternatives were evaluated in the BCA:

- Baseline (Existing/No Build Alternative): This alternative assumes the signal system is not upgraded. The baseline alternative is used to measure the incremental benefits and costs associated with the proposed signal system upgrades.
- Coordinated Signal System (Signal Optimization): This alternative assumes the existing signal system will be upgraded to allow for operation of a fully actuated coordinated signal system.
- ASCT (NYSDOT operated): This alternative assumes the existing signal system will be upgraded to a software-based ASCT and NYSDOT will operate and maintain the ASCT.
- ASCT (town operated): This alternative assumes the existing signal system will be upgraded to a software-based adaptive system and the town operate and maintain the ASCT.

#### 6.1.2 General Assumptions

The BCA measures benefits and costs throughout a period of analysis beginning at the base year and ending after the expected useful service life of an upgraded signal system. Using U.S. DOT guidance, the following assumptions were made to avoid overestimating expected project benefits and underestimating expected project costs:

- All costs are expressed in 2021 dollars. This year, also known as the base year, represents the latest year where dollar values for costs and benefits are available.
- The BCA analysis period begins in 2021 and ends in 2036. It assumes that construction will take place from 2024 through 2026 and upgraded signal systems will be implemented in 2027. The estimated service life (lifecycle) for either a coordinated signal system or an ASCT system is assumed to be 10 years.
- A real discount rate of 7% per year is assumed in the analysis to convert expected future revenue streams of benefits and costs to the same present value (2021 dollars) and remove the effects of inflation over time.

- Recommended improvement measures detailed within the Quaker and Aviation Road Pedestrian and Bicycle Improvements Technical Memorandum dated October 28, 2022 are evaluated as a standalone pedestrian facility benefit rather than integrated with safety or mobility benefits of the signal upgrades.

### **6.1.3 Estimation of Signal System Upgrade Benefits**

It is expected that the proposed signal system upgrades will improve safety, enhance mobility, and reduce transportation impacts to the environment (emissions). This section provides a summary of monetized benefits, along with key findings. Refer to appendix G for detailed calculations of expected benefits associated with the proposed signal system upgrades for each signal cluster.

The BCA conservatively assumes that benefits associated with the proposed signal system upgrades will begin to accrue the first year after the estimated time of construction completion, which is 2027. In addition, the expected benefits for an ASCT system are the same regardless of whether it is NYSDOT operated, or town operated.

#### **6.1.3.1 Safety Benefits**

The proposed signal upgrades are expected to reduce the number of crashes at intersections within each of the signal clusters. Using available crash data, proposed crash reductions are quantified using Crash Modification Factors (CMFs) and then monetized, using recommended values by crash type. CMFs are quantitative estimates of the effectiveness of a safety countermeasure and are based on prior studies.

Five-year crash data were obtained from NYSDOT and summarized for the 2017 to 2021 period by crash severity for each cluster. CMFs were then applied to the average annual crashes by crash severity to estimate the annual reduction in crashes at each cluster and monetized according to U.S. Department of Transportation (U.S. DOT) guidance.

The monetized safety benefits for each cluster are summarized in Table 16. ASCT is expected to generate a higher reduction in crashes at each signal cluster when compared to signal optimization. Cluster 3 is expected to generate the highest safety benefit with nearly \$1.5 million over the project lifecycle, when discounted at 7%.

**Table 16. Expected Safety Benefits--All Signal Clusters**

Alternatives	Estimated Benefits over the Project Lifecycle (Discounted at 7% <sup>a</sup> )		
	Signal Cluster 1	Signal Cluster 2	Signal Cluster 3
Signal Optimization	\$501,365	\$483,745	\$574,974
ASCT (NYSDOT or Town Operated)	\$1,303,548	\$1,257,738	\$1,494,932

Note:

- a This discount rate is applied to convert expected future revenue streams of benefits to the same present value (2021 dollars) and remove the effects of inflation over time.

### 6.1.3.2 Mobility (Travel Time) Benefits

Proposed signal upgrades are expected to optimize traffic flow and reduce peak hour travel times for each signal cluster. MOEs for each signal cluster were obtained from the Signal Coordination and ASCT Comparison discussed in section 4. Using corridor traffic data and U.S. DOT recommended values, peak hour travel time savings were monetized according to U.S. DOT guidance.

The monetized mobility benefits for each cluster are summarized in Table 17. ASCT is expected to generate a higher mobility benefit for Clusters 1 and 2 whereas Signal Optimization is expected to generate a higher mobility benefit for Cluster 3. ASCT provides the highest mobility benefit for Cluster 1 and is expected to generate \$5.5 million over the project lifecycle, when discounted at 7%. For Cluster 2, ASCT provides more than double the expected benefit in mobility when compared to Signal Optimization.

**Table 17. Expected Mobility (Travel Time) Benefits--All Signal Clusters**

Alternatives	Estimated Benefits over the Project Lifecycle (Discounted at 7% <sup>a</sup> )		
	Signal Cluster 1	Signal Cluster 2	Signal Cluster 3
Signal Optimization	\$3,447,110	\$1,411,159	\$3,420,816
ASCT (NYSDOT or Town Operated)	\$5,526,280	\$2,968,838	\$1,120,408

Note:

- a This discount rate is applied to convert expected future revenue streams of benefits to the same present value (2021 dollars) and remove the effects of inflation over time.

### 6.1.3.3 Pedestrian Facility Benefits

Recommended improvement measures are detailed in section 3 of this study. Based on a review of U.S. DOT guidance, the addition of striped crosswalks can be incorporated into the BCA. The installation of striped crosswalks can provide pedestrians with an increased sense of safety when crossing a roadway facility. Peak hour pedestrian traffic count data was utilized to estimate the amount of daily pedestrian trips at intersections within each signal cluster and monetized using U.S. DOT guidance.

The monetized pedestrian facility benefits for each cluster are summarized in Table 18. The pedestrian facility benefits are equivalent amongst all alternatives. The expected pedestrian facility benefits are higher in Cluster 1 as recommended improvements are proposed for several intersections within that cluster.

Other recommended pedestrian improvement measures such as new ADA compliant pedestrian ramps, pedestrian signals, modifications to the corner radii to shorten crossing distances and proposed No Turn on Red LED Blank-Out signage were not incorporated into the BCA as there is no available data to monetize these improvements. Recommended bicycle improvements were not incorporated into the BCA as the specific nature of these improvements (e.g., length of bike line, timing of implementation) have not been identified. Qualitatively, it is expected that these bicycle and pedestrian improvement measures would yield additional benefits to bicyclists and pedestrians along the corridor.

**Table 18. Expected Pedestrian Facility Benefits–All Signal Clusters**

Alternatives	Estimated Benefits over the Project Lifecycle (Discounted at 7% <sup>a</sup> )		
	Signal Cluster 1		Signal Cluster 1
Signal Optimization	\$89,238	Signal Optimization	\$89,238

Note:

- <sup>a</sup> This discount rate is applied to convert expected future revenue streams of benefits to the same present value (2021 dollars) and remove the effects of inflation over time.

### 6.1.3.4 Energy and Environment (Emissions) Benefits

Proposed signal system improvements are expected to reduce the amount of fuel consumption from vehicles traveling within each signal cluster. Emissions benefits for this BCA were derived using travel time data resulting in estimated fuel consumption. Gasoline prices and recommended values for average fuel consumption per hour of idle time were utilized to monetize emission benefits.

The monetized emission benefits for each cluster are summarized in Table 19. ASCT is expected to generate a higher mobility benefit for Clusters 1 and 2, whereas Signal Optimization is expected to generate a higher mobility benefit for Cluster 3. ASCT provides the highest mobility benefit for Cluster 1 and is expected to generate \$37,945 over the project lifecycle, when discounted at 7%.

The BCA does not include detailed emissions calculations of specific pollutants. Qualitatively, it is likely that the monetized emissions benefits would be greater than what is currently shown in Table 19 if detailed emissions data was incorporated into the analysis. The emission benefits do not account for any increases in the market share for electric vehicles.

**Table 19. Expected Emission Benefits—All Signal Clusters**

Alternatives	Estimated Benefits over the Project Lifecycle (Discounted at 7% <sup>a</sup> )		
	Signal Cluster 1	Signal Cluster 2	Signal Cluster 3
Signal Optimization	\$23,669	\$10,147	\$24,227
ASCT (NYSDOT or Town Operated)	\$37,945	\$21,348	\$7,935

Note:

<sup>a</sup> This discount rate is applied to convert expected future revenue streams of benefits to the same present value (2021 dollars) and remove the effects of inflation over time.

#### **6.1.4 Estimation of Signal System Upgrade Costs**

The proposed signal system upgrades require different levels of investment depending on the technology deployed and the ownership and operation of intersections within each signal cluster. This section provides a summary of monetized costs, along with key findings. Refer to section 5 for further information on cost estimates included in this BCA and appendix F for detailed calculations.

The BCA assumes that any capital costs associated with the proposed signal system upgrades will be spread out evenly over the duration of construction (2024 through 2026). Operations and Maintenance (O&M) costs were assumed to be spread out annually over the service life of the upgraded signal system (2027 through 2036).

##### **6.1.4.1 Capital Costs**

For the purposes of this BCA, capital costs account for all equipment expenses assumed to be necessary to upgrade the proposed signal system. The monetized capital costs for each cluster are



summarized in Table 20. Signal Optimization is expected to be the least expensive of all alternatives. For ASCT, a NYSDOT operated system is expected to be less expensive than a town operated system for all clusters as NYSDOT currently operates ASCT and has more of the necessary infrastructure in place.

**Table 20. Expected Capital Costs–All Signal Clusters**

Alternatives	Estimated Costs over the Project Lifecycle (Discounted at 7% <sup>a</sup> )		
	Signal Cluster 1	Signal Cluster 2	Signal Cluster 3
Signal Optimization	\$204,577	\$219,210	\$169,730
ASCT (NYSDOT Operated)	\$318,278	\$340,579	\$267,481
ASCT (Town Operated)	\$364,045	\$386,347	\$313,248

Note:

<sup>a</sup> This discount rate is applied to convert expected future revenue streams of benefits to the same present value (2021 dollars) and remove the effects of inflation over time.

#### 6.1.4.2 O&M Costs

Once the proposed signal system is upgraded, annual O&M costs are required to maintain a state of good repair. O&M costs generally include software and communications costs. The monetized O&M costs for each cluster are summarized in Table 21. A town operated ASCT system requires a higher level of ongoing O&M costs as there are reoccurring fees associated with operating a system in the Cloud which is what was conservatively planned for the town operated alternative.

**Table 21. Expected Operation and Maintenance Costs–All Signal Clusters**

Alternatives	Estimated Costs over the Project Lifecycle (Discounted at 7% <sup>a</sup> )		
	Signal Cluster 1	Signal Cluster 2	Signal Cluster 3
Signal Optimization	\$4,056	\$4,056	\$4,056
ASCT (NYSDOT Operated)	\$3,944	\$3,944	\$3,944
ASCT (Town Operated)	\$47,511	\$47,511	\$47,511

Note:

<sup>a</sup> This discount rate is applied to convert expected future revenue streams of benefits and costs to the same present value (2021 dollars) and remove the effects of inflation over time.

## 6.2 Summary of Findings and BCA Outcomes

The Benefit-Cost Ratio (BCR) is a method to evaluate the return on investment for an alternative. In this measure, the total value of expected benefits is placed in the numerator of the ratio and the value of expected costs is placed in the denominator. For example, an alternative with total

expected benefit of \$2 million and a total expected cost of \$1 million would result in a BCR of 2.0 (2 million/\$1 million = 2.0). This indicates that the alternative is expected to bring twice the amount of benefits to the public when compared to the cost. A BCR greater than or equal to 1.0 indicates that an alternative's benefits outweigh the costs.

It should also be noted that no analysis is performed for the No Build Alternative since it does not provide any benefits (a theoretical BCR of 0.00).

### **6.2.1 BCA Findings**

All BCA findings are summarized in Table 22. Detailed findings for each cluster include:

#### **Cluster 1:**

The findings of the BCA performed for Cluster 1 are summarized in Table 22. Considering monetized benefits (safety, mobility, pedestrian facility, and emissions) and costs (Capital and O&M), all alternatives for Cluster 1 would provide a positive return on investment with net present values ranging from \$3.9 million for Signal Optimization to \$6.6 million for a NYSDOT operated ASCT system. The NYSDOT ASCT system provides the best return on investment of all alternatives in Cluster 1 with a BCR of approximately 21.59.

#### **Cluster 2:**

The findings of the BCA performed for Cluster 2 are summarized in Table 22. Considering monetized benefits (safety, mobility, pedestrian facility, and emissions) and costs (Capital and O&M), all alternatives for Cluster 2 would provide a positive return on investment with net present values ranging from \$1.7 million for Signal Optimization to \$3.9 million for a NYSDOT operated ASCT system. The NYSDOT ASCT system provides the best return on investment of all alternatives in Cluster 2 with a BCR of approximately 12.35.

#### **Cluster 3:**

The findings of the BCA performed for Cluster 3 are summarized in Table 22. Considering monetized benefits (safety, mobility, pedestrian facility, and emissions) and costs (Capital and O&M),

all alternatives for Cluster 3 would provide a positive return on investment with net present values ranging from \$2.3 million for a town operated ASCT system to \$3.9 million for Signal Optimization. Signal Optimization provides the best return on investment of all alternatives in Cluster 3 with a BCR of approximately 23.18.

**Table 22. BCA Results—All Clusters**

<b>Alternatives</b>	<b>Signal Optimization</b>	<b>ASCT (NYSDOT Operated)</b>	<b>ASCT (Town Operated)</b>
<b>Signal Cluster 1</b>			
Total Discounted Benefits	\$4,061,381	\$6,957,011	\$6,957,011
Total Discounted Costs	\$208,633	\$322,222	\$411,556
Net Present Value (Benefits–Costs)	\$3,852,748	\$6,634,789	\$6,545,455
BCR	19.47	21.59	16.90
<b>Signal Cluster 2</b>			
Total Discounted Benefits	\$1,912,984	\$4,255,857	\$4,255,857
Total Discounted Costs	\$223,266	\$344,523	\$433,857
Net Present Value (Benefits–Costs)	\$1,689,718	\$3,911,334	\$3,822,000
BCR	8.57	12.35	9.81
<b>Signal Cluster 3</b>			
Total Discounted Benefits	\$4,027,949	\$2,631,207	\$2,631,207
Total Discounted Costs	\$173,786	\$271,424	\$360,759
Net Present Value (Benefits–Costs)	\$3,854,162	\$2,359,783	\$2,270,449
BCR	23.18	9.69	7.29

## 6.2.2 Evaluation of BCR at All Signal Clusters

As shown in Table 23, the results of the BCA indicate that while all alternatives show a positive return on investment, a NYSDOT operated ASCT is more cost effective than a town operated ASCT or Signal Optimization for Signal Clusters 1 and 2. Signal Optimization is more cost effective than either of the ASCT alternatives for Signal Cluster 3.

**Table 23. BCR Comparison—All Signal Clusters**

<b>Alternatives</b>	<b>Signal Cluster 1</b>	<b>Signal Cluster 2</b>	<b>Signal Cluster 3</b>
Signal Optimization	19.47	8.57	23.18
ASCT (NYSDOT Operated)	21.59	12.35	9.69
ASCT (Town Operated)	16.90	9.81	7.29

## 7 Public Participation, Recommendations, and Implementation

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### 7.1 Public Outreach

Public outreach was conducted during the study to ensure that residents, business owners, elected officials, and interested parties were made aware of the analysis findings and given a chance to comment. The following public outreach events were held:

- Town Board Workshop, 3:00 p.m., Friday, January 20, 2023. During this meeting, the project consultants presented initial analysis results to the Queensbury Town Board. Although this meeting did not involve public comment per se, the meeting was broadcast over Zoom and the minutes were made available to the public as per the town's policies.
- Town Board Meeting, 7:00 p.m., Monday, February 27, 2023. During this meeting, the project consultants presented a summary of the signal timing comparison analysis and cost-benefit analysis. The meeting was held in-person with concurrent live-casting online and on local television. Several members of the public attended both in-person and online. After the presentation, the project consultants were available to answer additional questions. Both the town board members and public attendees made comments in support of the study findings. Copies of the town board minutes, and video/audio recordings are available at: <https://www.queensbury.net/government/agendas-and-minutes/>
- Poster presentation, Queensbury Town Hall Lobby, February 27, 2023–May 15, 2023. Summary information regarding the signal timing analysis and cost-benefit analysis were displayed on posters in the Queensbury Town Hall and on the Town of Queensbury website after the February 27, 2023 meeting, giving any visitors to Town Hall or the website a chance to review the project summary materials.

### 7.2 Stakeholder Coordination

Throughout the course of the study, a steering committee comprised of project stakeholders represented various interested agencies, including:

- Town of Queensbury Planning Department
- Town of Queensbury Department of Public Works
- Queensbury Town Board
- Adirondack/Glens Falls Transportation Council
- Warren County Department of Public Works
- NYSDOT Region 1
- NYSERDA

This project steering committee met on a periodic basis to review each phase of the project. This ensured that all interested parties were kept up to date at all points during the progress of the analysis.

### 7.3 Signal Improvement Recommendations

Based on the results of the BCA and public/stakeholder support, recommendations for each signal cluster have been developed. In addition to the proposed signal improvement schema for each cluster, O&M recommendations have also been made. As noted in section 5, the traffic signals throughout the study area are a mix of town and NYSDOT jurisdiction which present several opportunities for operations and maintenance. The recommendations for each cluster are:

- Cluster 1—ASCT Improvements are recommended.
  - NYSDOT operates the ASCT and takes ownership of the town’s traffic signals to include ongoing maintenance and operations through the state’s permit signal agreement for a fee of approximately \$1,200 per year/signal.
- Cluster 2—**Either ASCT or coordinated signal timing** (jurisdiction dependent). One of the two following O&M options are recommended:
  - **ASCT:** NYSDOT operates the ASCT and maintains the traffic signal controllers and each stakeholder maintains the rest of the signal equipment for their own traffic signals.
  - **Coordinated signal timing:** Improvements to the signals can be undertaken by NYSDOT and the town, or the town may upgrade all signals in coordination with NYSDOT as appropriate. Ongoing maintenance and retiming will require coordination between the town and NYSDOT. (This option also allows for ASCT to be added in the future, if the town decides to take on maintenance of the ASCT system.)
- Cluster 3—Coordinated signal timing improvements are recommended.
  - Improvements to the signals can be undertaken by NYSDOT and the town, or the town may upgrade all signals in coordination with NYSDOT as appropriate. Ongoing maintenance and retiming will require coordination between the town and NYSDOT.

### 7.4 Funding

Should the Town of Queensbury and/or NYSDOT choose to pursue implementation of signal improvements based on the analysis within this report, potential grant funding resources have been identified. As of the time of publication, potential grant funding sources include, but are not limited to:

- A/GFTC Carbon Reduction Program (CRP): provides funds for projects designed to reduce transportation emissions, defined as carbon dioxide (CO<sub>2</sub>) emissions from on-road highway sources. These funds are awarded as a sub-allocation of the Transportation Improvement Program through A/GFTC; thus, there is no statewide or nationwide solicitation to fulfill. There is a 20% local match; the 1-year suballocation for this funding source is approximately \$110,000.

- NYSDOT Congestion Mitigation and Air Quality Improvement (CMAQ) Program: provides funding to State and local entities for transportation projects that reduce vehicle emissions and traffic congestion in specific counties across the state, based on air quality standards. Historically, the Town of Queensbury has not been eligible for CMAQ funding. However, there is a possibility that the definition of eligible counties may be expanded to include Warren County. If that proves to be the case, signal upgrades would be an eligible project. CMAQ grants have a minimum 20% local match and have historically had a minimum/maximum federal share set at \$500,000/\$5,000,000 respectively.
- New York State Department of Transportation (NYSDOT)/New York State Energy Research Development Agency (NYSERDA) joint research solicitation: Improving the Efficiency of New York's Transportation System, Program Opportunity Notice (PON) 3833: This solicitation is currently closed. Previous solicitations focused on innovative proposals that can address several of the following objectives: have the potential to reduce energy use and greenhouse gas emissions from the transportation sector; have broad application or impact across New York State; make use of new or emerging technologies; and improve intermodal connections or energy efficient services for the traveling public and commercial transportation providers. This study was funded under this program. If future rounds become available, implementation of signal upgrades in accordance with the recommendations of this plan may be eligible for funding.
- U.S. DOT Strengthening Mobility and Revolutionizing Transportation (SMART) Program: provide grants to eligible public sector agencies to conduct demonstration projects focused on advanced smart community technologies and systems in order to improve transportation efficiency and safety. This program funds projects in two phases: Planning & Prototyping and Implementation. Currently, it is anticipated that only projects which undergo the planning phase will be eligible for implementation grants. This report may fulfill the requirements of the planning phase; should eligibility be expanded to allow pre-planned projects to proceed directly to implementation, the signal upgrades as recommended herein would likely be an eligible project.

## 8 Bibliography

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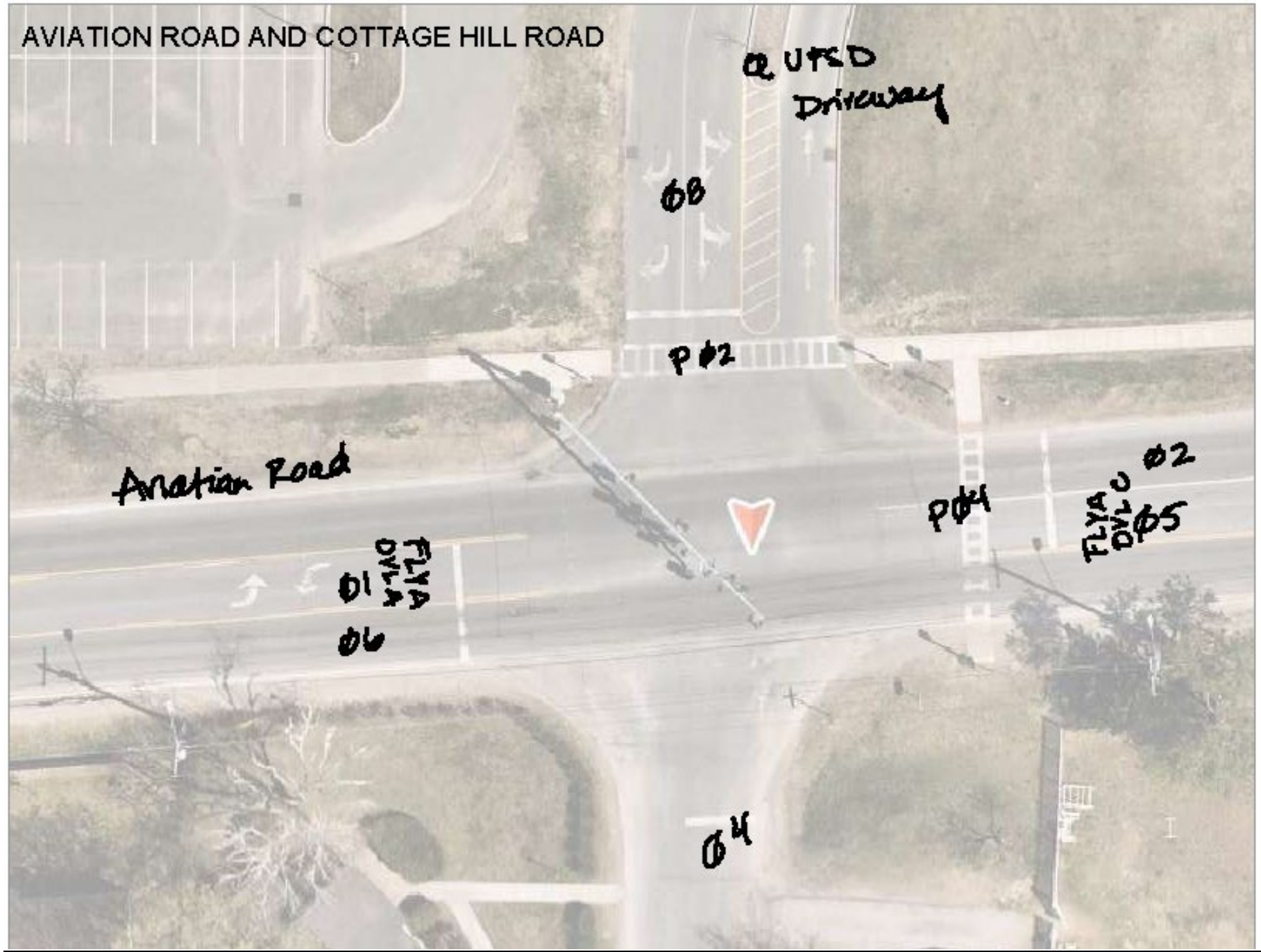
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**Appendix A. Signal Inventory Data Collection Sheet**

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AVIATION ROAD AND COTTAGE HILL ROAD



Signal Timing & Inventory Inspection

Date: 07/25/22

Time: 1:45 p.m.

Person: SL/MT

Municipality: Queensbury

Signal No.: none

Intersection: Aviation & Cottage Hill Rd.

Control: Actuated

Controller: ATC

Controller Make/Model: Econolite Cobalt Rack Mount

Cabinet Type: 330

Poles: Mast Arm

Ped Signals: Yes

Location of Ped Signals/Notes: 02 & 04 peds

Ped Buttons: Yes

Meets ADA Requirements: Yes

Vehicle Detection: Yes

Functional: Yes

Comments/Type: sensys pucks

Signal Coordination: Yes

Type of Coordination: Central Sys. TBC

Overall Condition: Excellent

Comments: none

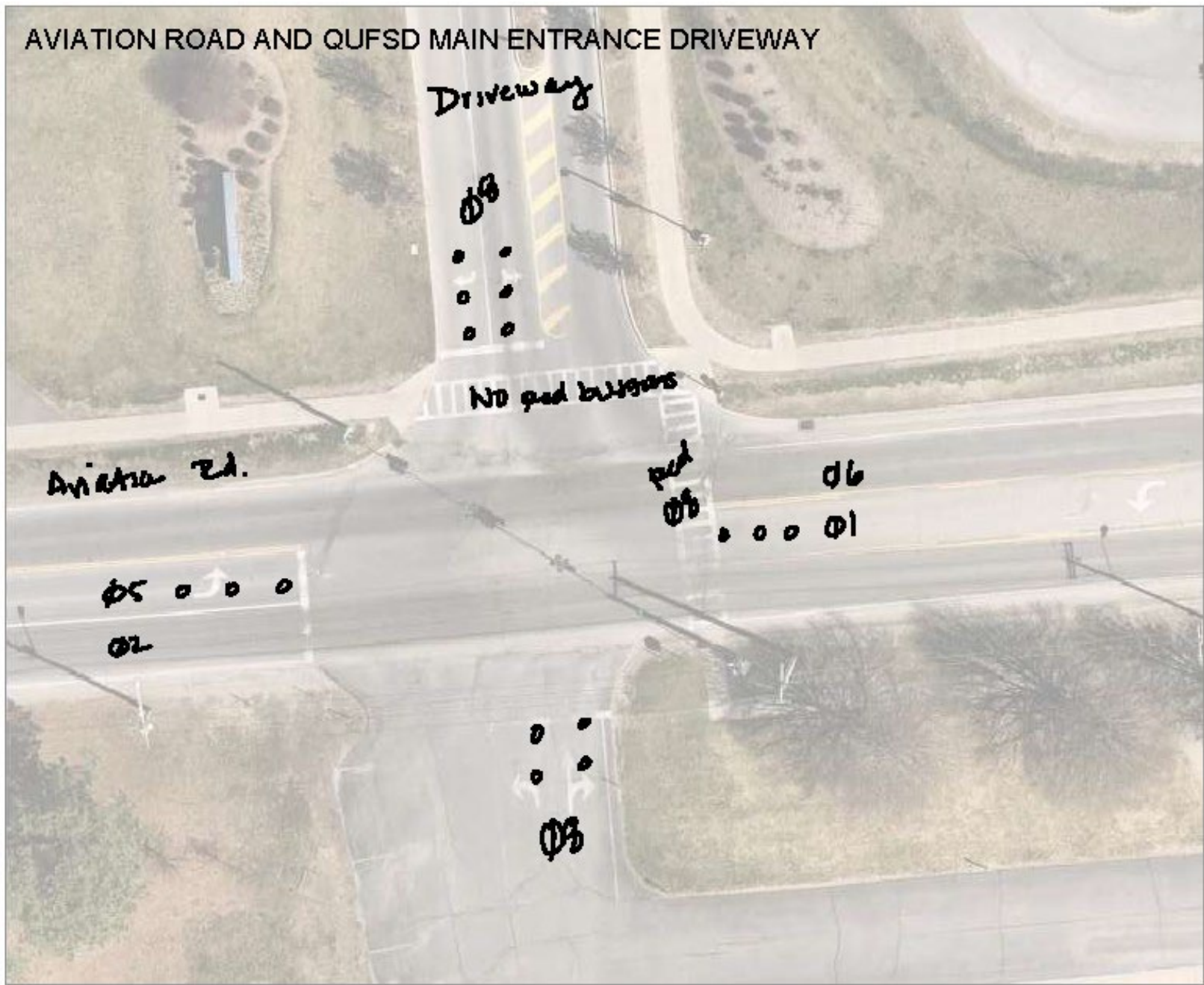
Signal Heads: 12"

Backplate: Yes retroreflective

Signage for signal: Yes

Location/Guidance for signage: WB LT only  
overhead sign EB LT only overhead sign

AVIATION ROAD AND QUFSD MAIN ENTRANCE DRIVEWAY



Signal Timing & Inventory Inspection

Date: 07/22/22

Time: 2 pm

Person: SL/MT

Municipality: Queensbury

Signal No.: none

Intersection: Aviation Rd & QUFSD Driveway

Control: Semi-Actuated

Controller: NEMA

Controller Make/Model: Econolite Cobalt

Cabinet Type: 330 ATC Cabinet

Untethered

Poles: Span Wire

Ped Signals: Yes

Location of Ped Signals/Notes: East Crosswalk; North Crosswalk no buttons/phasing

Ped Buttons: Yes

Meets ADA Requirements: Yes

Vehicle Detection: Yes

Functional: Yes

Comments/Type: sensys pucks

Signal Coordination: No

Type of Coordination: n/a

Overall Condition: Excellent

Comments:

Signal Heads: 12"

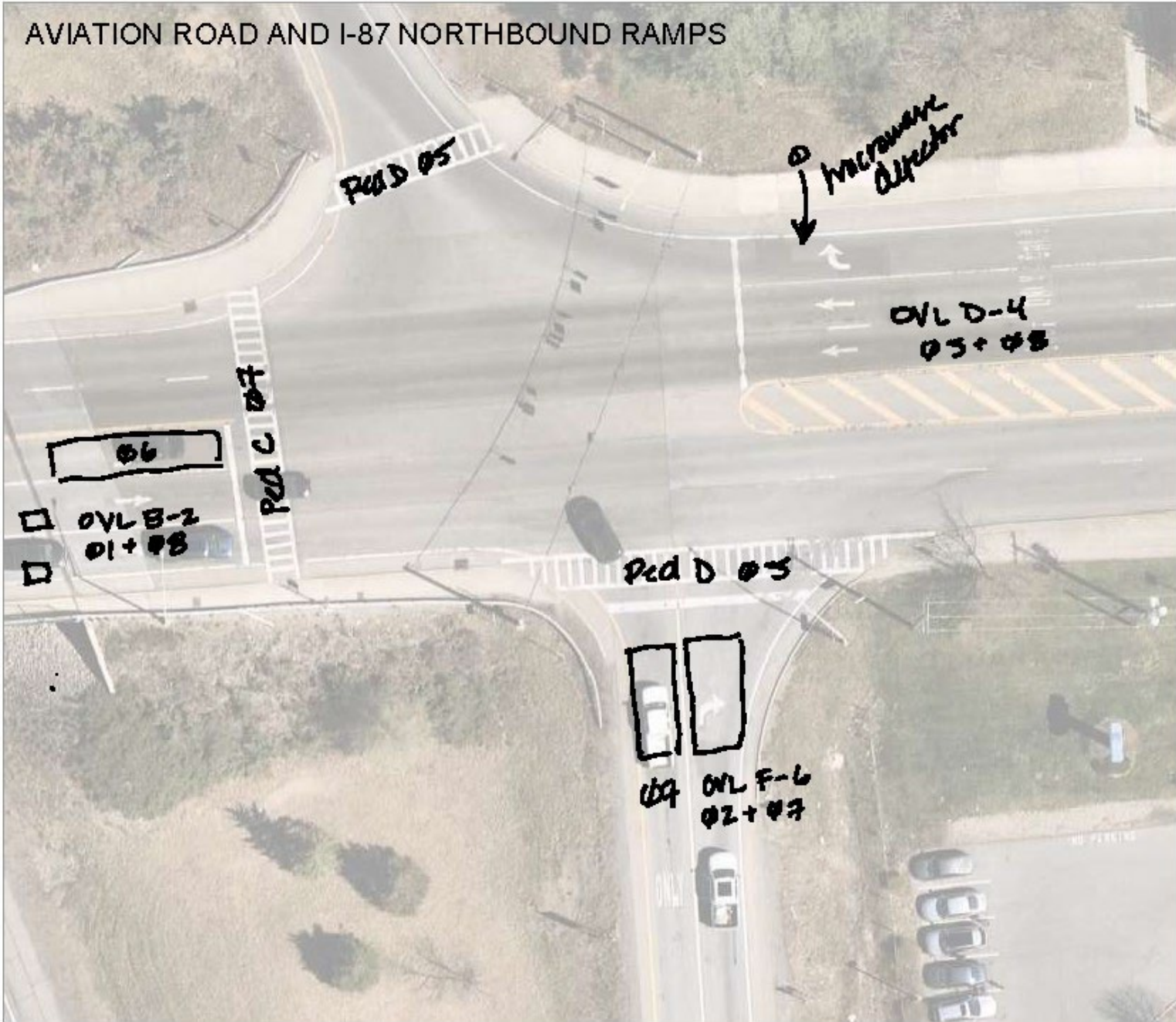
Backplate: No

Signage for signal: No

Location/Guidance for signage: none



AVIATION ROAD AND I-87 NORTHBOUND RAMPS



Signal Timing & Inventory Inspection

Date: 07/27/22

Time: 8:30 am

Person: MT

Municipality: Queensbury

Signal No.: NYSDOT #46 & #47

Intersection: Aviation Rd & NB Ramps (I-87)

Control: Semi-Actuated

Controller: 2070L

Controller Make/Model: Siemens Eagle V65 Naztec

Cabinet Type: 330

Tethered

Poles: Span Wire

Ped Signals: Yes

Location of Ped Signals/Notes: West, North, & South Crosswalks

Ped Buttons: Yes

Meets ADA Requirements:

Vehicle Detection: Yes

Functional: Yes

Comments/Type: Loops & Mags

Signal Coordination: No

Type of Coordination:

Overall Condition: Good

Comments: same controller & cabinet as SB ramps

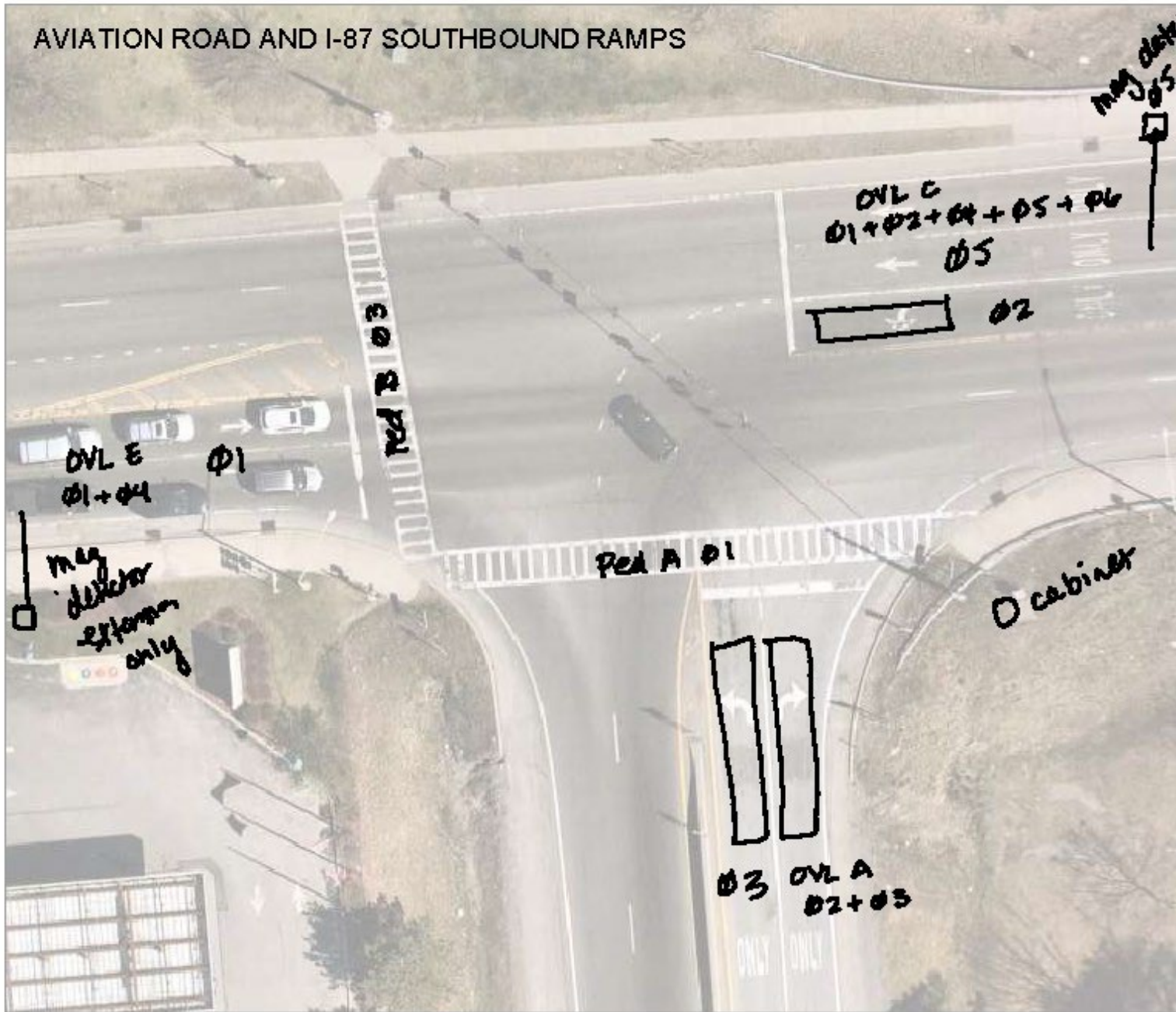
Signal Heads: 12"

Backplate: No

Signage for signal: Yes

Location/Guidance for signage: "only" signs for all lanes; blank out sign for NB RT

AVIATION ROAD AND I-87 SOUTHBOUND RAMP



Signal Timing & Inventory Inspection

Date: 07/27/22

Time: 8:30 am

Person: MT

Municipality: Queensbury

Signal No.: NYSDOT #46 & #54

Intersection: Aviation & NB+SB ramps (I-87)

Control: Semi-Actuated

Controller: 2070L

Controller Make/Model: Eagle Siemens Naztec V65

Cabinet Type: 330

Tethered

Poles: Span Wire

Ped Signals: Yes

Location of Ped Signals/Notes: south & west crosswalks

Ped Buttons: Yes

Meets ADA Requirements:

Vehicle Detection: Yes

Functional: Yes

Comments/Type: loops, radar, mags

Signal Coordination: No

Type of Coordination: N/A

Overall Condition: Good

Comments: Operates as one signal with NB ramps

Signal Heads: 12"

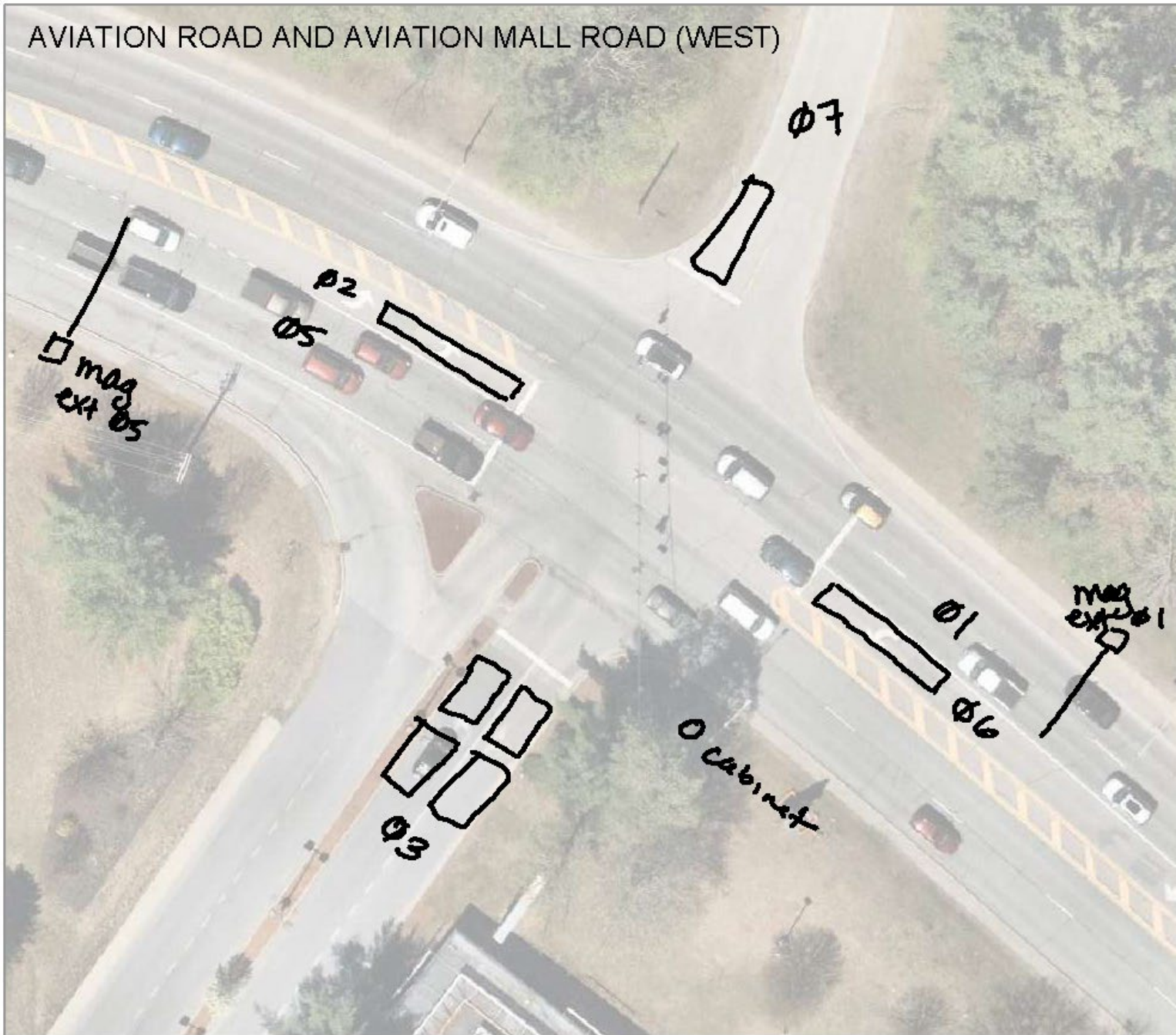
Backplate: No

Signage for signal:

Location/Guidance for signage: all lanes have "only" signs have overhead; blank out sign for NB RT



AVIATION ROAD AND AVIATION MALL ROAD (WEST)



Signal Timing & Inventory Inspection

Date: 07/27/22

Time: 8:30 am

Person: MT

Municipality: Queensbury

Signal No.: NYSDOT #34

Intersection: Aviation Rd & Mall Driveway West

Control: Actuated

Controller: 2070L

Controller Make/Model: Siemens Eagle ATC V65 Naztec

Cabinet Type: 330

Tethered

Poles: Span Wire

Ped Signals: No

Location of Ped Signals/Notes:

Ped Buttons: No

Meets ADA Requirements: No

Vehicle Detection: Yes

Functional: Yes

Comments/Type: loops & mags

Signal Coordination: No

Type of Coordination: none

Overall Condition: Good

Comments: none

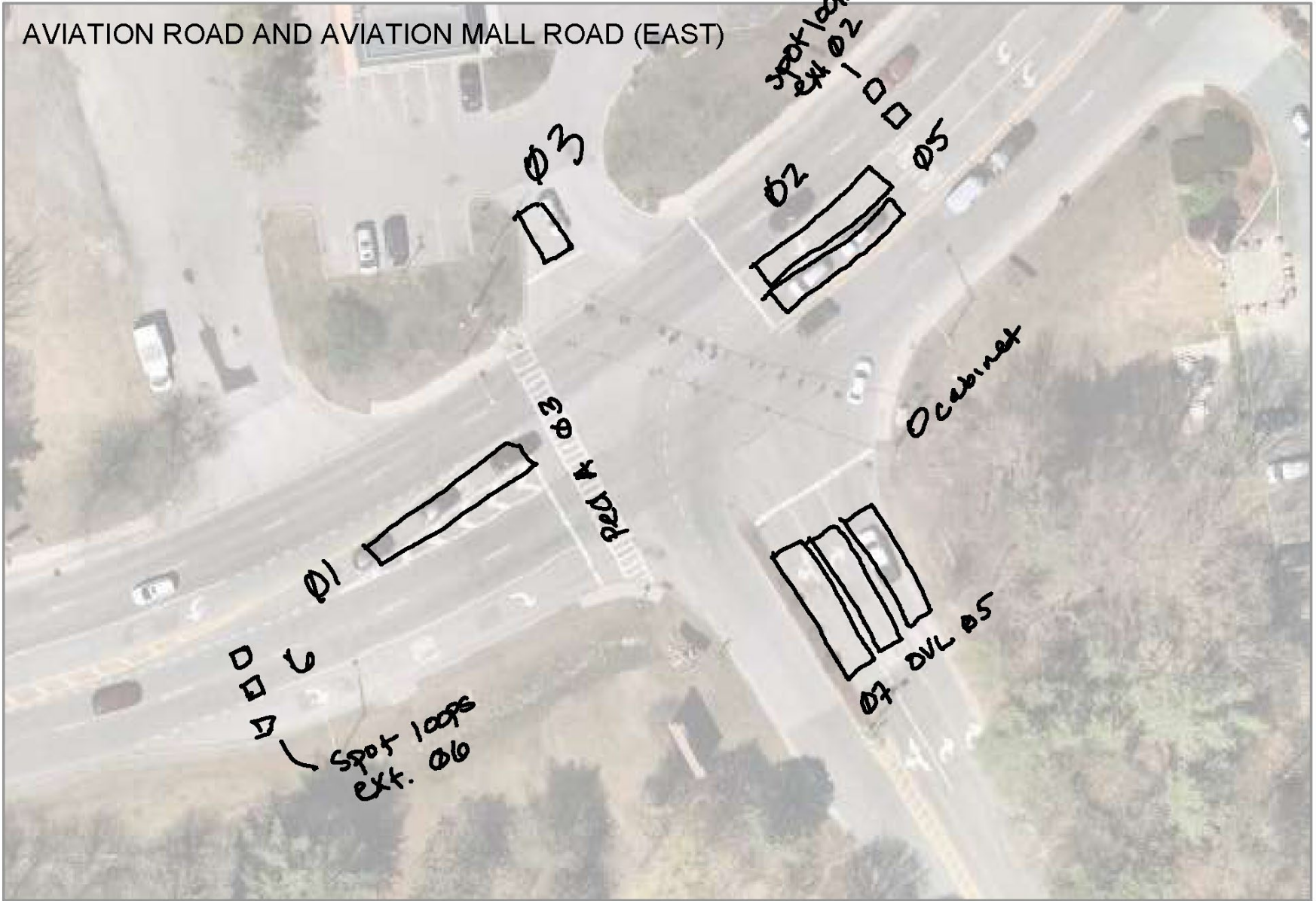
Signal Heads: 12"

Backplate: No

Signage for signal:

Location/Guidance for signage: lane signage overhead for driveway approach

AVIATION ROAD AND AVIATION MALL ROAD (EAST)



Signal Timing & Inventory Inspection

Date: 07/27/22

Time: 9:00 am

Person: MT

Municipality: Queensbury

Signal No.: NYSDOT #35

Intersection: Aviation Rd & Mall Driveway East

Control: Semi-Actuated

Controller: 2070L

Controller Make/Model: Siemens Eagle ATC Naztec V65

Cabinet Type: 330

Tethered

Poles: Span Wire

Ped Signals: Yes

Location of Ped Signals/Notes:

Ped Buttons: Yes

Meets ADA Requirements:

Vehicle Detection: Yes

Functional: Yes

Comments/Type: Loops & spot loops

Signal Coordination: No

Type of Coordination: none

Overall Condition: Good

Comments:

Signal Heads: 12"

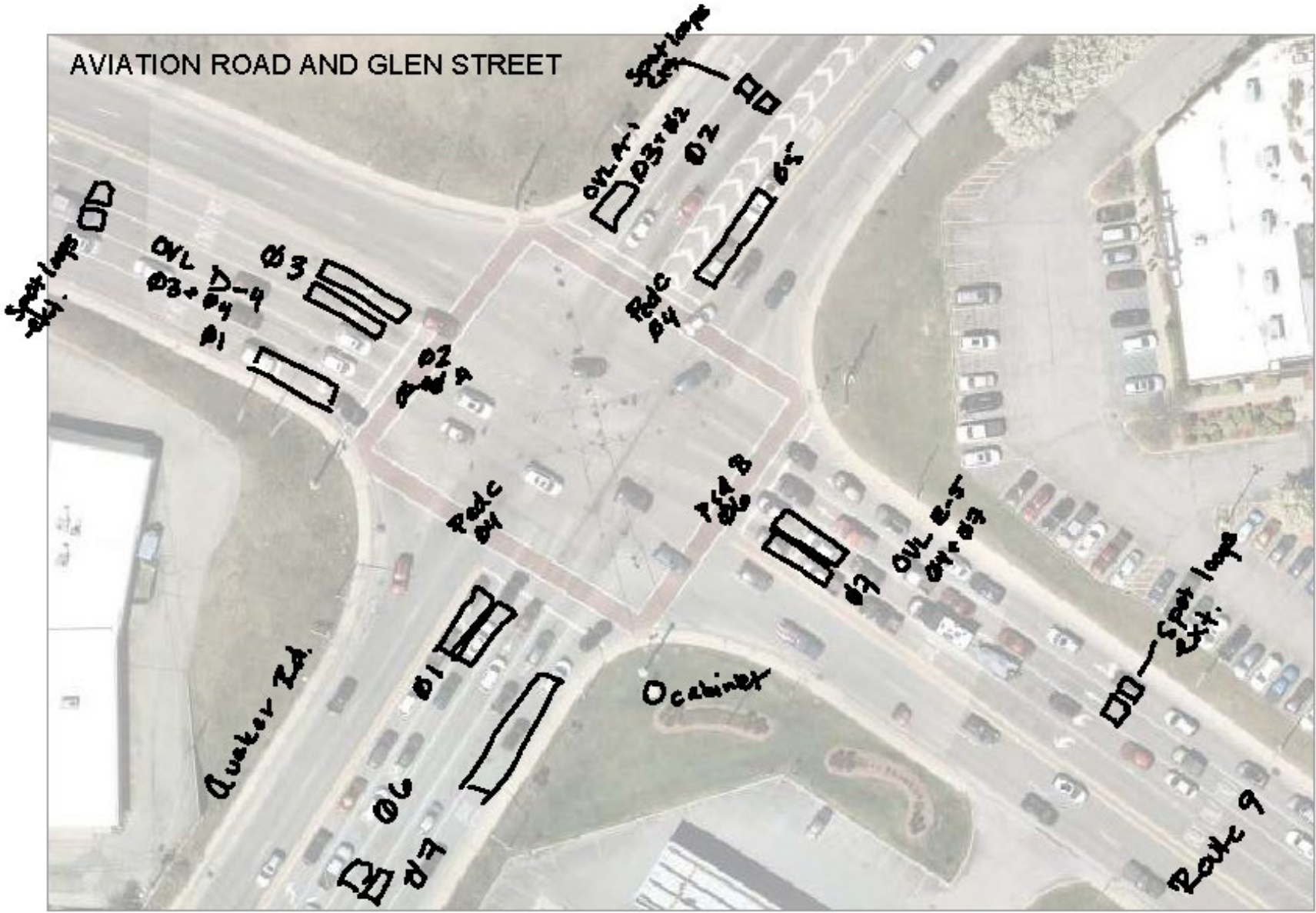
Backplate: No

Signage for signal: Yes

Location/Guidance for signage: Overhead lane useage signage for mall driveway and mainline LT and channelized RT



AVIATION ROAD AND GLEN STREET



Signal Timing & Inventory Inspection

Date: 07/27/22

Time: 9:30 am

Person: MT

Municipality: Queensbury

Signal No.: NYSDOT #18

Intersection: Quaker Rd & Glen St

Control: Semi-Actuated

Controller: 2070

Controller Make/Model: Peek Naztec V65

Cabinet Type: 330

Tethered

Poles: Span Wire

Ped Signals: Yes

Location of Ped Signals/Notes:

Ped Buttons: Yes

Meets ADA Requirements:

Vehicle Detection: Yes

Functional: Yes

Comments/Type: loops & spot loops

Signal Coordination: No

Type of Coordination: none

Overall Condition: Good

Comments:

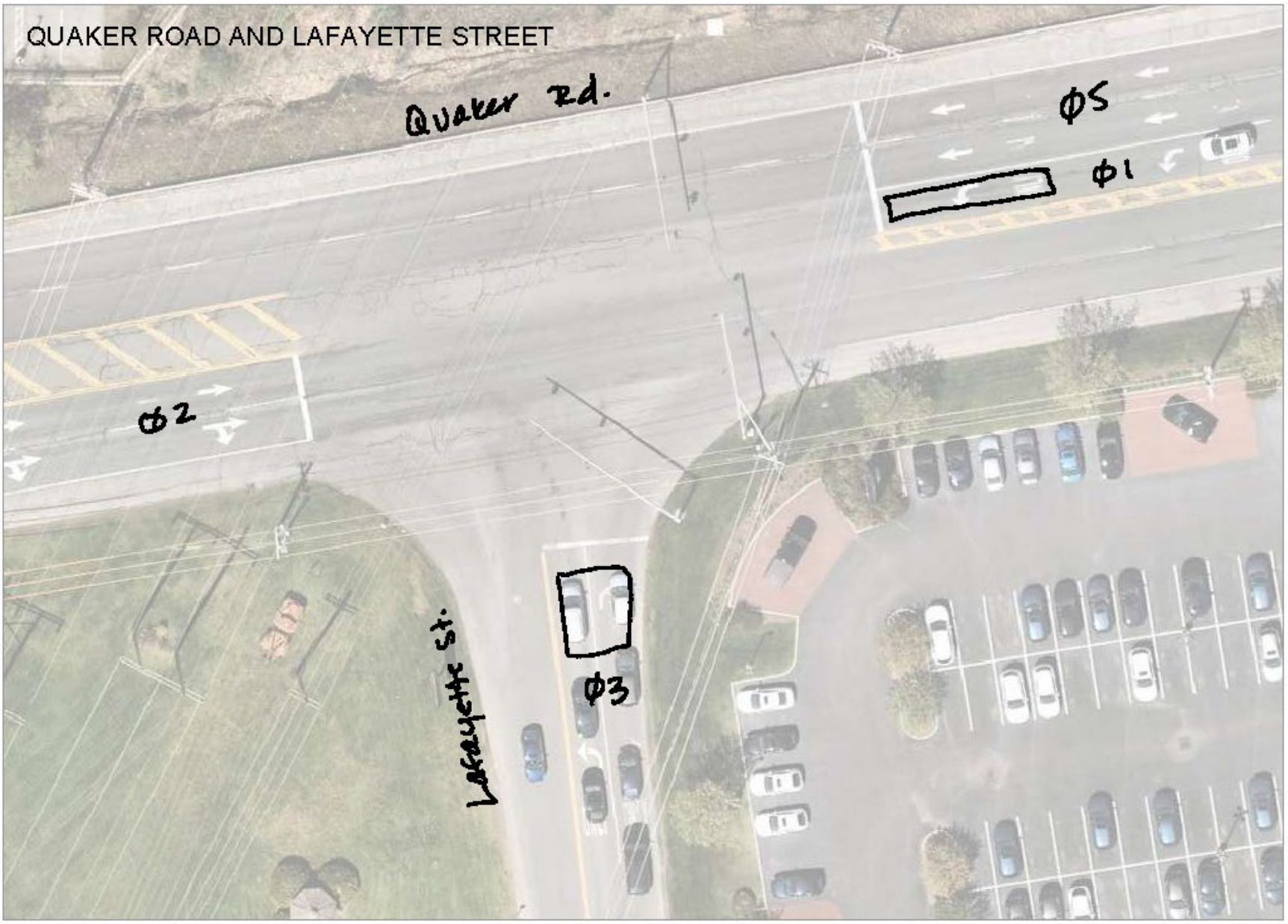
Signal Heads: 12"

Backplate: No

Signage for signal: Yes

Location/Guidance for signage: lane "only" signage

QUAKER ROAD AND LAFAYETTE STREET



Signal Timing & Inventory Inspection

Date: 07/25/22

Time: 1:30 pm

Person: SL/MT

Municipality: Queensbury

Signal No.:

Intersection: Quaker Rd & Lafayette

Control: Semi-Actuated

Controller: 179 SB

Controller Make/Model: Safetran

Cabinet Type: 330 stretch

Poles: Mast Arm

Ped Signals: No

Location of Ped Signals/Notes:

Ped Buttons: No

Meets ADA Requirements: n/a

Vehicle Detection: Yes

Functional: Yes

Comments/Type: loops except mainline

Signal Coordination: Yes

Type of Coordination: TBC

Overall Condition: Good

Comments:

Signal Heads: 12"

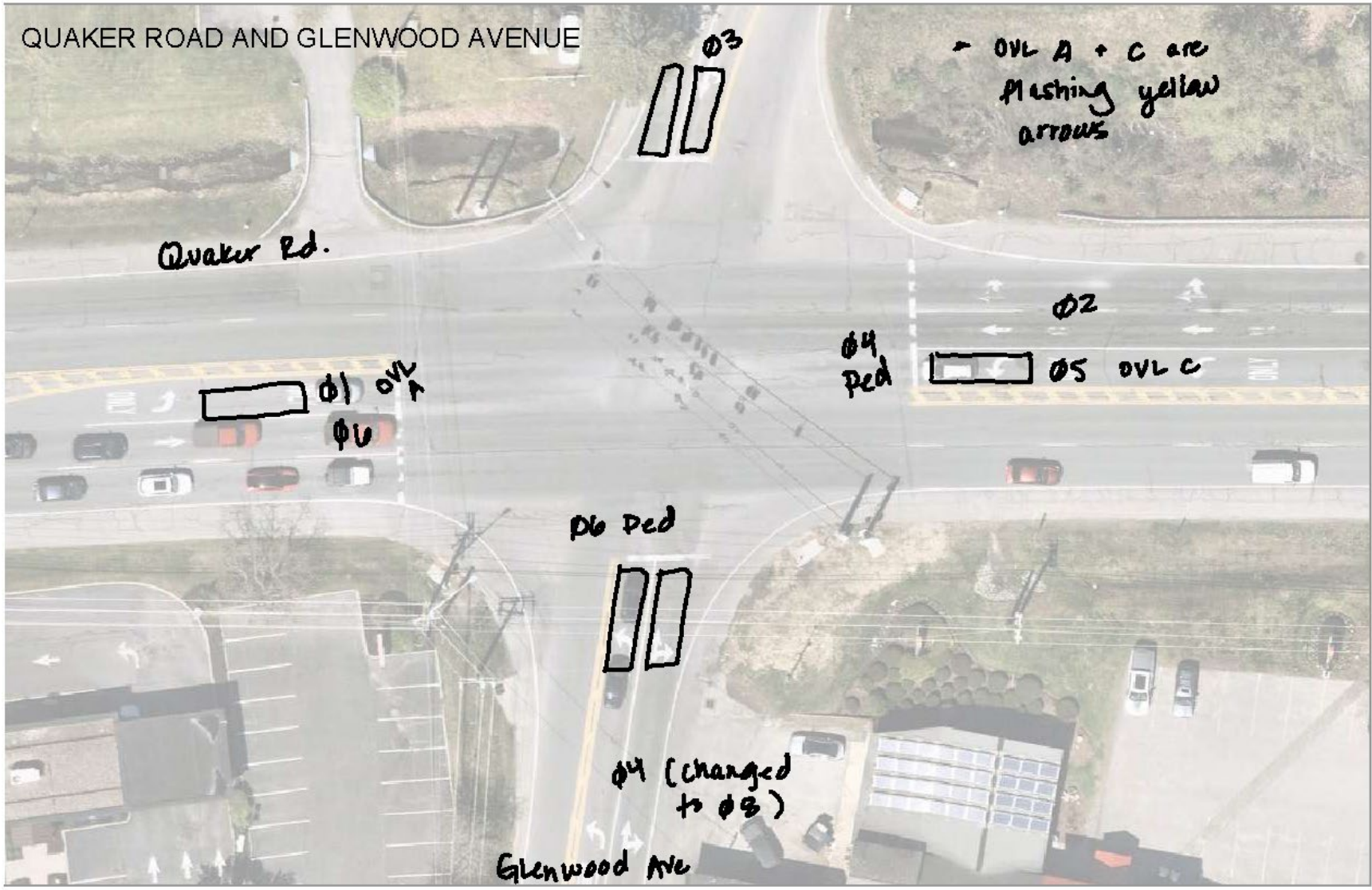
Backplate: No

Signage for signal: No

Location/Guidance for signage:



QUAKER ROAD AND GLENWOOD AVENUE



Signal Timing & Inventory Inspection

Date: 7/27/22

Time: 1:00 pm

Person: SL/MT

Municipality: Queensbury

Signal No.:

Intersection: Quaker Rd & Glenwood Rd

Control: Semi-Actuated

Controller:

Controller Make/Model: Econolite Cobalt

Cabinet Type: 330

Tethered

Poles: Span Wire

Ped Signals: Yes

Location of Ped Signals/Notes:

Ped Buttons: Yes

Meets ADA Requirements:

Vehicle Detection: Yes

Functional: Yes

Comments/Type: unknown

Signal Coordination: No

Type of Coordination:

Overall Condition: Excellent

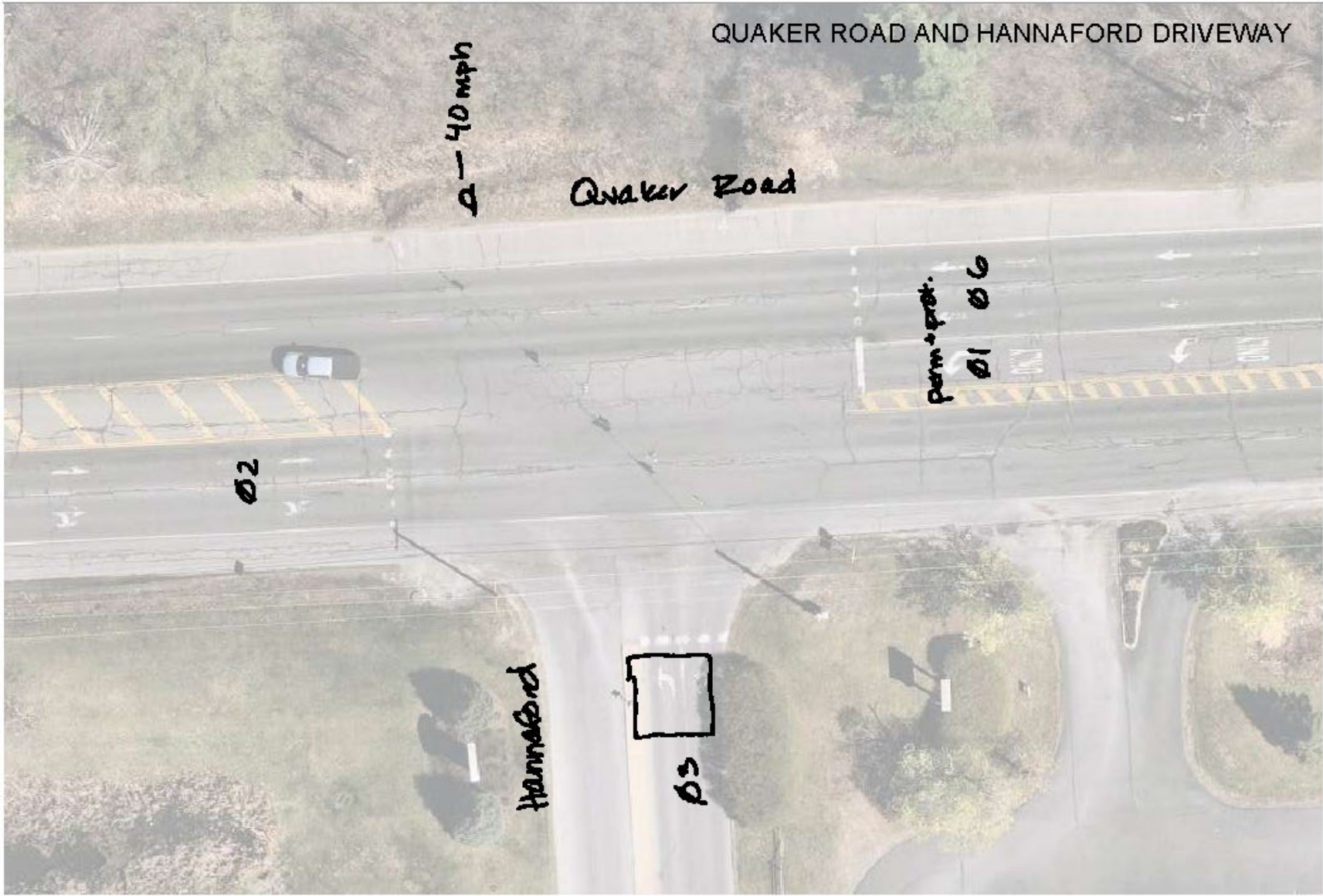
Comments:

Signal Heads: 12"

Backplate: Yes

Signage for signal: No

Location/Guidance for signage:



Signal Timing & Inventory Inspection

Date: 7/25/22

Time: 11:00 am

Person: MT

Municipality: Queensbury

Signal No.:

Intersection: Quaker Rd & Hannaford Driveway

Control: Semi-Actuated

Controller: 179

Controller Make/Model: US Corp 179

Cabinet Type: 330

Untethered

Poles: Span Wire

Ped Signals: No

Location of Ped Signals/Notes:

Ped Buttons: No

Meets ADA Requirements: n/a

Vehicle Detection: Yes

Functional: Yes

Comments/Type: loop on driveway

Signal Coordination: No

Type of Coordination: none

Overall Condition: Fair

Comments:

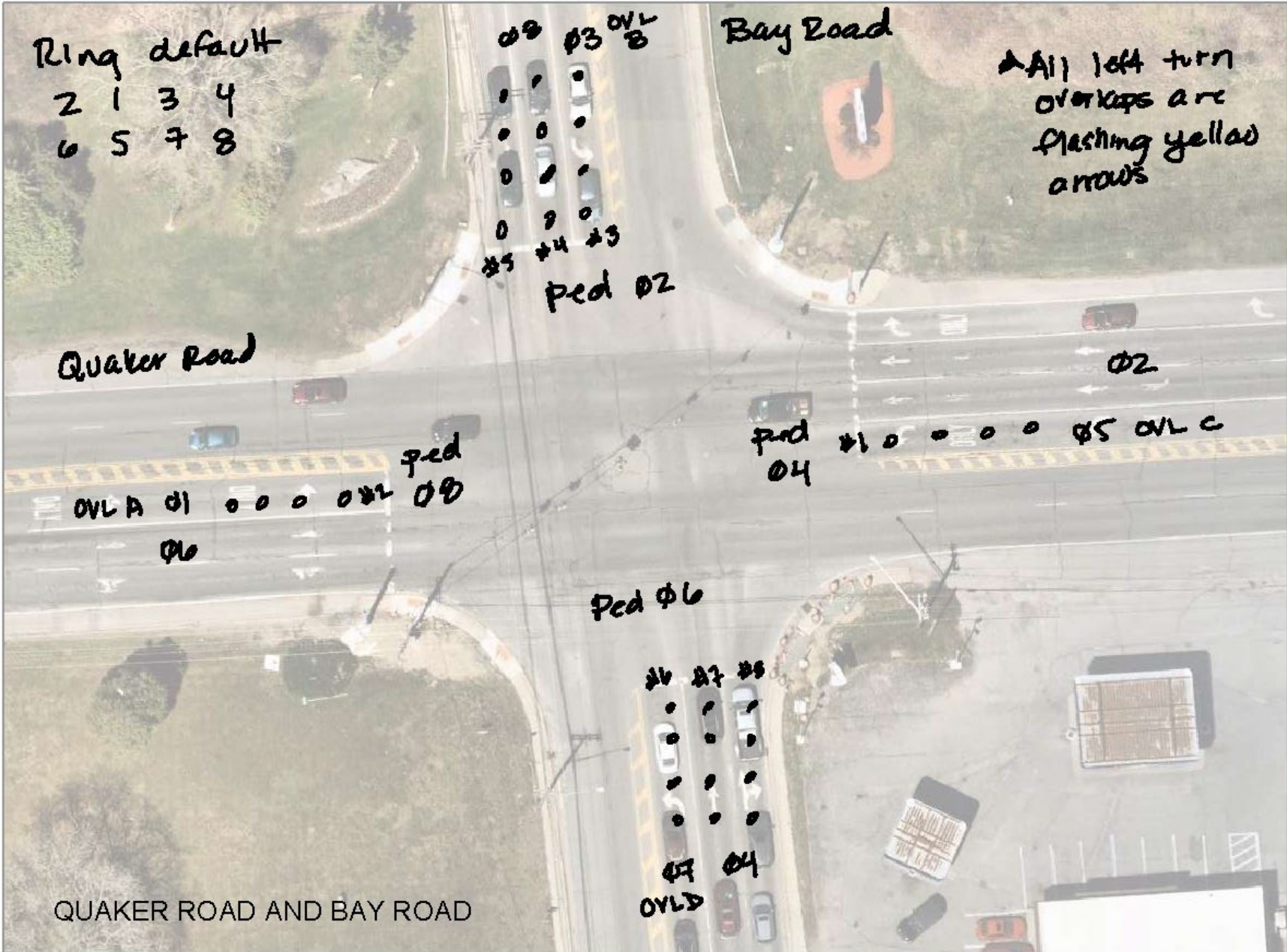
Signal Heads: 12"

Backplate: No

Signage for signal: No

Location/Guidance for signage:





Signal Timing & Inventory Inspection

Date: 7/27/22

Time: 11:30 am

Person: SL/MT

Municipality: Queensbury

Signal No.:

Intersection: Quaker Rd & Bay St

Control: Semi-Actuated

Controller: ATC, NEMA

Controller Make/Model: Cobalt Econolite 330

Cabinet Type: 330 stretch

Tethered

Poles: Span Wire

Ped Signals: Yes

Location of Ped Signals/Notes:

Ped Buttons: Yes

Meets ADA Requirements:

Vehicle Detection: Yes

Functional: Yes

Comments/Type: sensys pucks

Signal Coordination: No

Type of Coordination: none

Overall Condition: Excellent

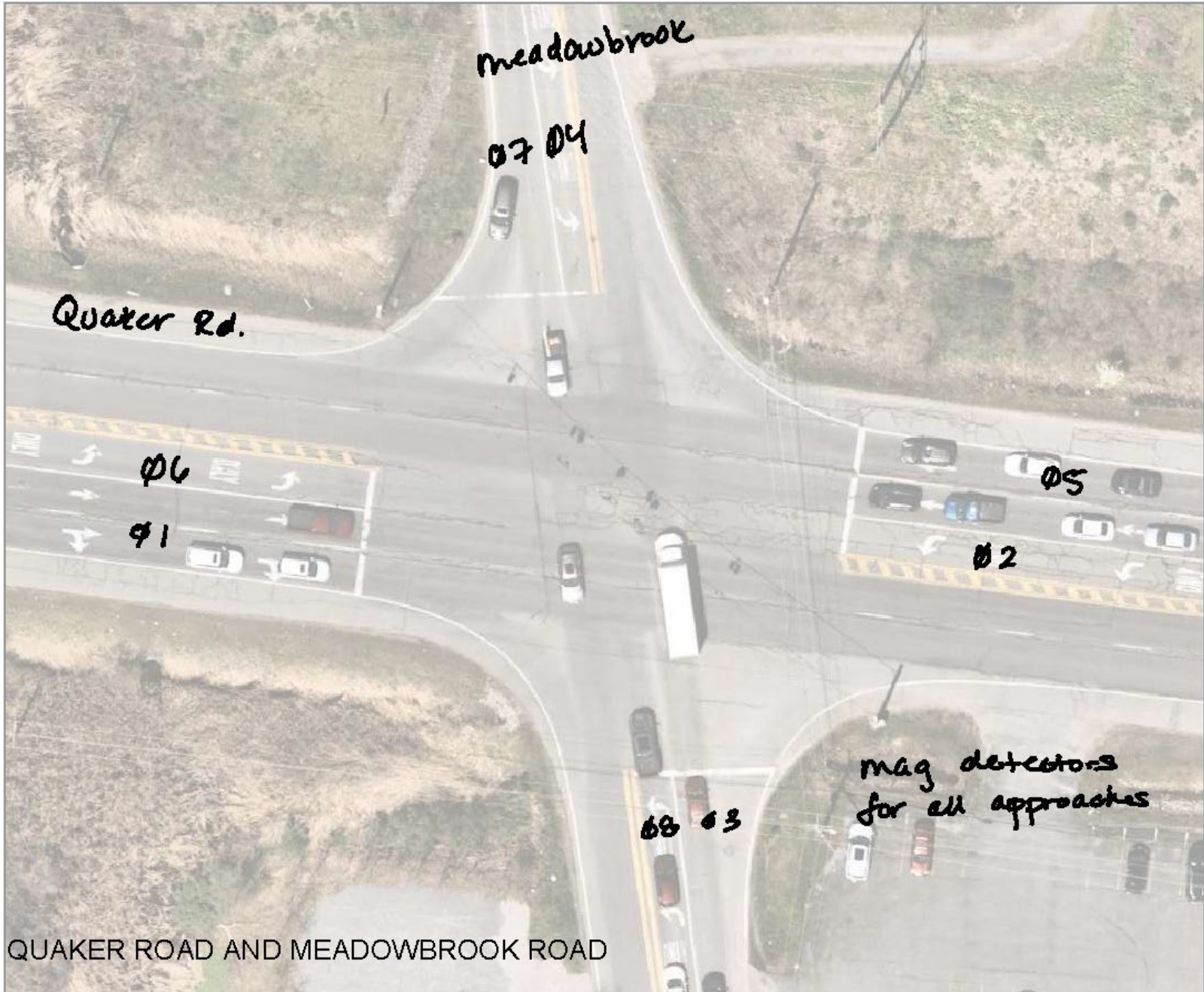
Comments:

Signal Heads: 12"

Backplate: Yes

Signage for signal: Yes

Location/Guidance for signage: lane "only" signage overhead



QUAKER ROAD AND MEADOWBROOK ROAD

Signal Timing & Inventory Inspection

Date: 7/27/22

Time: 12:00 pm

Person: SL/MT

Municipality: Queensbury

Signal No.:

Intersection: Quaker Rd & Meadowbrook

Control: Actuated

Controller: 179

Controller Make/Model: US Corp

Cabinet Type: 330

Untethered

Poles: Span Wire

Ped Signals: No

Location of Ped Signals/Notes:

Ped Buttons: No

Meets ADA Requirements:

Vehicle Detection: Yes

Functional: Yes

Comments/Type: mag detectors all approaches

Signal Coordination: Yes

Type of Coordination: TBC

Overall Condition: Fair

Comments:

Signal Heads: 12"

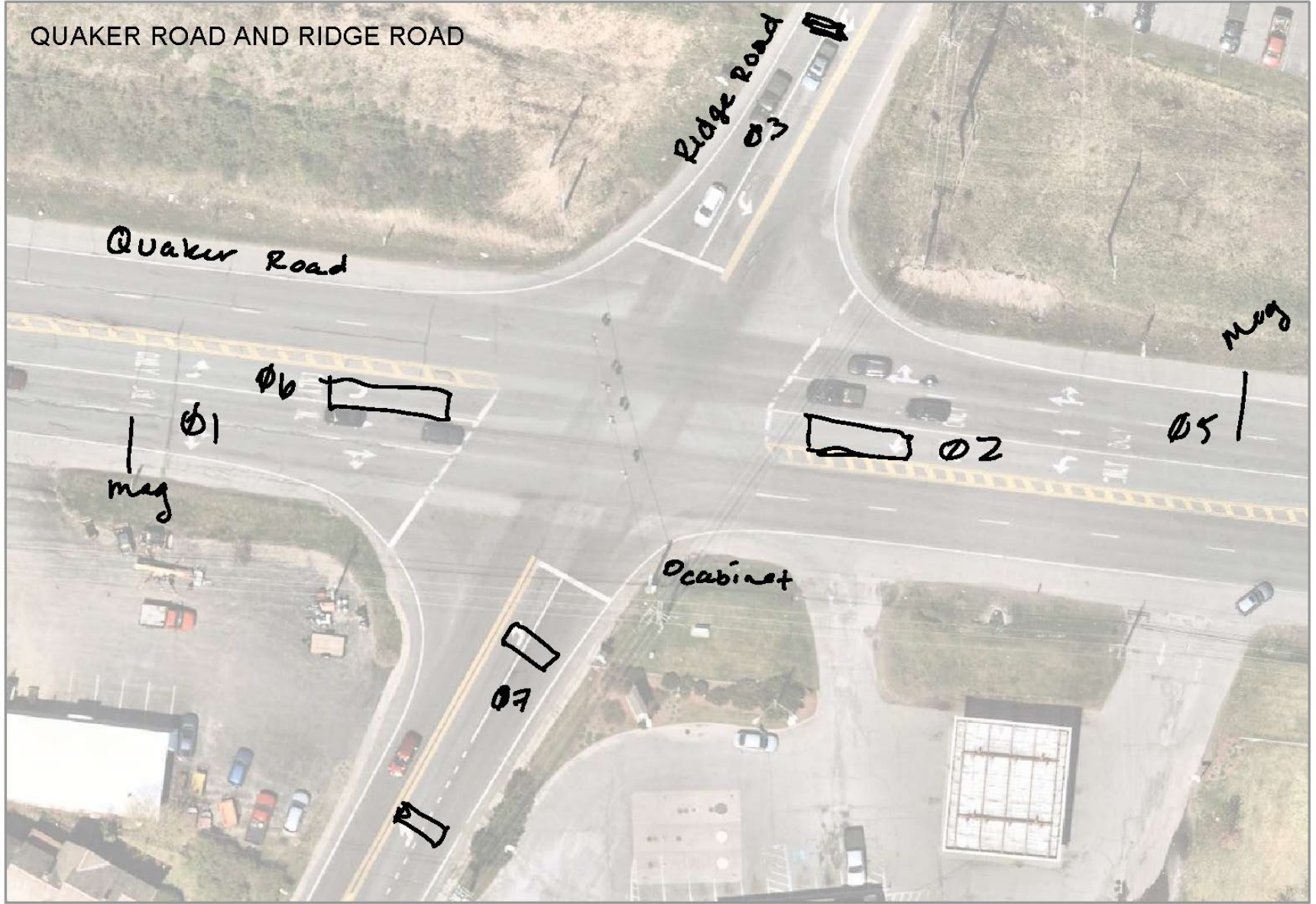
Backplate: No

Signage for signal: No

Location/Guidance for signage:



QUAKER ROAD AND RIDGE ROAD



Signal Timing & Inventory Inspection

Date: 7/27/22

Time: 10:00 am

Person: MT

Municipality: Queensbury

Signal No.: NYSDOT #19

Intersection: Quaker Rd & Ridge Rd

Control: Semi-Actuated

Controller: 2070L

Controller Make/Model: Siemens Eagle ATC

Cabinet Type: 330

Tethered

Poles: Span Wire

Ped Signals: No

Location of Ped Signals/Notes:

Ped Buttons: No

Meets ADA Requirements:

Vehicle Detection: Yes

Functional: Yes

Comments/Type: loops & mags

Signal Coordination: No

Type of Coordination:

Overall Condition: Good

Comments:

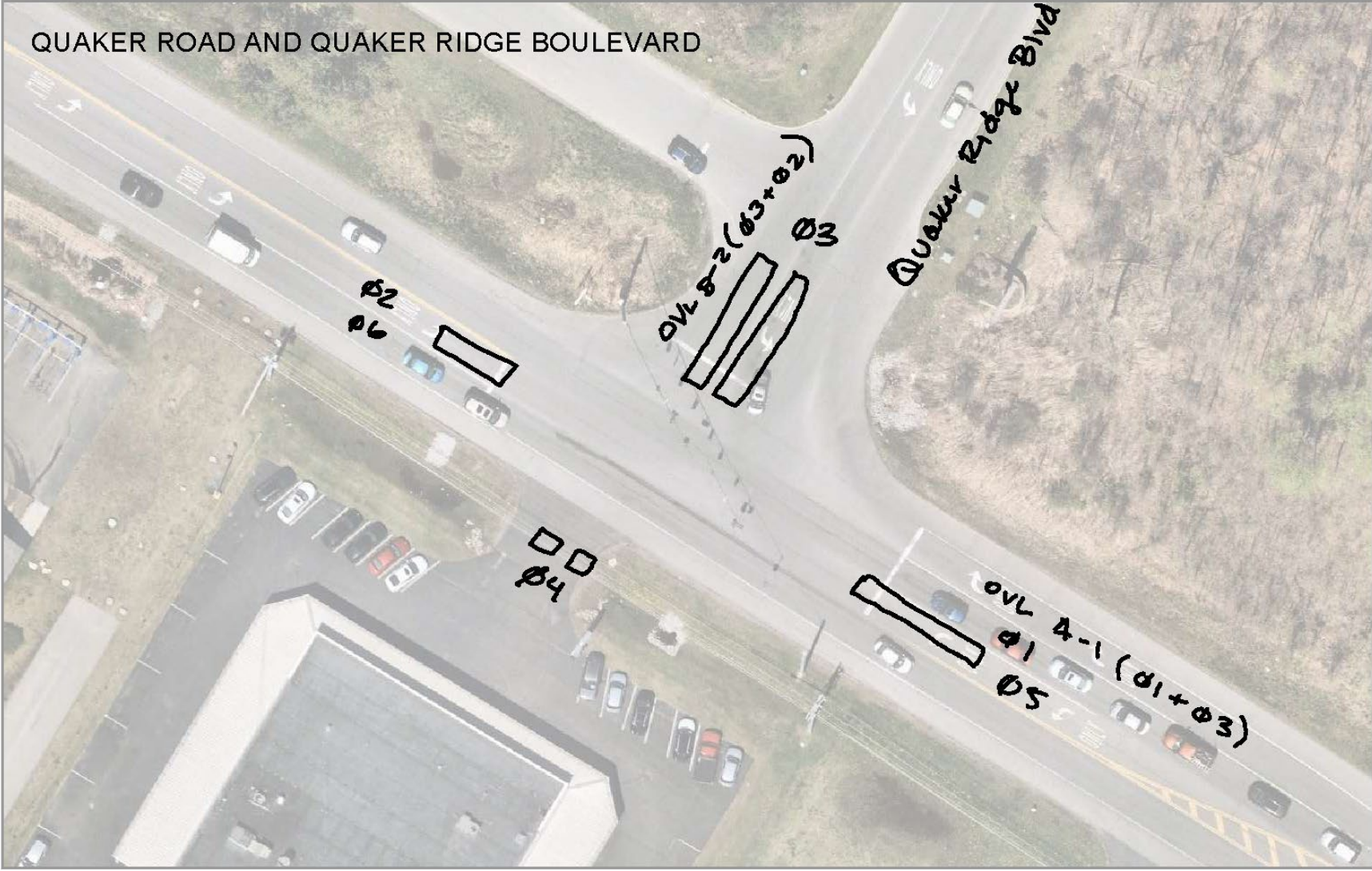
Signal Heads: 12"

Backplate: No

Signage for signal: No

Location/Guidance for signage:

QUAKER ROAD AND QUAKER RIDGE BOULEVARD



Signal Timing & Inventory Inspection

Date: 7/27/22

Time: 12:30 pm

Person: SL/MT

Municipality: Queensbury

Signal No.:

Intersection: Quaker and Quaker Ridge Blvd

Control: Semi-Actuated

Controller: 2070

Controller Make/Model: Naztec

Cabinet Type: 330

Tethered

Poles: Span Wire

Ped Signals: No

Location of Ped Signals/Notes:

Ped Buttons: No

Meets ADA Requirements:

Vehicle Detection: Yes

Functional: Yes

Comments/Type: loops

Signal Coordination: No

Type of Coordination: none

Overall Condition: Good

Comments:

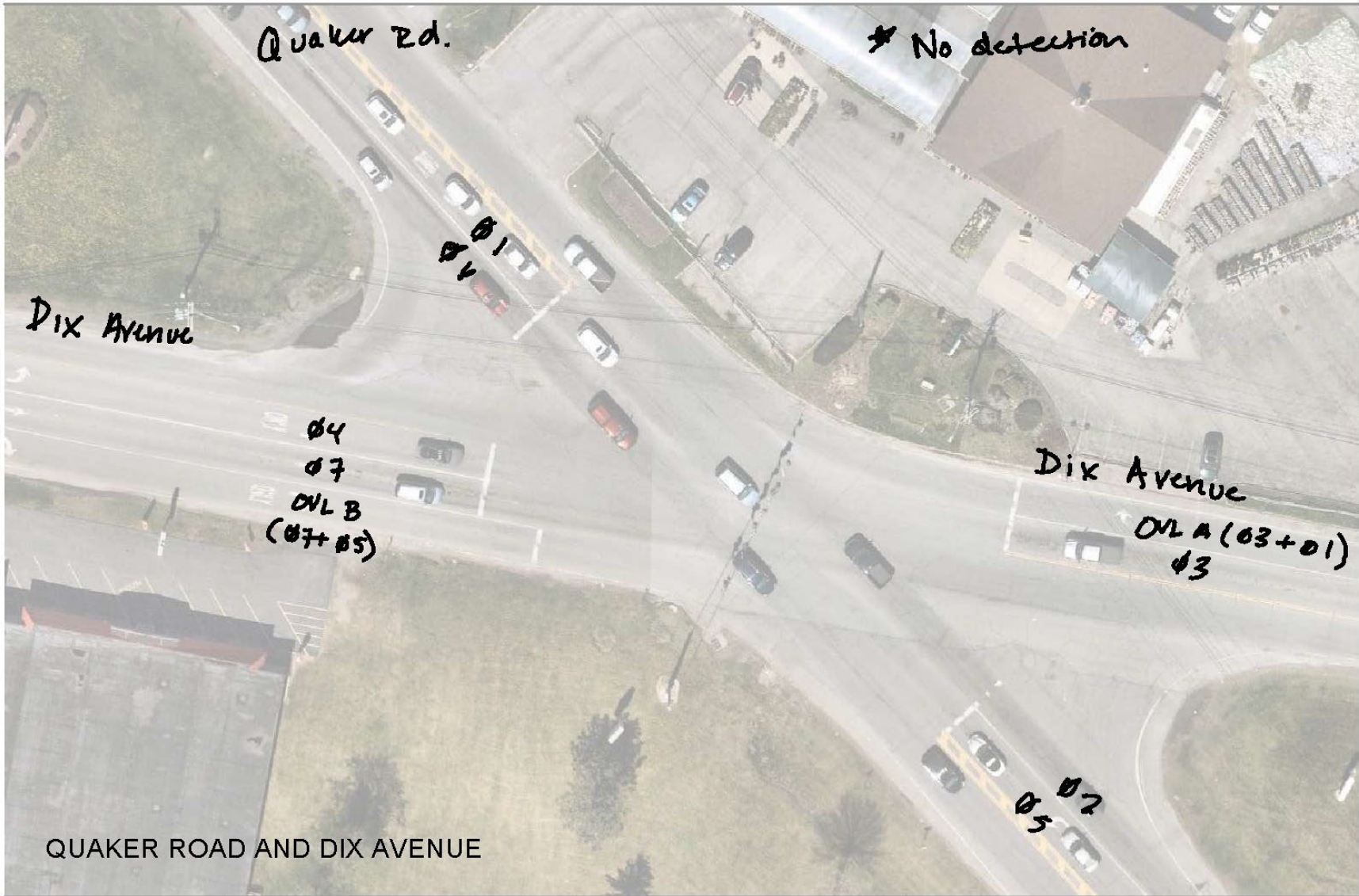
Signal Heads: 12"

Backplate: No

Signage for signal: Yes

Location/Guidance for signage: lane "only" overhead signage





Signal Timing & Inventory Inspection

Date: 7/27/22

Time: 1:00 pm

Person: SL/MT

Municipality: Queensbury

Signal No.:

Intersection: Quaker Rd & Dix Avenue

Control: Fixed Time

Controller: 207S0

Controller Make/Model:

Cabinet Type: 330

Tethered

Poles: Span Wire

Ped Signals: No

Location of Ped Signals/Notes:

Ped Buttons: No

Meets ADA Requirements: n/a

Vehicle Detection: No

Functional: n/a

Comments/Type:

Signal Coordination: Yes

Type of Coordination: TBC

Overall Condition: Good

Comments:

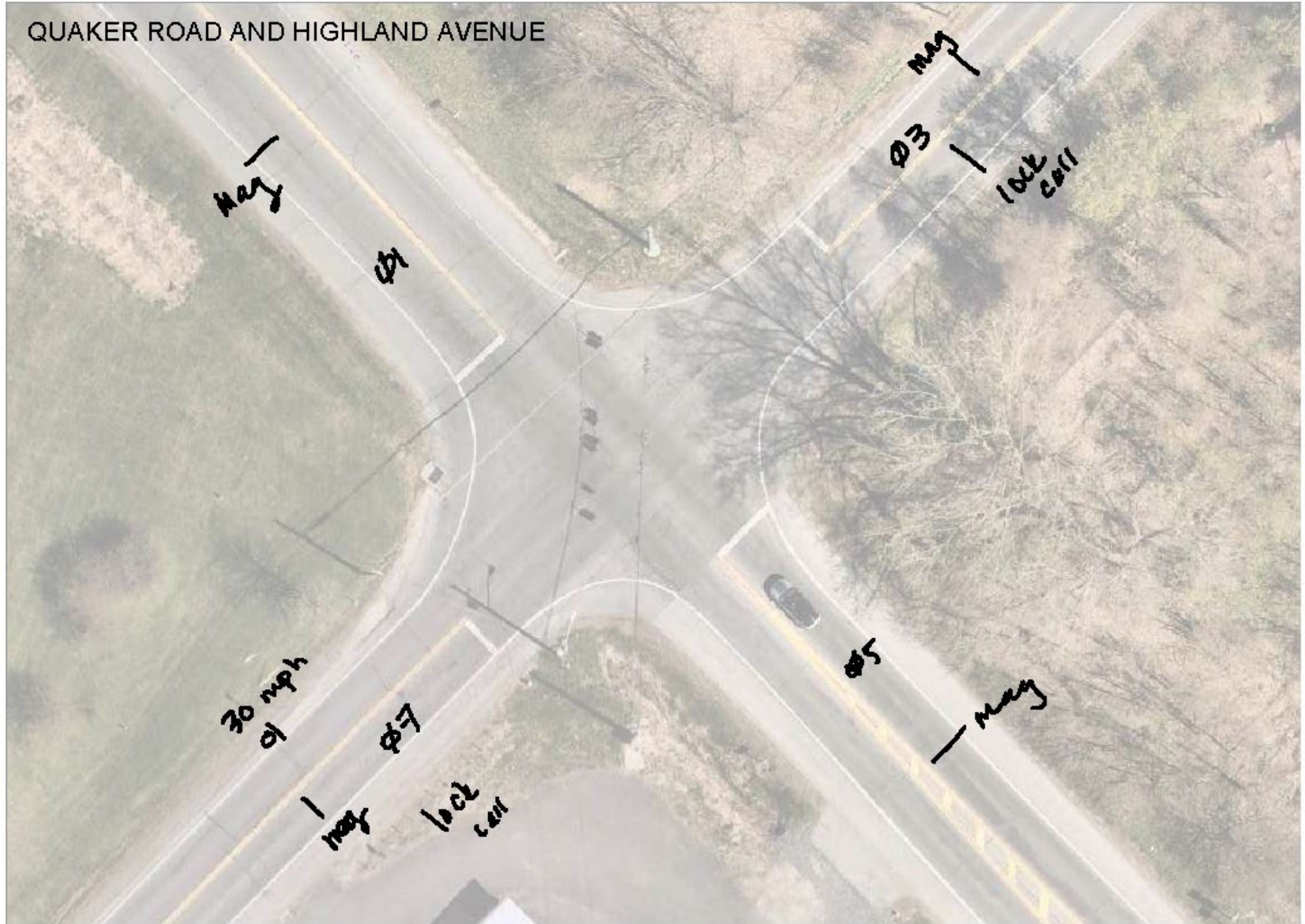
Signal Heads: 12"

Backplate: No

Signage for signal: Yes

Location/Guidance for signage: lane "only" signage overhead

QUAKER ROAD AND HIGHLAND AVENUE



Signal Timing & Inventory Inspection

Date: 7/27/22

Time: 10:30 am

Person: MT

Municipality: Queensbury

Signal No.: NYSDOT #42

Intersection: Quaker Rd & Highland

Control: Actuated

Controller: 2070

Controller Make/Model: Peek V65 Naztec

Cabinet Type: 330

Tethered

Poles: Span Wire

Ped Signals: No

Location of Ped Signals/Notes:

Ped Buttons: No

Meets ADA Requirements:

Vehicle Detection: Yes

Functional: Yes

Comments/Type: mags

Signal Coordination: No

Type of Coordination: none

Overall Condition: Good

Comments:

Signal Heads: 12"

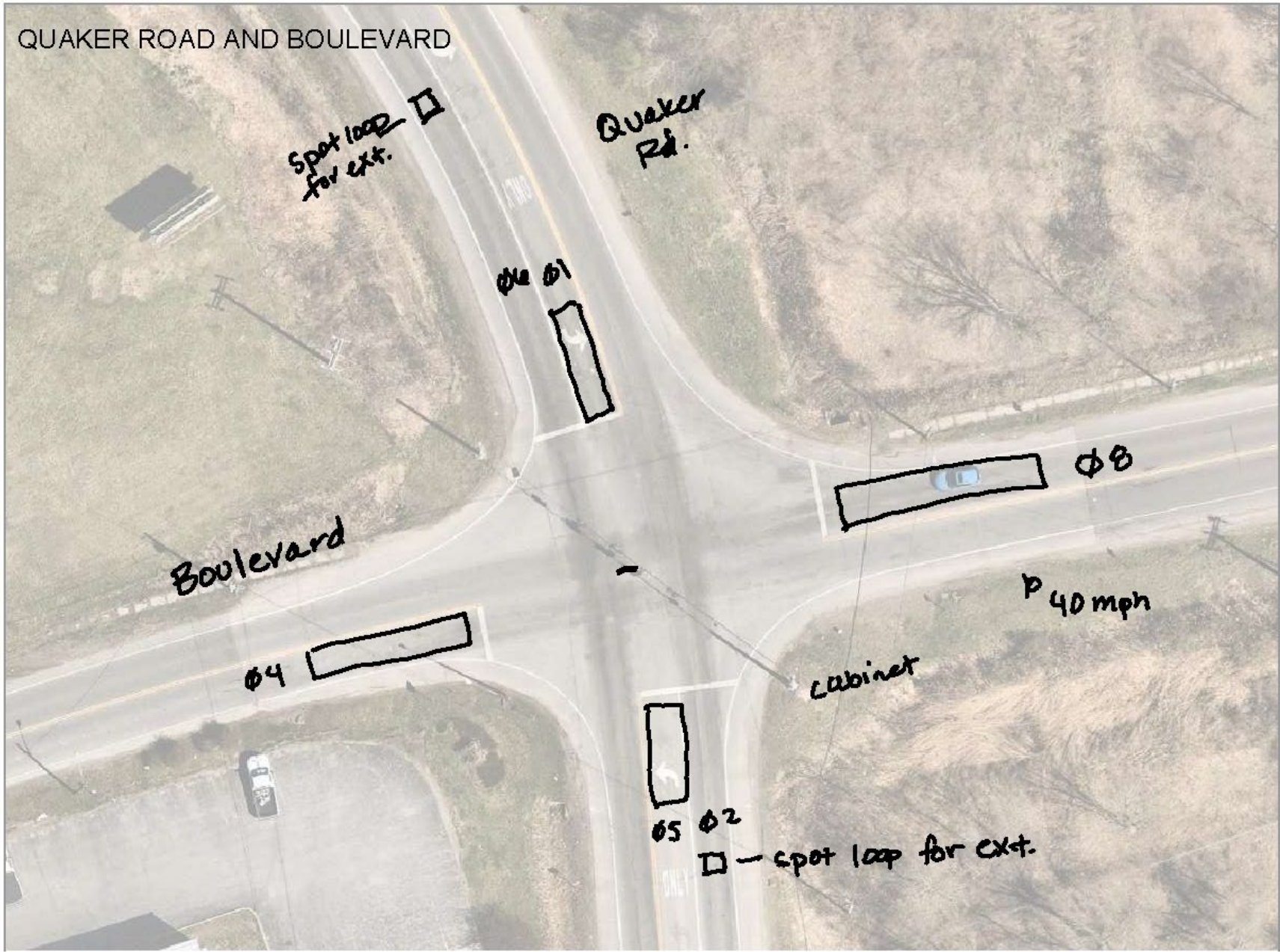
Backplate: Yes, retroreflective

Signage for signal: No

Location/Guidance for signage:



QUAKER ROAD AND BOULEVARD



Signal Timing & Inventory Inspection

Date: 7/25/22

Time: 1:00 pm

Person: SL/MT

Municipality: Queensbury

Signal No.:

Intersection: Quaker Rd & Boulevard

Control: Actuated

Controller: 179

Controller Make/Model: US Traffic Corp

Cabinet Type: 330

Tethered

Poles: Span Wire

Ped Signals: No

Location of Ped Signals/Notes:

Ped Buttons: No

Meets ADA Requirements: n/a

Vehicle Detection: Yes

Functional: Yes

Comments/Type: loops and spot loops for main line

Signal Coordination: Yes

Type of Coordination: TBC

Overall Condition: Good

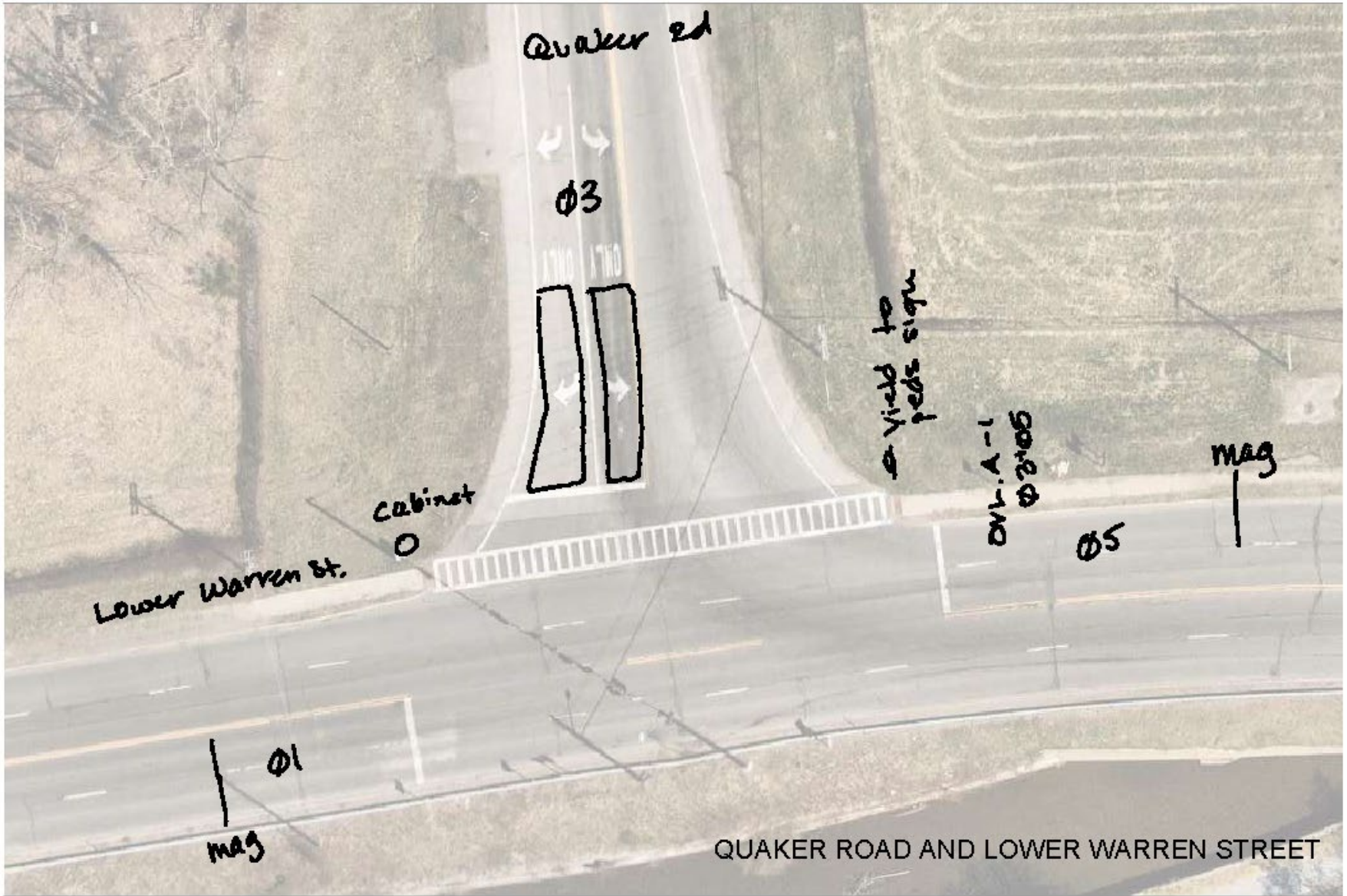
Comments:

Signal Heads: 12"

Backplate: No

Signage for signal: Yes

Location/Guidance for signage: NB LT only overhead sign; SB LT only overhead sign



Signal Timing & Inventory Inspection

Date: 7/27/22

Time: 10:45 am

Person: MT

Municipality: Queensbury

Signal No.: NYSDOT #26

Intersection: Quaker Rd & Lower Warren St

Control: Actuated

Controller: 2070L

Controller Make/Model: Siemens Eagle ATC

Cabinet Type: 330

Untethered

Poles: Span Wire

Ped Signals: Yes

Location of Ped Signals/Notes:

Ped Buttons: Yes

Meets ADA Requirements:

Vehicle Detection: Yes

Functional: Yes

Comments/Type: loops & mags

Signal Coordination: No

Type of Coordination: none

Overall Condition: Good

Comments:

Signal Heads: 12"

Backplate: No

Signage for signal: Yes

Location/Guidance for signage: overhead lane "only" signage

## **Appendix B. Existing Conditions Simulation Reports**

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Summary of All Intervals

Run Number	1	10	2	3	4	5	6
Start Time	7:00	7:00	7:00	7:00	7:00	7:00	7:00
End Time	8:15	8:15	8:15	8:15	8:15	8:15	8:15
Total Time (min)	75	75	75	75	75	75	75
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	5	5	5	5	5	5	5
# of Recorded mScheduledIntervals	4	4	4	4	4	4	4
Vehs Entered	3739	3803	3801	3901	3827	3823	3914
Vehs Exited	3750	3834	3792	3900	3824	3847	3908
Starting Vehs	112	152	108	159	117	138	121
Ending Vehs	101	121	117	160	120	114	127
Denied Entry Before	1	0	0	1	0	2	2
Travel Distance (mi)	2234	2264	2235	2299	2258	2236	2345
Travel Time (hr)	130.7	138.3	128.9	138.7	134.6	136.7	142.4
Total Delay (hr)	58.5	65.0	56.9	64.0	61.5	64.4	66.6
Total Stops	5621	5947	5544	5845	5856	5987	6206
Fuel Used (gal)	99.1	101.5	98.6	103.2	100.9	100.8	105.5

Summary of All Intervals

Run Number	7	8	9	Avg
Start Time	7:00	7:00	7:00	7:00
End Time	8:15	8:15	8:15	8:15
Total Time (min)	75	75	75	75
Time Recorded (min)	60	60	60	60
# of Intervals	5	5	5	5
# of Recorded mScheduledIntervals	4	4	4	4
Vehs Entered	3794	3870	3926	3839
Vehs Exited	3779	3914	3917	3848
Starting Vehs	111	166	116	128
Ending Vehs	126	122	125	119
Denied Entry Before	1	0	1	0
Travel Distance (mi)	2222	2307	2328	2273
Travel Time (hr)	135.3	139.6	141.2	136.6
Total Delay (hr)	63.6	65.3	65.9	63.2
Total Stops	5960	6041	6186	5921
Fuel Used (gal)	99.5	104.1	104.3	101.7

Interval #0 Information Seeding

Start Time	7:00
End Time	7:15
Total Time (min)	15
Volumes adjusted by Growth Factors.	
No data recorded this interval.	

Interval #1 Information Recording

Start Time	7:15
End Time	7:30
Total Time (min)	15
Volumes adjusted by Growth Factors, Anti PHF.	

Run Number	1	10	2	3	4	5	6
Vehs Entered	830	913	885	859	865	837	883
Vehs Exited	833	949	900	919	870	837	881
Starting Vehs	112	152	108	159	117	138	121
Ending Vehs	109	116	93	99	112	138	123
Denied Entry Before	1	0	0	1	0	2	2
Travel Distance (mi)	511	555	534	541	511	491	529
Travel Time (hr)	28.6	34.1	30.3	30.0	28.1	28.0	31.5
Total Delay (hr)	12.1	16.2	13.1	12.5	11.5	12.1	14.5
Total Stops	1254	1538	1343	1263	1215	1195	1387
Fuel Used (gal)	22.0	25.0	23.7	23.5	22.1	21.3	23.6

Interval #1 Information Recording

Start Time	7:15
End Time	7:30
Total Time (min)	15
Volumes adjusted by Growth Factors, Anti PHF.	

Run Number	7	8	9	Avg
Vehs Entered	883	896	886	872
Vehs Exited	872	958	856	887
Starting Vehs	111	166	116	128
Ending Vehs	122	104	146	114
Denied Entry Before	1	0	1	0
Travel Distance (mi)	522	568	527	529
Travel Time (hr)	30.6	33.0	30.3	30.4
Total Delay (hr)	13.7	14.7	13.3	13.4
Total Stops	1337	1417	1335	1324
Fuel Used (gal)	23.2	25.2	23.2	23.3

Interval #2 Information Recording

Start Time	7:30
End Time	7:45
Total Time (min)	15
Volumes adjusted by Growth Factors, Anti PHF.	

Run Number	1	10	2	3	4	5	6
Vehs Entered	884	855	867	902	882	873	876
Vehs Exited	878	806	838	878	879	889	875
Starting Vehs	109	116	93	99	112	138	123
Ending Vehs	115	165	122	123	115	122	124
Denied Entry Before	0	1	1	0	0	0	0
Travel Distance (mi)	562	494	494	545	529	540	542
Travel Time (hr)	32.1	29.8	27.1	30.0	30.4	31.6	30.7
Total Delay (hr)	14.0	13.6	11.3	12.3	13.3	14.2	13.1
Total Stops	1366	1283	1177	1195	1343	1329	1342
Fuel Used (gal)	24.7	21.8	21.7	23.4	23.2	23.7	23.7

Interval #2 Information Recording

Start Time	7:30
End Time	7:45
Total Time (min)	15
Volumes adjusted by Growth Factors, Anti PHF.	

Run Number	7	8	9	Avg
Vehs Entered	810	891	935	878
Vehs Exited	838	882	964	873
Starting Vehs	122	104	146	114
Ending Vehs	94	113	117	118
Denied Entry Before	0	0	0	0
Travel Distance (mi)	483	533	568	529
Travel Time (hr)	27.6	32.0	33.2	30.5
Total Delay (hr)	11.9	14.9	14.9	13.3
Total Stops	1179	1443	1435	1308
Fuel Used (gal)	20.8	24.0	25.4	23.2



Interval #3 Information Recording

Start Time	7:45
End Time	8:00
Total Time (min)	15
Volumes adjusted by PHF, Growth Factors.	

Run Number	1	10	2	3	4	5	6
Vehs Entered	1152	1150	1166	1188	1162	1217	1193
Vehs Exited	1100	1119	1111	1129	1121	1161	1121
Starting Vehs	115	165	122	123	115	122	124
Ending Vehs	167	196	177	182	156	178	196
Denied Entry Before	0	1	0	4	0	3	0
Travel Distance (mi)	622	647	659	639	654	663	665
Travel Time (hr)	38.5	40.8	40.5	43.3	42.8	44.4	43.5
Total Delay (hr)	18.3	19.9	19.1	22.4	21.7	22.9	22.0
Total Stops	1663	1767	1729	1835	1920	1983	1897
Fuel Used (gal)	28.2	29.6	29.4	30.1	30.4	31.2	31.1

Interval #3 Information Recording

Start Time	7:45
End Time	8:00
Total Time (min)	15
Volumes adjusted by PHF, Growth Factors.	

Run Number	7	8	9	Avg
Vehs Entered	1202	1121	1184	1171
Vehs Exited	1119	1058	1124	1115
Starting Vehs	94	113	117	118
Ending Vehs	177	176	177	177
Denied Entry Before	0	1	3	0
Travel Distance (mi)	657	622	653	648
Travel Time (hr)	42.7	40.4	43.5	42.0
Total Delay (hr)	21.5	20.3	22.3	21.0
Total Stops	1880	1753	1893	1831
Fuel Used (gal)	30.0	28.8	30.2	29.9

**Interval #4 Information Recording**

Start Time	8:00
End Time	8:15
Total Time (min)	15
Volumes adjusted by Growth Factors, Anti PHF.	

Run Number	1	10	2	3	4	5	6
Vehs Entered	873	885	883	952	918	896	962
Vehs Exited	939	960	943	974	954	960	1031
Starting Vehs	167	196	177	182	156	178	196
Ending Vehs	101	121	117	160	120	114	127
Denied Entry Before	0	1	0	1	1	0	3
Travel Distance (mi)	539	568	548	575	564	541	609
Travel Time (hr)	31.5	33.6	31.0	35.4	33.2	32.6	36.6
Total Delay (hr)	14.1	15.4	13.4	16.7	15.0	15.1	17.0
Total Stops	1338	1359	1295	1552	1378	1480	1580
Fuel Used (gal)	24.2	25.1	23.8	26.1	25.1	24.6	27.1

**Interval #4 Information Recording**

Start Time	8:00
End Time	8:15
Total Time (min)	15
Volumes adjusted by Growth Factors, Anti PHF.	

Run Number	7	8	9	Avg
Vehs Entered	899	962	921	911
Vehs Exited	950	1016	973	965
Starting Vehs	177	176	177	177
Ending Vehs	126	122	125	119
Denied Entry Before	4	0	0	0
Travel Distance (mi)	560	585	580	567
Travel Time (hr)	34.5	34.3	34.2	33.7
Total Delay (hr)	16.5	15.4	15.4	15.4
Total Stops	1564	1428	1523	1447
Fuel Used (gal)	25.5	26.2	25.5	25.3

1: Cottage Hill Road/School Parking & Aviation Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	3.4	0.4	0.4	0.0	0.0	0.0	0.1	0.2	0.2	0.2	0.2	0.1
Total Delay (hr)	0.5	0.8	0.0	0.1	0.8	0.1	0.0	0.6	0.2	0.5	0.3	0.1
Total Del/Veh (s)	10.5	9.5	5.2	12.1	13.3	9.6	21.4	23.3	11.2	30.0	23.3	4.5
Stop Delay (hr)	0.3	0.5	0.0	0.0	0.5	0.1	0.0	0.5	0.1	0.4	0.3	0.1
Stop Del/Veh (s)	7.5	5.4	3.4	7.8	8.1	6.6	19.0	19.4	9.6	28.0	20.2	4.4
Total Stops	108	136	2	12	87	18	2	66	43	49	40	65
Stop/Veh	0.65	0.42	0.50	0.67	0.42	0.53	1.00	0.71	0.77	0.88	0.75	0.73
Travel Dist (mi)	8.3	16.3	0.2	1.8	20.8	3.4	0.2	9.9	6.0	1.8	1.7	3.0
Travel Time (hr)	1.0	1.4	0.0	0.1	1.4	0.2	0.0	0.9	0.4	0.6	0.4	0.3
Avg Speed (mph)	10	12	14	14	15	15	10	11	14	3	4	10
Fuel Used (gal)	0.4	0.9	0.0	0.1	1.2	0.2	0.0	0.5	0.2	0.2	0.1	0.1
Fuel Eff. (mpg)	19.6	17.5	27.5	18.8	17.4	19.2	21.9	22.0	26.3	10.9	11.9	32.4
HC Emissions (g)	3	10	0	1	15	5	0	4	2	0	1	1
CO Emissions (g)	105	405	2	42	660	149	2	146	82	19	33	20
NOx Emissions (g)	11	37	0	3	53	15	0	12	7	2	3	2
Vehicles Entered	166	322	4	18	208	34	2	92	56	55	52	89
Vehicles Exited	166	323	4	18	208	34	2	92	56	55	52	89
Hourly Exit Rate	166	323	4	18	208	34	2	92	56	55	52	89
Input Volume	170	322	4	17	212	33	2	96	54	54	51	87
% of Volume	98	100	94	106	98	104	89	96	103	101	101	102
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0

1: Cottage Hill Road/School Parking & Aviation Rd Performance by movement

Movement	All
Denied Delay (hr)	0.2
Denied Del/Veh (s)	0.7
Total Delay (hr)	4.0
Total Del/Veh (s)	13.0
Stop Delay (hr)	2.9
Stop Del/Veh (s)	9.5
Total Stops	628
Stop/Veh	0.57
Travel Dist (mi)	73.5
Travel Time (hr)	6.7
Avg Speed (mph)	11
Fuel Used (gal)	3.9
Fuel Eff. (mpg)	18.7
HC Emissions (g)	42
CO Emissions (g)	1665
NOx Emissions (g)	147
Vehicles Entered	1098
Vehicles Exited	1099
Hourly Exit Rate	1099
Input Volume	1104
% of Volume	100
Denied Entry Before	0

2: Church Driveway/School Driveway & Aviation Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBT	SBL	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.2
Denied Del/Veh (s)	0.1	0.0	0.0	0.0	0.3	0.2	0.1	1.6	0.9	0.4
Total Delay (hr)	0.6	0.6	0.0	0.0	1.2	1.5	0.0	2.3	0.0	6.3
Total Del/Veh (s)	18.8	6.5	3.2	11.0	18.8	14.4	33.9	34.9	4.2	17.0
Stop Delay (hr)	0.5	0.3	0.0	0.0	0.7	0.9	0.0	2.2	0.0	4.6
Stop Del/Veh (s)	15.5	3.5	1.5	4.8	9.9	8.3	31.1	34.2	4.3	12.5
Total Stops	87	78	1	1	107	184	2	171	27	658
Stop/Veh	0.74	0.24	0.33	1.00	0.45	0.50	1.00	0.73	0.75	0.50
Travel Dist (mi)	11.5	31.9	0.3	0.1	25.4	40.4	0.1	7.0	1.1	117.7
Travel Time (hr)	1.0	1.6	0.0	0.0	2.0	3.0	0.0	2.8	0.1	10.7
Avg Speed (mph)	11	20	20	15	13	13	2	3	9	11
Fuel Used (gal)	0.6	1.6	0.0	0.0	0.9	1.2	0.0	0.9	0.0	5.3
Fuel Eff. (mpg)	19.0	19.8	22.4	30.3	29.2	32.5	9.7	7.8	24.2	22.3
HC Emissions (g)	6	21	0	0	7	9	0	4	1	48
CO Emissions (g)	252	872	7	0	205	253	0	108	11	1709
NOx Emissions (g)	21	75	0	0	24	31	0	13	1	165
Vehicles Entered	116	325	3	1	238	368	2	231	36	1320
Vehicles Exited	116	325	3	1	237	368	2	232	36	1320
Hourly Exit Rate	116	325	3	1	237	368	2	232	36	1320
Input Volume	118	322	4	1	239	365	2	232	34	1318
% of Volume	98	101	75	100	99	101	89	100	106	100
Denied Entry Before	0	0	0	0	0	0	0	0	0	0

3: Adirondack SB On/Off Ramp & Aviation Rd Performance by movement

Movement	EBT	EBR	WBL	WBT	NBL	NBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.1	0.0	0.0	0.1	0.2	0.1
Total Delay (hr)	1.6	0.7	1.3	0.9	0.6	0.4	5.5
Total Del/Veh (s)	13.5	9.3	15.7	5.4	39.3	6.2	10.6
Stop Delay (hr)	1.3	0.5	0.9	0.5	0.6	0.3	4.1
Stop Del/Veh (s)	10.5	7.6	10.5	2.9	36.8	4.9	7.8
Total Stops	174	110	160	70	46	164	724
Stop/Veh	0.40	0.44	0.54	0.12	0.82	0.66	0.39
Travel Dist (mi)	20.9	12.3	40.0	79.7	3.3	14.7	170.8
Travel Time (hr)	2.3	1.3	2.7	3.3	0.7	1.1	11.5
Avg Speed (mph)	9	10	15	24	4	13	15
Fuel Used (gal)	1.1	0.5	1.8	3.5	0.2	0.5	7.6
Fuel Eff. (mpg)	18.2	27.0	22.8	23.0	13.9	29.4	22.6
HC Emissions (g)	9	3	17	44	1	5	80
CO Emissions (g)	379	92	718	1648	53	198	3088
NOx Emissions (g)	32	11	63	155	4	17	283
Vehicles Entered	434	251	294	585	55	246	1865
Vehicles Exited	434	252	295	584	55	246	1866
Hourly Exit Rate	434	252	295	584	55	246	1866
Input Volume	436	243	292	588	54	245	1859
% of Volume	100	104	101	99	101	100	100
Denied Entry Before	0	0	0	0	0	0	0

4: Aviation Mall Rd/Greenway N & Aviation Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBR	SBL	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.3	0.0	0.0	0.1	0.1	0.1	0.1	0.0
Total Delay (hr)	0.0	1.1	0.0	0.0	1.1	0.0	0.1	0.0	0.1	0.0	2.7
Total Del/Veh (s)	29.1	3.9	3.1	16.1	4.8	4.5	23.2	8.9	26.7	9.0	4.9
Stop Delay (hr)	0.0	0.3	0.0	0.0	0.2	0.0	0.1	0.0	0.1	0.0	0.8
Stop Del/Veh (s)	25.5	0.9	0.2	12.1	0.7	0.7	21.8	8.8	24.8	8.8	1.5
Total Stops	5	87	0	6	62	1	21	18	18	5	223
Stop/Veh	1.00	0.08	0.00	1.00	0.08	0.14	0.95	0.95	0.90	1.00	0.11
Travel Dist (mi)	1.0	209.6	7.4	1.4	192.3	1.6	0.6	0.5	1.1	0.3	416.0
Travel Time (hr)	0.1	7.6	0.3	0.1	6.7	0.1	0.2	0.1	0.2	0.0	15.3
Avg Speed (mph)	14	27	25	20	29	26	3	6	6	12	27
Fuel Used (gal)	0.0	8.6	0.3	0.1	7.1	0.1	0.0	0.0	0.1	0.0	16.3
Fuel Eff. (mpg)	20.9	24.4	26.4	26.9	27.1	29.5	13.2	25.7	20.0	33.4	25.6
HC Emissions (g)	0	107	6	0	81	0	0	0	0	0	195
CO Emissions (g)	15	3915	174	13	2529	15	6	2	7	2	6677
NOx Emissions (g)	1	383	19	1	299	2	1	0	1	0	707
Vehicles Entered	5	1016	36	6	808	7	21	19	19	5	1942
Vehicles Exited	5	1020	37	6	812	7	21	19	19	5	1951
Hourly Exit Rate	5	1020	37	6	812	7	21	19	19	5	1951
Input Volume	5	1018	36	6	804	6	24	18	20	4	1942
% of Volume	95	100	102	96	101	112	88	107	95	118	100
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0

5: Aviation Mall Rd/Starbucks Driveway & Aviation Rd Performance by movement

Movement	EBL	EBT	WBL	WBT	WBR	NBL	NBR	SBL	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0		0.1	0.2	0.1	0.1	0.0
Total Delay (hr)	0.5	4.1	0.3	3.5	0.3	0.0	0.0	0.5	0.0	0.1	9.4
Total Del/Veh (s)	44.9	14.9	49.4	15.8	12.7		9.7	22.7	12.3	9.5	16.4
Stop Delay (hr)	0.5	2.5	0.3	2.0	0.2	0.0	0.0	0.4	0.0	0.1	6.0
Stop Del/Veh (s)	40.2	9.0	45.0	9.2	7.6		10.2	21.0	9.8	9.3	10.5
Total Stops	44	426	23	320	33	0	15	51	0	23	935
Stop/Veh	1.00	0.43	0.92	0.41	0.43		0.94	0.71	0.00	0.72	0.45
Travel Dist (mi)	10.3	231.9	2.9	96.5	9.4	0.0	0.9	2.0	0.0	0.9	354.8
Travel Time (hr)	0.9	10.9	0.5	6.6	0.7	0.0	0.1	0.6	0.0	0.1	20.3
Avg Speed (mph)	12	21	6	15	14	7	10	4	6	6	18
Fuel Used (gal)	0.4	7.4	0.2	5.1	0.4	0.0	0.0	0.2	0.0	0.0	13.7
Fuel Eff. (mpg)	26.2	31.5	14.5	19.0	21.9	16.8	33.3	11.7	14.2	18.1	25.9
HC Emissions (g)	2	70	1	55	3	0	0	1	0	1	133
CO Emissions (g)	75	1826	61	2136	154	0	5	26	0	12	4296
NOx Emissions (g)	9	241	4	210	14	0	0	3	0	1	482
Vehicles Entered	43	992	24	782	76	0	16	72	1	32	2038
Vehicles Exited	44	990	24	786	76	0	16	72	1	32	2041
Hourly Exit Rate	44	990	24	786	76	0	16	72	1	32	2041
Input Volume	44	991	24	783	76	1	16	66	1	30	2032
% of Volume	101	100	99	100	100	0	98	110	100	105	100
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0

6: Glen St/Lake George Rd & Aviation Rd/Quaker Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.0	0.0	0.1	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	2.9	0.2	3.1	3.5	0.1	0.1	3.5	0.1	0.2
Total Delay (hr)	3.0	5.0	0.5	0.1	5.5	0.1	4.6	1.1	0.0	1.2	1.0	0.3
Total Del/Veh (s)	70.9	27.8	7.0	71.6	36.9	4.0	85.6	22.3	7.7	62.6	23.4	7.1
Stop Delay (hr)	2.8	3.9	0.2	0.1	4.4	0.1	4.3	0.9	0.0	1.1	0.8	0.3
Stop Del/Veh (s)	66.1	21.4	3.2	68.8	29.4	2.8	80.6	17.6	7.6	59.4	19.1	5.8
Total Stops	139	348	116	4	369	46	206	90	4	64	79	81
Stop/Veh	0.90	0.53	0.45	1.00	0.68	0.59	1.07	0.51	0.50	0.93	0.52	0.49
Travel Dist (mi)	18.3	79.2	31.6	0.6	89.2	12.9	22.5	20.9	0.9	10.8	23.6	25.9
Travel Time (hr)	3.7	7.4	1.7	0.1	7.8	0.6	5.5	1.6	0.0	1.6	1.6	1.2
Avg Speed (mph)	5	11	19	7	11	26	4	13	19	7	15	22
Fuel Used (gal)	1.4	4.2	1.2	0.0	4.1	0.5	1.8	1.0	0.0	0.6	1.0	0.8
Fuel Eff. (mpg)	13.5	19.1	26.2	17.0	22.0	27.3	12.2	21.7	38.8	17.6	24.3	32.6
HC Emissions (g)	9	41	14	0	40	7	12	11	0	3	9	11
CO Emissions (g)	361	1430	511	15	1876	347	602	518	8	208	458	469
NOx Emissions (g)	31	147	52	1	124	22	34	36	1	12	32	34
Vehicles Entered	150	649	255	4	536	78	188	173	8	68	149	164
Vehicles Exited	150	645	254	4	533	77	184	175	8	68	150	164
Hourly Exit Rate	150	645	254	4	533	77	184	175	8	68	150	164
Input Volume	143	648	256	4	524	74	188	169	8	69	144	171
% of Volume	105	99	99	94	102	104	98	104	97	99	104	96
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0

6: Glen St/Lake George Rd & Aviation Rd/Quaker Rd Performance by movement

Movement	All
Denied Delay (hr)	0.4
Denied Del/Veh (s)	0.5
Total Delay (hr)	22.5
Total Del/Veh (s)	33.1
Stop Delay (hr)	18.9
Stop Del/Veh (s)	27.8
Total Stops	1546
Stop/Veh	0.63
Travel Dist (mi)	336.3
Travel Time (hr)	32.7
Avg Speed (mph)	10
Fuel Used (gal)	16.5
Fuel Eff. (mpg)	20.4
HC Emissions (g)	159
CO Emissions (g)	6804
NOx Emissions (g)	526
Vehicles Entered	2422
Vehicles Exited	2412
Hourly Exit Rate	2412
Input Volume	2399
% of Volume	101
Denied Entry Before	0



30: Adirondack NB Off Ramp/Adirondack NB On Ramp & Aviation Rd Performance by movement

Movement	EBL	EBT	WBT	WBR	NBL	NBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Denied Del/Veh (s)	0.0	0.0	0.0	0.1	0.2	0.4	0.1
Total Delay (hr)	0.4	3.2	3.1	0.3	1.6	1.4	9.9
Total Del/Veh (s)	24.5	18.3	16.2	5.5	28.3	11.4	16.3
Stop Delay (hr)	0.3	2.3	2.1	0.1	1.4	1.0	7.2
Stop Del/Veh (s)	20.5	13.5	10.9	2.0	24.6	8.3	11.9
Total Stops	41	268	280	70	140	235	1034
Stop/Veh	0.79	0.43	0.41	0.39	0.69	0.53	0.47
Travel Dist (mi)	7.0	84.3	142.2	37.0	15.4	33.8	319.8
Travel Time (hr)	0.6	5.9	7.2	1.5	2.2	2.9	20.3
Avg Speed (mph)	11	14	20	24	7	12	16
Fuel Used (gal)	0.4	4.4	4.7	1.0	0.9	1.3	12.7
Fuel Eff. (mpg)	19.0	19.3	30.0	35.5	17.3	26.0	25.2
HC Emissions (g)	3	55	44	9	6	12	129
CO Emissions (g)	146	2223	1203	273	268	463	4576
NOx Emissions (g)	11	185	153	34	22	40	444
Vehicles Entered	51	623	678	176	202	443	2173
Vehicles Exited	51	620	676	176	202	444	2169
Hourly Exit Rate	51	620	676	176	202	444	2169
Input Volume	53	620	675	176	205	446	2175
% of Volume	96	100	100	100	99	99	100
Denied Entry Before	0	0	0	0	0	0	0

33: Burke Drive & Aviation Rd Performance by movement

Movement	EBT	WBL	WBT	NBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.1	0.0	0.2	0.0
Total Delay (hr)	0.3	0.1	0.3	0.2	0.9
Total Del/Veh (s)	2.2	5.9	1.7	6.4	2.5
Stop Delay (hr)	0.0	0.0	0.0	0.2	0.3
Stop Del/Veh (s)	0.1	3.7	0.3	6.2	0.9
Total Stops	4	21	19	128	172
Stop/Veh	0.01	0.47	0.03	1.00	0.13
Travel Dist (mi)	61.5	2.4	32.5	3.5	100.0
Travel Time (hr)	2.3	0.2	1.3	0.4	4.2
Avg Speed (mph)	27	14	26	8	24
Fuel Used (gal)	2.6	0.1	1.2	0.1	4.0
Fuel Eff. (mpg)	23.7	31.3	27.0	25.5	24.9
HC Emissions (g)	32	0	14	1	46
CO Emissions (g)	1196	16	522	19	1754
NOx Emissions (g)	120	2	49	2	173
Vehicles Entered	553	45	609	128	1335
Vehicles Exited	554	45	609	128	1336
Hourly Exit Rate	554	45	609	128	1336
Input Volume	552	50	608	124	1334
% of Volume	100	90	100	103	100
Denied Entry Before	0	0	0	0	0

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Total Network Performance

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Denied Delay (hr)	0.9
Denied Del/Veh (s)	0.8
Total Delay (hr)	62.3
Total Del/Veh (s)	56.5
Stop Delay (hr)	45.1
Stop Del/Veh (s)	40.9
Total Stops	5921
Stop/Veh	1.49
Travel Dist (mi)	2273.0
Travel Time (hr)	136.6
Avg Speed (mph)	17
Fuel Used (gal)	101.7
Fuel Eff. (mpg)	22.3
HC Emissions (g)	1128
CO Emissions (g)	43792
NOx Emissions (g)	3968
Vehicles Entered	3839
Vehicles Exited	3848
Hourly Exit Rate	3848
Input Volume	17845
% of Volume	22
Denied Entry Before	0

Arterial Level of Service: EB Aviation Rd

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed	Run 1 Speed	Run 1 Delay
Cottage Hill Road	1	9.5	15.1	0.1	14	16	7.6
Church Driveway	2	6.9	17.1	0.1	22	20	7.7
Burke Drive	33	2.2	13.5	0.1	30	29	2.6
Adirondack SB On/Off	3	13.5	18.6	0.1	10	10	14.4
Adirondack NB Off Ra	30	14.6	28.8	0.1	17	19	11.9
Aviation Mall Rd	4	4.8	26.1	0.2	29	30	4.2
Aviation Mall Rd	5	15.0	39.0	0.2	22	23	13.4
Glen St	6	27.7	40.4	0.1	11	13	23.8
<b>Total</b>		<b>94.2</b>	<b>198.6</b>	<b>1.0</b>	<b>19</b>	<b>20</b>	<b>85.6</b>

Arterial Level of Service: EB Aviation Rd

Cross Street	Run 10 Speed	Run 10 Delay	Run 2 Speed	Run 2 Delay	Run 3 Speed	Run 3 Delay	Run 4 Speed
Cottage Hill Road	14	9.8	13	10.5	14	9.4	13
Church Driveway	19	9.2	22	7.0	21	7.9	24
Burke Drive	31	2.0	31	1.9	30	2.1	31
Adirondack SB On/Off	11	11.6	10	14.2	9	15.7	11
Adirondack NB Off Ra	18	12.7	18	13.1	17	15.2	16
Aviation Mall Rd	28	5.9	30	4.2	28	5.7	29
Aviation Mall Rd	21	17.0	28	6.7	24	11.4	23
Glen St	11	29.8	11	30.5	11	29.6	11
<b>Total</b>	<b>18</b>	<b>98.0</b>	<b>20</b>	<b>88.0</b>	<b>19</b>	<b>97.0</b>	<b>19</b>

Arterial Level of Service: EB Aviation Rd

Cross Street	Run 4 Delay	Run 5 Speed	Run 5 Delay	Run 6 Speed	Run 6 Delay	Run 7 Speed	Run 7 Delay
Cottage Hill Road	10.3	12	11.6	14	9.7	14	9.5
Church Driveway	5.6	22	6.3	22	6.7	21	7.5
Burke Drive	2.0	29	2.7	30	2.1	30	2.2
Adirondack SB On/Off	12.4	9	15.0	10	13.6	10	13.1
Adirondack NB Off Ra	15.8	18	13.3	16	16.3	17	15.0
Aviation Mall Rd	4.4	30	4.1	29	4.4	29	4.8
Aviation Mall Rd	12.6	20	18.2	21	17.1	20	18.9
Glen St	27.5	12	26.9	12	26.7	12	26.9
<b>Total</b>	<b>90.7</b>	<b>18</b>	<b>98.1</b>	<b>19</b>	<b>96.6</b>	<b>18</b>	<b>97.8</b>

Arterial Level of Service: EB Aviation Rd

Cross Street	Run 8 Speed	Run 8 Delay	Run 9 Speed	Run 9 Delay
Cottage Hill Road	15	8.5	16	7.7
Church Driveway	22	6.5	24	5.0
Burke Drive	31	1.9	30	2.0
Adirondack SB On/Off	11	12.1	11	13.0
Adirondack NB Off Ra	16	17.0	17	15.4
Aviation Mall Rd	29	5.4	29	4.7
Aviation Mall Rd	20	18.5	21	15.8
Glen St	11	28.0	11	27.9
Total	19	97.9	19	91.4

Arterial Level of Service: WB Aviation Rd

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed	Run 1 Speed	Run 1 Delay
Starbucks Driveway	5	17.2	30.1	0.1	15	15	17.5
Greenway N	4	4.9	29.5	0.2	29	29	4.9
Adirondack NB On Ram	30	16.3	37.9	0.2	20	19	18.0
Adirondack SB On/Off	3	4.7	18.8	0.1	26	28	3.4
Burke Drive	33	1.7	7.3	0.1	26	27	1.4
School Driveway	2	18.8	30.2	0.1	14	16	14.7
School Parking	1	13.6	24.1	0.1	15	19	9.4
Total		77.2	177.7	1.0	20	21	69.3

Arterial Level of Service: WB Aviation Rd

Cross Street	Run 10 Speed	Run 10 Delay	Run 2 Speed	Run 2 Delay	Run 3 Speed	Run 3 Delay	Run 4 Speed
Starbucks Driveway	14	19.2	20	10.6	19	10.8	17
Greenway N	30	4.6	29	4.6	29	5.3	30
Adirondack NB On Ram	22	12.7	21	15.2	20	16.6	19
Adirondack SB On/Off	26	4.6	26	4.8	26	4.5	24
Burke Drive	28	1.1	27	1.6	22	3.0	27
School Driveway	13	20.7	16	14.9	12	23.3	14
School Parking	16	11.9	16	12.6	14	16.5	13
Total	20	74.8	21	64.3	20	80.0	20

Arterial Level of Service: WB Aviation Rd

Cross Street	Run 4 Delay	Run 5 Speed	Run 5 Delay	Run 6 Speed	Run 6 Delay	Run 7 Speed	Run 7 Delay
Starbucks Driveway	14.2	13	22.8	14	19.1	13	21.4
Greenway N	4.6	29	5.3	29	4.6	29	5.2
Adirondack NB On Ram	18.2	21	14.4	20	16.2	20	16.6
Adirondack SB On/Off	6.4	25	5.3	26	4.8	27	4.4
Burke Drive	1.6	28	1.5	26	1.7	25	2.0
School Driveway	17.7	14	18.5	14	19.0	14	19.0
School Parking	17.2	15	14.8	15	13.4	15	14.1
Total	79.8	19	82.6	20	78.7	19	82.6

Arterial Level of Service: WB Aviation Rd

Cross Street	Run 8 Speed	Run 8 Delay	Run 9 Speed	Run 9 Delay
Starbucks Driveway	15	17.0	14	19.5
Greenway N	29	4.7	28	5.4
Adirondack NB On Ram	20	15.9	19	18.5
Adirondack SB On/Off	26	4.8	27	4.3
Burke Drive	27	1.5	25	1.9
School Driveway	14	19.1	13	20.5
School Parking	14	15.2	17	11.3
Total	20	78.1	19	81.4



Intersection: 1: Cottage Hill Road/School Parking & Aviation Rd

Movement	EB	EB	WB	WB	NB	SB	SB
Directions Served	L	TR	L	TR	LTR	LT	R
Maximum Queue (ft)	75	263	38	187	146	130	61
Average Queue (ft)	49	93	9	71	64	56	26
95th Queue (ft)	81	192	29	149	121	106	52
Link Distance (ft)		261		458	567	167	167
Upstream Blk Time (%)		0				0	
Queuing Penalty (veh)		0				0	
Storage Bay Dist (ft)	50		110				
Storage Blk Time (%)	7	12		3			
Queuing Penalty (veh)	25	21		1			

Intersection: 2: Church Driveway/School Driveway & Aviation Rd

Movement	EB	EB	WB	WB	NB	SB	SB
Directions Served	L	TR	L	TR	TR	LT	R
Maximum Queue (ft)	126	162	16	459	32	184	62
Average Queue (ft)	50	57	0	169	2	132	20
95th Queue (ft)	96	132	9	366	16	199	51
Link Distance (ft)		458		531	122	159	159
Upstream Blk Time (%)				0		9	
Queuing Penalty (veh)				1		0	
Storage Bay Dist (ft)	190		50				
Storage Blk Time (%)	0	0		21			
Queuing Penalty (veh)	0	0		0			

Intersection: 3: Adirondack SB On/Off Ramp & Aviation Rd

Movement	EB	EB	WB	WB	WB	NB	NB
Directions Served	T	TR	L	T	T	L	R
Maximum Queue (ft)	211	221	264	114	131	102	135
Average Queue (ft)	88	113	94	29	35	41	57
95th Queue (ft)	181	219	199	90	107	84	102
Link Distance (ft)	210	210		655	655	314	314
Upstream Blk Time (%)	0	1					
Queuing Penalty (veh)	1	4					
Storage Bay Dist (ft)			370				
Storage Blk Time (%)			0				
Queuing Penalty (veh)			0				

Queuing and Blocking Report  
Baseline

3/22/2023

Intersection: 4: Aviation Mall Rd/Greenway N & Aviation Rd

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB
Directions Served	L	T	T	L	T	TR	LT	R	LTR
Maximum Queue (ft)	36	143	153	28	162	165	57	42	53
Average Queue (ft)	5	26	41	5	20	24	17	14	18
95th Queue (ft)	24	88	108	21	86	93	46	39	45
Link Distance (ft)		1048	1048		1173	1173	137	137	308
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	70			140					
Storage Blk Time (%)		1	0		0				
Queuing Penalty (veh)		0	0		0				

Intersection: 5: Aviation Mall Rd/Starbucks Driveway & Aviation Rd

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Directions Served	L	T	T	L	L	T	TR	LT	R	R	LTR
Maximum Queue (ft)	148	293	321	25	109	351	342	8	20	14	115
Average Queue (ft)	35	120	150	1	23	130	140	0	5	2	40
95th Queue (ft)	93	246	280	13	75	284	297	4	18	9	86
Link Distance (ft)		1173	1173			553	553		277	277	131
Upstream Blk Time (%)											0
Queuing Penalty (veh)											0
Storage Bay Dist (ft)	80			150	150			170			
Storage Blk Time (%)	1	13	13				6				
Queuing Penalty (veh)	4	6	0				2				

Queuing and Blocking Report  
Baseline

3/22/2023

Intersection: 6: Glen St/Lake George Rd & Aviation Rd/Quaker Rd

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB
Directions Served	L	L	T	T	R	L	T	T	R	L	L	T
Maximum Queue (ft)	142	153	276	283	138	29	317	300	56	190	217	132
Average Queue (ft)	58	81	143	150	47	4	173	140	19	86	130	56
95th Queue (ft)	112	130	242	254	100	19	266	242	42	181	204	111
Link Distance (ft)			553	553			873	873				625
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	170	170			280	280			430	310	310	
Storage Blk Time (%)	0	0	6	0			1					
Queuing Penalty (veh)	0	1	9	1			0					

Intersection: 6: Glen St/Lake George Rd & Aviation Rd/Quaker Rd

Movement	NB	SB	SB	SB	SB	SB
Directions Served	TR	L	L	T	T	R
Maximum Queue (ft)	89	62	122	128	95	98
Average Queue (ft)	16	8	56	60	16	46
95th Queue (ft)	53	36	103	112	54	87
Link Distance (ft)	625			833	833	833
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)		240	240			
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 30: Adirondack NB Off Ramp/Adirondack NB On Ramp & Aviation Rd

Movement	EB	EB	EB	WB	WB	WB	NB	NB
Directions Served	L	T	T	T	T	R	L	R
Maximum Queue (ft)	120	266	276	309	291	217	229	300
Average Queue (ft)	32	93	109	116	98	36	107	116
95th Queue (ft)	80	188	207	255	225	114	195	230
Link Distance (ft)		655	655	1048	1048		402	402
Upstream Blk Time (%)								0
Queuing Penalty (veh)								0
Storage Bay Dist (ft)	120					140		
Storage Blk Time (%)	0	4			5			
Queuing Penalty (veh)	0	2			10			

# Queuing and Blocking Report

## Baseline

3/22/2023

### Intersection: 33: Burke Drive & Aviation Rd

Movement	EB	WB	WB	WB	NB
Directions Served	TR	L	T	T	LR
Maximum Queue (ft)	49	61	63	70	89
Average Queue (ft)	4	16	6	5	43
95th Queue (ft)	30	47	34	35	75
Link Distance (ft)	531		210	210	143
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)		85			
Storage Blk Time (%)		0	0		
Queuing Penalty (veh)		0	0		

### Network Summary

Network wide Queuing Penalty: 88

Summary of All Intervals

Run Number	1	10	2	3	4	5	6
Start Time	4:00	4:00	4:00	4:00	4:00	4:00	4:00
End Time	5:15	5:15	5:15	5:15	5:15	5:15	5:15
Total Time (min)	75	75	75	75	75	75	75
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	5	5	5	5	5	5	5
# of Recorded mScheduledIntervals	4	4	4	4	4	4	4
Vehs Entered	5652	5690	5630	5515	5644	5629	5691
Vehs Exited	5640	5660	5635	5581	5664	5626	5699
Starting Vehs	227	245	223	270	237	239	222
Ending Vehs	239	275	218	204	217	242	214
Denied Entry Before	0	0	1	1	1	1	0
Travel Distance (mi)	3375	3439	3361	3267	3347	3394	3409
Travel Time (hr)	253.9	253.3	257.6	237.4	254.4	260.5	266.0
Total Delay (hr)	144.8	142.7	149.3	132.3	146.3	151.3	156.0
Total Stops	10143	10036	10379	9527	10189	10622	10760
Fuel Used (gal)	164.8	166.6	165.1	156.9	164.0	166.6	168.2

Summary of All Intervals

Run Number	7	8	9	Avg
Start Time	4:00	4:00	4:00	4:00
End Time	5:15	5:15	5:15	5:15
Total Time (min)	75	75	75	75
Time Recorded (min)	60	60	60	60
# of Intervals	5	5	5	5
# of Recorded mScheduledIntervals	4	4	4	4
Vehs Entered	5648	5596	5675	5634
Vehs Exited	5641	5599	5652	5639
Starting Vehs	276	220	222	234
Ending Vehs	283	217	245	232
Denied Entry Before	0	0	2	0
Travel Distance (mi)	3371	3304	3324	3359
Travel Time (hr)	255.7	243.9	249.0	253.2
Total Delay (hr)	147.1	137.6	141.7	144.9
Total Stops	10042	9757	9893	10141
Fuel Used (gal)	165.2	160.8	162.8	164.1

Interval #0 Information Seeding

Start Time	4:00
End Time	4:15
Total Time (min)	15
Volumes adjusted by Growth Factors.	
No data recorded this interval.	

Interval #1 Information Recording

Start Time	4:15
End Time	4:30
Total Time (min)	15
Volumes adjusted by Growth Factors, Anti PHF.	

Run Number	1	10	2	3	4	5	6
Vehs Entered	1374	1365	1415	1332	1392	1293	1390
Vehs Exited	1368	1343	1380	1399	1353	1312	1342
Starting Vehs	227	245	223	270	237	239	222
Ending Vehs	233	267	258	203	276	220	270
Denied Entry Before	0	0	1	1	1	1	0
Travel Distance (mi)	834	833	832	830	803	795	802
Travel Time (hr)	60.8	59.2	66.5	59.6	60.0	54.4	57.9
Total Delay (hr)	33.8	32.5	39.8	33.0	34.0	28.8	31.9
Total Stops	2454	2397	2690	2288	2385	2074	2414
Fuel Used (gal)	40.2	39.6	41.8	39.8	39.3	37.2	38.6

Interval #1 Information Recording

Start Time	4:15
End Time	4:30
Total Time (min)	15
Volumes adjusted by Growth Factors, Anti PHF.	

Run Number	7	8	9	Avg
Vehs Entered	1337	1401	1376	1365
Vehs Exited	1393	1358	1381	1360
Starting Vehs	276	220	222	234
Ending Vehs	220	263	217	242
Denied Entry Before	0	0	2	0
Travel Distance (mi)	830	810	811	818
Travel Time (hr)	60.5	56.6	55.4	59.1
Total Delay (hr)	33.7	30.3	29.2	32.7
Total Stops	2282	2247	2118	2334
Fuel Used (gal)	39.9	38.6	38.9	39.4

Interval #2 Information Recording

Start Time	4:30
End Time	4:45
Total Time (min)	15
Volumes adjusted by Growth Factors, Anti PHF.	

Run Number	1	10	2	3	4	5	6
Vehs Entered	1397	1374	1361	1327	1386	1364	1364
Vehs Exited	1385	1387	1371	1320	1438	1343	1370
Starting Vehs	233	267	258	203	276	220	270
Ending Vehs	245	254	248	210	224	241	264
Denied Entry Before	1	3	1	1	1	1	5
Travel Distance (mi)	837	824	821	759	835	820	841
Travel Time (hr)	61.0	56.0	61.4	54.2	61.8	59.6	61.7
Total Delay (hr)	33.9	29.5	35.0	29.8	34.8	33.3	34.7
Total Stops	2509	2110	2427	2174	2513	2470	2482
Fuel Used (gal)	40.1	38.7	39.9	36.0	40.3	39.6	40.6

Interval #2 Information Recording

Start Time	4:30
End Time	4:45
Total Time (min)	15
Volumes adjusted by Growth Factors, Anti PHF.	

Run Number	7	8	9	Avg
Vehs Entered	1362	1381	1347	1368
Vehs Exited	1364	1353	1357	1369
Starting Vehs	220	263	217	242
Ending Vehs	218	291	207	238
Denied Entry Before	0	2	1	0
Travel Distance (mi)	821	820	795	817
Travel Time (hr)	53.7	61.3	53.8	58.5
Total Delay (hr)	27.3	35.0	28.1	32.2
Total Stops	2141	2502	2113	2340
Fuel Used (gal)	38.3	40.0	37.6	39.1



Interval #3 Information Recording

Start Time	4:45
End Time	5:00
Total Time (min)	15
Volumes adjusted by PHF, Growth Factors.	

Run Number	1	10	2	3	4	5	6
Vehs Entered	1553	1564	1498	1518	1502	1559	1523
Vehs Exited	1539	1516	1489	1458	1487	1442	1498
Starting Vehs	245	254	248	210	224	241	264
Ending Vehs	259	302	257	270	239	358	289
Denied Entry Before	1	2	0	1	1	0	1
Travel Distance (mi)	887	918	865	866	882	876	883
Travel Time (hr)	69.1	70.6	66.2	63.8	71.2	72.0	71.2
Total Delay (hr)	40.4	41.1	38.1	36.0	42.7	43.6	42.7
Total Stops	2703	2818	2709	2622	2824	3047	2853
Fuel Used (gal)	44.2	45.6	42.6	42.0	44.3	44.3	44.0

Interval #3 Information Recording

Start Time	4:45
End Time	5:00
Total Time (min)	15
Volumes adjusted by PHF, Growth Factors.	

Run Number	7	8	9	Avg
Vehs Entered	1568	1489	1535	1529
Vehs Exited	1460	1537	1430	1485
Starting Vehs	218	291	207	238
Ending Vehs	326	243	312	282
Denied Entry Before	2	2	1	0
Travel Distance (mi)	875	882	849	878
Travel Time (hr)	69.4	70.6	66.2	69.0
Total Delay (hr)	41.1	42.3	38.7	40.7
Total Stops	2791	2811	2777	2799
Fuel Used (gal)	43.5	44.2	42.1	43.7

Interval #4 Information Recording

Start Time	5:00
End Time	5:15
Total Time (min)	15
Volumes adjusted by Growth Factors, Anti PHF.	

Run Number	1	10	2	3	4	5	6
Vehs Entered	1328	1387	1356	1338	1364	1413	1414
Vehs Exited	1348	1414	1395	1404	1386	1529	1489
Starting Vehs	259	302	257	270	239	358	289
Ending Vehs	239	275	218	204	217	242	214
Denied Entry Before	1	2	3	1	2	2	1
Travel Distance (mi)	816	863	843	813	827	903	883
Travel Time (hr)	62.9	67.5	63.5	59.6	61.4	74.5	75.1
Total Delay (hr)	36.6	39.6	36.4	33.4	34.7	45.6	46.6
Total Stops	2477	2711	2553	2443	2467	3031	3011
Fuel Used (gal)	40.3	42.6	40.8	39.1	40.2	45.5	45.0

Interval #4 Information Recording

Start Time	5:00
End Time	5:15
Total Time (min)	15
Volumes adjusted by Growth Factors, Anti PHF.	

Run Number	7	8	9	Avg
Vehs Entered	1381	1325	1417	1371
Vehs Exited	1424	1351	1484	1420
Starting Vehs	326	243	312	282
Ending Vehs	283	217	245	232
Denied Entry Before	2	2	2	1
Travel Distance (mi)	845	792	869	845
Travel Time (hr)	72.1	55.4	73.7	66.6
Total Delay (hr)	44.9	29.9	45.6	39.4
Total Stops	2828	2197	2885	2664
Fuel Used (gal)	43.6	38.0	44.2	41.9

1: Cottage Hill Road/School Parking & Aviation Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	3.4	0.3	0.3	0.1	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1
Total Delay (hr)	0.2	0.6	0.0	0.1	1.1	0.0	0.0	0.3	0.1	0.2	0.2	0.1
Total Del/Veh (s)	9.3	6.7	6.0	10.8	10.1	7.6	21.7	20.5	8.4	23.8	21.1	5.1
Stop Delay (hr)	0.1	0.3	0.0	0.1	0.5	0.0	0.0	0.2	0.0	0.1	0.1	0.1
Stop Del/Veh (s)	6.7	3.7	4.3	6.3	4.8	4.0	19.2	17.2	7.7	22.1	18.4	5.0
Total Stops	50	104	1	20	131	8	6	37	17	20	22	57
Stop/Veh	0.71	0.32	0.50	0.59	0.32	0.38	0.86	0.73	0.77	0.83	0.76	0.77
Travel Dist (mi)	3.5	16.2	0.1	3.4	39.5	2.1	0.7	5.5	2.3	0.8	0.9	2.5
Travel Time (hr)	0.4	1.1	0.0	0.2	2.3	0.1	0.1	0.5	0.1	0.2	0.2	0.3
Avg Speed (mph)	11	15	13	15	17	17	11	12	16	4	5	10
Fuel Used (gal)	0.2	0.8	0.0	0.2	1.9	0.1	0.0	0.2	0.1	0.1	0.1	0.1
Fuel Eff. (mpg)	22.9	19.3	27.4	21.7	20.3	23.3	23.7	24.0	29.0	14.1	14.6	32.1
HC Emissions (g)	1	10	0	2	23	1	0	2	1	0	0	1
CO Emissions (g)	38	428	1	75	884	31	7	71	26	5	13	16
NOx Emissions (g)	4	36	0	7	86	3	1	6	2	1	1	2
Vehicles Entered	70	322	2	34	405	21	7	51	21	24	29	74
Vehicles Exited	70	322	2	34	403	21	7	51	21	24	29	74
Hourly Exit Rate	70	322	2	34	403	21	7	51	21	24	29	74
Input Volume	74	321	2	32	398	20	8	49	21	25	27	73
% of Volume	94	100	100	105	101	105	90	104	101	96	106	101
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0

1: Cottage Hill Road/School Parking & Aviation Rd Performance by movement

Movement	All
Denied Delay (hr)	0.1
Denied Del/Veh (s)	0.4
Total Delay (hr)	2.9
Total Del/Veh (s)	9.8
Stop Delay (hr)	1.8
Stop Del/Veh (s)	6.2
Total Stops	473
Stop/Veh	0.45
Travel Dist (mi)	77.6
Travel Time (hr)	5.5
Avg Speed (mph)	14
Fuel Used (gal)	3.7
Fuel Eff. (mpg)	20.8
HC Emissions (g)	41
CO Emissions (g)	1597
NOx Emissions (g)	147
Vehicles Entered	1060
Vehicles Exited	1058
Hourly Exit Rate	1058
Input Volume	1050
% of Volume	101
Denied Entry Before	0

2: Church Driveway/School Driveway & Aviation Rd Performance by movement

Movement	EBL	EBT	EBR	WBT	WBR	SBL	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.0	0.0	0.1	0.0	0.4	0.1	0.1
Total Delay (hr)	0.1	0.5	0.0	1.4	0.4	1.5	0.0	3.8
Total Del/Veh (s)	13.3	5.0	3.6	11.5	8.6	32.3	6.4	11.9
Stop Delay (hr)	0.1	0.2	0.0	0.5	0.2	1.4	0.0	2.4
Stop Del/Veh (s)	10.6	2.2	2.0	4.3	3.9	31.7	6.6	7.6
Total Stops	15	68	1	130	61	136	19	430
Stop/Veh	0.71	0.19	0.50	0.30	0.36	0.84	0.83	0.37
Travel Dist (mi)	2.1	35.0	0.2	47.0	18.7	4.9	0.7	108.6
Travel Time (hr)	0.2	1.5	0.0	2.7	1.1	1.8	0.1	7.4
Avg Speed (mph)	14	23	20	17	17	3	8	15
Fuel Used (gal)	0.1	1.5	0.0	1.4	0.5	0.6	0.0	4.2
Fuel Eff. (mpg)	23.9	22.7	25.4	33.1	37.5	8.6	22.8	26.1
HC Emissions (g)	1	23	0	11	4	3	0	41
CO Emissions (g)	30	797	3	285	100	81	4	1299
NOx Emissions (g)	2	77	0	38	13	10	0	141
Vehicles Entered	21	348	2	430	170	162	23	1156
Vehicles Exited	21	348	2	431	170	160	23	1155
Hourly Exit Rate	21	348	2	431	170	160	23	1155
Input Volume	23	346	1	422	178	161	24	1155
% of Volume	92	100	200	102	96	99	96	100
Denied Entry Before	0	0	0	0	0	0	0	0

3: Adirondack SB On/Off Ramp & Aviation Rd Performance by movement

Movement	EBT	EBR	WBL	WBT	NBL	NBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.1	0.3	0.0
Total Delay (hr)	2.8	0.7	2.6	0.9	0.7	0.5	8.2
Total Del/Veh (s)	19.7	15.8	18.0	4.6	51.1	6.9	13.2
Stop Delay (hr)	2.3	0.6	1.5	0.3	0.6	0.4	5.8
Stop Del/Veh (s)	16.2	14.0	10.1	1.7	48.3	5.5	9.3
Total Stops	231	75	284	50	40	154	834
Stop/Veh	0.45	0.49	0.54	0.07	0.83	0.57	0.37
Travel Dist (mi)	25.1	7.5	70.1	98.6	2.8	16.1	220.3
Travel Time (hr)	3.7	1.1	5.0	3.9	0.8	1.3	15.7
Avg Speed (mph)	7	7	14	25	4	13	14
Fuel Used (gal)	1.6	0.4	3.2	4.4	0.2	0.6	10.4
Fuel Eff. (mpg)	15.5	20.8	22.1	22.3	11.6	28.7	21.2
HC Emissions (g)	14	3	30	54	1	6	107
CO Emissions (g)	512	72	1111	2024	49	217	3985
NOx Emissions (g)	48	8	113	201	4	19	393
Vehicles Entered	507	153	517	729	48	270	2224
Vehicles Exited	510	153	518	729	47	269	2226
Hourly Exit Rate	510	153	518	729	47	269	2226
Input Volume	502	151	530	726	51	270	2230
% of Volume	102	101	98	100	92	100	100
Denied Entry Before	0	0	0	0	0	0	0

4: Aviation Mall Rd/Greenway N & Aviation Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.4	0.2	0.1	0.1	0.1
Total Delay (hr)	0.2	6.4	0.5	0.4	4.0	0.0	1.6	0.0	0.3	0.2	0.0	0.0
Total Del/Veh (s)	41.6	19.0	10.0	27.0	11.1	10.4	32.3	41.2	10.6	32.0	35.6	18.4
Stop Delay (hr)	0.1	3.7	0.1	0.3	1.3	0.0	1.5	0.0	0.3	0.1	0.0	0.0
Stop Del/Veh (s)	35.4	10.8	2.4	19.8	3.6	3.8	30.1	36.0	10.3	30.0	32.1	18.0
Total Stops	16	549	28	45	324	2	144	1	62	14	4	5
Stop/Veh	1.07	0.45	0.15	0.82	0.25	0.25	0.81	1.00	0.60	0.82	1.00	1.00
Travel Dist (mi)	3.1	247.9	37.8	12.9	310.2	1.9	4.7	0.0	2.7	1.0	0.3	0.3
Travel Time (hr)	0.3	14.3	1.9	0.8	13.0	0.1	1.8	0.0	0.5	0.2	0.0	0.0
Avg Speed (mph)	11	17	20	16	24	22	3	3	6	5	5	8
Fuel Used (gal)	0.2	11.2	1.5	0.5	11.3	0.1	0.6	0.0	0.1	0.1	0.0	0.0
Fuel Eff. (mpg)	20.1	22.2	25.1	25.8	27.3	31.9	8.2	9.4	19.1	17.3	17.3	22.9
HC Emissions (g)	1	135	21	3	115	0	3	0	1	0	0	0
CO Emissions (g)	51	4943	723	115	3491	12	74	0	25	8	3	2
NOx Emissions (g)	4	472	73	15	441	1	9	0	3	1	0	0
Vehicles Entered	15	1210	187	54	1307	8	176	1	102	17	4	5
Vehicles Exited	15	1212	186	54	1304	8	176	1	103	17	4	5
Hourly Exit Rate	15	1212	186	54	1304	8	176	1	103	17	4	5
Input Volume	16	1198	191	54	1313	9	170	1	100	19	4	6
% of Volume	94	101	97	100	99	89	103	100	103	91	94	77
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0

4: Aviation Mall Rd/Greenway N & Aviation Rd Performance by movement

Movement	All
Denied Delay (hr)	0.0
Denied Del/Veh (s)	0.0
Total Delay (hr)	13.7
Total Del/Veh (s)	15.9
Stop Delay (hr)	7.5
Stop Del/Veh (s)	8.7
Total Stops	1194
Stop/Veh	0.38
Travel Dist (mi)	622.8
Travel Time (hr)	32.9
Avg Speed (mph)	19
Fuel Used (gal)	25.6
Fuel Eff. (mpg)	24.4
HC Emissions (g)	279
CO Emissions (g)	9446
NOx Emissions (g)	1018
Vehicles Entered	3086
Vehicles Exited	3085
Hourly Exit Rate	3085
Input Volume	3081
% of Volume	100
Denied Entry Before	0

5: Aviation Mall Rd/Starbucks Driveway & Aviation Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.0	0.0	0.0	0.0	0.0	4.1	4.0	0.1	0.1	0.3	0.1
Total Delay (hr)	0.1	10.5	0.2	1.7	5.6	0.2	0.0	0.0	0.7	0.4	0.0	0.1
Total Del/Veh (s)	64.6	29.4	19.6	40.0	14.7	13.2	31.5	27.6	14.0	34.9	33.1	18.1
Stop Delay (hr)	0.1	6.4	0.1	1.5	2.8	0.1	0.0	0.0	0.7	0.3	0.0	0.1
Stop Del/Veh (s)	54.7	17.7	9.6	34.1	7.3	7.6	29.1	23.8	13.9	33.4	30.3	18.2
Total Stops	10	752	20	131	488	18	3	4	134	30	1	13
Stop/Veh	1.25	0.58	0.71	0.83	0.36	0.39	0.75	0.80	0.74	0.81	1.00	0.76
Travel Dist (mi)	1.9	298.6	6.4	19.0	166.1	5.6	0.2	0.3	9.9	1.0	0.0	0.5
Travel Time (hr)	0.2	19.3	0.4	2.5	11.3	0.4	0.0	0.1	1.2	0.4	0.0	0.1
Avg Speed (mph)	9	15	17	8	15	14	5	6	8	2	3	4
Fuel Used (gal)	0.1	12.2	0.2	1.2	8.9	0.3	0.0	0.0	0.4	0.1	0.0	0.0
Fuel Eff. (mpg)	20.3	24.5	27.7	15.5	18.7	21.1	12.7	13.3	22.7	9.0	9.1	13.6
HC Emissions (g)	0	119	4	10	92	3	0	0	3	1	0	0
CO Emissions (g)	16	3677	98	426	3399	105	5	7	111	17	1	4
NOx Emissions (g)	2	436	13	39	361	12	0	0	10	2	0	0
Vehicles Entered	8	1276	28	155	1363	46	4	5	178	36	1	17
Vehicles Exited	8	1271	28	154	1360	46	4	5	178	37	1	17
Hourly Exit Rate	8	1271	28	154	1360	46	4	5	178	37	1	17
Input Volume	9	1265	26	162	1369	41	6	5	177	41	1	16
% of Volume	89	100	107	95	99	113	67	100	101	90	100	108
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0

5: Aviation Mall Rd/Starbucks Driveway & Aviation Rd Performance by movement

Movement	All
Denied Delay (hr)	0.0
Denied Del/Veh (s)	0.0
Total Delay (hr)	19.6
Total Del/Veh (s)	22.4
Stop Delay (hr)	12.1
Stop Del/Veh (s)	13.9
Total Stops	1604
Stop/Veh	0.51
Travel Dist (mi)	509.5
Travel Time (hr)	35.9
Avg Speed (mph)	14
Fuel Used (gal)	23.5
Fuel Eff. (mpg)	21.7
HC Emissions (g)	233
CO Emissions (g)	7866
NOx Emissions (g)	876
Vehicles Entered	3117
Vehicles Exited	3109
Hourly Exit Rate	3109
Input Volume	3118
% of Volume	100
Denied Entry Before	0

6: Glen St/Lake George Rd & Aviation Rd/Quaker Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.1	0.1	0.4	0.0	0.0	0.2	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	2.8	0.3	2.8	3.0	0.3	0.3	2.6	0.2	0.3
Total Delay (hr)	8.3	9.3	1.8	1.7	19.1	0.5	10.7	4.1	0.3	4.8	5.0	1.9
Total Del/Veh (s)	77.8	48.0	14.5	100.3	95.9	9.9	85.4	36.8	21.4	78.7	41.6	16.6
Stop Delay (hr)	7.4	7.6	1.1	1.5	16.2	0.4	9.8	3.3	0.2	4.5	4.2	1.4
Stop Del/Veh (s)	69.8	39.3	8.8	91.5	81.7	6.9	77.5	29.6	18.8	72.9	34.5	11.9
Total Stops	349	462	230	69	758	120	457	266	27	226	286	217
Stop/Veh	0.91	0.66	0.53	1.15	1.06	0.65	1.01	0.67	0.60	1.03	0.66	0.51
Travel Dist (mi)	44.9	81.3	53.0	9.6	115.6	30.7	52.5	47.5	5.4	34.1	68.2	65.9
Travel Time (hr)	9.9	11.8	3.8	2.0	22.1	1.7	12.8	5.3	0.5	6.0	6.8	4.1
Avg Speed (mph)	5	7	14	5	5	20	4	9	12	6	10	16
Fuel Used (gal)	3.6	5.3	2.2	0.7	8.0	1.3	4.3	2.8	0.2	2.2	3.4	2.3
Fuel Eff. (mpg)	12.5	15.3	23.6	13.4	14.4	22.8	12.1	16.9	23.0	15.7	19.8	28.7
HC Emissions (g)	25	43	22	4	52	21	28	28	3	16	37	29
CO Emissions (g)	808	1494	775	223	2262	1049	1129	1334	121	759	1626	1325
NOx Emissions (g)	84	153	85	13	160	61	83	92	9	45	114	83
Vehicles Entered	370	680	432	58	695	184	437	394	45	216	431	417
Vehicles Exited	373	682	433	58	696	186	441	390	45	215	429	418
Hourly Exit Rate	373	682	433	58	696	186	441	390	45	215	429	418
Input Volume	378	674	427	63	700	183	444	398	41	215	436	419
% of Volume	99	101	101	92	99	102	99	98	109	100	98	100
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0

6: Glen St/Lake George Rd & Aviation Rd/Quaker Rd Performance by movement

Movement	All
Denied Delay (hr)	0.8
Denied Del/Veh (s)	0.7
Total Delay (hr)	67.4
Total Del/Veh (s)	54.5
Stop Delay (hr)	57.5
Stop Del/Veh (s)	46.5
Total Stops	3467
Stop/Veh	0.78
Travel Dist (mi)	608.8
Travel Time (hr)	86.6
Avg Speed (mph)	7
Fuel Used (gal)	36.6
Fuel Eff. (mpg)	16.6
HC Emissions (g)	306
CO Emissions (g)	12905
NOx Emissions (g)	981
Vehicles Entered	4359
Vehicles Exited	4366
Hourly Exit Rate	4366
Input Volume	4378
% of Volume	100
Denied Entry Before	0



30: Adirondack NB Off Ramp/Adirondack NB On Ramp & Aviation Rd Performance by movement

Movement	EBL	EBT	WBT	WBR	NBL	NBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.2	0.2
Denied Del/Veh (s)	0.1	0.0	0.0	0.0	0.5	0.9	0.2
Total Delay (hr)	0.5	5.8	10.6	1.6	2.1	3.8	24.4
Total Del/Veh (s)	36.3	27.7	35.1	15.0	37.1	19.7	27.7
Stop Delay (hr)	0.4	4.4	7.5	0.8	1.9	2.6	17.5
Stop Del/Veh (s)	31.3	20.8	24.6	7.4	32.8	13.5	19.8
Total Stops	44	406	665	240	146	353	1854
Stop/Veh	0.92	0.54	0.61	0.61	0.72	0.52	0.58
Travel Dist (mi)	6.4	99.9	224.0	82.9	15.4	52.1	480.7
Travel Time (hr)	0.7	9.0	17.2	4.5	2.7	6.1	40.2
Avg Speed (mph)	9	11	13	18	6	9	12
Fuel Used (gal)	0.4	5.5	9.6	2.9	1.0	2.4	21.7
Fuel Eff. (mpg)	17.0	18.2	23.3	28.9	14.9	22.2	22.1
HC Emissions (g)	2	64	80	29	9	19	204
CO Emissions (g)	137	2437	2688	913	312	601	7088
NOx Emissions (g)	10	217	293	105	28	59	712
Vehicles Entered	47	744	1070	390	202	681	3134
Vehicles Exited	48	744	1071	392	201	682	3138
Hourly Exit Rate	48	744	1071	392	201	682	3138
Input Volume	51	733	1077	388	202	684	3135
% of Volume	94	101	99	101	100	100	100
Denied Entry Before	0	0	0	0	0	0	0

33: Burke Drive & Aviation Rd Performance by movement

Movement	EBT	WBL	WBT	NBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.2	0.0
Total Delay (hr)	0.4	0.3	0.2	0.3	1.3
Total Del/Veh (s)	2.9	6.4	1.3	8.1	3.2
Stop Delay (hr)	0.1	0.2	0.0	0.3	0.6
Stop Del/Veh (s)	0.7	4.0	0.1	7.9	1.6
Total Stops	17	92	10	149	268
Stop/Veh	0.03	0.51	0.02	0.98	0.19
Travel Dist (mi)	57.4	9.9	32.3	4.2	103.8
Travel Time (hr)	2.2	0.7	1.2	0.6	4.7
Avg Speed (mph)	26	14	27	7	22
Fuel Used (gal)	2.3	0.3	1.1	0.2	3.9
Fuel Eff. (mpg)	24.9	30.0	30.0	22.2	26.6
HC Emissions (g)	31	3	11	1	46
CO Emissions (g)	1133	80	402	29	1643
NOx Emissions (g)	110	10	40	4	164
Vehicles Entered	510	182	594	151	1437
Vehicles Exited	512	182	593	152	1439
Hourly Exit Rate	512	182	593	152	1439
Input Volume	509	182	594	149	1434
% of Volume	101	100	100	102	100
Denied Entry Before	0	0	0	0	0

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Total Network Performance

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Denied Delay (hr)	1.3
Denied Del/Veh (s)	0.8
Total Delay (hr)	143.7
Total Del/Veh (s)	88.1
Stop Delay (hr)	105.6
Stop Del/Veh (s)	64.7
Total Stops	10141
Stop/Veh	1.73
Travel Dist (mi)	3359.1
Travel Time (hr)	253.2
Avg Speed (mph)	13
Fuel Used (gal)	164.1
Fuel Eff. (mpg)	20.5
HC Emissions (g)	1733
CO Emissions (g)	66160
NOx Emissions (g)	6126
Vehicles Entered	5634
Vehicles Exited	5639
Hourly Exit Rate	5639
Input Volume	25056
% of Volume	23
Denied Entry Before	0

Arterial Level of Service: EB Aviation Rd

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed	Run 1 Speed	Run 1 Delay
Cottage Hill Road	1	6.7	12.3	0.1	17	17	6.5
Church Driveway	2	5.1	15.5	0.1	24	23	5.7
Burke Drive	33	3.1	14.6	0.1	28	29	2.5
Adirondack SB On/Off	3	19.4	24.6	0.1	8	9	16.9
Adirondack NB Off Ra	30	21.9	35.8	0.1	14	14	22.1
Aviation Mall Rd	4	20.2	41.3	0.2	18	19	17.6
Aviation Mall Rd	5	29.4	53.4	0.2	16	16	30.9
Glen St	6	47.9	60.1	0.1	8	8	48.8
<b>Total</b>		<b>153.7</b>	<b>257.6</b>	<b>1.0</b>	<b>15</b>	<b>15</b>	<b>151.0</b>

Arterial Level of Service: EB Aviation Rd

Cross Street	Run 10 Speed	Run 10 Delay	Run 2 Speed	Run 2 Delay	Run 3 Speed	Run 3 Delay	Run 4 Speed
Cottage Hill Road	16	7.7	17	6.7	16	7.1	15
Church Driveway	21	6.9	25	4.4	25	4.6	24
Burke Drive	26	3.8	29	2.5	26	3.9	27
Adirondack SB On/Off	8	19.7	8	19.2	9	16.6	7
Adirondack NB Off Ra	12	25.7	14	20.7	13	22.5	15
Aviation Mall Rd	18	21.5	18	22.1	21	15.2	18
Aviation Mall Rd	21	16.8	13	41.1	17	27.0	15
Glen St	8	46.4	7	51.9	7	51.4	8
<b>Total</b>	<b>15</b>	<b>148.7</b>	<b>14</b>	<b>168.5</b>	<b>15</b>	<b>148.2</b>	<b>14</b>

Arterial Level of Service: EB Aviation Rd

Cross Street	Run 4 Delay	Run 5 Speed	Run 5 Delay	Run 6 Speed	Run 6 Delay	Run 7 Speed	Run 7 Delay
Cottage Hill Road	8.0	18	6.0	19	5.7	16	7.6
Church Driveway	4.9	25	4.5	26	4.0	24	5.1
Burke Drive	3.3	29	2.4	28	2.8	29	2.6
Adirondack SB On/Off	22.1	7	20.5	8	19.4	7	22.3
Adirondack NB Off Ra	19.6	14	21.1	14	21.5	13	22.9
Aviation Mall Rd	20.5	18	21.3	18	21.0	18	20.6
Aviation Mall Rd	33.2	16	30.2	15	33.9	18	23.5
Glen St	45.6	8	46.3	8	48.1	8	48.4
<b>Total</b>	<b>157.3</b>	<b>15</b>	<b>152.3</b>	<b>14</b>	<b>156.3</b>	<b>15</b>	<b>153.0</b>

Arterial Level of Service: EB Aviation Rd

Cross Street	Run 8 Speed	Run 8 Delay	Run 9 Speed	Run 9 Delay
Cottage Hill Road	18	6.1	19	5.6
Church Driveway	24	5.2	23	5.3
Burke Drive	27	3.2	27	3.7
Adirondack SB On/Off	8	17.1	7	20.3
Adirondack NB Off Ra	14	20.2	14	21.5
Aviation Mall Rd	17	22.9	19	19.3
Aviation Mall Rd	15	31.8	17	25.6
Glen St	8	45.7	8	47.0
Total	15	152.2	15	148.3

Arterial Level of Service: WB Aviation Rd

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed	Run 1 Speed	Run 1 Delay
Starbucks Driveway	5	17.1	30.0	0.1	15	15	18.2
Greenway N	4	11.1	35.6	0.2	24	23	12.8
Adirondack NB On Ram	30	35.4	56.7	0.2	13	15	30.0
Adirondack SB On/Off	3	4.3	18.2	0.1	27	27	3.9
Burke Drive	33	1.3	7.0	0.1	27	27	1.4
School Driveway	2	11.5	22.9	0.1	18	19	10.2
School Parking	1	10.1	20.3	0.1	18	19	9.7
Total		90.9	190.6	1.0	19	19	86.2

Arterial Level of Service: WB Aviation Rd

Cross Street	Run 10 Speed	Run 10 Delay	Run 2 Speed	Run 2 Delay	Run 3 Speed	Run 3 Delay	Run 4 Speed
Starbucks Driveway	20	10.7	15	18.2	16	15.6	15
Greenway N	25	9.6	24	11.5	25	10.1	24
Adirondack NB On Ram	12	40.3	14	34.7	14	32.3	15
Adirondack SB On/Off	27	4.4	28	3.7	26	4.5	26
Burke Drive	27	1.3	28	1.2	27	1.3	27
School Driveway	17	13.1	19	10.5	17	12.4	18
School Parking	16	12.5	18	10.8	19	9.0	17
Total	18	92.0	19	90.6	19	85.3	19

Arterial Level of Service: WB Aviation Rd

Cross Street	Run 4 Delay	Run 5 Speed	Run 5 Delay	Run 6 Speed	Run 6 Delay	Run 7 Speed	Run 7 Delay
Starbucks Driveway	17.6	14	20.9	14	21.0	18	13.5
Greenway N	10.6	22	13.6	23	13.2	25	10.4
Adirondack NB On Ram	28.3	10	51.1	12	44.3	16	26.7
Adirondack SB On/Off	5.0	27	4.4	26	4.8	26	4.7
Burke Drive	1.3	28	1.1	25	1.9	27	1.4
School Driveway	11.3	18	11.1	17	13.2	19	10.0
School Parking	11.1	19	9.3	19	9.7	19	9.5
Total	85.2	17	111.6	17	108.1	20	76.1

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Arterial Level of Service: WB Aviation Rd

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Cross Street	Run 8 Speed	Run 8 Delay	Run 9 Speed	Run 9 Delay
Starbucks Driveway	14	19.0	16	16.9
Greenway N	25	9.6	25	9.5
Adirondack NB On Ram	17	23.3	12	41.8
Adirondack SB On/Off	27	3.8	28	3.5
Burke Drive	28	1.1	28	1.1
School Driveway	17	12.9	19	10.2
School Parking	18	10.3	19	9.4
Total	20	80.0	18	92.4

Intersection: 1: Cottage Hill Road/School Parking & Aviation Rd

Movement	EB	EB	WB	WB	NB	SB	SB
Directions Served	L	TR	L	TR	LTR	LT	R
Maximum Queue (ft)	72	180	95	275	91	77	56
Average Queue (ft)	29	63	17	94	38	28	22
95th Queue (ft)	58	133	58	203	78	63	44
Link Distance (ft)		261		458	567	167	167
Upstream Blk Time (%)		0					
Queuing Penalty (veh)		0					
Storage Bay Dist (ft)	50		110				
Storage Blk Time (%)	2	9	0	4			
Queuing Penalty (veh)	5	7	0	1			

Intersection: 2: Church Driveway/School Driveway & Aviation Rd

Movement	EB	EB	WB	SB	SB
Directions Served	L	TR	TR	LT	R
Maximum Queue (ft)	42	146	367	176	51
Average Queue (ft)	11	47	132	99	15
95th Queue (ft)	34	114	302	167	44
Link Distance (ft)		458	531	159	159
Upstream Blk Time (%)				2	
Queuing Penalty (veh)				0	
Storage Bay Dist (ft)	190				
Storage Blk Time (%)		0	12		
Queuing Penalty (veh)		0	0		

Intersection: 3: Adirondack SB On/Off Ramp & Aviation Rd

Movement	EB	EB	WB	WB	WB	NB	NB
Directions Served	T	TR	L	T	T	L	R
Maximum Queue (ft)	227	230	429	362	152	106	159
Average Queue (ft)	126	149	159	36	25	40	62
95th Queue (ft)	225	246	338	174	98	88	115
Link Distance (ft)	210	210		655	655	314	314
Upstream Blk Time (%)	1	4					0
Queuing Penalty (veh)	4	13					0
Storage Bay Dist (ft)			370				
Storage Blk Time (%)			1	0			
Queuing Penalty (veh)			4	1			



Queuing and Blocking Report  
Baseline

3/22/2023

Intersection: 4: Aviation Mall Rd/Greenway N & Aviation Rd

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	SB
Directions Served	L	T	T	R	L	T	TR	LT	R	LTR
Maximum Queue (ft)	112	462	491	205	166	362	371	155	104	67
Average Queue (ft)	17	182	206	61	37	108	116	98	41	19
95th Queue (ft)	63	374	408	213	96	275	282	157	80	52
Link Distance (ft)		1048	1048			1173	1173	137	137	308
Upstream Blk Time (%)								4	0	
Queuing Penalty (veh)								0	0	
Storage Bay Dist (ft)	70			130	140					
Storage Blk Time (%)	0	22	15			4				
Queuing Penalty (veh)	0	3	30			2				

Intersection: 5: Aviation Mall Rd/Starbucks Driveway & Aviation Rd

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Directions Served	L	T	T	R	L	L	T	TR	LT	R	R	LTR
Maximum Queue (ft)	95	534	560	170	102	255	420	431	26	112	68	81
Average Queue (ft)	9	244	274	24	38	76	177	189	4	40	16	26
95th Queue (ft)	48	489	523	111	83	170	380	391	19	86	43	64
Link Distance (ft)		1173	1173				553	553		277	277	131
Upstream Blk Time (%)								0				0
Queuing Penalty (veh)								0				0
Storage Bay Dist (ft)	80			120	150	150			170			
Storage Blk Time (%)	0	28	28		0	0	10			0		
Queuing Penalty (veh)	0	2	7		0	1	16			0		

Queuing and Blocking Report  
Baseline

3/22/2023

Intersection: 6: Glen St/Lake George Rd & Aviation Rd/Quaker Rd

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB
Directions Served	L	L	T	T	R	L	T	T	R	L	L	T
Maximum Queue (ft)	272	374	488	477	378	369	666	632	313	358	398	371
Average Queue (ft)	175	205	241	246	149	115	410	377	69	216	241	159
95th Queue (ft)	264	328	396	400	327	310	637	600	254	321	355	276
Link Distance (ft)			553	553			873	873				625
Upstream Blk Time (%)			0	0			0					0
Queuing Penalty (veh)			0	1			0					0
Storage Bay Dist (ft)	170	170			280	280			430	310	310	
Storage Blk Time (%)	11	20	24	5	0	0	35	7		1	3	0
Queuing Penalty (veh)	37	63	89	23	1	0	22	13		2	7	0

Intersection: 6: Glen St/Lake George Rd & Aviation Rd/Quaker Rd

Movement	NB	SB	SB	SB	SB	SB
Directions Served	TR	L	L	T	T	R
Maximum Queue (ft)	262	210	244	344	256	303
Average Queue (ft)	116	110	154	176	137	142
95th Queue (ft)	217	208	223	287	236	245
Link Distance (ft)	625			833	833	833
Upstream Blk Time (%)				0		
Queuing Penalty (veh)				0		
Storage Bay Dist (ft)		240	240			
Storage Blk Time (%)		0	0	2		
Queuing Penalty (veh)		0	0	4		

Intersection: 30: Adirondack NB Off Ramp/Adirondack NB On Ramp & Aviation Rd

Movement	EB	EB	EB	WB	WB	WB	NB	NB
Directions Served	L	T	T	T	T	R	L	R
Maximum Queue (ft)	162	360	373	668	689	270	316	430
Average Queue (ft)	41	164	184	323	257	112	133	238
95th Queue (ft)	107	292	314	606	571	266	245	410
Link Distance (ft)		655	655	1048	1048		402	402
Upstream Blk Time (%)				0	0		0	2
Queuing Penalty (veh)				1	1		0	0
Storage Bay Dist (ft)	120					140		
Storage Blk Time (%)	0	13			19	1		
Queuing Penalty (veh)	0	7			74	7		

Intersection: 33: Burke Drive & Aviation Rd

Movement	EB	WB	WB	WB	NB
Directions Served	T	L	T	T	LR
Maximum Queue (ft)	187	104	84	48	122
Average Queue (ft)	17	46	5	2	49
95th Queue (ft)	96	87	37	19	92
Link Distance (ft)	531		210	210	143
Upstream Blk Time (%)					0
Queuing Penalty (veh)					0
Storage Bay Dist (ft)		85			
Storage Blk Time (%)		1	0		
Queuing Penalty (veh)		3	0		

Network Summary

Network wide Queuing Penalty: 452

Summary of All Intervals

Run Number	1	10	2	3	4	5	6
Start Time	11:00	11:00	11:00	11:00	11:00	11:00	11:00
End Time	12:15	12:15	12:15	12:15	12:15	12:15	12:15
Total Time (min)	75	75	75	75	75	75	75
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	5	5	5	5	5	5	5
# of Recorded mScheduledIntervals	4	4	4	4	4	4	4
Vehs Entered	5944	5802	5758	5784	5827	5808	5853
Vehs Exited	5948	5807	5744	5758	5799	5763	5761
Starting Vehs	270	261	219	254	252	230	202
Ending Vehs	266	256	233	280	280	275	294
Denied Entry Before	0	2	1	0	1	0	1
Travel Distance (mi)	3421	3299	3290	3291	3359	3295	3324
Travel Time (hr)	267.9	256.8	247.1	249.2	267.5	259.9	260.1
Total Delay (hr)	157.2	149.8	140.3	142.6	158.6	153.1	152.2
Total Stops	10784	10495	10074	10108	10883	10601	10580
Fuel Used (gal)	170.0	164.4	161.6	162.1	168.5	164.8	165.2

Summary of All Intervals

Run Number	7	8	9	Avg
Start Time	11:00	11:00	11:00	11:00
End Time	12:15	12:15	12:15	12:15
Total Time (min)	75	75	75	75
Time Recorded (min)	60	60	60	60
# of Intervals	5	5	5	5
# of Recorded mScheduledIntervals	4	4	4	4
Vehs Entered	5919	5665	5771	5813
Vehs Exited	5917	5662	5801	5795
Starting Vehs	233	221	273	237
Ending Vehs	235	224	243	253
Denied Entry Before	0	1	2	0
Travel Distance (mi)	3414	3212	3317	3322
Travel Time (hr)	272.9	234.8	249.2	256.5
Total Delay (hr)	162.5	130.6	141.5	148.8
Total Stops	11030	9728	9985	10423
Fuel Used (gal)	171.4	156.6	162.8	164.8

Interval #0 Information Seeding

Start Time	11:00
End Time	11:15
Total Time (min)	15
Volumes adjusted by Growth Factors.	
No data recorded this interval.	

Interval #1 Information Recording

Start Time	11:15
End Time	11:30
Total Time (min)	15
Volumes adjusted by Growth Factors, Anti PHF.	

Run Number	1	10	2	3	4	5	6
Vehs Entered	1395	1362	1402	1336	1415	1410	1395
Vehs Exited	1438	1426	1388	1374	1370	1385	1340
Starting Vehs	270	261	219	254	252	230	202
Ending Vehs	227	197	233	216	297	255	257
Denied Entry Before	0	2	1	0	1	0	1
Travel Distance (mi)	831	777	821	769	796	816	803
Travel Time (hr)	57.6	57.7	58.9	54.0	62.5	63.2	59.0
Total Delay (hr)	30.6	32.6	32.3	29.0	36.7	36.7	32.9
Total Stops	2256	2358	2418	2122	2560	2627	2388
Fuel Used (gal)	39.9	38.1	39.8	36.8	39.6	40.1	38.5

Interval #1 Information Recording

Start Time	11:15
End Time	11:30
Total Time (min)	15
Volumes adjusted by Growth Factors, Anti PHF.	

Run Number	7	8	9	Avg
Vehs Entered	1398	1373	1419	1391
Vehs Exited	1425	1383	1476	1401
Starting Vehs	233	221	273	237
Ending Vehs	206	211	216	231
Denied Entry Before	0	1	2	0
Travel Distance (mi)	810	798	833	805
Travel Time (hr)	58.7	55.4	59.3	58.6
Total Delay (hr)	32.6	29.6	32.3	32.5
Total Stops	2390	2238	2401	2375
Fuel Used (gal)	39.6	37.9	40.1	39.0

Interval #2 Information Recording

Start Time	11:30
End Time	11:45
Total Time (min)	15
Volumes adjusted by Growth Factors, Anti PHF.	

Run Number	1	10	2	3	4	5	6
Vehs Entered	1448	1364	1397	1440	1382	1399	1431
Vehs Exited	1418	1341	1369	1373	1434	1405	1448
Starting Vehs	227	197	233	216	297	255	257
Ending Vehs	257	220	261	283	245	249	240
Denied Entry Before	2	0	1	0	1	1	1
Travel Distance (mi)	838	788	798	795	829	803	799
Travel Time (hr)	63.2	57.6	57.3	61.0	65.4	60.1	59.0
Total Delay (hr)	36.0	31.9	31.4	35.2	38.6	33.9	33.1
Total Stops	2520	2351	2283	2509	2623	2416	2380
Fuel Used (gal)	40.5	38.2	38.4	39.1	41.4	39.7	39.4

Interval #2 Information Recording

Start Time	11:30
End Time	11:45
Total Time (min)	15
Volumes adjusted by Growth Factors, Anti PHF.	

Run Number	7	8	9	Avg
Vehs Entered	1449	1390	1362	1403
Vehs Exited	1381	1373	1338	1389
Starting Vehs	206	211	216	231
Ending Vehs	274	228	240	246
Denied Entry Before	0	0	0	0
Travel Distance (mi)	824	784	770	803
Travel Time (hr)	60.1	54.6	52.6	59.1
Total Delay (hr)	33.6	29.2	27.5	33.0
Total Stops	2393	2215	2161	2384
Fuel Used (gal)	40.0	37.6	36.7	39.1

Interval #3 Information Recording

Start Time	11:45
End Time	12:00
Total Time (min)	15
Volumes adjusted by PHF, Growth Factors.	

Run Number	1	10	2	3	4	5	6
Vehs Entered	1629	1617	1585	1577	1588	1570	1595
Vehs Exited	1558	1546	1532	1580	1526	1529	1492
Starting Vehs	257	220	261	283	245	249	240
Ending Vehs	328	291	314	280	307	290	343
Denied Entry Before	1	2	1	1	0	0	1
Travel Distance (mi)	901	864	860	879	875	846	881
Travel Time (hr)	77.5	71.0	68.9	67.6	70.1	67.9	68.9
Total Delay (hr)	48.5	43.1	40.9	39.2	41.7	40.6	40.3
Total Stops	3131	2942	2856	2745	2890	2786	2886
Fuel Used (gal)	46.3	44.1	43.4	43.8	43.9	42.8	43.6

Interval #3 Information Recording

Start Time	11:45
End Time	12:00
Total Time (min)	15
Volumes adjusted by PHF, Growth Factors.	

Run Number	7	8	9	Avg
Vehs Entered	1684	1529	1597	1597
Vehs Exited	1591	1492	1551	1540
Starting Vehs	274	228	240	246
Ending Vehs	367	265	286	303
Denied Entry Before	0	1	0	0
Travel Distance (mi)	940	858	892	880
Travel Time (hr)	85.5	67.4	74.2	71.9
Total Delay (hr)	55.0	39.7	45.4	43.4
Total Stops	3482	2780	3004	2950
Fuel Used (gal)	49.2	42.9	45.0	44.5

Interval #4 Information Recording

Start Time	12:00
End Time	12:15
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	1	10	2	3	4	5	6
Vehs Entered	1472	1459	1374	1431	1442	1429	1432
Vehs Exited	1534	1494	1455	1431	1469	1444	1481
Starting Vehs	328	291	314	280	307	290	343
Ending Vehs	266	256	233	280	280	275	294
Denied Entry Before	2	0	0	0	0	1	0
Travel Distance (mi)	851	871	812	848	859	830	842
Travel Time (hr)	69.7	70.4	62.0	66.6	69.5	68.7	73.3
Total Delay (hr)	42.1	42.2	35.6	39.2	41.7	41.9	45.8
Total Stops	2877	2844	2517	2732	2810	2772	2926
Fuel Used (gal)	43.3	44.1	40.0	42.3	43.5	42.2	43.8

Interval #4 Information Recording

Start Time	12:00
End Time	12:15
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	7	8	9	Avg
Vehs Entered	1388	1373	1393	1417
Vehs Exited	1520	1414	1436	1468
Starting Vehs	367	265	286	303
Ending Vehs	235	224	243	253
Denied Entry Before	1	1	3	0
Travel Distance (mi)	840	772	822	835
Travel Time (hr)	68.6	57.4	63.1	66.9
Total Delay (hr)	41.4	32.1	36.3	39.8
Total Stops	2765	2495	2419	2709
Fuel Used (gal)	42.6	38.2	41.0	42.1



1: Cottage Hill Road/School Parking & Aviation Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	3.5	0.3	0.4	0.1	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1
Total Delay (hr)	0.1	0.9	0.0	0.1	1.4	0.1	0.0	0.0	0.0	0.2	0.0	0.0
Total Del/Veh (s)	14.6	11.1	6.6	13.2	14.3	10.5	15.5	14.4	4.0	16.5	14.0	4.5
Stop Delay (hr)	0.0	0.6	0.0	0.0	0.9	0.1	0.0	0.0	0.0	0.1	0.0	0.0
Stop Del/Veh (s)	11.9	7.8	5.3	9.4	8.9	7.3	13.6	12.1	3.8	14.8	11.9	4.6
Total Stops	10	122	1	9	144	12	4	2	7	22	6	17
Stop/Veh	0.77	0.41	0.50	0.60	0.41	0.48	0.67	0.50	0.64	0.67	0.55	0.63
Travel Dist (mi)	0.6	14.8	0.1	1.5	34.8	2.5	0.7	0.4	1.2	1.1	0.4	0.9
Travel Time (hr)	0.1	1.4	0.0	0.1	2.4	0.2	0.1	0.0	0.1	0.2	0.1	0.1
Avg Speed (mph)	8	11	13	14	14	15	13	13	19	5	6	11
Fuel Used (gal)	0.0	0.8	0.0	0.1	1.5	0.1	0.0	0.0	0.0	0.1	0.0	0.0
Fuel Eff. (mpg)	19.3	18.5	30.6	26.9	23.8	27.2	31.5	29.1	37.2	17.7	16.4	35.0
HC Emissions (g)	0	10	0	0	14	1	0	0	0	0	0	0
CO Emissions (g)	7	368	1	14	467	35	2	2	5	9	6	7
NOx Emissions (g)	1	31	0	1	52	4	0	0	0	1	0	1
Vehicles Entered	13	293	2	15	348	25	6	4	11	33	11	27
Vehicles Exited	13	293	2	15	347	25	6	4	11	33	11	27
Hourly Exit Rate	13	293	2	15	347	25	6	4	11	33	11	27
Input Volume	14	292	2	17	354	24	5	3	10	33	12	27
% of Volume	95	100	100	90	98	104	114	123	110	101	92	99
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0

1: Cottage Hill Road/School Parking & Aviation Rd Performance by movement

Movement	All
Denied Delay (hr)	0.0
Denied Del/Veh (s)	0.2
Total Delay (hr)	2.8
Total Del/Veh (s)	12.6
Stop Delay (hr)	1.9
Stop Del/Veh (s)	8.6
Total Stops	356
Stop/Veh	0.45
Travel Dist (mi)	59.0
Travel Time (hr)	4.6
Avg Speed (mph)	13
Fuel Used (gal)	2.6
Fuel Eff. (mpg)	22.5
HC Emissions (g)	26
CO Emissions (g)	925
NOx Emissions (g)	92
Vehicles Entered	788
Vehicles Exited	787
Hourly Exit Rate	787
Input Volume	792
% of Volume	99
Denied Entry Before	0

2: Church Driveway/School Driveway & Aviation Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.5	0.3	0.1
Total Delay (hr)	0.0	0.6	0.0	0.2	0.8	0.0	0.0	0.0	0.0	1.7	0.0	0.0
Total Del/Veh (s)	6.6	6.7	2.7	10.4	7.3	4.2	19.3	28.7	6.7	33.7	26.5	5.8
Stop Delay (hr)	0.0	0.3	0.0	0.1	0.3	0.0	0.0	0.0	0.0	1.7	0.0	0.0
Stop Del/Veh (s)	3.6	3.3	0.9	6.3	3.3	2.0	18.5	26.4	6.6	33.0	26.0	6.1
Total Stops	2	76	0	37	97	1	1	2	5	149	1	12
Stop/Veh	0.50	0.23	0.00	0.63	0.26	0.25	1.00	0.67	1.00	0.82	1.00	0.80
Travel Dist (mi)	0.4	33.5	0.3	6.5	40.9	0.4	0.0	0.1	0.1	5.5	0.0	0.5
Travel Time (hr)	0.0	1.6	0.0	0.4	1.9	0.0	0.0	0.0	0.0	2.1	0.0	0.1
Avg Speed (mph)	19	21	21	17	21	20	3	2	7	3	3	8
Fuel Used (gal)	0.0	1.6	0.0	0.2	1.3	0.0	0.0	0.0	0.0	0.7	0.0	0.0
Fuel Eff. (mpg)	24.3	21.4	25.9	31.1	31.5	39.1	11.4	9.6	28.5	8.3	9.2	23.7
HC Emissions (g)	0	20	0	1	12	0	0	0	0	3	0	0
CO Emissions (g)	7	744	4	53	324	1	0	1	0	85	0	1
NOx Emissions (g)	1	73	0	6	45	0	0	0	0	10	0	0
Vehicles Entered	4	336	3	59	369	4	1	3	5	180	1	15
Vehicles Exited	4	336	3	59	370	4	1	3	5	181	1	15
Hourly Exit Rate	4	336	3	59	370	4	1	3	5	181	1	15
Input Volume	4	334	2	66	376	3	1	2	5	186	1	15
% of Volume	94	101	150	90	98	133	100	133	95	97	100	98
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0

2: Church Driveway/School Driveway & Aviation Rd Performance by movement

Movement	All
Denied Delay (hr)	0.0
Denied Del/Veh (s)	0.1
Total Delay (hr)	3.3
Total Del/Veh (s)	12.2
Stop Delay (hr)	2.5
Stop Del/Veh (s)	9.1
Total Stops	383
Stop/Veh	0.39
Travel Dist (mi)	88.1
Travel Time (hr)	6.2
Avg Speed (mph)	14
Fuel Used (gal)	3.8
Fuel Eff. (mpg)	23.2
HC Emissions (g)	37
CO Emissions (g)	1220
NOx Emissions (g)	135
Vehicles Entered	980
Vehicles Exited	982
Hourly Exit Rate	982
Input Volume	996
% of Volume	99
Denied Entry Before	0

3: Adirondack SB On/Off Ramp & Aviation Rd Performance by movement

Movement	EBT	EBR	WBL	WBT	NBL	NBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Denied Del/Veh (s)	0.1	0.3	0.0	0.0	0.1	0.3	0.1
Total Delay (hr)	2.7	0.5	2.4	0.6	0.7	1.1	7.9
Total Del/Veh (s)	16.6	12.3	16.7	3.9	53.5	10.8	13.0
Stop Delay (hr)	2.1	0.4	1.2	0.2	0.6	0.9	5.5
Stop Del/Veh (s)	13.3	10.8	8.4	1.0	50.8	9.1	9.0
Total Stops	244	62	280	23	40	237	886
Stop/Veh	0.42	0.44	0.55	0.04	0.87	0.65	0.40
Travel Dist (mi)	27.5	6.8	68.3	73.6	2.7	21.7	200.7
Travel Time (hr)	3.6	0.9	4.7	2.8	0.8	2.1	14.8
Avg Speed (mph)	8	8	15	27	3	10	14
Fuel Used (gal)	1.7	0.3	3.0	3.3	0.2	0.9	9.5
Fuel Eff. (mpg)	16.2	22.0	22.7	22.1	11.4	24.6	21.2
HC Emissions (g)	14	3	28	42	2	8	96
CO Emissions (g)	533	72	1032	1608	55	285	3584
NOx Emissions (g)	51	8	109	155	5	27	354
Vehicles Entered	574	141	504	545	46	364	2174
Vehicles Exited	575	141	505	545	46	364	2176
Hourly Exit Rate	575	141	505	545	46	364	2176
Input Volume	577	140	498	554	47	379	2195
% of Volume	100	101	101	98	97	96	99
Denied Entry Before	0	0	0	0	0	0	0

4: Aviation Mall Rd/Greenway N & Aviation Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.1	0.0	0.0	1.2	0.3	0.7	0.1		0.1
Total Delay (hr)	0.2	6.6	0.7	0.7	4.0	0.0	2.0	0.0	0.4	0.1	0.0	0.0
Total Del/Veh (s)	38.3	20.3	10.4	29.8	12.2	10.5	31.5	20.4	10.9	33.1		11.4
Stop Delay (hr)	0.1	3.8	0.1	0.5	1.6	0.0	1.9	0.0	0.4	0.1	0.0	0.0
Stop Del/Veh (s)	31.6	11.6	2.1	22.2	4.8	3.9	29.3	17.2	10.5	31.1		11.1
Total Stops	17	554	40	70	328	2	173	0	84	8	0	5
Stop/Veh	1.00	0.47	0.16	0.81	0.28	0.33	0.75	0.00	0.58	0.80		0.83
Travel Dist (mi)	3.5	236.7	49.7	20.2	273.7	1.4	6.2	0.0	3.8	0.6	0.0	0.4
Travel Time (hr)	0.3	14.0	2.4	1.3	12.0	0.1	2.4	0.0	0.7	0.1	0.0	0.0
Avg Speed (mph)	12	17	20	15	23	22	3	4	6	5	8	10
Fuel Used (gal)	0.2	10.6	2.0	0.8	10.5	0.0	0.8	0.0	0.2	0.0	0.0	0.0
Fuel Eff. (mpg)	20.6	22.2	25.4	24.9	26.0	27.8	8.1	9.3	17.7	18.2	21.9	27.8
HC Emissions (g)	1	113	24	8	119	0	3	0	1	0	0	0
CO Emissions (g)	50	4335	835	233	3698	12	97	0	38	3	0	2
NOx Emissions (g)	4	414	85	30	440	1	12	0	4	0	0	0
Vehicles Entered	17	1162	245	85	1160	6	231	1	144	10	0	6
Vehicles Exited	17	1157	244	85	1162	6	230	1	145	10	0	6
Hourly Exit Rate	17	1157	244	85	1162	6	230	1	145	10	0	6
Input Volume	16	1173	243	87	1162	5	224	1	142	11	1	7
% of Volume	105	99	100	97	100	114	103	100	102	91	0	89
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0

4: Aviation Mall Rd/Greenway N & Aviation Rd Performance by movement

Movement	All
Denied Delay (hr)	0.1
Denied Del/Veh (s)	0.1
Total Delay (hr)	14.8
Total Del/Veh (s)	17.2
Stop Delay (hr)	8.6
Stop Del/Veh (s)	10.0
Total Stops	1281
Stop/Veh	0.41
Travel Dist (mi)	596.2
Travel Time (hr)	33.3
Avg Speed (mph)	18
Fuel Used (gal)	25.2
Fuel Eff. (mpg)	23.7
HC Emissions (g)	269
CO Emissions (g)	9305
NOx Emissions (g)	991
Vehicles Entered	3067
Vehicles Exited	3063
Hourly Exit Rate	3063
Input Volume	3074
% of Volume	100
Denied Entry Before	0

5: Aviation Mall Rd/Starbucks Driveway & Aviation Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	3.5	3.2	0.1	0.2	0.1	0.2
Total Delay (hr)	0.7	12.0	0.1	2.8	5.8	0.3	0.0	0.0	1.1	0.6	0.1	0.2
Total Del/Veh (s)	61.3	34.6	19.4	41.8	16.9	14.5	29.2	22.3	17.5	38.9	34.8	21.3
Stop Delay (hr)	0.6	7.6	0.0	2.4	3.3	0.2	0.0	0.0	1.1	0.5	0.1	0.2
Stop Del/Veh (s)	51.1	22.1	9.0	36.0	9.5	8.8	27.0	18.7	17.2	37.2	31.7	21.0
Total Stops	53	792	6	202	506	35	4	2	173	42	4	31
Stop/Veh	1.23	0.64	0.60	0.84	0.41	0.47	0.67	0.67	0.76	0.81	0.67	0.78
Travel Dist (mi)	9.8	287.0	2.4	29.0	149.0	9.1	0.3	0.1	12.5	1.4	0.2	1.1
Travel Time (hr)	1.0	20.4	0.1	4.0	11.0	0.7	0.1	0.0	1.7	0.6	0.1	0.3
Avg Speed (mph)	9	14	18	7	14	13	5	6	7	2	3	4
Fuel Used (gal)	0.5	12.2	0.1	1.9	8.1	0.4	0.0	0.0	0.6	0.2	0.0	0.1
Fuel Eff. (mpg)	20.2	23.6	28.3	15.0	18.3	20.5	12.0	12.5	19.8	8.0	8.1	11.4
HC Emissions (g)	3	109	0	16	86	6	0	0	6	1	0	1
CO Emissions (g)	115	3574	19	654	3189	190	6	3	184	22	3	20
NOx Emissions (g)	11	407	2	61	329	20	0	0	18	2	0	2
Vehicles Entered	42	1226	10	238	1240	75	6	3	225	52	6	40
Vehicles Exited	41	1223	10	235	1230	74	6	3	226	52	6	40
Hourly Exit Rate	41	1223	10	235	1230	74	6	3	226	52	6	40
Input Volume	43	1241	9	235	1233	71	6	3	223	53	5	42
% of Volume	95	99	108	100	100	105	96	100	101	98	120	95
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0

5: Aviation Mall Rd/Starbucks Driveway & Aviation Rd Performance by movement

Movement	All
Denied Delay (hr)	0.0
Denied Del/Veh (s)	0.0
Total Delay (hr)	23.7
Total Del/Veh (s)	26.7
Stop Delay (hr)	16.1
Stop Del/Veh (s)	18.2
Total Stops	1850
Stop/Veh	0.58
Travel Dist (mi)	501.9
Travel Time (hr)	40.1
Avg Speed (mph)	13
Fuel Used (gal)	24.2
Fuel Eff. (mpg)	20.7
HC Emissions (g)	228
CO Emissions (g)	7980
NOx Emissions (g)	855
Vehicles Entered	3163
Vehicles Exited	3146
Hourly Exit Rate	3146
Input Volume	3165
% of Volume	99
Denied Entry Before	0

6: Glen St/Lake George Rd & Aviation Rd/Quaker Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.1	0.0	0.2	0.0	0.1
Denied Del/Veh (s)	0.0	0.0	0.0	2.9	0.3	2.9	2.8	0.3	0.4	2.5	0.2	0.4
Total Delay (hr)	14.0	7.7	2.0	1.5	12.1	0.5	10.0	6.6	0.4	6.0	5.7	2.8
Total Del/Veh (s)	101.7	48.6	15.5	89.5	73.2	11.6	80.2	39.8	28.3	87.2	43.6	18.6
Stop Delay (hr)	12.7	6.3	1.3	1.4	10.2	0.4	9.0	5.1	0.3	5.5	4.7	1.9
Stop Del/Veh (s)	91.8	40.1	9.9	82.9	61.7	9.4	72.4	31.2	24.6	80.8	36.0	12.8
Total Stops	527	393	244	61	530	110	427	417	31	264	332	291
Stop/Veh	1.06	0.69	0.53	1.00	0.89	0.65	0.95	0.70	0.62	1.07	0.70	0.54
Travel Dist (mi)	58.6	68.4	56.1	9.8	97.3	27.8	51.6	70.7	5.9	38.6	74.5	84.4
Travel Time (hr)	16.1	9.8	4.2	1.9	14.6	1.6	12.0	8.4	0.6	7.3	7.7	5.6
Avg Speed (mph)	4	7	13	5	7	19	4	8	10	5	10	15
Fuel Used (gal)	5.4	4.6	2.4	0.7	5.9	1.2	4.1	4.2	0.3	2.6	3.8	2.9
Fuel Eff. (mpg)	10.8	14.9	22.9	14.1	16.4	23.4	12.4	16.9	21.0	14.8	19.5	29.3
HC Emissions (g)	29	39	23	3	50	16	26	44	4	14	38	32
CO Emissions (g)	947	1393	825	242	2171	856	1092	1838	147	794	1721	1497
NOx Emissions (g)	98	138	90	12	150	47	81	142	12	46	120	92
Vehicles Entered	483	558	458	59	585	167	430	587	49	244	471	534
Vehicles Exited	478	562	459	59	588	166	433	581	50	244	469	532
Hourly Exit Rate	478	562	459	59	588	166	433	581	50	244	469	532
Input Volume	477	574	464	63	579	169	433	588	49	247	461	526
% of Volume	100	98	99	94	102	98	100	99	102	99	102	101
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0

6: Glen St/Lake George Rd & Aviation Rd/Quaker Rd Performance by movement

Movement	All
Denied Delay (hr)	0.9
Denied Del/Veh (s)	0.7
Total Delay (hr)	69.3
Total Del/Veh (s)	53.0
Stop Delay (hr)	59.0
Stop Del/Veh (s)	45.1
Total Stops	3627
Stop/Veh	0.77
Travel Dist (mi)	643.7
Travel Time (hr)	89.8
Avg Speed (mph)	7
Fuel Used (gal)	38.2
Fuel Eff. (mpg)	16.9
HC Emissions (g)	318
CO Emissions (g)	13523
NOx Emissions (g)	1026
Vehicles Entered	4625
Vehicles Exited	4621
Hourly Exit Rate	4621
Input Volume	4631
% of Volume	100
Denied Entry Before	0

30: Adirondack NB Off Ramp/Adirondack NB On Ramp & Aviation Rd Performance by movement

Movement	EBL	EBT	WBT	WBR	NBL	NBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.1	0.1
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.2	0.5	0.1
Total Delay (hr)	0.7	6.5	9.2	1.6	1.2	2.9	22.1
Total Del/Veh (s)	35.3	27.0	34.7	12.6	38.3	18.4	26.3
Stop Delay (hr)	0.6	4.7	6.4	0.7	1.1	2.1	15.7
Stop Del/Veh (s)	29.5	19.6	24.2	5.9	35.0	13.6	18.7
Total Stops	65	461	595	245	80	295	1741
Stop/Veh	0.94	0.53	0.62	0.55	0.73	0.52	0.58
Travel Dist (mi)	9.3	116.8	198.3	92.6	8.3	43.1	468.5
Travel Time (hr)	1.0	10.3	15.1	4.8	1.5	4.8	37.5
Avg Speed (mph)	9	11	13	19	6	9	13
Fuel Used (gal)	0.5	6.3	8.6	3.3	0.5	1.9	21.2
Fuel Eff. (mpg)	17.6	18.4	23.0	28.4	15.1	22.6	22.1
HC Emissions (g)	4	69	80	34	3	13	203
CO Emissions (g)	194	2715	2675	1140	144	511	7379
NOx Emissions (g)	15	238	282	122	11	46	714
Vehicles Entered	68	858	938	438	109	564	2975
Vehicles Exited	68	862	944	437	109	565	2985
Hourly Exit Rate	68	862	944	437	109	565	2985
Input Volume	70	873	946	423	108	563	2983
% of Volume	97	99	100	103	101	100	100
Denied Entry Before	0	0	0	0	0	0	0

33: Burke Drive & Aviation Rd Performance by movement

Movement	EBT	WBL	WBT	NBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.2	0.0
Total Delay (hr)	0.4	0.3	0.1	0.4	1.1
Total Del/Veh (s)	2.6	6.7	0.8	6.9	3.1
Stop Delay (hr)	0.1	0.2	0.0	0.3	0.6
Stop Del/Veh (s)	0.4	4.4	0.1	6.7	1.6
Total Stops	12	77	2	181	272
Stop/Veh	0.02	0.49	0.00	0.99	0.21
Travel Dist (mi)	58.8	8.5	23.5	5.0	95.8
Travel Time (hr)	2.2	0.6	0.8	0.7	4.4
Avg Speed (mph)	26	13	29	8	22
Fuel Used (gal)	2.4	0.3	0.8	0.2	3.8
Fuel Eff. (mpg)	24.1	30.1	28.6	23.4	25.5
HC Emissions (g)	31	2	10	2	45
CO Emissions (g)	1185	67	339	39	1629
NOx Emissions (g)	114	8	33	5	161
Vehicles Entered	537	157	434	181	1309
Vehicles Exited	538	157	434	181	1310
Hourly Exit Rate	538	157	434	181	1310
Input Volume	540	153	448	181	1322
% of Volume	100	102	97	100	99
Denied Entry Before	0	0	0	0	0



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Total Network Performance

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Denied Delay (hr)	1.2
Denied Del/Veh (s)	0.8
Total Delay (hr)	147.6
Total Del/Veh (s)	87.9
Stop Delay (hr)	110.1
Stop Del/Veh (s)	65.6
Total Stops	10423
Stop/Veh	1.72
Travel Dist (mi)	3322.3
Travel Time (hr)	256.5
Avg Speed (mph)	13
Fuel Used (gal)	164.8
Fuel Eff. (mpg)	20.2
HC Emissions (g)	1703
CO Emissions (g)	66113
NOx Emissions (g)	6067
Vehicles Entered	5813
Vehicles Exited	5795
Hourly Exit Rate	5795
Input Volume	24786
% of Volume	23
Denied Entry Before	0

Arterial Level of Service: EB Aviation Rd

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed	Run 1 Speed	Run 1 Delay
Cottage Hill Road	1	11.1	16.5	0.1	12	12	12.0
Church Driveway	2	6.8	17.1	0.1	22	21	7.3
Burke Drive	33	2.6	13.8	0.1	30	30	2.5
Adirondack SB On/Off	3	16.3	21.5	0.1	9	9	17.2
Adirondack NB Off Ra	30	20.8	34.9	0.1	14	15	17.8
Aviation Mall Rd	4	21.2	42.1	0.2	18	18	20.3
Aviation Mall Rd	5	34.4	58.3	0.2	15	14	35.5
Glen St	6	48.6	61.1	0.1	8	8	46.7
<b>Total</b>		<b>161.9</b>	<b>265.4</b>	<b>1.0</b>	<b>14</b>	<b>14</b>	<b>159.2</b>

Arterial Level of Service: EB Aviation Rd

Cross Street	Run 10 Speed	Run 10 Delay	Run 2 Speed	Run 2 Delay	Run 3 Speed	Run 3 Delay	Run 4 Speed
Cottage Hill Road	12	12.1	15	8.1	16	7.9	11
Church Driveway	22	6.6	21	7.0	21	7.1	22
Burke Drive	30	2.4	29	2.8	30	2.2	31
Adirondack SB On/Off	8	17.4	8	18.8	11	12.6	10
Adirondack NB Off Ra	13	22.3	14	20.6	15	19.4	14
Aviation Mall Rd	15	29.6	18	20.4	19	19.6	17
Aviation Mall Rd	15	34.9	16	29.3	15	33.9	13
Glen St	8	47.4	8	42.6	7	52.7	7
<b>Total</b>	<b>14</b>	<b>172.6</b>	<b>15</b>	<b>149.6</b>	<b>14</b>	<b>155.5</b>	<b>13</b>

Arterial Level of Service: EB Aviation Rd

Cross Street	Run 4 Delay	Run 5 Speed	Run 5 Delay	Run 6 Speed	Run 6 Delay	Run 7 Speed	Run 7 Delay
Cottage Hill Road	13.1	11	14.1	13	9.8	11	13.1
Church Driveway	6.5	21	7.4	23	5.4	20	8.6
Burke Drive	2.2	28	3.3	31	2.0	28	3.6
Adirondack SB On/Off	13.9	8	17.9	9	15.1	8	17.9
Adirondack NB Off Ra	20.9	14	20.2	13	22.5	13	24.0
Aviation Mall Rd	23.3	20	17.7	18	20.3	18	20.8
Aviation Mall Rd	44.5	15	34.8	12	45.1	14	36.9
Glen St	49.9	7	49.4	7	53.7	7	53.1
<b>Total</b>	<b>174.3</b>	<b>14</b>	<b>164.7</b>	<b>13</b>	<b>174.0</b>	<b>13</b>	<b>178.1</b>

Arterial Level of Service: EB Aviation Rd

Cross Street	Run 8 Speed	Run 8 Delay	Run 9 Speed	Run 9 Delay
Cottage Hill Road	9	16.2	20	5.0
Church Driveway	22	6.8	23	5.8
Burke Drive	30	2.5	29	3.0
Adirondack SB On/Off	10	14.7	8	17.8
Adirondack NB Off Ra	15	18.0	14	21.8
Aviation Mall Rd	19	19.3	18	20.2
Aviation Mall Rd	18	23.6	18	23.9
Glen St	8	43.9	8	47.3
Total	15	145.0	15	144.8

Arterial Level of Service: WB Aviation Rd

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed	Run 1 Speed	Run 1 Delay
Starbucks Driveway	5	20.1	32.9	0.1	14	14	19.3
Greenway N	4	12.3	36.6	0.2	23	24	12.2
Adirondack NB On Ram	30	35.3	56.7	0.2	13	12	41.3
Adirondack SB On/Off	3	3.8	17.7	0.1	28	27	4.3
Burke Drive	33	0.8	6.4	0.1	30	29	1.0
School Driveway	2	7.3	18.8	0.1	22	23	6.2
School Parking	1	14.3	24.7	0.1	15	13	17.4
Total		93.9	193.8	1.0	18	18	101.7

Arterial Level of Service: WB Aviation Rd

Cross Street	Run 10 Speed	Run 10 Delay	Run 2 Speed	Run 2 Delay	Run 3 Speed	Run 3 Delay	Run 4 Speed
Starbucks Driveway	12	24.4	13	23.1	14	19.2	14
Greenway N	23	13.8	22	14.0	25	10.5	23
Adirondack NB On Ram	13	39.3	14	32.2	16	27.2	14
Adirondack SB On/Off	28	3.7	28	3.7	28	3.9	29
Burke Drive	30	0.7	30	0.8	29	0.9	31
School Driveway	22	7.1	22	7.0	21	8.1	24
School Parking	14	16.2	18	10.0	16	12.0	13
Total	17	105.1	19	90.8	19	81.9	18

Arterial Level of Service: WB Aviation Rd

Cross Street	Run 4 Delay	Run 5 Speed	Run 5 Delay	Run 6 Speed	Run 6 Delay	Run 7 Speed	Run 7 Delay
Starbucks Driveway	20.7	12	24.4	14	20.6	15	18.2
Greenway N	13.4	25	10.6	24	11.8	24	12.0
Adirondack NB On Ram	32.5	12	44.0	15	29.2	13	37.5
Adirondack SB On/Off	3.2	28	3.7	27	3.9	27	4.1
Burke Drive	0.6	30	0.8	30	0.7	29	1.0
School Driveway	5.9	21	7.9	22	7.2	21	7.8
School Parking	19.0	14	17.1	18	10.5	13	17.3
Total	95.3	17	108.5	19	84.1	18	97.9

Arterial Level of Service: WB Aviation Rd

Cross Street	Run 8 Speed	Run 8 Delay	Run 9 Speed	Run 9 Delay
Starbucks Driveway	15	18.1	19	12.0
Greenway N	22	14.0	24	11.4
Adirondack NB On Ram	14	31.7	13	37.3
Adirondack SB On/Off	27	3.9	29	3.0
Burke Drive	30	0.7	29	0.9
School Driveway	23	6.2	19	9.5
School Parking	14	15.4	21	7.1
Total	19	90.0	20	81.2

Queuing and Blocking Report  
Baseline

3/22/2023

Intersection: 1: Cottage Hill Road/School Parking & Aviation Rd

Movement	EB	EB	WB	WB	NB	SB	SB
Directions Served	L	TR	L	TR	LTR	LT	R
Maximum Queue (ft)	60	200	77	319	45	69	41
Average Queue (ft)	8	80	9	110	10	21	10
95th Queue (ft)	34	167	50	255	34	53	31
Link Distance (ft)		261		458	567	167	167
Upstream Blk Time (%)		0					
Queuing Penalty (veh)		0					
Storage Bay Dist (ft)	50		110				
Storage Blk Time (%)	0	17		8			
Queuing Penalty (veh)	1	2		1			

Intersection: 2: Church Driveway/School Driveway & Aviation Rd

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	TR	L	TR	LT	R
Maximum Queue (ft)	18	192	70	277	15	33	175	38
Average Queue (ft)	2	50	24	81	1	7	110	11
95th Queue (ft)	11	136	60	213	9	27	179	35
Link Distance (ft)		458		531	122	122	159	159
Upstream Blk Time (%)							3	
Queuing Penalty (veh)							0	
Storage Bay Dist (ft)	190		50					
Storage Blk Time (%)		0	1	7				
Queuing Penalty (veh)		0	4	5				

Intersection: 3: Adirondack SB On/Off Ramp & Aviation Rd

Movement	EB	EB	WB	WB	WB	NB	NB
Directions Served	T	TR	L	T	T	L	R
Maximum Queue (ft)	223	228	385	277	107	99	211
Average Queue (ft)	118	136	158	23	10	41	92
95th Queue (ft)	207	227	324	139	57	84	167
Link Distance (ft)	210	210		655	655	314	314
Upstream Blk Time (%)	1	2					
Queuing Penalty (veh)	3	9					
Storage Bay Dist (ft)			370				
Storage Blk Time (%)			1	0			
Queuing Penalty (veh)			2	1			

Queuing and Blocking Report  
Baseline

3/22/2023

Intersection: 4: Aviation Mall Rd/Greenway N & Aviation Rd

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	SB
Directions Served	L	T	T	R	L	T	TR	LT	R	LTR
Maximum Queue (ft)	128	438	466	205	208	339	338	158	127	52
Average Queue (ft)	19	189	204	65	54	114	115	119	53	12
95th Queue (ft)	72	365	393	217	124	265	265	175	104	40
Link Distance (ft)		1048	1048			1173	1173	137	137	308
Upstream Blk Time (%)								9	0	
Queuing Penalty (veh)								0	0	
Storage Bay Dist (ft)	70			130	140					
Storage Blk Time (%)	0	24	15		0	5				
Queuing Penalty (veh)	1	4	37		1	4				

Intersection: 5: Aviation Mall Rd/Starbucks Driveway & Aviation Rd

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Directions Served	L	T	T	R	L	L	T	TR	LT	R	R	LTR
Maximum Queue (ft)	180	528	550	126	145	285	401	377	24	144	95	139
Average Queue (ft)	53	268	291	10	66	100	179	197	4	56	25	50
95th Queue (ft)	147	511	526	70	123	181	346	361	18	114	63	105
Link Distance (ft)		1173	1173				553	553		277	277	131
Upstream Blk Time (%)												1
Queuing Penalty (veh)												0
Storage Bay Dist (ft)	80			120	150	150			170			
Storage Blk Time (%)	2	35	32		0	1	12			0		
Queuing Penalty (veh)	13	15	3		1	3	29			0		

Queuing and Blocking Report  
Baseline

3/22/2023

Intersection: 6: Glen St/Lake George Rd & Aviation Rd/Quaker Rd

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB
Directions Served	L	L	T	T	R	L	T	T	R	L	L	T
Maximum Queue (ft)	272	374	549	522	345	342	531	412	117	340	382	418
Average Queue (ft)	233	291	296	255	130	89	294	260	50	214	227	215
95th Queue (ft)	317	429	570	480	261	232	446	396	95	309	331	343
Link Distance (ft)			553	553			873	873				625
Upstream Blk Time (%)			2	0			0					0
Queuing Penalty (veh)			19	2			0					0
Storage Bay Dist (ft)	170	170			280	280			430	310	310	
Storage Blk Time (%)	36	46	15	2	1	0	15	0		0	2	1
Queuing Penalty (veh)	104	132	72	11	2	0	10	1		1	5	5

Intersection: 6: Glen St/Lake George Rd & Aviation Rd/Quaker Rd

Movement	NB	SB	SB	SB	SB	SB
Directions Served	TR	L	L	T	T	R
Maximum Queue (ft)	356	226	272	298	263	331
Average Queue (ft)	175	125	169	190	150	175
95th Queue (ft)	300	222	239	272	246	285
Link Distance (ft)	625			833	833	833
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)		240	240			
Storage Blk Time (%)		0	1	3		
Queuing Penalty (veh)		0	3	6		

Intersection: 30: Adirondack NB Off Ramp/Adirondack NB On Ramp & Aviation Rd

Movement	EB	EB	EB	WB	WB	WB	NB	NB
Directions Served	L	T	T	T	T	R	L	R
Maximum Queue (ft)	186	378	415	683	622	269	186	397
Average Queue (ft)	64	176	197	321	197	102	73	197
95th Queue (ft)	153	325	348	589	460	232	145	342
Link Distance (ft)		655	655	1048	1048		402	402
Upstream Blk Time (%)							0	1
Queuing Penalty (veh)							0	0
Storage Bay Dist (ft)	120					140		
Storage Blk Time (%)	1	17			11	2		
Queuing Penalty (veh)	3	12			47	10		



Intersection: 33: Burke Drive & Aviation Rd

Movement	EB	WB	WB	WB	NB
Directions Served	T	L	T	T	LR
Maximum Queue (ft)	137	105	58	30	117
Average Queue (ft)	11	42	3	1	53
95th Queue (ft)	77	83	32	21	94
Link Distance (ft)	531		210	210	143
Upstream Blk Time (%)					0
Queuing Penalty (veh)					0
Storage Bay Dist (ft)		85			
Storage Blk Time (%)		1			
Queuing Penalty (veh)		2			

Network Summary

Network wide Queuing Penalty: 588

Summary of All Intervals

Run Number	1	10	2	3	4	5	6
Start Time	4:00	4:00	4:00	4:00	4:00	4:00	4:00
End Time	5:15	5:15	5:15	5:15	5:15	5:15	5:15
Total Time (min)	75	75	75	75	75	75	75
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	5	5	5	5	5	5	5
# of Recorded mScheduledIntervals	4	4	4	4	4	4	4
Vehs Entered	4295	4232	4344	4284	4266	4230	4224
Vehs Exited	4308	4218	4363	4317	4249	4216	4232
Starting Vehs	194	152	189	173	167	151	163
Ending Vehs	181	166	170	140	184	165	155
Denied Entry Before	0	1	0	1	0	0	2
Travel Distance (mi)	3238	3287	3455	3283	3306	3239	3227
Travel Time (hr)	170.9	164.7	181.6	169.0	177.4	164.4	162.9
Total Delay (hr)	81.8	74.4	86.6	78.8	86.2	75.2	74.2
Total Stops	7163	6755	7410	6985	7352	6889	6776
Fuel Used (gal)	143.0	142.2	151.1	143.5	144.8	141.5	140.4

Summary of All Intervals

Run Number	7	8	9	Avg
Start Time	4:00	4:00	4:00	4:00
End Time	5:15	5:15	5:15	5:15
Total Time (min)	75	75	75	75
Time Recorded (min)	60	60	60	60
# of Intervals	5	5	5	5
# of Recorded mScheduledIntervals	4	4	4	4
Vehs Entered	4304	4293	4419	4287
Vehs Exited	4302	4281	4409	4287
Starting Vehs	163	149	157	161
Ending Vehs	165	161	167	161
Denied Entry Before	1	0	1	0
Travel Distance (mi)	3345	3396	3443	3322
Travel Time (hr)	171.9	171.9	182.8	171.8
Total Delay (hr)	79.9	78.8	87.9	80.4
Total Stops	7133	7024	7662	7119
Fuel Used (gal)	146.2	146.3	151.9	145.1

Interval #0 Information Seeding

Start Time	4:00
End Time	4:15
Total Time (min)	15
Volumes adjusted by Growth Factors.	
No data recorded this interval.	

Interval #1 Information Recording

Start Time	4:15
End Time	4:30
Total Time (min)	15
Volumes adjusted by Growth Factors, Anti PHF.	

Run Number	1	10	2	3	4	5	6
Vehs Entered	1023	974	1038	1028	1022	967	1052
Vehs Exited	1062	998	1081	1061	1043	975	1063
Starting Vehs	194	152	189	173	167	151	163
Ending Vehs	155	128	146	140	146	143	152
Denied Entry Before	0	1	0	1	0	0	2
Travel Distance (mi)	790	808	848	820	780	795	794
Travel Time (hr)	40.4	38.0	43.1	41.0	41.0	38.0	38.7
Total Delay (hr)	18.8	16.0	19.8	18.6	19.3	16.2	16.9
Total Stops	1699	1491	1729	1669	1720	1568	1616
Fuel Used (gal)	34.6	34.2	36.3	35.5	34.2	33.8	33.8

Interval #1 Information Recording

Start Time	4:15
End Time	4:30
Total Time (min)	15
Volumes adjusted by Growth Factors, Anti PHF.	

Run Number	7	8	9	Avg
Vehs Entered	1017	992	1078	1013
Vehs Exited	1029	974	1082	1036
Starting Vehs	163	149	157	161
Ending Vehs	151	167	153	145
Denied Entry Before	1	0	1	0
Travel Distance (mi)	814	786	833	807
Travel Time (hr)	41.4	39.4	43.5	40.5
Total Delay (hr)	19.1	18.0	20.5	18.3
Total Stops	1796	1603	1879	1680
Fuel Used (gal)	35.7	33.7	36.5	34.8

Interval #2 Information Recording

Start Time	4:30
End Time	4:45
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	1	10	2	3	4	5	6
Vehs Entered	1074	1009	1011	1010	1004	1053	1007
Vehs Exited	1062	948	996	994	981	1026	993
Starting Vehs	155	128	146	140	146	143	152
Ending Vehs	167	189	161	156	169	170	166
Denied Entry Before	1	1	1	3	0	1	0
Travel Distance (mi)	803	761	783	764	771	799	758
Travel Time (hr)	42.1	37.4	38.6	38.0	39.0	40.3	37.7
Total Delay (hr)	19.9	16.4	17.1	17.0	17.7	18.3	16.9
Total Stops	1784	1566	1602	1583	1612	1622	1560
Fuel Used (gal)	35.8	32.6	33.5	32.8	32.9	34.8	32.8

Interval #2 Information Recording

Start Time	4:30
End Time	4:45
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	7	8	9	Avg
Vehs Entered	1052	1056	1065	1032
Vehs Exited	1048	1055	1039	1016
Starting Vehs	151	167	153	145
Ending Vehs	155	168	179	168
Denied Entry Before	0	1	0	0
Travel Distance (mi)	803	854	846	794
Travel Time (hr)	39.2	41.4	46.0	40.0
Total Delay (hr)	17.0	18.1	22.6	18.1
Total Stops	1589	1666	1840	1644
Fuel Used (gal)	34.5	36.4	37.5	34.4

Interval #3 Information Recording

Start Time	4:45
End Time	5:00
Total Time (min)	15

Volumes adjusted by PHF, Growth Factors.

Run Number	1	10	2	3	4	5	6
Vehs Entered	1159	1208	1251	1181	1159	1160	1173
Vehs Exited	1134	1204	1177	1182	1115	1121	1136
Starting Vehs	167	189	161	156	169	170	166
Ending Vehs	192	193	235	155	213	209	203
Denied Entry Before	1	0	2	0	3	1	0
Travel Distance (mi)	831	894	932	885	869	845	900
Travel Time (hr)	45.9	47.6	52.8	47.9	47.5	44.6	46.3
Total Delay (hr)	22.9	22.9	27.2	23.5	23.6	21.3	21.4
Total Stops	1932	2019	2195	1997	1954	1854	1873
Fuel Used (gal)	37.1	39.8	42.0	39.2	38.2	37.2	39.5

Interval #3 Information Recording

Start Time	4:45
End Time	5:00
Total Time (min)	15

Volumes adjusted by PHF, Growth Factors.

Run Number	7	8	9	Avg
Vehs Entered	1210	1201	1209	1190
Vehs Exited	1146	1163	1176	1155
Starting Vehs	155	168	179	168
Ending Vehs	219	206	212	201
Denied Entry Before	0	1	0	0
Travel Distance (mi)	873	918	924	887
Travel Time (hr)	47.4	49.7	48.6	47.8
Total Delay (hr)	23.3	24.6	23.2	23.4
Total Stops	1971	2112	2063	1997
Fuel Used (gal)	38.8	40.5	40.4	39.3

Interval #4 Information Recording

Start Time	5:00
End Time	5:15
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	1	10	2	3	4	5	6
Vehs Entered	1039	1041	1044	1065	1081	1050	992
Vehs Exited	1050	1068	1109	1080	1110	1094	1040
Starting Vehs	192	193	235	155	213	209	203
Ending Vehs	181	166	170	140	184	165	155
Denied Entry Before	1	2	2	1	3	1	0
Travel Distance (mi)	814	823	892	814	887	800	775
Travel Time (hr)	42.5	41.7	47.0	42.0	50.0	41.5	40.3
Total Delay (hr)	20.1	19.1	22.5	19.7	25.5	19.4	18.9
Total Stops	1748	1679	1884	1736	2066	1845	1727
Fuel Used (gal)	35.5	35.6	39.3	36.0	39.4	35.7	34.3

Interval #4 Information Recording

Start Time	5:00
End Time	5:15
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	7	8	9	Avg
Vehs Entered	1025	1044	1067	1045
Vehs Exited	1079	1089	1112	1083
Starting Vehs	219	206	212	201
Ending Vehs	165	161	167	161
Denied Entry Before	1	1	0	0
Travel Distance (mi)	855	839	840	834
Travel Time (hr)	43.9	41.4	44.8	43.5
Total Delay (hr)	20.5	18.2	21.6	20.6
Total Stops	1777	1643	1880	1794
Fuel Used (gal)	37.2	35.7	37.4	36.6

7: Lafayette St & Quaker Rd Performance by movement

Movement	EBT	EBR	WBL	WBT	NBL	NBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Denied Del/Veh (s)	0.2	0.3	0.0	0.0	3.8	0.3	0.2
Total Delay (hr)	3.1	0.0	0.9	3.3	0.2	1.8	9.4
Total Del/Veh (s)	13.4	6.8	18.9	12.1	26.5	29.5	14.9
Stop Delay (hr)	1.9	0.0	0.6	1.2	0.2	1.6	5.5
Stop Del/Veh (s)	8.1	5.4	12.4	4.3	22.6	26.3	8.7
Total Stops	378	7	148	311	27	179	1050
Stop/Veh	0.45	0.47	0.84	0.31	0.84	0.84	0.46
Travel Dist (mi)	56.0	1.0	37.2	209.1	2.6	16.9	322.7
Travel Time (hr)	4.6	0.1	2.1	9.0	0.4	2.5	18.6
Avg Speed (mph)	12	14	18	23	8	7	17
Fuel Used (gal)	2.9	0.0	1.6	9.3	0.2	1.0	15.0
Fuel Eff. (mpg)	19.6	27.4	22.6	22.4	15.9	16.9	21.5
HC Emissions (g)	30	0	19	126	1	8	184
CO Emissions (g)	1251	13	857	5159	49	306	7635
NOx Emissions (g)	106	1	68	452	4	27	658
Vehicles Entered	834	14	175	982	32	211	2248
Vehicles Exited	834	15	174	981	32	211	2247
Hourly Exit Rate	834	15	174	981	32	211	2247
Input Volume	813	16	175	974	35	206	2220
% of Volume	103	92	99	101	91	102	101
Denied Entry Before	0	0	0	0	0	0	0

8: Glenwood Ave & Quaker Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.3
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	3.8	0.2	0.2	0.4	0.4	3.6
Total Delay (hr)	1.3	4.9	0.1	0.6	6.3	0.0	0.6	0.7	0.5	0.4	0.9	1.0
Total Del/Veh (s)	28.5	20.3	15.6	25.2	26.3	24.9	39.8	41.2	21.7	42.7	40.7	13.3
Stop Delay (hr)	1.0	3.0	0.1	0.4	4.0	0.0	0.6	0.7	0.5	0.4	0.8	0.9
Stop Del/Veh (s)	21.1	12.5	11.0	17.6	16.7	18.9	36.2	36.3	19.7	39.3	35.8	12.2
Total Stops	148	388	11	81	473	5	48	54	74	32	72	220
Stop/Veh	0.89	0.45	0.52	0.89	0.55	0.71	0.86	0.83	0.86	0.91	0.89	0.84
Travel Dist (mi)	34.4	175.9	4.3	30.7	284.1	2.3	5.3	6.2	8.1	2.3	5.3	17.7
Travel Time (hr)	2.4	9.6	0.2	1.5	13.5	0.1	0.9	1.0	0.9	0.5	1.1	2.1
Avg Speed (mph)	15	18	19	21	21	20	6	7	9	5	5	10
Fuel Used (gal)	1.6	7.9	0.2	1.0	9.9	0.1	0.3	0.4	0.4	0.2	0.4	0.9
Fuel Eff. (mpg)	22.0	22.2	25.9	29.5	28.7	29.3	15.2	16.7	20.7	12.5	12.8	19.4
HC Emissions (g)	17	101	1	10	110	0	2	3	5	1	4	9
CO Emissions (g)	749	4389	66	356	3660	22	106	109	155	43	121	318
NOx Emissions (g)	62	348	5	39	406	2	8	9	14	4	11	29
Vehicles Entered	163	861	21	90	848	7	56	64	85	34	80	261
Vehicles Exited	163	862	21	90	846	7	55	64	85	35	80	262
Hourly Exit Rate	163	862	21	90	846	7	55	64	85	35	80	262
Input Volume	159	840	21	88	850	6	57	65	82	34	80	247
% of Volume	103	103	101	102	100	117	96	99	103	103	100	106
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0

8: Glenwood Ave & Quaker Rd Performance by movement

Movement	All
Denied Delay (hr)	0.3
Denied Del/Veh (s)	0.5
Total Delay (hr)	17.5
Total Del/Veh (s)	24.2
Stop Delay (hr)	12.3
Stop Del/Veh (s)	17.0
Total Stops	1606
Stop/Veh	0.62
Travel Dist (mi)	576.7
Travel Time (hr)	33.8
Avg Speed (mph)	17
Fuel Used (gal)	23.3
Fuel Eff. (mpg)	24.7
HC Emissions (g)	264
CO Emissions (g)	10095
NOx Emissions (g)	939
Vehicles Entered	2570
Vehicles Exited	2570
Hourly Exit Rate	2570
Input Volume	2528
% of Volume	102
Denied Entry Before	0



9: Grocery Parking Lot & Quaker Rd Performance by movement

Movement	EBT	EBR	WBL	WBT	NBL	NBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.1	0.1	0.0
Total Delay (hr)	2.7	0.3	0.1	1.9	0.4	0.1	5.5
Total Del/Veh (s)	11.5	10.4	13.9	7.6	21.3	6.8	9.9
Stop Delay (hr)	0.8	0.1	0.1	0.6	0.3	0.1	2.0
Stop Del/Veh (s)	3.2	2.7	9.7	2.6	19.1	6.3	3.6
Total Stops	230	32	20	217	52	51	602
Stop/Veh	0.27	0.34	0.71	0.24	0.80	0.81	0.30
Travel Dist (mi)	284.9	31.3	2.8	89.5	2.9	2.9	414.3
Travel Time (hr)	10.1	1.2	0.2	4.4	0.5	0.3	16.7
Avg Speed (mph)	28	27	13	20	6	11	25
Fuel Used (gal)	10.3	1.1	0.1	5.0	0.2	0.1	16.7
Fuel Eff. (mpg)	27.7	29.1	19.8	18.0	17.9	32.9	24.8
HC Emissions (g)	128	18	1	64	1	1	213
CO Emissions (g)	4859	544	63	2849	32	23	8370
NOx Emissions (g)	480	61	6	241	3	2	792
Vehicles Entered	843	92	27	894	65	63	1984
Vehicles Exited	845	91	28	896	64	63	1987
Hourly Exit Rate	845	91	28	896	64	63	1987
Input Volume	818	90	28	891	66	62	1955
% of Volume	103	101	100	101	97	102	102
Denied Entry Before	0	0	0	0	0	0	0

10: Bay Rd & Quaker Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.4	0.0	0.4	3.4	0.2	0.2	3.3	0.1	0.2
Total Delay (hr)	0.9	5.1	0.4	1.0	5.5	0.2	1.7	2.0	0.3	1.5	2.0	0.3
Total Del/Veh (s)	34.4	25.3	21.3	38.8	27.6	8.6	43.5	30.6	11.9	45.1	31.5	11.4
Stop Delay (hr)	0.8	3.6	0.3	0.8	3.4	0.1	1.5	1.7	0.3	1.4	1.7	0.2
Stop Del/Veh (s)	29.0	17.6	16.2	30.4	17.2	2.6	39.8	25.8	10.7	41.0	25.9	10.2
Total Stops	86	419	41	82	387	49	119	169	72	107	172	61
Stop/Veh	0.90	0.57	0.64	0.85	0.55	0.54	0.86	0.73	0.72	0.87	0.74	0.72
Travel Dist (mi)	9.1	69.2	6.1	47.0	349.3	44.5	7.8	13.1	5.7	11.5	22.1	8.1
Travel Time (hr)	1.2	6.9	0.6	2.3	14.5	1.5	2.1	2.4	0.6	2.1	2.7	0.6
Avg Speed (mph)	7	10	10	20	24	30	4	6	10	6	8	14
Fuel Used (gal)	0.5	3.7	0.3	1.7	12.2	1.5	0.7	1.0	0.2	0.8	1.3	0.3
Fuel Eff. (mpg)	18.5	18.8	20.5	28.2	28.6	30.4	10.9	13.7	23.1	14.4	17.5	26.3
HC Emissions (g)	4	34	3	14	137	16	4	8	2	6	12	4
CO Emissions (g)	130	1328	99	565	4846	656	169	290	88	274	490	139
NOx Emissions (g)	13	122	9	59	517	62	14	28	7	19	38	11
Vehicles Entered	94	723	64	94	700	89	136	228	100	121	232	84
Vehicles Exited	94	725	64	95	701	89	136	228	99	120	231	84
Hourly Exit Rate	94	725	64	95	701	89	136	228	99	120	231	84
Input Volume	96	700	60	94	703	91	135	218	101	124	232	81
% of Volume	98	104	106	101	100	98	101	105	98	97	100	104
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0

10: Bay Rd & Quaker Rd Performance by movement

Movement	All
Denied Delay (hr)	0.3
Denied Del/Veh (s)	0.4
Total Delay (hr)	20.9
Total Del/Veh (s)	28.0
Stop Delay (hr)	15.7
Stop Del/Veh (s)	21.0
Total Stops	1764
Stop/Veh	0.65
Travel Dist (mi)	593.4
Travel Time (hr)	37.5
Avg Speed (mph)	16
Fuel Used (gal)	24.1
Fuel Eff. (mpg)	24.6
HC Emissions (g)	243
CO Emissions (g)	9074
NOx Emissions (g)	901
Vehicles Entered	2665
Vehicles Exited	2666
Hourly Exit Rate	2666
Input Volume	2635
% of Volume	101
Denied Entry Before	0

11: Meadowbrook Rd & Quaker Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	3.9	0.2	3.8	3.8	0.3	0.3
Total Delay (hr)	1.4	3.1	0.2	0.0	4.7	0.2	1.0	1.5	0.0	0.8	1.5	1.1
Total Del/Veh (s)	50.2	14.3	12.8	32.5	26.3	19.5	45.8	56.8	18.5	46.4	64.0	37.2
Stop Delay (hr)	1.2	1.3	0.1	0.0	3.2	0.2	0.9	1.3	0.0	0.7	1.3	0.9
Stop Del/Veh (s)	42.9	5.8	5.6	28.2	18.2	14.5	41.9	50.6	16.6	41.5	55.8	33.4
Total Stops	81	229	23	2	320	22	66	85	5	54	78	98
Stop/Veh	0.79	0.30	0.34	0.67	0.50	0.52	0.88	0.89	1.00	0.90	0.94	0.96
Travel Dist (mi)	53.4	393.3	35.1	0.8	178.6	11.7	6.6	8.4	0.4	4.8	6.6	8.1
Travel Time (hr)	2.9	13.2	1.2	0.1	9.3	0.6	1.3	1.7	0.0	1.0	1.6	1.4
Avg Speed (mph)	18	30	29	15	19	20	6	5	10	5	4	6
Fuel Used (gal)	2.0	13.6	1.2	0.0	7.5	0.5	0.5	0.6	0.0	0.4	0.6	0.5
Fuel Eff. (mpg)	26.5	28.9	29.8	24.0	23.8	25.0	13.4	13.1	19.7	12.7	11.8	15.2
HC Emissions (g)	19	165	17	0	86	8	2	6	0	2	4	5
CO Emissions (g)	716	5856	526	13	3718	274	145	207	8	102	143	184
NOx Emissions (g)	74	631	61	1	308	24	10	17	0	8	12	16
Vehicles Entered	100	761	66	3	632	41	73	95	5	59	82	101
Vehicles Exited	100	759	65	3	628	41	74	95	5	60	82	101
Hourly Exit Rate	100	759	65	3	628	41	74	95	5	60	82	101
Input Volume	98	749	62	3	635	42	76	90	5	59	81	100
% of Volume	102	101	105	100	99	97	98	106	100	101	101	101
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0

11: Meadowbrook Rd & Quaker Rd Performance by movement

Movement	All
Denied Delay (hr)	0.2
Denied Del/Veh (s)	0.3
Total Delay (hr)	15.4
Total Del/Veh (s)	27.2
Stop Delay (hr)	11.2
Stop Del/Veh (s)	19.6
Total Stops	1063
Stop/Veh	0.52
Travel Dist (mi)	707.8
Travel Time (hr)	34.4
Avg Speed (mph)	21
Fuel Used (gal)	27.4
Fuel Eff. (mpg)	25.8
HC Emissions (g)	314
CO Emissions (g)	11892
NOx Emissions (g)	1161
Vehicles Entered	2018
Vehicles Exited	2013
Hourly Exit Rate	2013
Input Volume	2000
% of Volume	101
Denied Entry Before	0

12: Ridge Rd & Quaker Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	3.3	0.1	0.2	3.9	0.2	0.2	3.6	0.2	0.2
Total Delay (hr)	0.9	2.6	0.1	0.2	2.4	0.1	0.2	0.7	0.0	0.2	0.8	0.3
Total Del/Veh (s)	28.5	14.2	12.1	31.5	15.6	7.4	25.9	19.3	8.3	20.2	20.6	10.0
Stop Delay (hr)	0.7	1.3	0.1	0.2	1.5	0.1	0.1	0.5	0.0	0.2	0.5	0.2
Stop Del/Veh (s)	23.5	7.1	6.8	28.5	9.8	5.5	23.5	14.1	7.3	17.1	13.9	8.4
Total Stops	95	272	15	25	301	22	19	80	12	31	94	68
Stop/Veh	0.86	0.42	0.48	0.93	0.54	0.61	0.86	0.66	0.71	0.78	0.69	0.72
Travel Dist (mi)	30.6	181.5	8.6	2.9	61.0	3.9	1.7	9.5	1.3	2.7	9.5	6.6
Travel Time (hr)	1.8	7.2	0.4	0.4	4.0	0.2	0.2	0.9	0.1	0.4	1.0	0.6
Avg Speed (mph)	17	25	24	9	15	18	8	11	14	8	10	12
Fuel Used (gal)	1.1	6.4	0.3	0.2	2.6	0.1	0.1	0.4	0.1	0.2	0.5	0.3
Fuel Eff. (mpg)	26.9	28.4	29.7	19.1	23.7	28.5	17.3	21.2	24.5	16.5	19.1	22.5
HC Emissions (g)	11	72	6	1	30	3	1	4	0	1	6	3
CO Emissions (g)	441	2790	174	68	1353	89	38	195	24	67	227	137
NOx Emissions (g)	42	272	19	3	98	7	2	14	1	5	18	10
Vehicles Entered	108	648	31	26	556	36	22	122	17	39	137	95
Vehicles Exited	108	649	31	26	556	36	22	122	17	39	137	94
Hourly Exit Rate	108	649	31	26	556	36	22	122	17	39	137	94
Input Volume	110	638	30	25	560	35	23	123	15	40	137	94
% of Volume	98	102	104	103	99	103	95	99	111	98	100	100
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0

12: Ridge Rd & Quaker Rd Performance by movement

Movement	All
Denied Delay (hr)	0.1
Denied Del/Veh (s)	0.3
Total Delay (hr)	8.4
Total Del/Veh (s)	16.4
Stop Delay (hr)	5.5
Stop Del/Veh (s)	10.6
Total Stops	1034
Stop/Veh	0.56
Travel Dist (mi)	319.7
Travel Time (hr)	17.1
Avg Speed (mph)	19
Fuel Used (gal)	12.2
Fuel Eff. (mpg)	26.1
HC Emissions (g)	137
CO Emissions (g)	5605
NOx Emissions (g)	491
Vehicles Entered	1837
Vehicles Exited	1837
Hourly Exit Rate	1837
Input Volume	1831
% of Volume	100
Denied Entry Before	0

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Total Network Performance

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Denied Delay (hr)	1.1
Denied Del/Veh (s)	0.9
Total Delay (hr)	79.3
Total Del/Veh (s)	64.2
Stop Delay (hr)	52.3
Stop Del/Veh (s)	42.4
Total Stops	7119
Stop/Veh	1.60
Travel Dist (mi)	3321.8
Travel Time (hr)	171.8
Avg Speed (mph)	19
Fuel Used (gal)	145.1
Fuel Eff. (mpg)	22.9
HC Emissions (g)	1756
CO Emissions (g)	73867
NOx Emissions (g)	6307
Vehicles Entered	4287
Vehicles Exited	4287
Hourly Exit Rate	4287
Input Volume	17222
% of Volume	25
Denied Entry Before	0

Intersection: 7: Lafayette St & Quaker Rd

Movement	EB	EB	WB	WB	WB	NB	NB
Directions Served	T	TR	L	T	T	L	R
Maximum Queue (ft)	311	234	189	253	272	116	236
Average Queue (ft)	163	100	75	96	121	24	114
95th Queue (ft)	273	207	143	207	227	69	191
Link Distance (ft)	353	353		1045	1045		421
Upstream Blk Time (%)	0						
Queuing Penalty (veh)	0						
Storage Bay Dist (ft)			110			90	
Storage Blk Time (%)			2	4		0	18
Queuing Penalty (veh)			8	7		0	6

Intersection: 8: Glenwood Ave & Quaker Rd

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	TR	LT	R
Maximum Queue (ft)	174	332	330	221	353	354	126	208	172	164
Average Queue (ft)	83	147	149	56	165	174	40	75	64	65
95th Queue (ft)	165	266	260	165	300	306	87	154	132	131
Link Distance (ft)		1045	1045		1719	1719		499	335	
Upstream Blk Time (%)									0	
Queuing Penalty (veh)									0	
Storage Bay Dist (ft)	90			140			100			160
Storage Blk Time (%)	7	19		0	13		0	6	1	0
Queuing Penalty (veh)	27	30		0	11		0	4	1	1

Intersection: 9: Grocery Parking Lot & Quaker Rd

Movement	EB	EB	WB	WB	WB	NB	NB
Directions Served	T	TR	L	T	T	L	R
Maximum Queue (ft)	200	236	58	238	244	92	71
Average Queue (ft)	82	95	18	77	83	38	30
95th Queue (ft)	166	187	47	180	184	79	57
Link Distance (ft)	1719	1719		444	444	240	240
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)			160				
Storage Blk Time (%)				1			
Queuing Penalty (veh)				0			

Queuing and Blocking Report  
Baseline

3/22/2023

Intersection: 10: Bay Rd & Quaker Rd

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	T	R	L	T	TR	L	T
Maximum Queue (ft)	216	288	302	223	321	314	64	192	183	159	170	192
Average Queue (ft)	71	157	169	64	149	148	27	92	99	63	82	99
95th Queue (ft)	161	276	290	144	285	282	58	157	162	126	146	166
Link Distance (ft)		444	444		2710	2710			302	302		497
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	110			130			465	160			170	
Storage Blk Time (%)	2	19		1	13			2	1		1	0
Queuing Penalty (veh)	6	18		3	12			2	1		1	1

Intersection: 10: Bay Rd & Quaker Rd

Movement	SB
Directions Served	TR
Maximum Queue (ft)	158
Average Queue (ft)	52
95th Queue (ft)	116
Link Distance (ft)	497
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 11: Meadowbrook Rd & Quaker Rd

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	T	R	L	TR
Maximum Queue (ft)	156	207	223	19	258	269	128	184	44	154	301
Average Queue (ft)	67	82	97	2	121	129	51	78	6	56	136
95th Queue (ft)	129	183	204	11	217	233	102	147	31	136	262
Link Distance (ft)		2710	2710		1400	1400		464			421
Upstream Blk Time (%)											0
Queuing Penalty (veh)											0
Storage Bay Dist (ft)	150			150			90		25	90	
Storage Blk Time (%)	1	2			6		4	61	1	2	28
Queuing Penalty (veh)	5	2			0		3	49	1	5	16

Queuing and Blocking Report  
Baseline

3/22/2023

Intersection: 12: Ridge Rd & Quaker Rd

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	TR	L	TR
Maximum Queue (ft)	123	193	227	46	214	178	42	107	76	162
Average Queue (ft)	54	75	101	13	102	66	11	40	19	64
95th Queue (ft)	103	158	187	35	174	136	30	86	51	129
Link Distance (ft)		1400	1400		570	570		396		350
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	190			190			120		120	
Storage Blk Time (%)		0			0			0		1
Queuing Penalty (veh)		0			0			0		0

Network Summary

Network wide Queuing Penalty: 221



Summary of All Intervals

Run Number	1	10	2	3	4	5	6
Start Time	11:00	11:00	11:00	11:00	11:00	11:00	11:00
End Time	12:15	12:15	12:15	12:15	12:15	12:15	12:15
Total Time (min)	75	75	75	75	75	75	75
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	5	5	5	5	5	5	5
# of Recorded mScheduledIntervals	4	4	4	4	4	4	4
Vehs Entered	3908	3925	4050	3926	3934	3889	4014
Vehs Exited	3943	3901	4065	3929	3975	3878	4002
Starting Vehs	165	138	167	131	157	138	151
Ending Vehs	130	162	152	128	116	149	163
Denied Entry Before	1	1	1	0	0	0	2
Travel Distance (mi)	3123	3092	3161	3056	3129	3077	3210
Travel Time (hr)	152.3	152.6	158.0	152.4	156.4	153.6	161.6
Total Delay (hr)	66.6	68.0	71.1	68.6	70.5	69.2	73.7
Total Stops	6273	6260	6583	6282	6412	6391	6753
Fuel Used (gal)	132.2	131.1	135.6	131.5	133.4	131.0	137.8

Summary of All Intervals

Run Number	7	8	9	Avg
Start Time	11:00	11:00	11:00	11:00
End Time	12:15	12:15	12:15	12:15
Total Time (min)	75	75	75	75
Time Recorded (min)	60	60	60	60
# of Intervals	5	5	5	5
# of Recorded mScheduledIntervals	4	4	4	4
Vehs Entered	4002	3980	4002	3963
Vehs Exited	4001	3995	3988	3965
Starting Vehs	151	159	140	142
Ending Vehs	152	144	154	144
Denied Entry Before	1	2	0	0
Travel Distance (mi)	3108	3162	3193	3131
Travel Time (hr)	153.6	157.6	158.4	155.6
Total Delay (hr)	68.3	70.8	70.9	69.8
Total Stops	6328	6577	6637	6447
Fuel Used (gal)	133.0	135.2	136.3	133.7

Interval #0 Information Seeding

Start Time	11:00
End Time	11:15
Total Time (min)	15
Volumes adjusted by Growth Factors.	
No data recorded this interval.	

Interval #1 Information Recording

Start Time	11:15
End Time	11:30
Total Time (min)	15
Volumes adjusted by Growth Factors, Anti PHF.	

Run Number	1	10	2	3	4	5	6
Vehs Entered	945	919	1037	921	957	930	936
Vehs Exited	989	933	1051	911	965	938	937
Starting Vehs	165	138	167	131	157	138	151
Ending Vehs	121	124	153	141	149	130	150
Denied Entry Before	1	1	1	0	0	0	2
Travel Distance (mi)	757	719	815	702	752	733	762
Travel Time (hr)	36.3	34.3	40.8	34.6	35.2	35.7	38.3
Total Delay (hr)	15.5	14.7	18.3	15.2	14.6	15.5	17.4
Total Stops	1449	1461	1669	1410	1436	1512	1615
Fuel Used (gal)	31.8	30.1	34.7	30.0	31.2	30.5	32.3

Interval #1 Information Recording

Start Time	11:15
End Time	11:30
Total Time (min)	15
Volumes adjusted by Growth Factors, Anti PHF.	

Run Number	7	8	9	Avg
Vehs Entered	1002	1031	945	962
Vehs Exited	990	1052	936	972
Starting Vehs	151	159	140	142
Ending Vehs	163	138	149	136
Denied Entry Before	1	2	0	0
Travel Distance (mi)	758	803	739	754
Travel Time (hr)	37.9	39.9	35.9	36.9
Total Delay (hr)	17.0	17.8	15.7	16.2
Total Stops	1559	1644	1493	1527
Fuel Used (gal)	32.5	34.5	31.5	31.9

Interval #2 Information Recording

Start Time	11:30
End Time	11:45
Total Time (min)	15
Volumes adjusted by Growth Factors, Anti PHF.	

Run Number	1	10	2	3	4	5	6
Vehs Entered	1014	952	940	956	976	1018	968
Vehs Exited	989	901	961	940	980	962	983
Starting Vehs	121	124	153	141	149	130	150
Ending Vehs	146	175	132	157	145	186	135
Denied Entry Before	0	2	1	1	2	0	2
Travel Distance (mi)	808	713	735	748	785	803	780
Travel Time (hr)	39.5	32.5	37.0	35.5	39.6	41.1	36.3
Total Delay (hr)	17.5	13.0	16.9	14.9	18.0	19.2	14.9
Total Stops	1705	1280	1549	1445	1647	1656	1477
Fuel Used (gal)	34.1	28.7	31.7	31.2	33.5	34.4	32.9

Interval #2 Information Recording

Start Time	11:30
End Time	11:45
Total Time (min)	15
Volumes adjusted by Growth Factors, Anti PHF.	

Run Number	7	8	9	Avg
Vehs Entered	975	957	1019	975
Vehs Exited	969	922	996	960
Starting Vehs	163	138	149	136
Ending Vehs	169	173	172	159
Denied Entry Before	0	0	0	0
Travel Distance (mi)	780	771	828	775
Travel Time (hr)	38.6	37.7	40.7	37.8
Total Delay (hr)	17.2	16.6	18.0	16.6
Total Stops	1574	1561	1709	1565
Fuel Used (gal)	33.3	32.4	34.9	32.7

Interval #3 Information Recording

Start Time	11:45
End Time	12:00
Total Time (min)	15
Volumes adjusted by PHF, Growth Factors.	

Run Number	1	10	2	3	4	5	6
Vehs Entered	1011	1107	1110	1077	1009	1027	1057
Vehs Exited	1023	1109	1085	1102	990	1040	1020
Starting Vehs	146	175	132	157	145	186	135
Ending Vehs	134	173	157	132	164	173	172
Denied Entry Before	0	0	0	0	2	1	1
Travel Distance (mi)	803	894	843	858	792	809	826
Travel Time (hr)	39.6	47.2	43.4	45.6	41.1	41.0	44.1
Total Delay (hr)	17.5	22.7	20.2	22.2	19.3	18.9	21.5
Total Stops	1655	1896	1791	1907	1679	1734	1874
Fuel Used (gal)	34.3	39.1	36.8	38.2	34.3	34.9	36.0

Interval #3 Information Recording

Start Time	11:45
End Time	12:00
Total Time (min)	15
Volumes adjusted by PHF, Growth Factors.	

Run Number	7	8	9	Avg
Vehs Entered	1044	1028	1033	1047
Vehs Exited	1046	1028	1042	1048
Starting Vehs	169	173	172	159
Ending Vehs	167	173	163	156
Denied Entry Before	2	1	0	0
Travel Distance (mi)	808	801	794	823
Travel Time (hr)	39.4	41.4	40.3	42.3
Total Delay (hr)	17.1	19.5	18.4	19.7
Total Stops	1602	1729	1706	1760
Fuel Used (gal)	34.2	35.1	34.3	35.7

Interval #4 Information Recording

Start Time	12:00
End Time	12:15
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	1	10	2	3	4	5	6
Vehs Entered	938	947	963	972	992	914	1053
Vehs Exited	942	958	968	976	1040	938	1062
Starting Vehs	134	173	157	132	164	173	172
Ending Vehs	130	162	152	128	116	149	163
Denied Entry Before	2	2	0	1	0	2	0
Travel Distance (mi)	756	767	769	747	801	730	841
Travel Time (hr)	37.0	38.6	36.8	36.7	40.6	35.7	42.9
Total Delay (hr)	16.2	17.6	15.8	16.2	18.6	15.7	20.0
Total Stops	1464	1623	1574	1520	1650	1489	1787
Fuel Used (gal)	31.9	33.3	32.4	32.1	34.5	31.2	36.7

Interval #4 Information Recording

Start Time	12:00
End Time	12:15
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	7	8	9	Avg
Vehs Entered	981	964	1005	971
Vehs Exited	996	993	1014	987
Starting Vehs	167	173	163	156
Ending Vehs	152	144	154	144
Denied Entry Before	1	0	0	0
Travel Distance (mi)	762	787	832	779
Travel Time (hr)	37.7	38.5	41.6	38.6
Total Delay (hr)	16.8	16.9	18.8	17.3
Total Stops	1593	1643	1729	1606
Fuel Used (gal)	33.0	33.2	35.6	33.4

7: Lafayette St & Quaker Rd Performance by movement

Movement	EBT	EBR	WBL	WBT	NBL	NBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Denied Del/Veh (s)	0.2	0.3	0.2	0.0	3.7	0.3	0.2
Total Delay (hr)	3.2	0.1	1.0	3.4	0.2	2.0	9.9
Total Del/Veh (s)	14.3	7.0	20.6	12.4	26.4	29.6	15.7
Stop Delay (hr)	2.0	0.0	0.7	1.3	0.2	1.8	6.0
Stop Del/Veh (s)	9.0	5.2	13.8	4.6	22.4	26.1	9.5
Total Stops	374	16	152	310	23	199	1074
Stop/Veh	0.47	0.47	0.84	0.32	0.79	0.81	0.47
Travel Dist (mi)	53.5	2.3	37.6	203.5	2.3	19.4	318.7
Travel Time (hr)	4.6	0.2	2.2	8.8	0.3	2.9	18.9
Avg Speed (mph)	12	14	17	23	8	7	17
Fuel Used (gal)	2.8	0.1	1.6	8.9	0.1	1.1	14.7
Fuel Eff. (mpg)	19.3	26.1	23.2	22.9	15.5	16.9	21.7
HC Emissions (g)	27	1	18	122	1	9	178
CO Emissions (g)	1163	40	801	4784	51	348	7188
NOx Emissions (g)	97	3	67	438	5	30	639
Vehicles Entered	796	34	180	972	29	244	2255
Vehicles Exited	797	34	178	972	29	242	2252
Hourly Exit Rate	797	34	178	972	29	242	2252
Input Volume	801	32	182	952	28	241	2235
% of Volume	100	107	98	102	105	100	101
Denied Entry Before	0	0	0	0	0	0	0

8: Glenwood Ave & Quaker Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.2
Denied Del/Veh (s)	0.0	0.0	0.0	0.1	0.0	0.0	3.8	0.2	0.2	0.4	0.3	3.8
Total Delay (hr)	0.9	4.3	0.1	0.5	5.7	0.1	0.6	0.6	0.4	0.1	0.6	0.5
Total Del/Veh (s)	25.8	17.4	14.1	22.3	22.9	20.3	40.0	37.1	17.2	36.4	37.7	10.9
Stop Delay (hr)	0.7	2.5	0.1	0.3	3.3	0.0	0.6	0.5	0.3	0.1	0.5	0.5
Stop Del/Veh (s)	19.0	10.1	9.6	15.1	13.3	12.5	37.0	32.6	15.5	33.5	33.5	10.4
Total Stops	118	366	16	67	450	7	49	46	66	12	50	145
Stop/Veh	0.89	0.41	0.48	0.83	0.50	0.54	0.88	0.84	0.85	0.92	0.86	0.86
Travel Dist (mi)	27.4	176.9	6.8	26.8	295.5	4.4	5.3	5.3	7.4	0.9	3.8	11.3
Travel Time (hr)	1.8	9.0	0.3	1.3	13.2	0.2	0.9	0.7	0.7	0.2	0.7	1.2
Avg Speed (mph)	15	20	19	21	22	22	6	7	11	5	5	11
Fuel Used (gal)	1.2	8.0	0.3	0.9	10.2	0.2	0.3	0.3	0.3	0.1	0.3	0.5
Fuel Eff. (mpg)	22.0	22.2	23.9	29.2	28.8	29.4	15.4	17.6	22.4	15.0	14.1	20.9
HC Emissions (g)	15	99	6	15	124	1	2	3	4	0	1	5
CO Emissions (g)	637	4485	207	428	4009	37	90	94	138	11	62	204
NOx Emissions (g)	52	348	18	49	452	4	7	8	12	1	5	18
Vehicles Entered	130	877	32	80	878	13	55	55	78	13	58	167
Vehicles Exited	131	874	33	80	883	13	56	55	76	13	57	167
Hourly Exit Rate	131	874	33	80	883	13	56	55	76	13	57	167
Input Volume	131	878	33	82	869	12	58	53	84	14	58	162
% of Volume	100	100	101	97	102	106	97	104	90	91	98	103
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0

8: Glenwood Ave & Quaker Rd Performance by movement

Movement	All
Denied Delay (hr)	0.2
Denied Del/Veh (s)	0.4
Total Delay (hr)	14.4
Total Del/Veh (s)	21.0
Stop Delay (hr)	9.5
Stop Del/Veh (s)	13.9
Total Stops	1392
Stop/Veh	0.56
Travel Dist (mi)	571.8
Travel Time (hr)	30.3
Avg Speed (mph)	19
Fuel Used (gal)	22.7
Fuel Eff. (mpg)	25.2
HC Emissions (g)	275
CO Emissions (g)	10401
NOx Emissions (g)	974
Vehicles Entered	2436
Vehicles Exited	2438
Hourly Exit Rate	2438
Input Volume	2435
% of Volume	100
Denied Entry Before	0

9: Grocery Parking Lot & Quaker Rd Performance by movement

Movement	EBT	EBR	WBL	WBT	NBL	NBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.1	0.0	0.2	0.1	0.0
Total Delay (hr)	2.5	0.4	0.2	2.1	0.5	0.2	5.9
Total Del/Veh (s)	11.7	10.3	15.1	8.7	22.5	6.3	10.5
Stop Delay (hr)	0.8	0.1	0.1	0.7	0.5	0.2	2.4
Stop Del/Veh (s)	3.8	3.3	10.4	3.1	20.3	5.7	4.3
Total Stops	227	46	35	234	62	74	678
Stop/Veh	0.29	0.37	0.80	0.27	0.77	0.78	0.34
Travel Dist (mi)	255.9	42.8	4.4	87.6	3.7	4.3	398.8
Travel Time (hr)	9.1	1.6	0.3	4.6	0.7	0.4	16.7
Avg Speed (mph)	28	27	13	19	6	11	24
Fuel Used (gal)	9.1	1.4	0.2	4.9	0.2	0.1	16.0
Fuel Eff. (mpg)	28.0	30.1	20.4	17.9	16.7	32.3	24.9
HC Emissions (g)	116	15	2	65	1	1	201
CO Emissions (g)	4310	579	81	2747	45	34	7797
NOx Emissions (g)	434	59	7	243	5	3	751
Vehicles Entered	775	124	44	878	81	95	1997
Vehicles Exited	775	125	44	877	81	95	1997
Hourly Exit Rate	775	125	44	877	81	95	1997
Input Volume	789	122	44	864	84	93	1996
% of Volume	98	102	100	101	96	102	100
Denied Entry Before	0	0	0	0	0	0	0



10: Bay Rd & Quaker Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.2	0.0	0.2	3.6	0.1	0.2	3.5	0.1	0.2
Total Delay (hr)	0.8	4.5	0.2	0.7	6.4	0.2	1.2	1.6	0.2	1.6	1.5	0.3
Total Del/Veh (s)	26.8	24.3	20.3	28.1	31.0	8.6	46.4	32.7	9.8	46.0	31.2	12.3
Stop Delay (hr)	0.7	3.2	0.1	0.5	4.2	0.1	1.1	1.3	0.2	1.4	1.3	0.3
Stop Del/Veh (s)	21.7	17.3	15.7	19.3	20.0	2.7	43.0	28.1	8.9	42.0	26.1	11.0
Total Stops	98	369	20	74	444	56	81	124	54	108	124	62
Stop/Veh	0.87	0.55	0.61	0.82	0.60	0.59	0.88	0.73	0.75	0.89	0.72	0.70
Travel Dist (mi)	10.8	63.0	3.1	45.1	374.6	47.9	5.2	9.7	4.1	11.5	16.3	8.3
Travel Time (hr)	1.2	6.2	0.3	1.9	16.1	1.6	1.5	1.8	0.4	2.1	2.0	0.6
Avg Speed (mph)	9	10	10	23	23	31	4	5	11	6	8	13
Fuel Used (gal)	0.6	3.5	0.2	1.5	12.8	1.6	0.5	0.7	0.2	0.8	0.9	0.3
Fuel Eff. (mpg)	19.2	18.1	20.1	30.0	29.2	30.8	10.4	13.6	26.1	14.4	17.7	26.0
HC Emissions (g)	5	33	3	18	155	24	3	5	1	6	8	4
CO Emissions (g)	181	1362	81	587	4986	790	122	195	59	273	353	146
NOx Emissions (g)	18	121	8	68	569	83	10	17	4	19	27	12
Vehicles Entered	112	665	33	87	727	94	91	168	71	121	171	87
Vehicles Exited	112	667	33	88	732	93	90	169	71	120	172	87
Hourly Exit Rate	112	667	33	88	732	93	90	169	71	120	172	87
Input Volume	116	678	33	84	725	93	89	169	75	121	171	83
% of Volume	96	98	101	104	101	100	101	100	94	99	101	105
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0

10: Bay Rd & Quaker Rd Performance by movement

Movement	All
Denied Delay (hr)	0.2
Denied Del/Veh (s)	0.4
Total Delay (hr)	19.2
Total Del/Veh (s)	28.0
Stop Delay (hr)	14.3
Stop Del/Veh (s)	20.9
Total Stops	1614
Stop/Veh	0.65
Travel Dist (mi)	599.6
Travel Time (hr)	35.7
Avg Speed (mph)	17
Fuel Used (gal)	23.5
Fuel Eff. (mpg)	25.5
HC Emissions (g)	265
CO Emissions (g)	9134
NOx Emissions (g)	956
Vehicles Entered	2427
Vehicles Exited	2434
Hourly Exit Rate	2434
Input Volume	2436
% of Volume	100
Denied Entry Before	0

11: Meadowbrook Rd & Quaker Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.4	0.0	0.0	3.9	0.2	4.2	3.8	0.2	0.2
Total Delay (hr)	1.0	2.1	0.1	0.0	3.9	0.1	0.9	0.9	0.0	0.5	0.7	0.6
Total Del/Veh (s)	59.6	10.3	10.4	31.2	19.7	15.1	44.6	55.1	12.8	43.9	55.1	25.1
Stop Delay (hr)	0.9	0.8	0.1	0.0	2.4	0.1	0.9	0.8	0.0	0.5	0.6	0.6
Stop Del/Veh (s)	53.1	3.8	4.1	25.4	12.1	10.5	41.1	49.6	10.8	39.9	48.2	22.7
Total Stops	50	151	13	4	286	15	64	51	4	38	42	84
Stop/Veh	0.86	0.20	0.28	0.80	0.41	0.47	0.85	0.89	1.00	0.84	0.88	0.93
Travel Dist (mi)	29.9	347.7	24.2	1.4	189.0	8.4	6.6	4.9	0.4	3.7	3.8	7.2
Travel Time (hr)	1.8	11.1	0.8	0.1	8.7	0.4	1.2	1.0	0.0	0.7	0.8	0.9
Avg Speed (mph)	17	31	30	17	22	22	6	5	13	5	5	8
Fuel Used (gal)	1.2	12.0	0.8	0.1	7.6	0.3	0.5	0.4	0.0	0.3	0.3	0.4
Fuel Eff. (mpg)	26.0	29.1	31.0	24.0	25.0	26.4	13.8	13.4	20.2	13.4	13.3	18.8
HC Emissions (g)	9	143	10	0	102	9	4	2	0	2	2	4
CO Emissions (g)	368	5139	327	24	3926	240	159	106	7	86	82	152
NOx Emissions (g)	39	559	37	2	358	25	13	8	0	6	6	12
Vehicles Entered	56	731	46	5	698	31	73	55	4	45	47	90
Vehicles Exited	57	730	46	5	698	31	73	56	4	44	47	89
Hourly Exit Rate	57	730	46	5	698	31	73	56	4	44	47	89
Input Volume	54	753	44	5	692	33	78	55	4	46	49	86
% of Volume	105	97	105	100	101	95	93	102	94	95	95	103
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0

11: Meadowbrook Rd & Quaker Rd Performance by movement

Movement	All
Denied Delay (hr)	0.2
Denied Del/Veh (s)	0.3
Total Delay (hr)	11.0
Total Del/Veh (s)	20.7
Stop Delay (hr)	7.5
Stop Del/Veh (s)	14.2
Total Stops	802
Stop/Veh	0.42
Travel Dist (mi)	627.2
Travel Time (hr)	27.7
Avg Speed (mph)	23
Fuel Used (gal)	23.6
Fuel Eff. (mpg)	26.5
HC Emissions (g)	287
CO Emissions (g)	10616
NOx Emissions (g)	1065
Vehicles Entered	1881
Vehicles Exited	1880
Hourly Exit Rate	1880
Input Volume	1900
% of Volume	99
Denied Entry Before	0

12: Ridge Rd & Quaker Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	3.0	0.1	0.2	4.0	0.2	0.2	3.7	0.3	0.2
Total Delay (hr)	0.7	1.7	0.1	0.1	2.3	0.1	0.1	0.5	0.0	0.7	0.4	0.1
Total Del/Veh (s)	31.2	11.6	9.6	32.8	13.8	7.1	17.7	17.4	7.4	21.3	16.8	6.1
Stop Delay (hr)	0.6	0.8	0.0	0.1	1.4	0.1	0.1	0.3	0.0	0.6	0.3	0.1
Stop Del/Veh (s)	27.2	5.6	5.2	30.3	8.2	5.3	15.6	12.2	6.6	18.5	11.0	5.2
Total Stops	68	202	13	15	304	23	11	66	14	96	51	24
Stop/Veh	0.89	0.38	0.50	0.94	0.50	0.53	0.73	0.65	0.74	0.83	0.61	0.69
Travel Dist (mi)	21.1	146.3	7.2	1.7	66.2	4.6	1.1	8.0	1.4	7.9	5.8	2.4
Travel Time (hr)	1.3	5.5	0.3	0.2	4.0	0.3	0.1	0.7	0.1	1.1	0.5	0.2
Avg Speed (mph)	17	27	26	8	17	19	10	11	15	8	11	15
Fuel Used (gal)	0.8	5.0	0.2	0.1	2.7	0.2	0.1	0.4	0.1	0.5	0.3	0.1
Fuel Eff. (mpg)	27.3	29.6	32.0	18.9	24.8	28.2	19.1	22.3	25.2	16.5	20.3	25.5
HC Emissions (g)	8	55	2	1	33	3	0	4	0	4	3	2
CO Emissions (g)	303	2081	85	37	1436	104	24	168	25	205	141	70
NOx Emissions (g)	30	211	8	2	107	8	1	12	2	14	10	6
Vehicles Entered	74	523	26	16	604	42	14	102	19	115	84	34
Vehicles Exited	74	526	26	16	604	43	14	102	18	116	84	35
Hourly Exit Rate	74	526	26	16	604	43	14	102	18	116	84	35
Input Volume	77	538	24	16	597	43	16	100	18	114	85	36
% of Volume	96	98	109	102	101	99	86	102	99	102	99	97
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0

12: Ridge Rd & Quaker Rd Performance by movement

Movement	All
Denied Delay (hr)	0.2
Denied Del/Veh (s)	0.4
Total Delay (hr)	6.7
Total Del/Veh (s)	14.5
Stop Delay (hr)	4.4
Stop Del/Veh (s)	9.4
Total Stops	887
Stop/Veh	0.53
Travel Dist (mi)	273.8
Travel Time (hr)	14.2
Avg Speed (mph)	20
Fuel Used (gal)	10.2
Fuel Eff. (mpg)	26.8
HC Emissions (g)	115
CO Emissions (g)	4680
NOx Emissions (g)	412
Vehicles Entered	1653
Vehicles Exited	1658
Hourly Exit Rate	1658
Input Volume	1664
% of Volume	100
Denied Entry Before	0

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Total Network Performance

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Denied Delay (hr)	1.0
Denied Del/Veh (s)	0.9
Total Delay (hr)	68.8
Total Del/Veh (s)	60.3
Stop Delay (hr)	44.3
Stop Del/Veh (s)	38.8
Total Stops	6447
Stop/Veh	1.57
Travel Dist (mi)	3131.2
Travel Time (hr)	155.6
Avg Speed (mph)	20
Fuel Used (gal)	133.7
Fuel Eff. (mpg)	23.4
HC Emissions (g)	1689
CO Emissions (g)	68806
NOx Emissions (g)	6021
Vehicles Entered	3963
Vehicles Exited	3965
Hourly Exit Rate	3965
Input Volume	16298
% of Volume	24
Denied Entry Before	0

Arterial Level of Service: EB Quaker Rd

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed	Run 1 Speed	Run 1 Delay
Lafayette St	7	14.3	20.6	0.1	13	12	15.6
Glenwood Ave	8	18.0	36.2	0.2	21	22	17.2
Grocery Parking Lot	9	12.1	41.9	0.3	29	29	12.5
Bay Rd	10	24.3	32.8	0.1	11	12	21.2
Meadowbrook Rd	11	11.3	53.9	0.5	35	35	11.6
Ridge Rd	12	11.8	36.8	0.3	28	29	10.0
<b>Total</b>		<b>91.8</b>	<b>222.1</b>	<b>1.5</b>	<b>25</b>	<b>25</b>	<b>88.0</b>

Arterial Level of Service: EB Quaker Rd

Cross Street	Run 10 Speed	Run 10 Delay	Run 2 Speed	Run 2 Delay	Run 3 Speed	Run 3 Delay	Run 4 Speed
Lafayette St	13	14.8	13	13.7	13	14.5	14
Glenwood Ave	23	14.6	20	19.0	20	20.1	21
Grocery Parking Lot	29	13.4	30	12.2	29	12.1	29
Bay Rd	10	27.9	11	24.2	11	25.0	11
Meadowbrook Rd	35	12.7	35	13.4	35	12.5	36
Ridge Rd	28	11.8	26	13.9	28	12.7	30
<b>Total</b>	<b>25</b>	<b>95.2</b>	<b>25</b>	<b>96.4</b>	<b>25</b>	<b>96.9</b>	<b>26</b>

Arterial Level of Service: EB Quaker Rd

Cross Street	Run 4 Delay	Run 5 Speed	Run 5 Delay	Run 6 Speed	Run 6 Delay	Run 7 Speed	Run 7 Delay
Lafayette St	13.4	14	13.2	12	15.5	13	14.0
Glenwood Ave	18.1	21	18.4	21	18.7	21	18.6
Grocery Parking Lot	12.1	29	12.0	30	12.0	30	11.8
Bay Rd	24.2	11	25.1	11	24.9	11	24.8
Meadowbrook Rd	9.8	36	9.9	36	10.7	36	11.3
Ridge Rd	9.7	29	10.5	28	12.0	27	12.4
<b>Total</b>	<b>87.3</b>	<b>25</b>	<b>89.2</b>	<b>25</b>	<b>93.7</b>	<b>25</b>	<b>93.0</b>

Arterial Level of Service: EB Quaker Rd

Cross Street	Run 10 Speed	Run 10 Delay	Run 2 Speed	Run 2 Delay	Run 3 Speed	Run 3 Delay	Run 4 Speed
Lafayette St	13	13.7	13	14.8			
Glenwood Ave	22	17.4	21	17.6			
Grocery Parking Lot	29	11.7	30	11.7			
Bay Rd	11	25.3	12	20.6			
Meadowbrook Rd	37	10.4	36	10.9			
Ridge Rd	28	11.9	28	12.7			
<b>Total</b>	<b>25</b>	<b>90.3</b>	<b>25</b>	<b>88.4</b>			

Arterial Level of Service: WB Quaker Rd

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed	Run 1 Speed	Run 1 Delay
Ridge Rd	12	13.8	23.9	0.1	18	18	13.9
Meadowbrook Rd	11	20.0	44.4	0.3	23	26	16.1
Bay Rd	10	31.8	77.0	0.5	25	25	31.3
Grocery Parking Lot	9	9.5	18.6	0.1	19	18	10.3
Glenwood Ave	8	23.3	53.2	0.3	23	24	20.6
Lafayette St	7	13.4	32.3	0.2	24	25	12.2
<b>Total</b>		<b>111.8</b>	<b>249.4</b>	<b>1.6</b>	<b>23</b>	<b>24</b>	<b>104.5</b>

Arterial Level of Service: WB Quaker Rd

Cross Street	Run 10 Speed	Run 10 Delay	Run 2 Speed	Run 2 Delay	Run 3 Speed	Run 3 Delay	Run 4 Speed
Ridge Rd	18	14.2	18	13.4	18	13.4	18
Meadowbrook Rd	25	17.8	23	20.7	24	19.2	21
Bay Rd	25	30.6	26	28.3	25	30.8	23
Grocery Parking Lot	19	9.5	21	8.1	20	8.9	19
Glenwood Ave	24	20.9	23	23.4	23	22.6	24
Lafayette St	24	13.1	25	12.4	25	11.4	23
<b>Total</b>	<b>23</b>	<b>106.2</b>	<b>24</b>	<b>106.3</b>	<b>23</b>	<b>106.2</b>	<b>22</b>

Arterial Level of Service: WB Quaker Rd

Cross Street	Run 4 Delay	Run 5 Speed	Run 5 Delay	Run 6 Speed	Run 6 Delay	Run 7 Speed	Run 7 Delay
Ridge Rd	13.1	18	14.2	17	15.6	19	12.8
Meadowbrook Rd	23.7	22	21.7	23	21.4	23	20.5
Bay Rd	38.3	27	26.7	23	38.0	26	29.9
Grocery Parking Lot	10.0	19	9.6	19	9.5	20	8.8
Glenwood Ave	22.7	21	27.5	23	23.7	24	20.3
Lafayette St	13.8	23	14.3	23	14.3	23	14.1
<b>Total</b>	<b>121.7</b>	<b>23</b>	<b>114.1</b>	<b>22</b>	<b>122.4</b>	<b>24</b>	<b>106.4</b>

Arterial Level of Service: WB Quaker Rd

Cross Street	Run 8 Speed	Run 8 Delay	Run 9 Speed	Run 9 Delay
Ridge Rd	19	12.5	17	14.6
Meadowbrook Rd	24	18.7	23	20.2
Bay Rd	25	30.7	25	32.3
Grocery Parking Lot	18	10.4	19	9.7
Glenwood Ave	22	25.9	23	24.8
Lafayette St	22	15.2	24	13.0
<b>Total</b>	<b>23</b>	<b>113.4</b>	<b>23</b>	<b>114.6</b>

Queuing and Blocking Report  
Baseline

3/22/2023

Intersection: 7: Lafayette St & Quaker Rd

Movement	EB	EB	WB	WB	WB	NB	NB
Directions Served	T	TR	L	T	T	L	R
Maximum Queue (ft)	324	261	187	303	300	110	231
Average Queue (ft)	167	107	79	102	122	24	128
95th Queue (ft)	279	212	148	229	248	78	202
Link Distance (ft)	353	353		1045	1045		421
Upstream Blk Time (%)	0	0					
Queuing Penalty (veh)	0	0					
Storage Bay Dist (ft)			110			90	
Storage Blk Time (%)			2	4		0	21
Queuing Penalty (veh)			10	8		0	6

Intersection: 8: Glenwood Ave & Quaker Rd

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	TR	LT	R
Maximum Queue (ft)	170	307	312	221	339	346	113	167	109	109
Average Queue (ft)	66	129	138	46	161	169	41	63	34	37
95th Queue (ft)	135	245	250	137	302	306	86	129	80	80
Link Distance (ft)		1045	1045		1719	1719		499	335	
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	90			140			100			160
Storage Blk Time (%)	3	15		0	11		0	3	0	0
Queuing Penalty (veh)	13	20		0	9		1	2	0	0

Intersection: 9: Grocery Parking Lot & Quaker Rd

Movement	EB	EB	WB	WB	WB	NB	NB
Directions Served	T	TR	L	T	T	L	R
Maximum Queue (ft)	223	239	69	256	258	105	80
Average Queue (ft)	85	96	28	85	95	45	36
95th Queue (ft)	177	192	62	195	212	90	64
Link Distance (ft)	1719	1719		444	444	240	240
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)			160				
Storage Blk Time (%)				1			
Queuing Penalty (veh)				1			

Queuing and Blocking Report  
Baseline

3/22/2023

Intersection: 10: Bay Rd & Quaker Rd

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	T	R	L	T	TR	L	T
Maximum Queue (ft)	215	329	328	251	357	355	103	158	165	133	166	162
Average Queue (ft)	68	142	158	59	168	169	30	66	82	46	84	76
95th Queue (ft)	146	259	274	150	303	302	83	121	141	99	149	136
Link Distance (ft)		444	444		2710	2710			302	302		497
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	110			130			465	160			170	
Storage Blk Time (%)	1	15		0	17	0		0	1		1	0
Queuing Penalty (veh)	5	18		1	14	0		0	0		1	0

Intersection: 10: Bay Rd & Quaker Rd

Movement	SB
Directions Served	TR
Maximum Queue (ft)	138
Average Queue (ft)	50
95th Queue (ft)	106
Link Distance (ft)	497
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 11: Meadowbrook Rd & Quaker Rd

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	T	R	L	TR
Maximum Queue (ft)	113	180	209	45	247	260	114	123	45	117	207
Average Queue (ft)	43	51	66	3	112	114	46	47	5	35	83
95th Queue (ft)	94	137	162	30	220	229	93	96	25	87	163
Link Distance (ft)		2710	2710		1400	1400		464			421
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)	150			150			90		25	90	
Storage Blk Time (%)	0	0			5		4	47	0	0	13
Queuing Penalty (veh)	0	0			0		2	39	1	1	6



Queuing and Blocking Report  
Baseline

3/22/2023

Intersection: 12: Ridge Rd & Quaker Rd

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	TR	L	TR
Maximum Queue (ft)	105	176	188	36	194	179	28	97	106	102
Average Queue (ft)	39	55	76	7	100	70	6	34	47	30
95th Queue (ft)	83	132	151	24	166	142	22	73	89	70
Link Distance (ft)		1400	1400		570	570		396		350
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	190			190			120		120	
Storage Blk Time (%)		0			0			0	0	0
Queuing Penalty (veh)		0			0			0	0	0

Network Summary

Network wide Queuing Penalty: 158

## **Appendix C. Bicycle/Pedestrian Figures and Cost Estimates**

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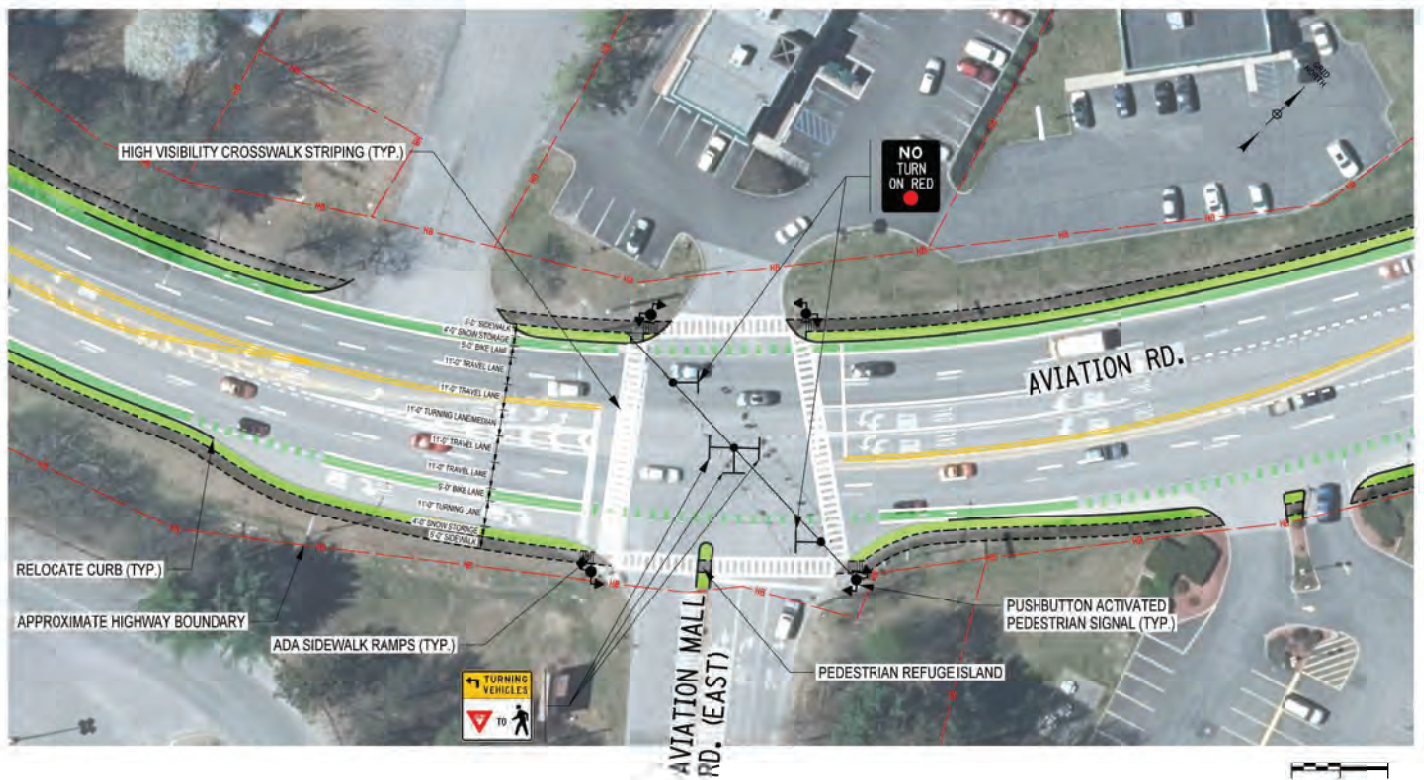


**Aviation Road, Aviation Mall Road (west), and Greenway North**

0 20 40  
HORIZONTAL 1" = 40 FEET

**Barton & Loguidice**  
**AKRF**

JANUARY 2023



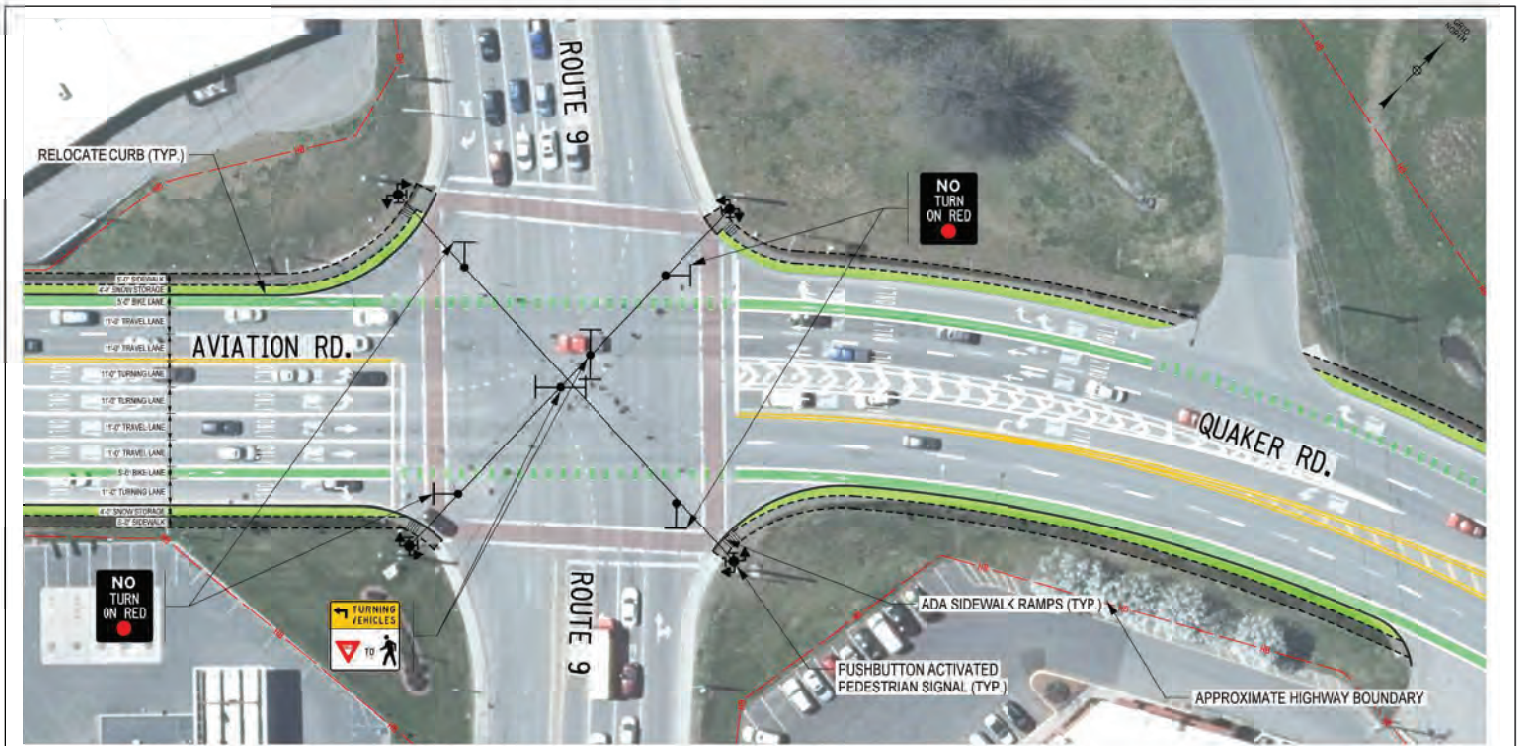
**Aviation Road and Aviation Mall Road (east)**

0 20 40  
HORIZONTAL 1" = 40 FEET

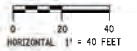
**Barton & Loguidice**  
**AKRF**

JANUARY 2023

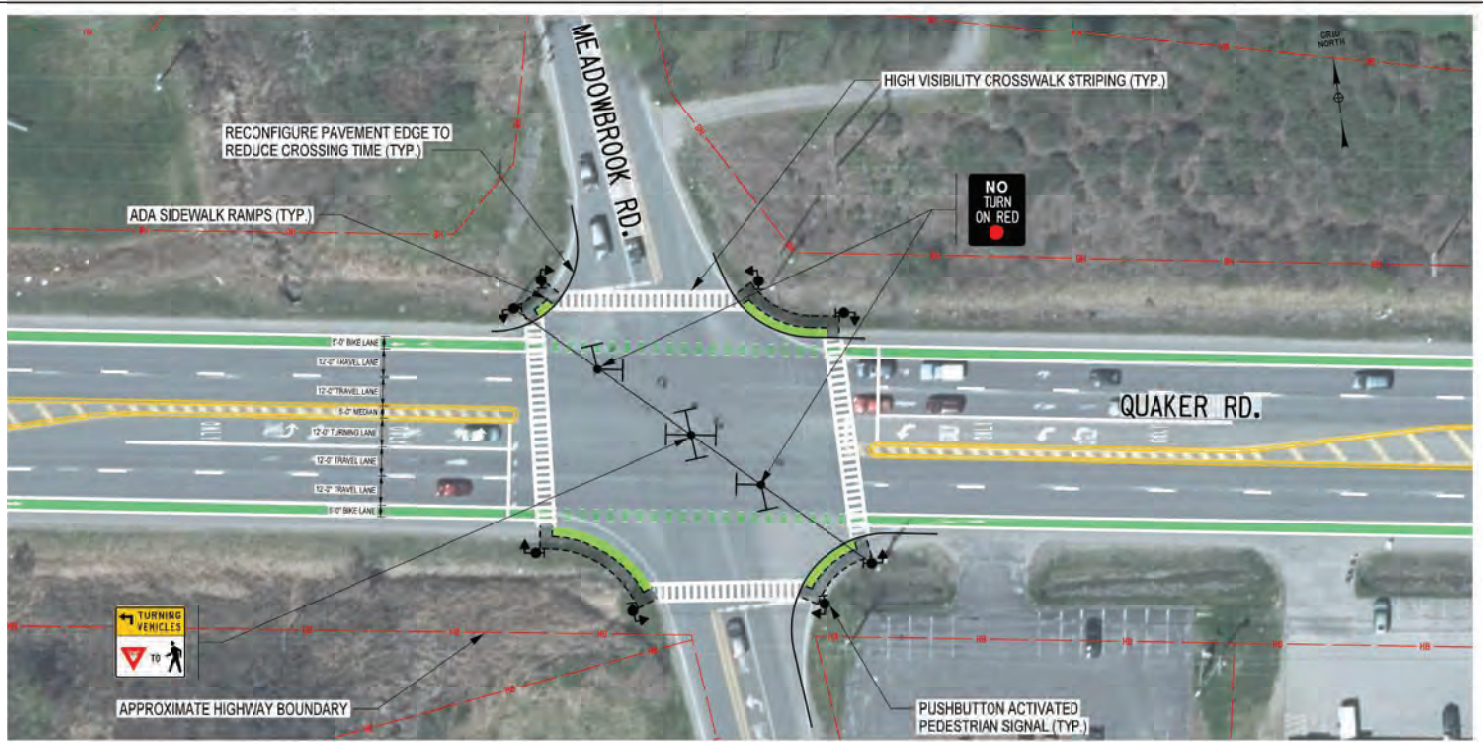




**Aviation Road, Quaker Road, and Glen Street (Route 9)**



**Barton & Loguidice**  
**AKRF**  
 JANUARY 2023



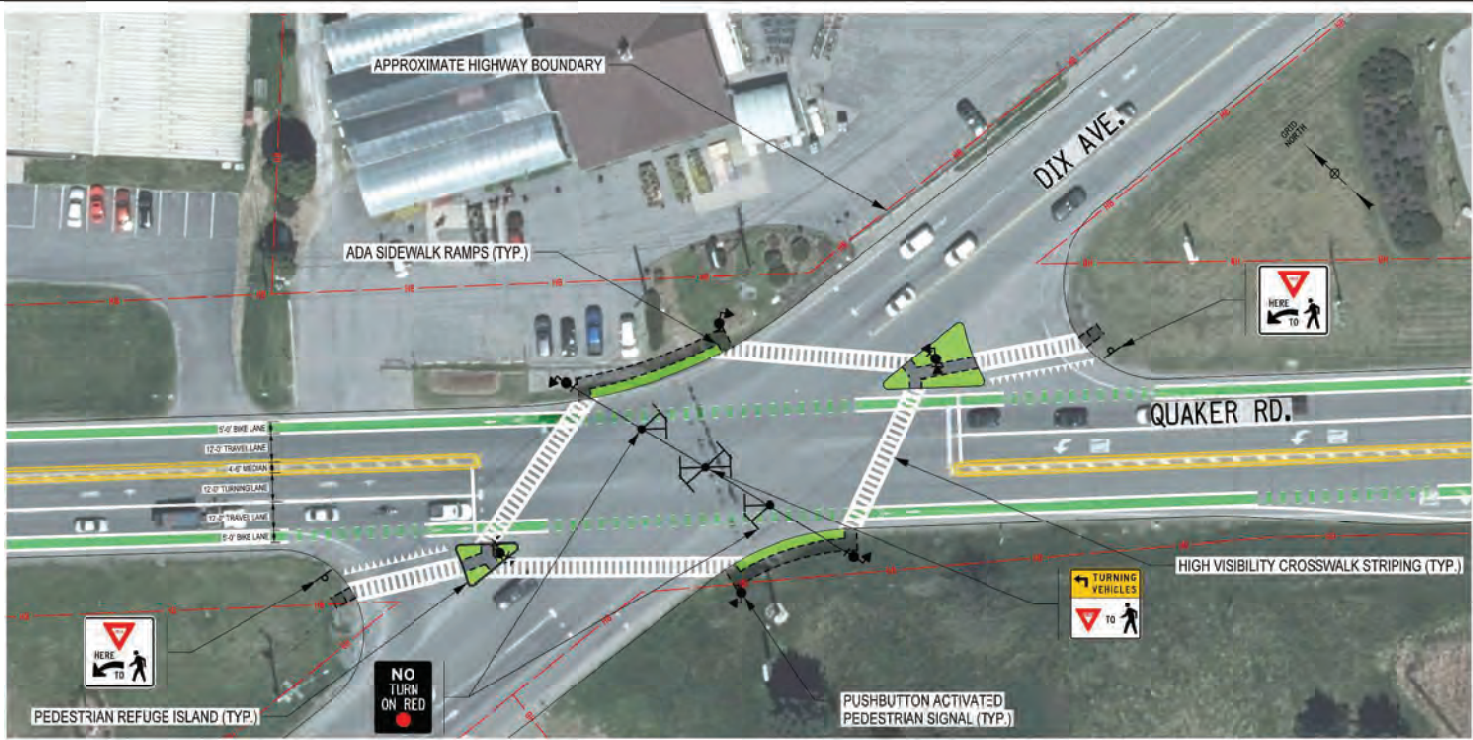
**Quaker Road and Meadowbrook Road**

0 20 40  
HORIZONTAL: 1" = 40 FEET

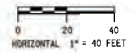
**Barton & Loguidice**  
**AKRF**

JANUARY 2023





**Quaker Road and Dix Avenue**



**Barton & Loguidice**  
**AKRF**  
 JANUARY 2023

Queensbury Adaptive Signal Control Technologies Quaker and Aviation Road Pedestrian and Bicycle Improvements Order-of-Magnitude Cost Estimate					
Description of Work	Cluster 1			Cluster 2	Cluster 3
	Aviation Mall Road (West)	Aviation Mall Road (East)	Glen Street (Route 9)	Meadowbrook Road	Dix Avenue
Curb and Median	\$ 6,000	\$ -	\$ -	\$ -	\$ 22,000
Road Widening for Bike Lanes	\$ 198,000	\$ 269,000	\$ 240,000	\$ 7,000	\$ 20,000
ADA Sidewalk Ramps	\$ 46,000	\$ 46,000	\$ 33,000	\$ 52,000	\$ 78,000
Pedestrian Signals	\$ 33,000	\$ 36,000	\$ 18,000	\$ 55,000	\$ 48,000
Signing and Striping	\$ 30,000	\$ 34,000	\$ 51,000	\$ 45,000	\$ 46,000
<b>Subtotal Work Items =</b>	<b>\$313,000</b>	<b>\$385,000</b>	<b>\$342,000</b>	<b>\$159,000</b>	<b>\$214,000</b>
10% WZTC based on project complexity	\$ 31,300	\$ 38,500	\$ 34,200	\$ 15,900	\$ 21,400
20% for incidentals, inflation, and Contingencies	\$ 62,600	\$ 77,000	\$ 68,400	\$ 31,800	\$ 42,800
4% Mobilization	\$ 12,600	\$ 15,400	\$ 13,700	\$ 6,400	\$ 8,600
<b>Subtotal Construction Cost =</b>	<b>\$419,500</b>	<b>\$515,900</b>	<b>\$458,300</b>	<b>\$213,100</b>	<b>\$286,800</b>
Survey	\$ 12,600	\$ 15,500	\$ 13,800	\$ 6,400	\$ 8,700
Engineering	\$ 42,000	\$ 51,600	\$ 45,900	\$ 21,400	\$ 28,700
Construction Inspection	\$ 63,000	\$ 77,400	\$ 68,800	\$ 32,000	\$ 43,100
<b>Total Project Cost by Intersection</b>	<b>\$537,100</b>	<b>\$660,400</b>	<b>\$586,800</b>	<b>\$272,900</b>	<b>\$367,300</b>
<b>Total Project Cost by Signal Clusters</b>	<b>\$1,784,300</b>			<b>\$272,900</b>	<b>\$367,300</b>
<b>Total Project Cost</b>	<b>\$2,424,500</b>				



Intersection of Aviation & Aviation Mall Road (West)							
DESCRIPTION OF WORK	ROUNDED	EST. COST	ITEM #	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE COST
Curb and Median	\$6,000	\$5,995	203.02	UNCLASSIFIED EXCAVATION AND DISPOSAL	35.00	CY	\$ 45.00 \$ 1,575.00
			304.12	SUBBASE COURSE, TYPE 2	40.00	CY	\$ 80.00 \$ 3,200.00
			610.1401	TOPSOIL - REUSE ON-SITE MATERIALS	12.00	CY	\$ 60.00 \$ 720.00
			610.1602	TURF ESTABLISHMENT - LAWNS	100.00	SY	\$ 5.00 \$ 500.00
			#N/A		#N/A		\$ -
Road Widening for Bike Lanes	\$198,000	\$197,595	609.0201	STONE CURB, GRANITE, (TYPE A)	810.00	LF	\$ 80.00 \$ 64,800.00
SIDEWALK			#N/A		#N/A		\$ -
			203.02	UNCLASSIFIED EXCAVATION AND DISPOSAL	150.00	CY	\$ 45.00 \$ 6,750.00
			304.12	SUBBASE COURSE, TYPE 2	90.00	CY	\$ 80.00 \$ 7,200.00
BUFFER			608.0101	CONCRETE SIDEWALKS AND DRIVEWAYS	50.00	CY	\$ 1,000.00 \$ 50,000.00
			#N/A		#N/A		\$ -
FULL DEPTH			203.02	UNCLASSIFIED EXCAVATION AND DISPOSAL	40.00	CY	\$ 45.00 \$ 1,800.00
			610.14	TOPSOIL - REUSE ON-SITE MATERIALS	40.00	CY	\$ 80.00 \$ 3,200.00
			610.1602	TURF ESTABLISHMENT - LAWNS	360.00	SY	\$ 2.00 \$ 720.00
			#N/A		#N/A		\$ -
			203.02	UNCLASSIFIED EXCAVATION AND DISPOSAL	277.78	CY	\$ 45.00 \$ 12,500.00
Drainage Structure			404.098304	9.5 F3 TOP COURSE WMA, 80 SERIES COMPACTION	36.36	TON	\$ 150.00 \$ 5,453.84
			404.198904	19 F9 BINDER COURSE WMA, 80 SERIES COMPACTION	73.97	TON	\$ 130.00 \$ 9,615.62
			404.378904	37.5 F9 BASE COURSE WMA, 80 SERIES COMPACTION	112.82	TON	\$ 130.00 \$ 14,666.86
			304.12	SUBBASE COURSE, TYPE 2	111.11	CY	\$ 80.00 \$ 8,888.89
			#N/A		#N/A		\$ -
ADA Sidewalk Ramps	\$46,000	\$45,500	#N/A		#N/A		\$ -
Pedestrian Signals	\$33,000	\$32,732	#N/A		#N/A		\$ -
			206.03	CONDUIT EXCAVATION AND BACKFILL INCLUDING SURFACE RESTORATION	150.00	LF	\$ 60.00 \$ 9,000.00
			680.520606	TRAFFIC SIGNAL CONDUIT, RIGID PLASTIC, CLASS 2, 2"	150.00	LF	\$ 4.00 \$ 600.00
			680.730514	SIGNAL CABLE 5 CONDUCTORS, 14 AWG	1160.00	LF	\$ 4.20 \$ 4,872.00
			#N/A		#N/A		\$ -
			680.5001	POLE EXCAVATION AND CONCRETE FOUNDATION	2.20	CY	\$ 1,500.00 \$ 3,300.00
			680.6708	TRAFFIC SIGNAL POLE POST TOP MOUNT, 8 FEET MOUNTING HEIGHT	2.00	EACH	\$ 1,000.00 \$ 2,000.00
			680.813103	PEDESTRIAN SIGNAL SECTION - TYPE I, 12 INCH	16.00	EACH	\$ 165.00 \$ 2,640.00
			680.813105	PEDESTRIAN SIGNAL MODULE - 12 INCH BI-MODAL, HAND/MAN SYMBOLS LED	8.00	EACH	\$ 250.00 \$ 2,000.00
			680.8141	PEDESTRIAN SIGNAL BRACKET MOUNT ASSEMBLY	4.00	EACH	\$ 200.00 \$ 800.00
			680.8142	PEDESTRIAN SIGNAL POST TOP MOUNT ASSEMBLY	4.00	EACH	\$ 180.00 \$ 720.00
			680.81500010	PEDESTRIAN COUNT-DOWN TIMER MODULE	8.00	EACH	\$ 200.00 \$ 1,600.00
			680.82201908	BREAKAWAY TRANSFORMER BASE (TRAFFIC)	2.00	EACH	\$ 500.00 \$ 1,000.00
			680.8225	PEDESTRIAN PUSHBUTTON AND SIGN - WITHOUT POST	4.00	EACH	\$ 250.00 \$ 1,000.00
			680.8226	PEDESTRIAN PUSHBUTTON AND SIGN - WITH POST	4.00	EACH	\$ 800.00 \$ 3,200.00
Signing and Striping	\$30,000	\$29,960	#N/A		#N/A		\$ -
WORK ZONE TRAFFIC CONTROL:	\$0		#N/A		#N/A		\$ -
			#N/A		#N/A		\$ -
			#N/A		#N/A		\$ -
			#N/A		#N/A		\$ -
			#N/A		#N/A		\$ -
			#N/A		#N/A		\$ -
			#N/A		#N/A		\$ -
			#N/A		#N/A		\$ -
TOTAL	\$313,000						

Intersection of Aviation & Aviation Mall Road (East)							
DESCRIPTION OF WORK	ROUNDED	EST. COST	ITEM #	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE COST
CURB & MEDIAN RELOCATION	\$0	\$0	203.02	UNCLASSIFIED EXCAVATION AND DISPOSAL	CY	\$	45.00 \$ -
			304.12	SUBBASE COURSE, TYPE 2	CY	\$	80.00 \$ -
			610.1401	TOPSOIL - REUSE ON-SITE MATERIALS	CY	\$	60.00 \$ -
			610.1602	TURF ESTABLISHMENT - LAWNS	SY	\$	5.00 \$ -
			#N/A		#N/A		\$
ROAD WIDENING FOR BIKE LANES	\$269,000	\$268,941	609.0201	STONE CURB, GRANITE, (TYPE A)	975.00	LF	\$ 80.00 \$ 78,000.00
SIDEWALK			#N/A		#N/A		\$ -
			203.02	UNCLASSIFIED EXCAVATION AND DISPOSAL	180.56	CY	\$ 45.00 \$ 8,125.00
			304.12	SUBBASE COURSE, TYPE 2	108.33	CY	\$ 80.00 \$ 8,666.67
BUFFER			608.0101	CONCRETE SIDEWALKS AND DRIVEWAYS	60.19	CY	\$ 1,000.00 \$ 60,185.19
			#N/A		#N/A		\$ -
FULL DEPTH			203.02	UNCLASSIFIED EXCAVATION AND DISPOSAL	48.15	CY	\$ 45.00 \$ 2,166.67
			610.14	TOPSOIL - REUSE ON-SITE MATERIALS	48.15	CY	\$ 80.00 \$ 3,851.85
			610.1602	TURF ESTABLISHMENT - LAWNS	433.33	SY	\$ 2.00 \$ 866.67
Drainage Structure			#N/A		#N/A		\$ -
			203.02	UNCLASSIFIED EXCAVATION AND DISPOSAL	451.39	CY	\$ 45.00 \$ 20,312.50
			404.098304	9.5 F3 TOP COURSE WMA, 80 SERIES COMPACTION	59.08	TON	\$ 150.00 \$ 8,862.50
			404.198904	19 F9 BINDER COURSE WMA, 80 SERIES COMPACTION	120.20	TON	\$ 130.00 \$ 15,625.38
			404.378904	37.5 F9 BASE COURSE WMA, 80 SERIES COMPACTION	183.34	TON	\$ 130.00 \$ 23,833.65
ADA SIDEWALK RAMPS	\$46,000	\$45,500	304.12	SUBBASE COURSE, TYPE 2	180.56	CY	\$ 80.00 \$ 14,444.44
PEDESTRIAN SIGNALS	\$36,000	\$35,156	#N/A		#N/A		\$ -
			206.03	CONDUIT EXCAVATION AND BACKFILL INCLUDING SURFACE RESTORATION	180.00	LF	\$ 60.00 \$ 10,800.00
SIGNING & STRIPING	\$34,000	\$33,540	680.520606	TRAFFIC SIGNAL CONDUIT, RIGID PLASTIC, CLASS 2, 2"	180.00	LF	\$ 4.00 \$ 720.00
			680.730514	SIGNAL CABLE 5 CONDUCTORS, 14 AWG	1280.00	LF	\$ 4.20 \$ 5,376.00
			#N/A		#N/A		\$ -
			680.5001	POLE EXCAVATION AND CONCRETE FOUNDATION	2.20	CY	\$ 1,500.00 \$ 3,300.00
			680.6708	TRAFFIC SIGNAL POLE POST TOP MOUNT, 8 FEET MOUNTING HEIGHT	2.00	EACH	\$ 1,000.00 \$ 2,000.00
			680.813103	PEDESTRIAN SIGNAL SECTION - TYPE I, 12 INCH	16.00	EACH	\$ 165.00 \$ 2,640.00
			680.813105	PEDESTRIAN SIGNAL MODULE - 12 INCH BI-MODAL, HAND/MAN SYMBOLS LED	8.00	EACH	\$ 250.00 \$ 2,000.00
			680.8141	PEDESTRIAN SIGNAL BRACKET MOUNT ASSEMBLY	4.00	EACH	\$ 200.00 \$ 800.00
			680.8142	PEDESTRIAN SIGNAL POST TOP MOUNT ASSEMBLY	4.00	EACH	\$ 180.00 \$ 720.00
			680.81500010	PEDESTRIAN COUNT-DOWN TIMER MODULE	8.00	EACH	\$ 200.00 \$ 1,600.00
			680.82201908	BREAKAWAY TRANSFORMER BASE (TRAFFIC)	2.00	EACH	\$ 500.00 \$ 1,000.00
			680.8225	PEDESTRIAN PUSHBUTTON AND SIGN - WITHOUT POST	4.00	EACH	\$ 250.00 \$ 1,000.00
			680.8226	PEDESTRIAN PUSHBUTTON AND SIGN - WITH POST	4.00	EACH	\$ 800.00 \$ 3,200.00
			#N/A		#N/A		\$ -
			685.01	WHITE EPOXY REFLECTORIZED PAVEMENT STRIPES - 15 MILS	2800.00	LF	\$ 3.00 \$ 8,400.00
685.02	YELLOW EPOXY REFLECTORIZED PAVEMENT STRIPES-15 MILS	3000.00	LF	\$ 3.00 \$ 9,000.00			
685.03	WHITE EPOXY REFLECTORIZED PAVEMENT LETTERS - 15 MILS	32.00	EACH	\$ 40.00 \$ 1,280.00			
685.04	WHITE EPOXY REFLECTORIZED PAVEMENT SYMBOLS - 15 MILS	10.00	EACH	\$ 90.00 \$ 900.00			
NTOR		#N/A		\$ -			
680.730314	SIGNAL CABLE 3 CONDUCTORS, 14 AWG	240.00	LF	\$ 4.00 \$ 960.00			
680.8210	OVERHEAD SIGN ASSEMBLY, TYPE J	3.00	EACH	\$ 1,000.00 \$ 3,000.00			
WORK ZONE TRAFFIC CONTROL:	\$0		#N/A		#N/A		\$ -
			#N/A		#N/A		\$ -
			#N/A		#N/A		\$ -
			#N/A		#N/A		\$ -
			#N/A		#N/A		\$ -
			#N/A		#N/A		\$ -
TOTAL	\$385,000						\$ -

Intersection of Aviation & Glen Street/Route 9							
DESCRIPTION OF WORK	ROUNDED	EST. COST	ITEM #	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE COST
CURB & MEDIAN	\$0	\$0	203.02	UNCLASSIFIED EXCAVATION AND DISPOSAL		CY	\$ 45.00 \$ -
			304.12	SUBBASE COURSE, TYPE 2		CY	\$ 80.00 \$ -
			610.1401	TOPSOIL - REUSE ON-SITE MATERIALS		CY	\$ 60.00 \$ -
			610.1602	TURF ESTABLISHMENT - LAWNS		SY	\$ 5.00 \$ -
				#N/A		#N/A	
ROAD WIDENING FOR BIKE LANES	\$240,000	\$239,888	609.0201	STONE CURB, GRANITE, (TYPE A)	800.00	LF	\$ 80.00 \$ 64,000.00
				#N/A			\$ -
SIDEWALK			203.02	UNCLASSIFIED EXCAVATION AND DISPOSAL	148.15	CY	\$ 45.00 \$ 6,666.67
			304.12	SUBBASE COURSE, TYPE 2	88.89	CY	\$ 80.00 \$ 7,111.11
			608.0101	CONCRETE SIDEWALKS AND DRIVEWAYS	49.38	CY	\$ 1,000.00 \$ 49,382.72
							\$ -
BUFFER			203.02	UNCLASSIFIED EXCAVATION AND DISPOSAL	39.51	CY	\$ 45.00 \$ 1,777.78
			610.14	TOPSOIL - REUSE ON-SITE MATERIALS	39.51	CY	\$ 80.00 \$ 3,160.49
			610.1602	TURF ESTABLISHMENT - LAWNS	355.56	SY	\$ 2.00 \$ 711.11
							\$ -
FULL DEPTH				#N/A			\$ -
			203.02	UNCLASSIFIED EXCAVATION AND DISPOSAL	451.39	CY	\$ 45.00 \$ 20,312.50
			404.098304	9.5 F3 TOP COURSE WMA, 80 SERIES COMPACTION	59.08	TON	\$ 150.00 \$ 8,862.50
			404.198904	19 F9 BINDER COURSE WMA, 80 SERIES COMPACTION	120.20	TON	\$ 130.00 \$ 15,625.38
			404.378904	37.5 F9 BASE COURSE WMA, 80 SERIES COMPACTION	183.34	TON	\$ 130.00 \$ 23,833.65
			304.12	SUBBASE COURSE, TYPE 2	180.56	CY	\$ 80.00 \$ 14,444.44
							\$ -
Drainage Structure					2.00	EACH	\$ 12,000.00 \$ 24,000.00
				#N/A			\$ -
ADA SIDEWALK RAMPS	\$33,000	\$32,500					\$ -
							\$ -
					5.00	EACH	\$ 6,500.00 \$ 32,500.00
							\$ -
PEDESTRIAN SIGNALS	\$18,000	\$17,878					\$ -
							\$ -
			206.03	CONDUIT EXCAVATION AND BACKFILL INCLUDING SURFACE RESTORATION		LF	\$ 60.00 \$ -
			680.520606	TRAFFIC SIGNAL CONDUIT, RIGID PLASTIC, CLASS 2, 2"		LF	\$ 4.00 \$ -
			680.730514	SIGNAL CABLE 5 CONDUCTORS, 14 AWG	1390.00	LF	\$ 4.20 \$ 5,838.00
				#N/A			\$ -
			680.5001	POLE EXCAVATION AND CONCRETE FOUNDATION		CY	\$ 1,500.00 \$ -
			680.6708	TRAFFIC SIGNAL POLE POST TOP MOUNT, 8 FEET MOUNTING HEIGHT		EACH	\$ 1,000.00 \$ -
			680.813103	PEDESTRIAN SIGNAL SECTION - TYPE I, 12 INCH	16.00	EACH	\$ 165.00 \$ 2,640.00
			680.813105	PEDESTRIAN SIGNAL MODULE - 12 INCH BI-MODAL, HAND/MAN SYMBOLS LED	8.00	EACH	\$ 250.00 \$ 2,000.00
			680.8141	PEDESTRIAN SIGNAL BRACKET MOUNT ASSEMBLY	8.00	EACH	\$ 200.00 \$ 1,600.00
			680.8142	PEDESTRIAN SIGNAL POST TOP MOUNT ASSEMBLY	0.00	EACH	\$ 180.00 \$ -
			680.81500010	PEDESTRIAN COUNT-DOWN TIMER MODULE	8.00	EACH	\$ 200.00 \$ 1,600.00
			680.82201908	BREAKAWAY TRANSFORMER BASE (TRAFFIC)	0.00	EACH	\$ 500.00 \$ -
			680.8225	PEDESTRIAN PUSHBUTTON AND SIGN - WITHOUT POST	4.00	EACH	\$ 250.00 \$ 1,000.00
			680.8226	PEDESTRIAN PUSHBUTTON AND SIGN - WITH POST	4.00	EACH	\$ 800.00 \$ 3,200.00
				#N/A			\$ -
SIGNING & STRIPING	\$51,000	\$50,920					\$ -
							\$ -
			685.01	WHITE EPOXY REFLECTORIZED PAVEMENT STRIPES - 15 MILS	3500.00	LF	\$ 3.00 \$ 10,500.00
			685.02	YELLOW EPOXY REFLECTORIZED PAVEMENT STRIPES-15 MILS	2600.00	LF	\$ 3.00 \$ 7,800.00
			685.03	WHITE EPOXY REFLECTORIZED PAVEMENT LETTERS - 15 MILS	92.00	EACH	\$ 40.00 \$ 3,680.00
			685.04	WHITE EPOXY REFLECTORIZED PAVEMENT SYMBOLS - 15 MILS	28.00	EACH	\$ 90.00 \$ 2,520.00
				NTOR	4.00	EACH	\$ 5,000.00 \$ 20,000.00
				#N/A			\$ -
			680.730314	SIGNAL CABLE 3 CONDUCTORS, 14 AWG	605.00	LF	\$ 4.00 \$ 2,420.00
			680.8210	OVERHEAD SIGN ASSEMBLY, TYPE J	4.00	EACH	\$ 1,000.00 \$ 4,000.00
WORK ZONE TRAFFIC CONTROL:	\$0						\$ -
							\$ -
							\$ -
							\$ -
							\$ -
							\$ -
TOTAL	\$342,000						\$ -

Intersection of Quaker & Meadowbrook Road							
DESCRIPTION OF WORK	ROUNDED	EST. COST	ITEM #	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE COST
CURB & MEDIAN	\$0	\$0	203.02	UNCLASSIFIED EXCAVATION AND DISPOSAL		CY	\$ 45.00 \$ -
			304.12	SUBBASE COURSE, TYPE 2		CY	\$ 80.00 \$ -
			610.1401	TOPSOIL - REUSE ON-SITE MATERIALS		CY	\$ 60.00 \$ -
			610.1602	TURF ESTABLISHMENT - LAWNS		SY	\$ 5.00 \$ -
				#N/A		#N/A	
ROAD WIDENING FOR BIKE LANES	\$7,000	\$6,881	609.0201	STONE CURB, GRANITE, (TYPE A)		LF	\$ 80.00 \$ -
				#N/A		#N/A	\$ -
SIDEWALK			203.02	UNCLASSIFIED EXCAVATION AND DISPOSAL	14.81	CY	\$ 45.00 \$ 666.67
			304.12	SUBBASE COURSE, TYPE 2	8.89	CY	\$ 80.00 \$ 711.11
			608.0101	CONCRETE SIDEWALKS AND DRIVEWAYS	4.94	CY	\$ 1,000.00 \$ 4,938.27
							\$ -
BUFFER			203.02	UNCLASSIFIED EXCAVATION AND DISPOSAL	3.95	CY	\$ 45.00 \$ 177.78
			610.14	TOPSOIL - REUSE ON-SITE MATERIALS	3.95	CY	\$ 80.00 \$ 316.05
			610.1602	TURF ESTABLISHMENT - LAWNS	35.56	SY	\$ 2.00 \$ 71.11
							\$ -
FULL DEPTH				#N/A		#N/A	\$ -
			203.02	UNCLASSIFIED EXCAVATION AND DISPOSAL		CY	\$ 45.00 \$ -
			404.098304	9.5 F3 TOP COURSE WMA, 80 SERIES COMPACTION		TON	\$ 150.00 \$ -
			404.198904	19 F9 BINDER COURSE WMA, 80 SERIES COMPACTION		TON	\$ 130.00 \$ -
			404.378904	37.5 F9 BASE COURSE WMA, 80 SERIES COMPACTION		TON	\$ 130.00 \$ -
			304.12	SUBBASE COURSE, TYPE 2		CY	\$ 80.00 \$ -
Drainage Structure				#N/A		EACH	\$ 12,000.00 \$ -
				#N/A		#N/A	\$ -
ADA SIDEWALK RAMPS	\$52,000	\$52,000		#N/A		#N/A	\$ -
				#N/A		8.00	EACH \$ 6,500.00 \$ 52,000.00
				#N/A		#N/A	\$ -
PEDESTRIAN SIGNALS	\$55,000	\$54,571		#N/A		#N/A	\$ -
			206.03	CONDUIT EXCAVATION AND BACKFILL INCLUDING SURFACE RESTORATION	310.00	LF	\$ 60.00 \$ 18,600.00
			680.520606	TRAFFIC SIGNAL CONDUIT, RIGID PLASTIC, CLASS 2, 2"	310.00	LF	\$ 4.00 \$ 1,240.00
			680.730514	SIGNAL CABLE 5 CONDUCTORS, 14 AWG	1455.00	LF	\$ 4.20 \$ 6,111.00
				#N/A		#N/A	\$ -
			680.5001	POLE EXCAVATION AND CONCRETE FOUNDATION	6.60	CY	\$ 1,500.00 \$ 9,900.00
			680.6708	TRAFFIC SIGNAL POLE POST TOP MOUNT, 8 FEET MOUNTING HEIGHT	6.00	EACH	\$ 1,000.00 \$ 6,000.00
			680.813103	PEDESTRIAN SIGNAL SECTION - TYPE I, 12 INCH	16.00	EACH	\$ 165.00 \$ 2,640.00
			680.813105	PEDESTRIAN SIGNAL MODULE - 12 INCH BI-MODAL, HAND/MAN SYMBOLS LED	8.00	EACH	\$ 250.00 \$ 2,000.00
			680.8141	PEDESTRIAN SIGNAL BRACKET MOUNT ASSEMBLY	2.00	EACH	\$ 200.00 \$ 400.00
			680.8142	PEDESTRIAN SIGNAL POST TOP MOUNT ASSEMBLY	6.00	EACH	\$ 180.00 \$ 1,080.00
			680.81500010	PEDESTRIAN COUNT-DOWN TIMER MODULE	8.00	EACH	\$ 200.00 \$ 1,600.00
			680.82201908	BREAKAWAY TRANSFORMER BASE (TRAFFIC)	6.00	EACH	\$ 500.00 \$ 3,000.00
			680.8225	PEDESTRIAN PUSHBUTTON AND SIGN - WITHOUT POST	8.00	EACH	\$ 250.00 \$ 2,000.00
			680.8226	PEDESTRIAN PUSHBUTTON AND SIGN - WITH POST		EACH	\$ 800.00 \$ -
				#N/A		#N/A	\$ -
SIGNING & STRIPING	\$45,000	\$44,100				LF	\$ -
			685.01	WHITE EPOXY REFLECTORIZED PAVEMENT STRIPES - 15 MILS	2600.00	LF	\$ 3.00 \$ 7,800.00
			685.02	YELLOW EPOXY REFLECTORIZED PAVEMENT STRIPES-15 MILS	2960.00	LF	\$ 3.00 \$ 8,880.00
			685.03	WHITE EPOXY REFLECTORIZED PAVEMENT LETTERS - 15 MILS	16.00	EACH	\$ 40.00 \$ 640.00
			685.04	WHITE EPOXY REFLECTORIZED PAVEMENT SYMBOLS - 15 MILS	6.00	EACH	\$ 90.00 \$ 540.00
				NTOR		4.00	EACH \$ 5,000.00 \$ 20,000.00
			680.730314	SIGNAL CABLE 3 CONDUCTORS, 14 AWG	560.00	LF	\$ 4.00 \$ 2,240.00
			680.8210	OVERHEAD SIGN ASSEMBLY, TYPE J	4.00	EACH	\$ 1,000.00 \$ 4,000.00
WORK ZONE TRAFFIC CONTROL:	\$0			#N/A		#N/A	\$ -
				#N/A		#N/A	\$ -
				#N/A		#N/A	\$ -
				#N/A		#N/A	\$ -
				#N/A		#N/A	\$ -
				#N/A		#N/A	\$ -
TOTAL	\$159,000						

Intersection of Quaker Road & Dix Avenue									
DESCRIPTION OF WORK	ROUNDED	EST. COST	ITEM #	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE COST		
CURB & MEDIAN	\$22,000	\$21,195	203.02	UNCLASSIFIED EXCAVATION AND DISPOSAL	35.00	CY	\$ 45.00 \$ 1,575.00		
			304.12	SUBBASE COURSE, TYPE 2	40.00	CY	\$ 80.00 \$ 3,200.00		
			610.1401	TOPSOIL - REUSE ON-SITE MATERIALS	12.00	CY	\$ 60.00 \$ 720.00		
			610.1602	TURF ESTABLISHMENT - LAWNS	100.00	SY	\$ 5.00 \$ 500.00		
			609.0201	STONE CURB, GRANITE, (TYPE A)	190.00	LF	\$ 80.00 \$ 15,200.00		
				#N/A			\$ -		
ROAD WIDENING FOR BIKE LANES	\$20,000	\$19,296	609.0201	STONE CURB, GRANITE, (TYPE A)		LF	\$ 80.00 \$ -		
				#N/A			\$ -		
SIDEWALK			203.02	UNCLASSIFIED EXCAVATION AND DISPOSAL	40.00	CY	\$ 45.00 \$ 1,800.00		
			304.12	SUBBASE COURSE, TYPE 2	25.00	CY	\$ 80.00 \$ 2,000.00		
			608.0101	CONCRETE SIDEWALKS AND DRIVEWAYS	14.00	CY	\$ 1,000.00 \$ 14,000.00		
							\$ -		
BUFFER			203.02	UNCLASSIFIED EXCAVATION AND DISPOSAL	10.37	CY	\$ 45.00 \$ 466.67		
			610.14	TOPSOIL - REUSE ON-SITE MATERIALS	10.37	CY	\$ 80.00 \$ 829.63		
			610.1602	TURF ESTABLISHMENT - LAWNS	100.00	SY	\$ 2.00 \$ 200.00		
				#N/A			\$ -		
FULL DEPTH			203.02	UNCLASSIFIED EXCAVATION AND DISPOSAL		CY	\$ 45.00 \$ -		
			404.098304	9.5 F3 TOP COURSE WMA, 80 SERIES COMPACTION		TON	\$ 150.00 \$ -		
			404.198904	19 F9 BINDER COURSE WMA, 80 SERIES COMPACTION		TON	\$ 130.00 \$ -		
			404.378904	37.5 F9 BASE COURSE WMA, 80 SERIES COMPACTION		TON	\$ 130.00 \$ -		
			304.12	SUBBASE COURSE, TYPE 2		CY	\$ 80.00 \$ -		
							\$ -		
Drainage Structure						EACH	\$ 12,000.00 \$ -		
						#N/A		\$ -	
ADA SIDEWALK RAMPS	\$78,000	\$78,000				#N/A	\$ -		
						#N/A	\$ -		
					12.00	EACH	\$ 6,500.00 \$ 78,000.00		
						#N/A	\$ -		
PEDESTRIAN SIGNALS	\$48,000	\$47,710					#N/A	\$ -	
			206.03	CONDUIT EXCAVATION AND BACKFILL INCLUDING SURFACE RESTORATION	340.00	LF	\$ 60.00 \$ 20,400.00		
			680.520606	TRAFFIC SIGNAL CONDUIT, RIGID PLASTIC, CLASS 2, 2"	340.00	LF	\$ 4.00 \$ 1,360.00		
			680.730514	SIGNAL CABLE 5 CONDUCTORS, 14 AWG	950.00	LF	\$ 4.20 \$ 3,990.00		
				#N/A					\$ -
			680.5001	POLE EXCAVATION AND CONCRETE FOUNDATION	4.40	CY	\$ 1,500.00 \$ 6,600.00		
			680.6708	TRAFFIC SIGNAL POLE POST TOP MOUNT, 8 FEET MOUNTING HEIGHT	4.00	EACH	\$ 1,000.00 \$ 4,000.00		
			680.813103	PEDESTRIAN SIGNAL SECTION - TYPE I, 12 INCH	16.00	EACH	\$ 165.00 \$ 2,640.00		
			680.813105	PEDESTRIAN SIGNAL MODULE - 12 INCH BI-MODAL, HAND/MAN SYMBOLS LED	8.00	EACH	\$ 250.00 \$ 2,000.00		
			680.8141	PEDESTRIAN SIGNAL BRACKET MOUNT ASSEMBLY	2.00	EACH	\$ 200.00 \$ 400.00		
			680.8142	PEDESTRIAN SIGNAL POST TOP MOUNT ASSEMBLY	4.00	EACH	\$ 180.00 \$ 720.00		
			680.81500010	PEDESTRIAN COUNT-DOWN TIMER MODULE	8.00	EACH	\$ 200.00 \$ 1,600.00		
			680.82201908	BREAKAWAY TRANSFORMER BASE (TRAFFIC)	4.00	EACH	\$ 500.00 \$ 2,000.00		
			680.8225	PEDESTRIAN PUSHBUTTON AND SIGN - WITHOUT POST	8.00	EACH	\$ 250.00 \$ 2,000.00		
			680.8226	PEDESTRIAN PUSHBUTTON AND SIGN - WITH POST		EACH	\$ 800.00 \$ -		
	#N/A					\$ -			
SIGNING & STRIPING	\$46,000	\$45,920				LF	\$ -		
			685.01	WHITE EPOXY REFLECTORIZED PAVEMENT STRIPES - 15 MILS	3000.00	LF	\$ 3.00 \$ 9,000.00		
			685.02	YELLOW EPOXY REFLECTORIZED PAVEMENT STRIPES-15 MILS	3360.00	LF	\$ 3.00 \$ 10,080.00		
			685.03	WHITE EPOXY REFLECTORIZED PAVEMENT LETTERS - 15 MILS	16.00	EACH	\$ 40.00 \$ 640.00		
			685.04	WHITE EPOXY REFLECTORIZED PAVEMENT SYMBOLS - 15 MILS	4.00	EACH	\$ 90.00 \$ 360.00		
				#N/A			\$ -		
			680.730314	SIGNAL CABLE 3 CONDUCTORS, 14 AWG	460.00	LF	\$ 4.00 \$ 1,840.00		
			680.8210	OVERHEAD SIGN ASSEMBLY, TYPE J	4.00	EACH	\$ 1,000.00 \$ 4,000.00		
WORK ZONE TRAFFIC CONTROL:	\$0			#N/A		#N/A	\$ -		
				#N/A		#N/A	\$ -		
				#N/A		#N/A	\$ -		
				#N/A		#N/A	\$ -		
				#N/A		#N/A	\$ -		
				#N/A		#N/A	\$ -		
TOTAL	\$214,000						\$ -		

# **Appendix D. Coordinated Signal Timing System Conditions Simulation**

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Summary of All Intervals

Run Number	1	10	2	3	4	5	6
Start Time	7:00	7:00	7:00	7:00	7:00	7:00	7:00
End Time	8:10	8:10	8:10	8:10	8:10	8:10	8:10
Total Time (min)	70	70	70	70	70	70	70
Time Recorded (min)	55	55	55	55	55	55	55
# of Intervals	5	5	5	5	5	5	5
# of Recorded mScheduledIntervals	4	4	4	4	4	4	4
Vehs Entered	3598	3653	3545	3524	3475	3529	3478
Vehs Exited	3627	3651	3522	3553	3492	3562	3471
Starting Vehs	129	149	92	130	107	147	117
Ending Vehs	100	151	115	101	90	114	124
Denied Entry Before	0	0	0	1	1	1	1
Travel Distance (mi)	2140	2179	2080	2046	2050	2086	2017
Travel Time (hr)	123.1	125.6	119.1	117.3	115.4	119.4	112.3
Total Delay (hr)	53.9	55.0	52.1	50.9	49.0	51.9	47.0
Total Stops	5310	5472	5184	5162	5018	5087	4832
Fuel Used (gal)	95.0	95.8	91.8	90.6	89.8	92.5	88.1

Summary of All Intervals

Run Number	7	8	9	Avg
Start Time	7:00	7:00	7:00	7:00
End Time	8:10	8:10	8:10	8:10
Total Time (min)	70	70	70	70
Time Recorded (min)	55	55	55	55
# of Intervals	5	5	5	5
# of Recorded mScheduledIntervals	4	4	4	4
Vehs Entered	3596	3444	3619	3544
Vehs Exited	3602	3464	3616	3556
Starting Vehs	121	126	105	122
Ending Vehs	115	106	108	112
Denied Entry Before	0	1	1	0
Travel Distance (mi)	2121	2037	2160	2092
Travel Time (hr)	120.6	115.1	123.9	119.2
Total Delay (hr)	52.1	49.5	54.2	51.6
Total Stops	5265	4956	5292	5156
Fuel Used (gal)	93.2	89.7	95.8	92.2

Interval #0 Information Seeding

Start Time	7:00
End Time	7:15
Total Time (min)	15
Volumes adjusted by Growth Factors.	
No data recorded this interval.	

Interval #1 Information Recording

Start Time	7:15
End Time	7:30
Total Time (min)	15
Volumes adjusted by Growth Factors, Anti PHF.	

Run Number	1	10	2	3	4	5	6
Vehs Entered	892	916	904	896	868	859	858
Vehs Exited	895	928	884	903	857	886	856
Starting Vehs	129	149	92	130	107	147	117
Ending Vehs	126	137	112	123	118	120	119
Denied Entry Before	0	0	0	1	1	1	1
Travel Distance (mi)	533	534	517	532	522	528	514
Travel Time (hr)	29.2	30.0	30.1	29.4	29.8	29.4	27.5
Total Delay (hr)	11.9	12.7	13.3	12.2	12.9	12.3	10.9
Total Stops	1266	1310	1304	1276	1319	1233	1175
Fuel Used (gal)	23.0	23.1	23.0	23.2	22.9	23.0	22.1

Interval #1 Information Recording

Start Time	7:15
End Time	7:30
Total Time (min)	15
Volumes adjusted by Growth Factors, Anti PHF.	

Run Number	7	8	9	Avg
Vehs Entered	902	847	907	882
Vehs Exited	899	861	897	887
Starting Vehs	121	126	105	122
Ending Vehs	124	112	115	114
Denied Entry Before	0	1	1	0
Travel Distance (mi)	545	510	540	528
Travel Time (hr)	29.9	27.4	29.1	29.2
Total Delay (hr)	12.3	11.0	11.7	12.1
Total Stops	1295	1169	1224	1257
Fuel Used (gal)	23.4	22.1	23.2	22.9



Interval #2 Information Recording

Start Time	7:30
End Time	7:45
Total Time (min)	15
Volumes adjusted by Growth Factors, Anti PHF.	

Run Number	1	10	2	3	4	5	6
Vehs Entered	956	912	888	869	881	928	874
Vehs Exited	951	921	858	887	892	927	881
Starting Vehs	126	137	112	123	118	120	119
Ending Vehs	131	128	142	105	107	121	112
Denied Entry Before	0	2	1	1	0	1	0
Travel Distance (mi)	570	560	552	510	533	557	513
Travel Time (hr)	32.8	32.2	30.3	28.3	28.5	30.5	27.6
Total Delay (hr)	14.4	14.0	12.7	11.7	11.2	12.6	10.9
Total Stops	1447	1380	1317	1250	1226	1317	1184
Fuel Used (gal)	25.3	24.7	23.9	22.3	22.8	24.2	22.2

Interval #2 Information Recording

Start Time	7:30
End Time	7:45
Total Time (min)	15
Volumes adjusted by Growth Factors, Anti PHF.	

Run Number	7	8	9	Avg
Vehs Entered	921	882	899	896
Vehs Exited	919	876	888	898
Starting Vehs	124	112	115	114
Ending Vehs	126	118	126	118
Denied Entry Before	0	1	1	0
Travel Distance (mi)	551	522	529	540
Travel Time (hr)	30.9	28.4	28.9	29.8
Total Delay (hr)	13.0	11.6	11.8	12.4
Total Stops	1349	1206	1289	1293
Fuel Used (gal)	24.1	22.6	23.3	23.5

Interval #3 Information Recording

Start Time	7:45
End Time	8:00
Total Time (min)	15
Volumes adjusted by PHF, Growth Factors.	

Run Number	1	10	2	3	4	5	6
Vehs Entered	1161	1192	1135	1186	1137	1155	1161
Vehs Exited	1126	1130	1112	1151	1102	1106	1119
Starting Vehs	131	128	142	105	107	121	112
Ending Vehs	166	190	165	140	142	170	154
Denied Entry Before	1	1	0	1	0	0	0
Travel Distance (mi)	658	671	627	653	629	636	628
Travel Time (hr)	40.0	39.4	37.8	40.2	37.1	38.2	36.8
Total Delay (hr)	18.8	17.6	17.5	19.0	16.7	17.5	16.4
Total Stops	1730	1736	1707	1817	1622	1637	1582
Fuel Used (gal)	30.0	29.6	28.4	29.8	28.1	28.7	28.0

Interval #3 Information Recording

Start Time	7:45
End Time	8:00
Total Time (min)	15
Volumes adjusted by PHF, Growth Factors.	

Run Number	7	8	9	Avg
Vehs Entered	1172	1127	1202	1160
Vehs Exited	1148	1100	1166	1126
Starting Vehs	126	118	126	118
Ending Vehs	150	145	162	154
Denied Entry Before	0	2	1	0
Travel Distance (mi)	642	646	695	648
Travel Time (hr)	39.0	38.9	43.6	39.1
Total Delay (hr)	18.2	18.1	21.2	18.1
Total Stops	1725	1747	1884	1720
Fuel Used (gal)	29.3	29.6	32.0	29.3

Interval #4 Information Recording

Start Time	8:00
End Time	8:10
Total Time (min)	10

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	1	10	2	3	4	5	6
Vehs Entered	589	633	618	573	589	587	585
Vehs Exited	655	672	668	612	641	643	615
Starting Vehs	166	190	165	140	142	170	154
Ending Vehs	100	151	115	101	90	114	124
Denied Entry Before	1	1	0	2	0	1	2
Travel Distance (mi)	379	414	384	352	367	364	362
Travel Time (hr)	21.1	24.0	20.9	19.4	20.1	21.3	20.4
Total Delay (hr)	8.8	10.7	8.6	8.1	8.2	9.5	8.7
Total Stops	867	1046	856	819	851	900	891
Fuel Used (gal)	16.8	18.4	16.5	15.3	15.9	16.5	15.7

Interval #4 Information Recording

Start Time	8:00
End Time	8:10
Total Time (min)	10

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	7	8	9	Avg
Vehs Entered	601	588	611	597
Vehs Exited	636	627	665	641
Starting Vehs	150	145	162	154
Ending Vehs	115	106	108	112
Denied Entry Before	1	3	0	0
Travel Distance (mi)	383	358	396	376
Travel Time (hr)	20.8	20.4	22.2	21.1
Total Delay (hr)	8.5	8.8	9.5	8.9
Total Stops	896	834	895	883
Fuel Used (gal)	16.5	15.5	17.3	16.4

1: Cottage Hill Road/School Parking & Aviation Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	3.5	0.7	0.4	0.0	0.0	0.0	0.1	0.2	0.2	0.2	0.2	0.1
Total Delay (hr)	0.5	0.8	0.0	0.0	0.7	0.1	0.0	1.0	0.4	0.7	0.6	0.1
Total Del/Veh (s)	12.0	9.3	6.5	9.4	11.6	9.1	50.9	38.2	23.2	49.8	41.2	4.7
Stop Delay (hr)	0.4	0.5	0.0	0.0	0.4	0.0	0.0	0.8	0.3	0.6	0.5	0.1
Stop Del/Veh (s)	8.9	5.6	4.4	5.1	6.5	5.9	47.7	33.4	20.7	47.7	37.8	4.6
Total Stops	102	106	2	8	70	13	2	69	45	45	42	66
Stop/Veh	0.62	0.36	0.50	0.47	0.34	0.45	1.00	0.77	0.80	0.92	0.84	0.77
Travel Dist (mi)	8.1	14.9	0.2	1.7	20.4	2.9	0.2	9.7	6.0	1.6	1.6	2.9
Travel Time (hr)	1.0	1.3	0.0	0.1	1.3	0.2	0.0	1.3	0.6	0.8	0.6	0.3
Avg Speed (mph)	9	12	12	16	16	15	6	8	10	2	3	10
Fuel Used (gal)	0.4	0.9	0.0	0.1	1.1	0.1	0.0	0.5	0.3	0.2	0.2	0.1
Fuel Eff. (mpg)	18.7	16.4	22.8	19.3	17.8	20.0	18.3	17.8	21.1	7.4	8.3	32.3
HC Emissions (g)	3	10	0	1	15	4	0	3	5	0	1	1
CO Emissions (g)	107	424	2	43	648	115	2	153	133	21	30	19
NOx Emissions (g)	12	37	0	3	54	11	0	12	13	2	3	2
Vehicles Entered	162	296	4	17	203	29	2	89	55	48	50	86
Vehicles Exited	163	296	4	17	203	29	2	90	55	49	50	86
Hourly Exit Rate	178	323	4	19	221	32	2	98	60	53	55	94
Input Volume	172	324	4	17	213	33	2	97	55	55	52	88
% of Volume	104	100	102	109	104	96	96	102	109	97	106	107
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0

1: Cottage Hill Road/School Parking & Aviation Rd Performance by movement

Movement	All
Denied Delay (hr)	0.2
Denied Del/Veh (s)	0.8
Total Delay (hr)	4.8
Total Del/Veh (s)	16.5
Stop Delay (hr)	3.8
Stop Del/Veh (s)	13.0
Total Stops	570
Stop/Veh	0.54
Travel Dist (mi)	70.2
Travel Time (hr)	7.5
Avg Speed (mph)	10
Fuel Used (gal)	4.1
Fuel Eff. (mpg)	17.2
HC Emissions (g)	43
CO Emissions (g)	1698
NOx Emissions (g)	149
Vehicles Entered	1041
Vehicles Exited	1044
Hourly Exit Rate	1139
Input Volume	1112
% of Volume	102
Denied Entry Before	0

2: Church Driveway/School Driveway & Aviation Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBT	SBL	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.2
Denied Del/Veh (s)	0.1	0.0	0.0	0.4	0.1	0.1	0.1	2.7	1.2	0.6
Total Delay (hr)	1.1	1.1	0.0	0.0	1.1	1.3	0.0	2.4	0.0	7.1
Total Del/Veh (s)	37.1	13.5	7.7	19.6	17.3	13.3	43.6	40.9	4.4	20.7
Stop Delay (hr)	1.0	0.8	0.0	0.0	0.5	0.7	0.0	2.3	0.0	5.4
Stop Del/Veh (s)	33.5	9.6	5.5	10.7	8.1	6.8	41.1	40.2	4.6	15.7
Total Stops	91	108	2	1	109	184	2	152	26	675
Stop/Veh	0.83	0.36	0.40	1.00	0.47	0.52	1.00	0.72	0.81	0.54
Travel Dist (mi)	10.8	28.9	0.5	0.1	24.3	38.1	0.0	6.3	1.0	110.1
Travel Time (hr)	1.5	2.0	0.0	0.0	1.8	2.7	0.0	3.0	0.1	11.3
Avg Speed (mph)	7	14	16	11	13	14	2	2	9	10
Fuel Used (gal)	0.7	1.5	0.0	0.0	0.8	1.2	0.0	0.9	0.0	5.2
Fuel Eff. (mpg)	16.2	19.6	24.5	23.5	28.7	31.7	7.5	7.0	23.8	21.3
HC Emissions (g)	4	20	0	0	7	9	0	3	1	45
CO Emissions (g)	210	721	9	1	203	263	0	103	12	1520
NOx Emissions (g)	17	67	1	0	24	32	0	11	1	152
Vehicles Entered	109	296	5	1	227	347	2	209	32	1228
Vehicles Exited	109	296	5	1	228	348	2	209	32	1230
Hourly Exit Rate	119	323	5	1	249	380	2	228	35	1342
Input Volume	118	324	4	1	240	367	2	234	34	1325
% of Volume	100	100	136	109	104	103	96	97	102	101
Denied Entry Before	0	0	0	0	0	0	0	0	0	0

3: Adirondack SB On/Off Ramp & Aviation Rd Performance by movement

Movement	EBT	EBR	WBL	WBT	NBL	NBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.1	0.0	0.0	0.1	0.3	0.1
Total Delay (hr)	1.2	0.5	1.0	0.7	0.5	0.4	4.3
Total Del/Veh (s)	11.5	7.6	13.5	4.7	34.0	6.1	9.1
Stop Delay (hr)	1.0	0.4	0.6	0.3	0.5	0.3	3.0
Stop Del/Veh (s)	8.8	6.0	8.8	1.8	31.6	4.7	6.3
Total Stops	134	94	171	83	41	153	676
Stop/Veh	0.34	0.41	0.65	0.15	0.77	0.66	0.39
Travel Dist (mi)	18.7	11.0	35.4	75.7	3.1	13.8	157.7
Travel Time (hr)	1.9	1.0	2.2	3.0	0.6	1.0	9.8
Avg Speed (mph)	10	11	16	25	5	14	16
Fuel Used (gal)	1.0	0.4	1.5	3.2	0.2	0.5	6.7
Fuel Eff. (mpg)	18.7	29.5	23.9	23.5	15.0	29.4	23.4
HC Emissions (g)	10	3	16	41	1	5	76
CO Emissions (g)	393	76	640	1529	47	187	2870
NOx Emissions (g)	33	9	58	147	3	16	267
Vehicles Entered	389	226	261	556	51	231	1714
Vehicles Exited	389	226	261	556	51	231	1714
Hourly Exit Rate	424	247	285	607	56	252	1870
Input Volume	438	245	294	591	55	247	1869
% of Volume	97	101	97	103	101	102	100
Denied Entry Before	0	0	0	0	0	0	0

4: Aviation Mall Rd/Greenway N & Aviation Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBR	SBL	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.0
Total Delay (hr)	0.1	1.7	0.0	0.1	1.5	0.0	0.3	0.0	0.2	0.0	3.9
Total Del/Veh (s)	53.7	6.4	3.7	50.7	7.2	3.9	43.9	7.9	45.0	11.8	7.8
Stop Delay (hr)	0.1	0.7	0.0	0.1	0.7	0.0	0.3	0.0	0.2	0.0	2.1
Stop Del/Veh (s)	50.3	2.7	0.9	46.4	3.3	1.5	42.4	7.9	42.7	11.3	4.1
Total Stops	5	171	6	4	153	1	21	13	16	4	394
Stop/Veh	1.00	0.18	0.19	1.00	0.20	0.17	0.91	0.87	0.84	0.80	0.22
Travel Dist (mi)	1.1	192.2	6.6	1.1	177.5	1.4	0.6	0.4	1.1	0.3	382.2
Travel Time (hr)	0.1	7.7	0.3	0.1	6.7	0.1	0.3	0.1	0.3	0.0	15.5
Avg Speed (mph)	10	25	24	12	27	26	2	7	4	9	25
Fuel Used (gal)	0.1	7.7	0.2	0.0	5.9	0.0	0.1	0.0	0.1	0.0	14.2
Fuel Eff. (mpg)	20.1	25.0	27.8	24.1	29.9	31.8	7.4	26.7	13.3	25.5	26.9
HC Emissions (g)	0	98	4	0	62	0	0	0	0	0	165
CO Emissions (g)	15	3493	129	7	1832	8	10	1	11	2	5508
NOx Emissions (g)	1	339	13	1	221	1	1	0	1	0	578
Vehicles Entered	5	935	32	4	748	6	23	15	19	5	1792
Vehicles Exited	5	935	32	4	747	6	23	15	19	5	1791
Hourly Exit Rate	5	1020	35	4	815	7	25	16	21	5	1954
Input Volume	5	1023	36	6	808	6	24	18	20	4	1952
% of Volume	103	100	96	70	101	104	104	91	103	128	100
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0

5: Aviation Mall Rd/Starbucks Driveway & Aviation Rd Performance by movement

Movement	EBL	EBT	WBL	WBT	WBR	NBL	NBR	SBL	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0		0.1	0.6	6.1	0.2	0.0
Total Delay (hr)	0.7	2.1	0.3	1.5	0.1	0.0	0.0	0.8	0.0	0.2	5.9
Total Del/Veh (s)	65.1	8.2	54.2	7.6	5.6		11.7	48.5	33.7	25.0	11.3
Stop Delay (hr)	0.7	0.8	0.3	0.8	0.1	0.0	0.1	0.8	0.0	0.2	3.7
Stop Del/Veh (s)	60.6	3.0	51.0	3.9	2.9		12.3	46.7	30.4	24.6	7.0
Total Stops	38	198	21	162	17	0	14	57	1	26	534
Stop/Veh	0.93	0.22	0.95	0.22	0.24		0.93	0.90	1.00	0.93	0.28
Travel Dist (mi)	9.5	211.6	2.7	89.9	8.9	0.0	0.8	1.7	0.0	0.8	325.8
Travel Time (hr)	1.0	8.2	0.4	4.5	0.5	0.0	0.1	0.9	0.0	0.2	15.9
Avg Speed (mph)	9	26	6	20	19	3	9	2	3	3	20
Fuel Used (gal)	0.4	6.9	0.2	4.4	0.4	0.0	0.0	0.3	0.0	0.1	12.7
Fuel Eff. (mpg)	21.4	30.9	14.7	20.3	23.7	10.2	30.8	6.6	7.5	10.3	25.7
HC Emissions (g)	3	75	1	57	4	0	0	1	0	0	141
CO Emissions (g)	96	1976	54	2259	180	0	4	29	1	10	4609
NOx Emissions (g)	11	267	4	205	15	0	0	3	0	1	506
Vehicles Entered	40	906	22	729	72	0	15	62	1	28	1875
Vehicles Exited	40	908	22	729	71	0	15	62	1	28	1876
Hourly Exit Rate	44	991	24	795	77	0	16	68	1	31	2047
Input Volume	44	994	24	787	77	1	16	66	1	31	2042
% of Volume	99	100	99	101	101	0	100	102	109	99	100
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0



6: Glen St/Lake George Rd & Aviation Rd/Quaker Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.0	0.0	0.1	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	2.7	0.2	3.1	3.6	0.1	0.2	3.4	0.1	0.2
Total Delay (hr)	2.0	2.0	0.3	0.1	2.6	0.1	2.2	1.7	0.0	0.9	1.8	0.4
Total Del/Veh (s)	53.6	12.3	3.9	70.3	18.8	3.5	44.5	38.0	11.4	55.6	49.1	8.6
Stop Delay (hr)	1.9	1.2	0.0	0.1	1.9	0.0	2.0	1.4	0.0	0.8	1.6	0.3
Stop Del/Veh (s)	49.6	7.4	0.7	67.9	13.7	2.4	40.3	31.7	10.9	51.8	42.4	7.0
Total Stops	119	218	37	4	240	28	148	119	6	54	114	121
Stop/Veh	0.88	0.37	0.16	0.80	0.49	0.40	0.85	0.73	0.75	0.92	0.85	0.76
Travel Dist (mi)	16.4	72.2	29.4	0.8	81.9	11.5	20.7	19.1	1.0	9.2	20.6	25.0
Travel Time (hr)	2.6	4.2	1.4	0.1	4.7	0.5	3.0	2.2	0.1	1.2	2.4	1.2
Avg Speed (mph)	6	17	21	6	18	27	7	9	17	8	9	21
Fuel Used (gal)	1.0	3.0	1.0	0.0	3.0	0.4	1.3	1.1	0.0	0.6	1.1	0.8
Fuel Eff. (mpg)	16.5	24.2	30.2	16.9	27.1	29.1	16.0	18.0	31.0	16.5	18.4	30.6
HC Emissions (g)	7	35	11	0	35	6	12	12	0	5	12	10
CO Emissions (g)	270	1150	402	13	1478	262	613	530	11	273	561	467
NOx Emissions (g)	23	123	39	1	114	17	36	36	1	14	35	31
Vehicles Entered	135	590	238	5	492	69	173	159	8	58	130	158
Vehicles Exited	134	590	237	5	492	70	172	158	8	58	129	158
Hourly Exit Rate	146	644	259	5	537	76	188	172	9	63	141	172
Input Volume	144	651	257	4	527	75	189	170	8	69	145	173
% of Volume	102	99	101	128	102	102	99	101	105	91	97	100
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0

6: Glen St/Lake George Rd & Aviation Rd/Quaker Rd Performance by movement

Movement	All
Denied Delay (hr)	0.3
Denied Del/Veh (s)	0.5
Total Delay (hr)	14.1
Total Del/Veh (s)	22.7
Stop Delay (hr)	11.3
Stop Del/Veh (s)	18.2
Total Stops	1208
Stop/Veh	0.54
Travel Dist (mi)	307.6
Travel Time (hr)	23.5
Avg Speed (mph)	13
Fuel Used (gal)	13.3
Fuel Eff. (mpg)	23.1
HC Emissions (g)	143
CO Emissions (g)	6029
NOx Emissions (g)	469
Vehicles Entered	2215
Vehicles Exited	2211
Hourly Exit Rate	2412
Input Volume	2411
% of Volume	100
Denied Entry Before	0

30: Adirondack NB Off Ramp/Adirondack NB On Ramp & Aviation Rd Performance by movement

Movement	EBL	EBT	WBT	WBR	NBL	NBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Denied Del/Veh (s)	0.0	0.0	0.0	0.1	0.3	0.4	0.1
Total Delay (hr)	0.2	2.2	2.2	0.3	2.1	1.5	8.5
Total Del/Veh (s)	15.6	14.0	12.5	5.5	40.0	13.0	15.2
Stop Delay (hr)	0.2	1.7	1.3	0.1	1.9	1.1	6.2
Stop Del/Veh (s)	12.6	10.6	7.2	1.7	35.4	10.0	11.1
Total Stops	31	191	240	59	157	264	942
Stop/Veh	0.67	0.33	0.38	0.35	0.81	0.64	0.47
Travel Dist (mi)	6.1	76.8	131.4	34.9	14.5	31.2	294.9
Travel Time (hr)	0.4	4.7	6.0	1.4	2.7	2.8	18.1
Avg Speed (mph)	14	16	22	24	5	11	16
Fuel Used (gal)	0.3	3.9	4.5	1.0	1.0	1.2	12.0
Fuel Eff. (mpg)	20.6	19.5	29.2	33.8	13.9	25.0	24.5
HC Emissions (g)	2	53	46	10	7	11	129
CO Emissions (g)	132	2118	1317	292	283	425	4568
NOx Emissions (g)	9	178	162	35	24	38	447
Vehicles Entered	45	567	625	165	189	409	2000
Vehicles Exited	45	569	628	166	188	409	2005
Hourly Exit Rate	49	621	685	181	205	446	2187
Input Volume	53	623	678	177	206	449	2187
% of Volume	92	100	101	102	100	99	100
Denied Entry Before	0	0	0	0	0	0	0

33: Burke Drive & Aviation Rd Performance by movement

Movement	EBT	WBL	WBT	NBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.1	0.0	0.2	0.0
Total Delay (hr)	0.4	0.1	0.3	0.2	0.9
Total Del/Veh (s)	2.5	5.8	1.9	7.0	2.8
Stop Delay (hr)	0.0	0.0	0.0	0.2	0.3
Stop Del/Veh (s)	0.2	3.5	0.3	6.8	0.9
Total Stops	4	20	24	109	157
Stop/Veh	0.01	0.47	0.04	1.00	0.13
Travel Dist (mi)	55.8	2.3	30.9	3.0	91.9
Travel Time (hr)	2.1	0.2	1.2	0.4	4.0
Avg Speed (mph)	26	14	25	8	23
Fuel Used (gal)	2.5	0.1	1.3	0.1	4.0
Fuel Eff. (mpg)	22.3	28.0	24.1	24.6	23.0
HC Emissions (g)	33	1	16	1	50
CO Emissions (g)	1187	22	649	19	1878
NOx Emissions (g)	125	3	56	2	187
Vehicles Entered	501	43	579	109	1232
Vehicles Exited	501	43	579	108	1231
Hourly Exit Rate	547	47	632	118	1343
Input Volume	555	50	611	124	1340
% of Volume	99	93	103	95	100
Denied Entry Before	0	0	0	0	0

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Total Network Performance

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Denied Delay (hr)	0.9
Denied Del/Veh (s)	0.9
Total Delay (hr)	50.7
Total Del/Veh (s)	49.7
Stop Delay (hr)	36.0
Stop Del/Veh (s)	35.4
Total Stops	5156
Stop/Veh	1.41
Travel Dist (mi)	2091.6
Travel Time (hr)	119.2
Avg Speed (mph)	18
Fuel Used (gal)	92.2
Fuel Eff. (mpg)	22.7
HC Emissions (g)	1072
CO Emissions (g)	41104
NOx Emissions (g)	3730
Vehicles Entered	3544
Vehicles Exited	3556
Hourly Exit Rate	3879
Input Volume	17938
% of Volume	22
Denied Entry Before	0

Arterial Level of Service: EB Aviation Rd

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed	Run 1 Speed	Run 1 Delay
Cottage Hill Road	1	9.3	15.2	0.1	14	14	9.2
Church Driveway	2	13.9	23.9	0.1	15	18	10.6
Burke Drive	33	2.8	14.2	0.1	29	28	2.9
Adirondack SB On/Off	3	10.2	15.3	0.1	12	10	12.9
Adirondack NB Off Ra	30	12.1	26.3	0.1	19	18	13.5
Aviation Mall Rd	4	8.0	29.2	0.2	26	24	9.9
Aviation Mall Rd	5	8.1	32.2	0.2	27	26	9.6
Glen St	6	11.3	24.0	0.1	19	21	9.9
<b>Total</b>		<b>75.7</b>	<b>180.3</b>	<b>1.0</b>	<b>21</b>	<b>20</b>	<b>78.5</b>

Arterial Level of Service: EB Aviation Rd

Cross Street	Run 10 Speed	Run 10 Delay	Run 2 Speed	Run 2 Delay	Run 3 Speed	Run 3 Delay	Run 4 Speed
Cottage Hill Road	15	8.4	13	10.1	14	9.4	17
Church Driveway	16	13.6	16	12.7	15	14.4	17
Burke Drive	29	2.6	29	3.1	29	2.7	30
Adirondack SB On/Off	11	12.1	10	13.4	13	9.7	13
Adirondack NB Off Ra	19	11.3	18	13.6	20	10.2	18
Aviation Mall Rd	27	7.6	24	9.8	25	9.4	27
Aviation Mall Rd	27	7.9	28	6.8	25	9.7	26
Glen St	20	10.0	19	12.1	19	10.9	17
<b>Total</b>	<b>21</b>	<b>73.4</b>	<b>20</b>	<b>81.5</b>	<b>21</b>	<b>76.4</b>	<b>21</b>

Arterial Level of Service: EB Aviation Rd

Cross Street	Run 4 Delay	Run 5 Speed	Run 5 Delay	Run 6 Speed	Run 6 Delay	Run 7 Speed	Run 7 Delay
Cottage Hill Road	6.7	14	9.7	13	10.3	13	10.4
Church Driveway	12.0	14	16.0	15	15.2	15	13.8
Burke Drive	2.5	28	3.4	30	2.4	29	2.3
Adirondack SB On/Off	9.6	13	9.1	17	6.4	14	8.2
Adirondack NB Off Ra	12.8	19	11.9	20	10.4	19	11.3
Aviation Mall Rd	6.3	26	7.7	27	7.4	28	6.4
Aviation Mall Rd	8.2	26	8.8	28	5.9	26	9.1
Glen St	13.7	20	10.4	18	12.5	20	10.7
<b>Total</b>	<b>71.8</b>	<b>21</b>	<b>77.1</b>	<b>21</b>	<b>70.5</b>	<b>21</b>	<b>72.1</b>

Arterial Level of Service: EB Aviation Rd

Cross Street	Run 8 Speed	Run 8 Delay	Run 9 Speed	Run 9 Delay
Cottage Hill Road	14	9.6	14	9.6
Church Driveway	15	13.8	14	16.4
Burke Drive	29	2.8	28	3.1
Adirondack SB On/Off	15	7.9	12	11.4
Adirondack NB Off Ra	18	12.4	18	13.0
Aviation Mall Rd	26	8.1	26	7.7
Aviation Mall Rd	28	7.1	27	7.6
Glen St	19	11.8	19	11.3
Total	21	73.4	20	80.2

Arterial Level of Service: WB Aviation Rd

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed	Run 1 Speed	Run 1 Delay
Starbucks Driveway	5	9.4	22.3	0.1	21	20	10.1
Greenway N	4	7.3	31.7	0.2	27	27	7.0
Adirondack NB On Ram	30	12.8	34.4	0.2	22	22	13.6
Adirondack SB On/Off	3	4.0	18.0	0.1	27	27	3.9
Burke Drive	33	2.1	7.6	0.1	25	25	2.0
School Driveway	2	17.3	28.5	0.1	14	14	17.9
School Parking	1	11.8	22.2	0.1	17	17	11.3
Total		64.7	164.6	1.0	21	21	65.9

Arterial Level of Service: WB Aviation Rd

Cross Street	Run 10 Speed	Run 10 Delay	Run 2 Speed	Run 2 Delay	Run 3 Speed	Run 3 Delay	Run 4 Speed
Starbucks Driveway	19	11.1	21	9.7	20	10.0	21
Greenway N	25	9.4	26	8.4	28	6.1	27
Adirondack NB On Ram	21	13.6	24	10.6	22	13.3	21
Adirondack SB On/Off	27	4.3	28	3.6	27	3.9	27
Burke Drive	25	2.1	26	1.8	24	2.3	25
School Driveway	14	19.0	14	17.0	15	16.9	14
School Parking	16	12.2	14	16.5	19	9.3	18
Total	21	71.7	21	67.6	22	61.7	22

Arterial Level of Service: WB Aviation Rd

Cross Street	Run 4 Delay	Run 5 Speed	Run 5 Delay	Run 6 Speed	Run 6 Delay	Run 7 Speed	Run 7 Delay
Starbucks Driveway	9.1	20	9.9	22	7.7	21	8.9
Greenway N	6.9	27	7.7	29	5.4	28	6.5
Adirondack NB On Ram	13.9	23	10.8	23	10.8	21	14.8
Adirondack SB On/Off	4.1	28	3.7	28	3.6	26	4.6
Burke Drive	2.1	26	1.8	26	1.9	24	2.5
School Driveway	17.0	15	17.5	14	17.4	15	16.4
School Parking	10.6	17	10.8	17	11.9	15	13.8
Total	63.7	22	62.1	22	58.7	21	67.4

Arterial Level of Service: WB Aviation Rd

Cross Street	Run 8 Speed	Run 8 Delay	Run 9 Speed	Run 9 Delay
Starbucks Driveway	22	8.1	20	9.8
Greenway N	28	6.3	26	9.0
Adirondack NB On Ram	22	13.0	22	13.6
Adirondack SB On/Off	27	4.2	27	4.2
Burke Drive	24	2.4	26	1.7
School Driveway	15	16.8	14	17.3
School Parking	20	8.5	16	12.9
Total	22	59.2	21	68.5



Queuing and Blocking Report  
Baseline

1/12/2023

Intersection: 1: Cottage Hill Road/School Parking & Aviation Rd

Movement	EB	EB	WB	WB	NB	SB	SB
Directions Served	L	TR	L	TR	LTR	LT	R
Maximum Queue (ft)	75	270	72	209	208	163	59
Average Queue (ft)	48	89	7	71	91	75	26
95th Queue (ft)	80	210	35	165	167	142	51
Link Distance (ft)		261		458	567	167	167
Upstream Blk Time (%)		1				1	
Queuing Penalty (veh)		0				0	
Storage Bay Dist (ft)	50		110				
Storage Blk Time (%)	9	11		4			
Queuing Penalty (veh)	33	20		1			

Intersection: 2: Church Driveway/School Driveway & Aviation Rd

Movement	EB	EB	WB	WB	NB	SB	SB
Directions Served	L	TR	L	TR	TR	LT	R
Maximum Queue (ft)	192	245	18	441	24	183	59
Average Queue (ft)	67	85	1	185	2	143	22
95th Queue (ft)	144	191	12	360	14	201	52
Link Distance (ft)		458		531	122	159	159
Upstream Blk Time (%)				0		12	
Queuing Penalty (veh)				0		0	
Storage Bay Dist (ft)	190		50				
Storage Blk Time (%)	0	1		20			
Queuing Penalty (veh)	1	1		0			

Intersection: 3: Adirondack SB On/Off Ramp & Aviation Rd

Movement	EB	EB	WB	WB	WB	NB	NB
Directions Served	T	TR	L	T	T	L	R
Maximum Queue (ft)	192	224	191	100	108	100	133
Average Queue (ft)	72	106	84	36	43	38	56
95th Queue (ft)	156	201	157	83	97	80	102
Link Distance (ft)	210	210		655	655	314	314
Upstream Blk Time (%)	0	1					
Queuing Penalty (veh)	1	4					
Storage Bay Dist (ft)			370				
Storage Blk Time (%)							
Queuing Penalty (veh)							

Queuing and Blocking Report  
Baseline

1/12/2023

Intersection: 4: Aviation Mall Rd/Greenway N & Aviation Rd

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	SB
Directions Served	L	T	T	R	L	T	TR	LT	R	LTR
Maximum Queue (ft)	36	206	236	55	28	242	240	66	38	64
Average Queue (ft)	6	67	85	7	5	62	66	22	10	20
95th Queue (ft)	26	171	196	35	21	170	169	54	32	52
Link Distance (ft)		1048	1048			1173	1173	130	130	308
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	70			130	140					
Storage Blk Time (%)	0	5	3			1				
Queuing Penalty (veh)	0	0	1			0				

Intersection: 5: Aviation Mall Rd/Starbucks Driveway & Aviation Rd

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Directions Served	L	T	T	L	L	T	TR	LT	R	R	LTR
Maximum Queue (ft)	89	217	273	18	60	229	239	9	18	14	135
Average Queue (ft)	36	70	94	1	20	74	78	0	6	1	58
95th Queue (ft)	77	183	232	11	50	167	178	5	19	8	119
Link Distance (ft)		1173	1173			553	553		277	277	131
Upstream Blk Time (%)											1
Queuing Penalty (veh)											0
Storage Bay Dist (ft)	80			150	150			170			
Storage Blk Time (%)	2	5	5			1					
Queuing Penalty (veh)	8	2	0			0					

Queuing and Blocking Report  
Baseline

1/12/2023

Intersection: 6: Glen St/Lake George Rd & Aviation Rd/Quaker Rd

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB
Directions Served	L	L	T	T	R	L	T	T	R	L	L	T
Maximum Queue (ft)	137	147	220	237	84	40	219	197	50	137	168	155
Average Queue (ft)	47	70	88	103	22	5	122	90	16	40	88	73
95th Queue (ft)	103	119	179	206	58	24	205	179	40	101	148	133
Link Distance (ft)			553	553			873	873				625
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	170	170			280	280			430	310	310	
Storage Blk Time (%)	0	0	1	0			0					
Queuing Penalty (veh)	0	0	2	0			0					

Intersection: 6: Glen St/Lake George Rd & Aviation Rd/Quaker Rd

Movement	NB	SB	SB	SB	SB	SB
Directions Served	TR	L	L	T	T	R
Maximum Queue (ft)	123	53	121	151	128	118
Average Queue (ft)	27	5	50	82	27	50
95th Queue (ft)	78	30	98	137	80	90
Link Distance (ft)	625			833	833	833
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)		240	240			
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 30: Adirondack NB Off Ramp/Adirondack NB On Ramp & Aviation Rd

Movement	EB	EB	EB	WB	WB	WB	NB	NB
Directions Served	L	T	T	T	T	R	L	R
Maximum Queue (ft)	83	157	182	275	249	131	256	254
Average Queue (ft)	26	76	89	112	94	32	131	120
95th Queue (ft)	63	139	158	226	201	87	216	213
Link Distance (ft)		655	655	1048	1048		402	402
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	120					140		
Storage Blk Time (%)		3			4			
Queuing Penalty (veh)		1			7			

# Queuing and Blocking Report

## Baseline

1/12/2023

### Intersection: 33: Burke Drive & Aviation Rd

Movement	EB	WB	WB	WB	NB
Directions Served	T	L	T	T	LR
Maximum Queue (ft)	72	62	77	75	96
Average Queue (ft)	4	17	9	7	42
95th Queue (ft)	39	48	42	40	72
Link Distance (ft)	531		210	210	143
Upstream Blk Time (%)					0
Queuing Penalty (veh)					0
Storage Bay Dist (ft)		85			
Storage Blk Time (%)		0	0		
Queuing Penalty (veh)		0	0		

### Network Summary

Network wide Queuing Penalty: 84

Summary of All Intervals

Run Number	1	10	2	3	4	5	6
Start Time	3:45	3:45	3:45	3:45	3:45	3:45	3:45
End Time	5:15	5:15	5:15	5:15	5:15	5:15	5:15
Total Time (min)	90	90	90	90	90	90	90
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	5	5	5	5	5	5	5
# of Recorded mScheduledIntervals	4	4	4	4	4	4	4
Vehs Entered	5642	5819	5678	5612	5484	5612	5723
Vehs Exited	5633	5751	5681	5621	5455	5666	5677
Starting Vehs	219	214	233	225	188	262	177
Ending Vehs	228	282	230	216	217	208	223
Denied Entry Before	0	0	1	0	1	1	0
Travel Distance (mi)	3333	3416	3360	3331	3245	3375	3385
Travel Time (hr)	224.8	228.3	225.1	217.8	212.9	227.7	223.0
Total Delay (hr)	117.3	118.2	116.7	110.3	108.4	119.0	113.4
Total Stops	9254	9363	9210	8943	8860	9357	9189
Fuel Used (gal)	156.0	158.8	158.2	154.8	151.0	158.5	156.8

Summary of All Intervals

Run Number	7	8	9	Avg
Start Time	3:45	3:45	3:45	3:45
End Time	5:15	5:15	5:15	5:15
Total Time (min)	90	90	90	90
Time Recorded (min)	60	60	60	60
# of Intervals	5	5	5	5
# of Recorded mScheduledIntervals	4	4	4	4
Vehs Entered	5602	5571	5734	5651
Vehs Exited	5617	5585	5705	5640
Starting Vehs	219	219	213	211
Ending Vehs	204	205	242	219
Denied Entry Before	0	1	0	0
Travel Distance (mi)	3344	3291	3403	3348
Travel Time (hr)	226.3	215.2	225.7	222.7
Total Delay (hr)	118.4	109.3	115.9	114.7
Total Stops	9212	8868	9205	9151
Fuel Used (gal)	157.2	153.1	158.3	156.3

Interval #0 Information Seeding

Start Time	3:45
End Time	4:15
Total Time (min)	30
Volumes adjusted by Growth Factors.	
No data recorded this interval.	

Interval #1 Information

Start Time	4:15
End Time	4:30
Total Time (min)	15
Volumes adjusted by Growth Factors, Anti PHF.	

Run Number	1	10	2	3	4	5	6
Vehs Entered	1321	1377	1419	1368	1310	1319	1419
Vehs Exited	1324	1379	1439	1405	1311	1377	1360
Starting Vehs	219	214	233	225	188	262	177
Ending Vehs	216	212	213	188	187	204	236
Denied Entry Before	0	0	1	0	1	1	0
Travel Distance (mi)	799	848	848	836	793	817	851
Travel Time (hr)	52.7	53.2	59.5	53.6	49.9	52.7	56.6
Total Delay (hr)	26.8	26.1	32.0	26.8	24.4	26.4	29.2
Total Stops	2166	2141	2457	2192	1989	2074	2417
Fuel Used (gal)	37.1	38.4	40.8	38.8	36.4	37.5	39.6

Interval #1 Information

Start Time	4:15
End Time	4:30
Total Time (min)	15
Volumes adjusted by Growth Factors, Anti PHF.	

Run Number	7	8	9	Avg
Vehs Entered	1333	1360	1369	1362
Vehs Exited	1346	1360	1345	1365
Starting Vehs	219	219	213	211
Ending Vehs	206	219	237	207
Denied Entry Before	0	1	0	0
Travel Distance (mi)	823	807	826	825
Travel Time (hr)	51.5	53.5	51.7	53.5
Total Delay (hr)	25.0	27.6	25.1	26.9
Total Stops	2096	2256	2121	2189
Fuel Used (gal)	37.7	37.7	37.7	38.2

Interval #2 Information

Start Time	4:30
End Time	4:45
Total Time (min)	15
Volumes adjusted by Growth Factors, Anti PHF.	

Run Number	1	10	2	3	4	5	6
Vehs Entered	1402	1410	1341	1358	1332	1380	1359
Vehs Exited	1392	1375	1357	1359	1323	1382	1373
Starting Vehs	216	212	213	188	187	204	236
Ending Vehs	226	247	197	187	196	202	222
Denied Entry Before	1	1	2	2	0	1	0
Travel Distance (mi)	828	828	803	814	804	838	815
Travel Time (hr)	55.4	53.9	52.7	51.9	53.5	55.4	52.4
Total Delay (hr)	28.8	27.3	26.7	25.6	27.8	28.5	26.0
Total Stops	2214	2223	2097	2097	2218	2319	2113
Fuel Used (gal)	38.6	38.2	37.3	37.4	37.3	39.0	37.3

Interval #2 Information

Start Time	4:30
End Time	4:45
Total Time (min)	15
Volumes adjusted by Growth Factors, Anti PHF.	

Run Number	7	8	9	Avg
Vehs Entered	1353	1327	1398	1366
Vehs Exited	1341	1360	1411	1367
Starting Vehs	206	219	237	207
Ending Vehs	218	186	224	206
Denied Entry Before	2	2	1	0
Travel Distance (mi)	806	782	863	818
Travel Time (hr)	52.7	50.0	58.7	53.7
Total Delay (hr)	26.7	24.8	30.9	27.3
Total Stops	2130	1998	2373	2181
Fuel Used (gal)	37.2	36.1	40.3	37.9

**Interval #3 Information**

Start Time	4:45
End Time	5:00
Total Time (min)	15
Volumes adjusted by PHF, Growth Factors.	

Run Number	1	10	2	3	4	5	6
Vehs Entered	1527	1552	1548	1528	1456	1563	1538
Vehs Exited	1522	1548	1509	1492	1428	1500	1507
Starting Vehs	226	247	197	187	196	202	222
Ending Vehs	231	251	236	223	224	265	253
Denied Entry Before	0	1	1	1	1	4	0
Travel Distance (mi)	862	876	879	876	835	882	875
Travel Time (hr)	57.3	59.6	58.7	60.8	55.0	62.1	58.1
Total Delay (hr)	29.6	31.1	30.5	32.5	27.9	33.6	29.7
Total Stops	2400	2466	2473	2549	2314	2599	2402
Fuel Used (gal)	40.2	41.0	41.7	41.8	39.0	42.2	40.3

**Interval #3 Information**

Start Time	4:45
End Time	5:00
Total Time (min)	15
Volumes adjusted by PHF, Growth Factors.	

Run Number	7	8	9	Avg
Vehs Entered	1586	1520	1559	1539
Vehs Exited	1579	1511	1566	1517
Starting Vehs	218	186	224	206
Ending Vehs	225	195	217	231
Denied Entry Before	1	2	1	0
Travel Distance (mi)	902	885	882	875
Travel Time (hr)	64.1	57.8	61.5	59.5
Total Delay (hr)	35.1	29.3	32.8	31.2
Total Stops	2624	2365	2497	2472
Fuel Used (gal)	43.2	41.1	41.7	41.2



Interval #4 Information Recording

Start Time	5:00
End Time	5:15
Total Time (min)	15
Volumes adjusted by Growth Factors, Anti PHF.	

Run Number	1	10	2	3	4	5	6
Vehs Entered	1392	1480	1370	1358	1386	1350	1407
Vehs Exited	1395	1449	1376	1365	1393	1407	1437
Starting Vehs	231	251	236	223	224	265	253
Ending Vehs	228	282	230	216	217	208	223
Denied Entry Before	1	3	1	1	1	4	1
Travel Distance (mi)	845	864	830	805	814	838	845
Travel Time (hr)	59.4	61.7	54.2	51.4	54.4	57.6	55.9
Total Delay (hr)	32.1	33.7	27.5	25.4	28.2	30.5	28.5
Total Stops	2474	2533	2183	2105	2339	2365	2257
Fuel Used (gal)	40.2	41.2	38.4	36.8	38.4	39.9	39.6

Interval #4 Information Recording

Start Time	5:00
End Time	5:15
Total Time (min)	15
Volumes adjusted by Growth Factors, Anti PHF.	

Run Number	7	8	9	Avg
Vehs Entered	1330	1364	1408	1381
Vehs Exited	1351	1354	1383	1391
Starting Vehs	225	195	217	231
Ending Vehs	204	205	242	219
Denied Entry Before	0	1	1	0
Travel Distance (mi)	813	817	831	830
Travel Time (hr)	57.9	53.9	53.7	56.0
Total Delay (hr)	31.6	27.6	27.1	29.2
Total Stops	2362	2249	2214	2306
Fuel Used (gal)	39.2	38.1	38.5	39.0

1: Cottage Hill Road/School Parking & Aviation Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	3.4	0.3	0.3	0.2	0.0	0.0	0.1	0.2	0.1	0.1	0.1	0.1
Total Delay (hr)	0.2	0.5	0.0	0.1	0.7	0.0	0.1	0.5	0.1	0.3	0.3	0.1
Total Del/Veh (s)	8.6	5.3	4.4	7.3	6.0	4.6	47.7	39.6	18.5	45.6	42.7	6.3
Stop Delay (hr)	0.1	0.3	0.0	0.0	0.2	0.0	0.1	0.5	0.1	0.3	0.3	0.1
Stop Del/Veh (s)	6.1	2.9	3.3	3.4	2.1	1.9	45.0	35.7	17.0	43.7	39.5	6.2
Total Stops	43	69	1	14	62	5	7	38	20	24	22	65
Stop/Veh	0.60	0.21	0.33	0.45	0.16	0.23	0.88	0.81	0.87	0.89	0.85	0.84
Travel Dist (mi)	3.6	16.4	0.1	3.1	38.4	2.2	0.8	5.1	2.4	0.9	0.9	2.6
Travel Time (hr)	0.4	1.0	0.0	0.2	1.8	0.1	0.1	0.7	0.2	0.4	0.3	0.3
Avg Speed (mph)	11	17	13	18	21	19	6	7	11	2	3	9
Fuel Used (gal)	0.2	0.8	0.0	0.1	1.8	0.1	0.1	0.3	0.1	0.1	0.1	0.1
Fuel Eff. (mpg)	23.4	19.4	29.1	23.9	21.1	24.1	16.8	18.4	22.7	8.2	8.9	28.7
HC Emissions (g)	1	12	0	2	25	1	0	2	1	0	1	1
CO Emissions (g)	40	489	1	67	933	36	10	80	39	9	17	19
NOx Emissions (g)	4	39	0	6	90	3	1	7	3	1	2	2
Vehicles Entered	72	324	3	31	392	22	8	47	22	26	26	77
Vehicles Exited	72	324	3	31	395	22	8	46	23	26	26	77
Hourly Exit Rate	72	324	3	31	395	22	8	46	23	26	26	77
Input Volume	74	321	2	32	398	20	8	49	21	25	27	73
% of Volume	97	101	150	96	99	110	103	94	111	104	95	105
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0

1: Cottage Hill Road/School Parking & Aviation Rd Performance by movement

Movement	All
Denied Delay (hr)	0.1
Denied Del/Veh (s)	0.4
Total Delay (hr)	2.9
Total Del/Veh (s)	10.0
Stop Delay (hr)	2.1
Stop Del/Veh (s)	7.1
Total Stops	370
Stop/Veh	0.35
Travel Dist (mi)	76.4
Travel Time (hr)	5.5
Avg Speed (mph)	14
Fuel Used (gal)	3.8
Fuel Eff. (mpg)	20.3
HC Emissions (g)	45
CO Emissions (g)	1741
NOx Emissions (g)	157
Vehicles Entered	1050
Vehicles Exited	1053
Hourly Exit Rate	1053
Input Volume	1050
% of Volume	100
Denied Entry Before	0

2: Church Driveway/School Driveway & Aviation Rd Performance by movement

Movement	EBL	EBT	EBR	WBT	WBR	SBL	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	1.0	0.5	0.2
Total Delay (hr)	0.1	0.5	0.0	0.8	0.2	2.0	0.1	3.6
Total Del/Veh (s)	20.2	4.8	1.4	6.7	4.0	44.8	7.1	11.4
Stop Delay (hr)	0.1	0.3	0.0	0.2	0.1	2.0	0.1	2.6
Stop Del/Veh (s)	17.8	2.6	0.3	1.4	1.1	44.2	7.3	8.2
Total Stops	16	62	0	55	28	133	22	316
Stop/Veh	0.70	0.18	0.00	0.13	0.17	0.82	0.81	0.27
Travel Dist (mi)	2.3	35.3	0.2	45.1	18.5	4.9	0.8	107.0
Travel Time (hr)	0.2	1.5	0.0	2.1	0.9	2.4	0.1	7.2
Avg Speed (mph)	11	23	22	22	21	2	7	15
Fuel Used (gal)	0.1	1.5	0.0	1.2	0.4	0.7	0.0	4.0
Fuel Eff. (mpg)	22.8	24.2	29.0	36.2	43.6	6.8	21.4	26.9
HC Emissions (g)	1	19	0	12	4	3	0	39
CO Emissions (g)	35	693	2	291	95	89	5	1211
NOx Emissions (g)	3	66	0	41	13	10	1	133
Vehicles Entered	23	351	2	412	167	160	27	1142
Vehicles Exited	23	351	2	413	168	162	26	1145
Hourly Exit Rate	23	351	2	413	168	162	26	1145
Input Volume	23	346	1	422	178	161	24	1155
% of Volume	101	101	200	98	94	100	108	99
Denied Entry Before	0	0	0	0	0	0	0	0

3: Adirondack SB On/Off Ramp & Aviation Rd Performance by movement

Movement	EBT	EBR	WBL	WBT	NBL	NBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.1	0.3	0.0
Total Delay (hr)	2.5	0.6	2.2	0.6	0.7	0.5	7.1
Total Del/Veh (s)	17.6	13.4	14.9	3.1	49.7	6.7	11.4
Stop Delay (hr)	2.0	0.5	1.1	0.1	0.7	0.4	4.8
Stop Del/Veh (s)	14.2	11.7	7.6	0.5	46.7	5.2	7.7
Total Stops	244	80	275	36	47	142	824
Stop/Veh	0.48	0.53	0.52	0.05	0.92	0.51	0.37
Travel Dist (mi)	24.8	7.5	70.3	96.0	3.0	16.4	217.9
Travel Time (hr)	3.3	1.0	4.6	3.5	0.8	1.3	14.4
Avg Speed (mph)	8	8	15	27	4	13	15
Fuel Used (gal)	1.5	0.3	3.0	4.3	0.3	0.6	9.9
Fuel Eff. (mpg)	16.6	22.5	23.8	22.6	11.6	28.8	22.1
HC Emissions (g)	13	2	26	59	1	5	106
CO Emissions (g)	482	62	997	2089	52	203	3885
NOx Emissions (g)	44	7	105	213	4	17	390
Vehicles Entered	503	152	519	712	50	275	2211
Vehicles Exited	503	151	520	706	50	275	2205
Hourly Exit Rate	503	151	520	706	50	275	2205
Input Volume	502	151	530	726	51	270	2230
% of Volume	100	100	98	97	98	102	99
Denied Entry Before	0	0	0	0	0	0	0

4: Aviation Mall Rd/Greenway N & Aviation Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	1.7	4.7	1.1	0.1	0.1	0.1
Total Delay (hr)	0.2	4.8	0.7	0.6	3.0	0.0	2.2	0.0	0.4	0.2	0.0	0.0
Total Del/Veh (s)	48.7	14.1	13.7	37.8	8.3	8.0	45.8	57.7	13.2	41.2	41.6	17.7
Stop Delay (hr)	0.2	2.2	0.4	0.5	1.1	0.0	2.1	0.0	0.4	0.2	0.0	0.0
Stop Del/Veh (s)	42.7	6.6	6.9	31.5	2.9	3.1	43.8	54.7	13.1	39.0	38.1	17.3
Total Stops	18	399	65	47	148	1	131	1	69	16	4	7
Stop/Veh	1.00	0.33	0.33	0.87	0.11	0.14	0.77	1.00	0.69	0.84	1.00	0.88
Travel Dist (mi)	3.6	244.9	40.2	12.7	310.4	1.6	4.3	0.0	2.6	1.1	0.3	0.5
Travel Time (hr)	0.4	12.5	2.2	1.0	12.0	0.1	2.4	0.0	0.6	0.3	0.1	0.1
Avg Speed (mph)	10	20	18	13	26	24	2	2	5	4	5	8
Fuel Used (gal)	0.2	10.8	1.7	0.5	11.1	0.1	0.7	0.0	0.2	0.1	0.0	0.0
Fuel Eff. (mpg)	19.0	22.8	24.3	24.0	28.1	29.1	6.0	5.3	15.9	14.4	15.2	22.7
HC Emissions (g)	1	122	20	3	123	0	3	0	1	0	0	0
CO Emissions (g)	61	4812	714	116	3571	12	79	0	28	10	3	3
NOx Emissions (g)	4	441	70	14	457	1	9	0	3	1	0	0
Vehicles Entered	17	1196	194	53	1300	7	169	1	100	19	4	8
Vehicles Exited	17	1201	194	54	1319	7	166	1	100	19	4	8
Hourly Exit Rate	17	1201	194	54	1319	7	166	1	100	19	4	8
Input Volume	16	1198	191	54	1313	9	170	1	100	19	4	6
% of Volume	106	100	102	100	100	78	98	100	100	101	94	123
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0

4: Aviation Mall Rd/Greenway N & Aviation Rd Performance by movement

Movement	All
Denied Delay (hr)	0.1
Denied Del/Veh (s)	0.1
Total Delay (hr)	12.2
Total Del/Veh (s)	14.1
Stop Delay (hr)	7.1
Stop Del/Veh (s)	8.2
Total Stops	906
Stop/Veh	0.29
Travel Dist (mi)	622.3
Travel Time (hr)	31.5
Avg Speed (mph)	20
Fuel Used (gal)	25.2
Fuel Eff. (mpg)	24.7
HC Emissions (g)	274
CO Emissions (g)	9410
NOx Emissions (g)	1000
Vehicles Entered	3068
Vehicles Exited	3090
Hourly Exit Rate	3090
Input Volume	3081
% of Volume	100
Denied Entry Before	0

5: Aviation Mall Rd/Starbucks Driveway & Aviation Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.0	0.1	0.0	0.0	0.0	4.1	3.8	0.1	0.1	0.1	0.1
Total Delay (hr)	0.1	8.2	0.2	2.0	4.5	0.1	0.1	0.1	1.7	0.5	0.0	0.1
Total Del/Veh (s)	57.5	23.2	24.1	44.9	11.9	11.4	45.3	36.8	36.7	45.4	53.9	26.2
Stop Delay (hr)	0.1	5.5	0.1	1.8	2.4	0.1	0.1	0.1	1.7	0.5	0.0	0.1
Stop Del/Veh (s)	51.7	15.5	17.9	40.0	6.4	7.8	42.3	33.4	35.5	43.9	51.4	26.1
Total Stops	9	584	16	145	463	15	5	4	134	36	1	13
Stop/Veh	1.00	0.46	0.62	0.88	0.34	0.36	1.00	0.67	0.79	0.84	1.00	0.81
Travel Dist (mi)	2.0	297.1	6.1	19.9	166.3	5.1	0.3	0.3	9.3	1.2	0.0	0.4
Travel Time (hr)	0.2	16.9	0.4	2.8	10.2	0.3	0.1	0.1	2.2	0.6	0.0	0.1
Avg Speed (mph)	10	18	16	7	16	15	4	4	4	2	1	3
Fuel Used (gal)	0.1	11.9	0.2	1.3	8.7	0.3	0.0	0.0	0.7	0.2	0.0	0.0
Fuel Eff. (mpg)	20.6	24.9	26.1	14.8	19.0	20.2	10.2	10.2	13.0	7.3	5.5	10.2
HC Emissions (g)	0	110	5	12	102	4	0	0	4	1	0	0
CO Emissions (g)	19	3443	113	479	3922	130	7	7	149	24	0	4
NOx Emissions (g)	2	421	15	43	385	13	0	0	13	2	0	0
Vehicles Entered	8	1264	26	163	1364	42	5	5	169	43	1	16
Vehicles Exited	9	1256	26	161	1356	41	5	6	168	43	1	16
Hourly Exit Rate	9	1256	26	161	1356	41	5	6	168	43	1	16
Input Volume	9	1265	26	162	1369	41	6	5	177	41	1	16
% of Volume	100	99	99	99	99	101	83	120	95	104	100	102
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0

5: Aviation Mall Rd/Starbucks Driveway & Aviation Rd Performance by movement

Movement	All
Denied Delay (hr)	0.0
Denied Del/Veh (s)	0.0
Total Delay (hr)	17.8
Total Del/Veh (s)	20.4
Stop Delay (hr)	12.5
Stop Del/Veh (s)	14.4
Total Stops	1425
Stop/Veh	0.46
Travel Dist (mi)	507.9
Travel Time (hr)	34.0
Avg Speed (mph)	15
Fuel Used (gal)	23.6
Fuel Eff. (mpg)	21.5
HC Emissions (g)	238
CO Emissions (g)	8297
NOx Emissions (g)	895
Vehicles Entered	3106
Vehicles Exited	3088
Hourly Exit Rate	3088
Input Volume	3118
% of Volume	99
Denied Entry Before	0

6: Glen St/Lake George Rd & Aviation Rd/Quaker Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.1	0.1	0.4	0.0	0.0	0.2	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	2.7	0.3	2.7	3.0	0.3	0.3	2.7	0.2	0.3
Total Delay (hr)	6.5	2.3	1.0	1.6	6.0	0.9	7.3	4.3	0.4	4.1	6.3	4.1
Total Del/Veh (s)	60.9	12.1	8.5	85.7	30.2	17.8	57.8	38.7	36.9	65.9	51.9	35.7
Stop Delay (hr)	5.9	1.3	0.5	1.5	4.4	0.8	6.5	3.4	0.4	3.7	5.2	3.3
Stop Del/Veh (s)	54.8	7.1	3.9	81.0	22.3	15.2	51.0	30.5	33.9	60.0	42.9	28.9
Total Stops	349	227	124	64	465	99	458	326	31	242	405	355
Stop/Veh	0.90	0.34	0.29	0.97	0.65	0.55	1.00	0.82	0.78	1.09	0.93	0.86
Travel Dist (mi)	45.5	80.0	52.4	10.8	116.3	29.7	53.8	47.2	4.8	34.3	67.8	64.7
Travel Time (hr)	8.1	4.7	3.0	1.9	9.0	2.0	9.4	5.5	0.6	5.3	8.0	6.3
Avg Speed (mph)	6	17	17	6	13	16	6	9	8	7	8	10
Fuel Used (gal)	3.1	3.7	2.0	0.7	4.9	1.2	3.6	2.7	0.3	2.1	3.7	2.9
Fuel Eff. (mpg)	14.7	21.8	26.8	15.4	23.7	23.9	14.9	17.3	17.7	16.5	18.2	22.3
HC Emissions (g)	21	38	20	3	56	16	28	29	4	18	36	28
CO Emissions (g)	738	1491	731	226	2376	786	1223	1294	152	871	1706	1379
NOx Emissions (g)	72	142	75	11	172	48	87	90	11	50	110	83
Vehicles Entered	372	666	426	65	698	178	450	393	39	217	429	410
Vehicles Exited	377	671	428	64	704	180	445	387	39	218	428	408
Hourly Exit Rate	377	671	428	64	704	180	445	387	39	218	428	408
Input Volume	378	674	427	63	700	183	444	398	41	215	436	419
% of Volume	100	100	100	101	101	98	100	97	95	101	98	97
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0

6: Glen St/Lake George Rd & Aviation Rd/Quaker Rd Performance by movement

Movement	All
Denied Delay (hr)	0.9
Denied Del/Veh (s)	0.7
Total Delay (hr)	44.7
Total Del/Veh (s)	36.4
Stop Delay (hr)	36.7
Stop Del/Veh (s)	30.0
Total Stops	3145
Stop/Veh	0.71
Travel Dist (mi)	607.4
Travel Time (hr)	63.8
Avg Speed (mph)	10
Fuel Used (gal)	30.9
Fuel Eff. (mpg)	19.7
HC Emissions (g)	297
CO Emissions (g)	12974
NOx Emissions (g)	951
Vehicles Entered	4343
Vehicles Exited	4349
Hourly Exit Rate	4349
Input Volume	4378
% of Volume	99
Denied Entry Before	0

30: Adirondack NB Off Ramp/Adirondack NB On Ramp & Aviation Rd Performance by movement

Movement	EBL	EBT	WBT	WBR	NBL	NBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.1	0.1
Denied Del/Veh (s)	0.1	0.0	0.0	0.0	0.3	0.5	0.1
Total Delay (hr)	0.3	5.4	9.5	1.3	2.3	3.3	22.1
Total Del/Veh (s)	23.6	26.1	31.9	11.9	41.3	17.0	25.2
Stop Delay (hr)	0.3	4.0	6.8	0.6	2.1	2.1	15.9
Stop Del/Veh (s)	18.8	19.6	22.7	5.5	36.6	11.1	18.0
Total Stops	42	366	736	248	167	358	1917
Stop/Veh	0.81	0.49	0.69	0.61	0.83	0.52	0.61
Travel Dist (mi)	7.0	99.1	223.1	85.3	15.3	52.4	482.1
Travel Time (hr)	0.6	8.5	16.1	4.3	2.9	5.6	37.9
Avg Speed (mph)	12	12	14	20	5	10	13
Fuel Used (gal)	0.4	5.4	8.9	2.7	1.1	2.2	20.6
Fuel Eff. (mpg)	19.8	18.4	25.2	31.5	13.7	23.5	23.4
HC Emissions (g)	3	61	79	26	8	15	191
CO Emissions (g)	146	2419	2441	821	314	547	6687
NOx Emissions (g)	11	208	274	94	27	52	665
Vehicles Entered	52	738	1066	402	200	685	3143
Vehicles Exited	51	731	1055	400	200	688	3125
Hourly Exit Rate	51	731	1055	400	200	688	3125
Input Volume	51	733	1077	388	202	684	3135
% of Volume	100	100	98	103	99	101	100
Denied Entry Before	0	0	0	0	0	0	0



33: Burke Drive & Aviation Rd Performance by movement

Movement	EBT	WBL	WBT	NBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.2	0.0
Total Delay (hr)	0.3	0.3	0.1	0.3	1.0
Total Del/Veh (s)	1.9	6.0	0.9	6.2	2.5
Stop Delay (hr)	0.0	0.2	0.0	0.2	0.5
Stop Del/Veh (s)	0.1	3.6	0.1	5.9	1.2
Total Stops	3	91	3	151	248
Stop/Veh	0.01	0.49	0.01	1.00	0.17
Travel Dist (mi)	57.6	10.0	31.2	4.2	102.9
Travel Time (hr)	2.1	0.7	1.1	0.5	4.4
Avg Speed (mph)	28	14	29	8	23
Fuel Used (gal)	2.2	0.3	1.1	0.2	3.8
Fuel Eff. (mpg)	25.6	30.5	29.1	25.3	27.0
HC Emissions (g)	31	3	13	1	47
CO Emissions (g)	1086	82	442	25	1636
NOx Emissions (g)	108	10	45	3	167
Vehicles Entered	513	184	574	151	1422
Vehicles Exited	510	185	574	150	1419
Hourly Exit Rate	510	185	574	150	1419
Input Volume	509	182	594	149	1434
% of Volume	100	102	97	101	99
Denied Entry Before	0	0	0	0	0

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Total Network Performance

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Denied Delay (hr)	1.3
Denied Del/Veh (s)	0.8
Total Delay (hr)	113.4
Total Del/Veh (s)	69.7
Stop Delay (hr)	82.4
Stop Del/Veh (s)	50.6
Total Stops	9151
Stop/Veh	1.56
Travel Dist (mi)	3348.4
Travel Time (hr)	222.7
Avg Speed (mph)	15
Fuel Used (gal)	156.3
Fuel Eff. (mpg)	21.4
HC Emissions (g)	1714
CO Emissions (g)	66492
NOx Emissions (g)	6032
Vehicles Entered	5651
Vehicles Exited	5640
Hourly Exit Rate	5640
Input Volume	25056
% of Volume	23
Denied Entry Before	0

Arterial Level of Service: EB Aviation Rd

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed	Run 1 Speed	Run 1 Delay
Cottage Hill Road	1	5.3	10.8	0.1	19	21	4.5
Church Driveway	2	5.0	15.4	0.1	24	25	4.6
Burke Drive	33	2.0	13.5	0.1	30	31	1.8
Adirondack SB On/Off	3	16.6	21.8	0.1	9	9	14.9
Adirondack NB Off Ra	30	21.2	35.3	0.1	14	14	21.0
Aviation Mall Rd	4	13.6	34.3	0.2	22	21	14.9
Aviation Mall Rd	5	23.2	47.4	0.2	18	17	26.0
Glen St	6	8.9	21.2	0.1	22	23	7.9
<b>Total</b>		<b>95.8</b>	<b>199.7</b>	<b>1.0</b>	<b>19</b>	<b>19</b>	<b>95.6</b>

Arterial Level of Service: EB Aviation Rd

Cross Street	Run 10 Speed	Run 10 Delay	Run 2 Speed	Run 2 Delay	Run 3 Speed	Run 3 Delay	Run 4 Speed
Cottage Hill Road	20	5.1	20	5.1	18	5.9	18
Church Driveway	24	5.0	24	5.1	27	3.5	26
Burke Drive	30	2.1	31	1.8	30	2.1	31
Adirondack SB On/Off	8	17.5	9	16.8	8	18.0	9
Adirondack NB Off Ra	14	20.3	14	21.1	14	20.7	14
Aviation Mall Rd	23	12.9	22	13.6	22	14.2	22
Aviation Mall Rd	19	21.3	17	25.1	18	23.3	18
Glen St	24	6.6	20	10.2	20	10.1	20
<b>Total</b>	<b>19</b>	<b>90.9</b>	<b>18</b>	<b>98.9</b>	<b>19</b>	<b>97.7</b>	<b>19</b>

Arterial Level of Service: EB Aviation Rd

Cross Street	Run 4 Delay	Run 5 Speed	Run 5 Delay	Run 6 Speed	Run 6 Delay	Run 7 Speed	Run 7 Delay
Cottage Hill Road	6.0	20	5.0	16	7.1	18	5.9
Church Driveway	3.9	22	6.2	24	5.2	23	5.9
Burke Drive	1.8	29	2.4	30	1.9	30	2.0
Adirondack SB On/Off	15.0	9	15.2	9	16.8	9	15.8
Adirondack NB Off Ra	20.6	13	22.3	14	21.4	13	23.1
Aviation Mall Rd	14.5	22	14.2	23	12.4	23	12.6
Aviation Mall Rd	23.3	18	24.6	19	21.4	18	22.6
Glen St	10.7	20	10.3	24	6.8	23	8.0
<b>Total</b>	<b>95.8</b>	<b>18</b>	<b>100.3</b>	<b>19</b>	<b>92.9</b>	<b>19</b>	<b>95.8</b>

Arterial Level of Service: EB Aviation Rd

Cross Street	Run 8 Speed	Run 8 Delay	Run 9 Speed	Run 9 Delay
Cottage Hill Road	22	4.0	21	4.5
Church Driveway	26	3.7	21	7.2
Burke Drive	31	1.7	29	2.3
Adirondack SB On/Off	8	17.3	8	18.2
Adirondack NB Off Ra	14	20.8	14	20.8
Aviation Mall Rd	22	13.3	22	14.0
Aviation Mall Rd	18	22.9	19	22.2
Glen St	24	6.9	20	11.1
Total	19	90.7	18	100.2

Arterial Level of Service: WB Aviation Rd

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed	Run 1 Speed	Run 1 Delay
Starbucks Driveway	5	21.1	34.0	0.1	14	14	21.1
Greenway N	4	8.2	32.5	0.2	26	28	6.7
Adirondack NB On Ram	30	32.9	54.6	0.2	14	14	33.9
Adirondack SB On/Off	3	3.5	17.4	0.1	28	28	3.3
Burke Drive	33	0.9	6.5	0.1	29	29	0.9
School Driveway	2	6.7	18.0	0.1	23	24	5.5
School Parking	1	6.1	16.2	0.1	23	24	5.1
Total		79.4	179.1	1.0	20	20	76.4

Arterial Level of Service: WB Aviation Rd

Cross Street	Run 10 Speed	Run 10 Delay	Run 2 Speed	Run 2 Delay	Run 3 Speed	Run 3 Delay	Run 4 Speed
Starbucks Driveway	13	22.0	14	19.5	13	21.8	14
Greenway N	27	7.2	27	7.6	28	6.6	26
Adirondack NB On Ram	14	33.9	14	34.3	17	23.6	14
Adirondack SB On/Off	28	3.6	28	3.8	28	3.3	28
Burke Drive	28	1.0	28	1.1	29	0.9	29
School Driveway	22	7.4	23	6.5	23	6.5	23
School Parking	21	7.0	25	4.9	24	5.1	23
Total	19	82.2	20	77.8	21	67.9	20

Arterial Level of Service: WB Aviation Rd

Cross Street	Run 4 Delay	Run 5 Speed	Run 5 Delay	Run 6 Speed	Run 6 Delay	Run 7 Speed	Run 7 Delay
Starbucks Driveway	19.7	14	20.9	13	22.1	13	22.0
Greenway N	8.6	25	10.4	26	8.2	27	7.6
Adirondack NB On Ram	32.8	14	32.5	14	30.6	11	49.0
Adirondack SB On/Off	3.5	28	3.6	28	3.4	28	3.6
Burke Drive	0.9	28	1.1	29	0.9	30	0.8
School Driveway	6.6	22	7.5	23	6.6	24	6.0
School Parking	6.0	23	6.1	21	7.3	22	6.6
Total	78.2	19	82.2	20	79.1	18	95.7

Arterial Level of Service: WB Aviation Rd

Cross Street	Run 8 Speed	Run 8 Delay	Run 9 Speed	Run 9 Delay
Starbucks Driveway	13	21.5	14	20.1
Greenway N	26	8.4	25	10.0
Adirondack NB On Ram	15	30.6	16	27.4
Adirondack SB On/Off	29	3.2	28	3.6
Burke Drive	30	0.7	30	0.8
School Driveway	22	7.7	23	6.8
School Parking	23	5.6	22	6.7
Total	20	77.7	20	75.4

Intersection: 1: Cottage Hill Road/School Parking & Aviation Rd

Phase	1	2	4	5	6	8
Movement(s) Served	EBL	WBTL	NBTL	WBL	EBTL	SBTL
Maximum Green (s)	7.0	51.0	37.0	7.0	51.0	37.0
Minimum Green (s)	5.0	20.0	10.0	5.0	20.0	10.0
Recall	None	Max	None	None	Max	None
Avg. Green (s)	0.0	0.0	0.0	0.0	0.0	0.0
g/C Ratio	NA	NA	NA	NA	NA	NA
Cycles Skipped (%)	NA	NA	NA	NA	NA	NA
Cycles @ Minimum (%)	NA	NA	NA	NA	NA	NA
Cycles Maxed Out (%)	NA	NA	NA	NA	NA	NA
Cycles with Peds (%)	NA	NA	NA	NA	NA	NA

Controller Summary

Average Cycle Length (s): NA  
Number of Complete Cycles : 0

Intersection: 2: Church Driveway/School Driveway & Aviation Rd

Phase	1	2	4	5	6	8
Movement(s) Served	EBL	WBTL	NBTL	WBL	EBTL	SBTL
Maximum Green (s)	10.0	51.0	34.0	10.0	51.0	34.0
Minimum Green (s)	5.0	20.0	10.0	5.0	20.0	10.0
Recall	None	Max	None	None	Max	None
Avg. Green (s)	0.0	0.0	0.0	0.0	0.0	0.0
g/C Ratio	NA	NA	NA	NA	NA	NA
Cycles Skipped (%)	NA	NA	NA	NA	NA	NA
Cycles @ Minimum (%)	NA	NA	NA	NA	NA	NA
Cycles Maxed Out (%)	NA	NA	NA	NA	NA	NA
Cycles with Peds (%)	NA	NA	NA	NA	NA	NA

Controller Summary

Average Cycle Length (s): NA  
Number of Complete Cycles : 0

Actuated Signals, Observed Splits  
Baseline

1/12/2023

Intersection: 3: Adirondack SB On/Off Ramp & Aviation Rd

Phase	1	2	3	5	6	7
Movement(s) Served	WBT	WBTL	NBL	WBTL	EBWB	NBL
Maximum Green (s)	39.0	24.0	32.0	39.5	24.0	32.0
Minimum Green (s)	28.0	1.0	1.0	15.0	1.0	1.0
Recall	Max	None	None	Max	None	None
Avg. Green (s)	0.0	0.0	0.0	0.0	0.0	0.0
g/C Ratio	NA	NA	NA	NA	NA	NA
Cycles Skipped (%)	NA	NA	NA	NA	NA	NA
Cycles @ Minimum (%)	NA	NA	NA	NA	NA	NA
Cycles Maxed Out (%)	NA	NA	NA	NA	NA	NA
Cycles with Peds (%)	NA	NA	NA	NA	NA	NA

Controller Summary

Average Cycle Length (s): NA  
Number of Complete Cycles : 0

Intersection: 4: Aviation Mall Rd/Greenway N & Aviation Rd

Phase	1	2	3	5	6	7
Movement(s) Served	EBL	WBT	NBTL	WBL	EBT	SBTL
Maximum Green (s)	18.0	50.0	27.0	18.0	50.0	27.0
Minimum Green (s)	20.0	5.0	5.0	5.0	5.0	5.0
Recall	None	None	None	None	Max	None
Avg. Green (s)	0.0	0.0	0.0	0.0	0.0	0.0
g/C Ratio	NA	NA	NA	NA	NA	NA
Cycles Skipped (%)	NA	NA	NA	NA	NA	NA
Cycles @ Minimum (%)	NA	NA	NA	NA	NA	NA
Cycles Maxed Out (%)	NA	NA	NA	NA	NA	NA
Cycles with Peds (%)	NA	NA	NA	NA	NA	NA

Controller Summary

Average Cycle Length (s): NA  
Number of Complete Cycles : 0



Intersection: 5: Aviation Mall Rd/Starbucks Driveway & Aviation Rd

Phase	1	2	3	5	6	7
Movement(s) Served	EBL	WBT	SBTL	WBL	EBT	NBTL
Maximum Green (s)	10.0	65.0	20.0	25.0	50.0	20.0
Minimum Green (s)	5.0	15.0	5.0	5.0	15.0	5.0
Recall	None	Max	None	None	Max	None
Avg. Green (s)	0.0	0.0	0.0	0.0	0.0	0.0
g/C Ratio	NA	NA	NA	NA	NA	NA
Cycles Skipped (%)	NA	NA	NA	NA	NA	NA
Cycles @ Minimum (%)	NA	NA	NA	NA	NA	NA
Cycles Maxed Out (%)	NA	NA	NA	NA	NA	NA
Cycles with Peds (%)	NA	NA	NA	NA	NA	NA

Controller Summary

Average Cycle Length (s): NA  
Number of Complete Cycles : 0

Intersection: 6: Glen St/Lake George Rd & Aviation Rd/Quaker Rd

Phase	1	2	3	4	5	6	7	8
Movement(s) Served	EBL	WBTL	SBL	NBT	WBL	EBTL	SBT	NBL
Maximum Green (s)	16.0	37.0	11.0	26.0	5.0	48.0	18.0	19.0
Minimum Green (s)	5.0	15.0	5.0	15.0	5.0	15.0	5.0	5.0
Recall	None	None	None	None	None	Max	None	None
Avg. Green (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
g/C Ratio	NA	NA	NA	NA	NA	NA	NA	NA
Cycles Skipped (%)	NA	NA	NA	NA	NA	NA	NA	NA
Cycles @ Minimum (%)	NA	NA	NA	NA	NA	NA	NA	NA
Cycles Maxed Out (%)	NA	NA	NA	NA	NA	NA	NA	NA
Cycles with Peds (%)	NA	NA	NA	NA	NA	NA	NA	NA

Controller Summary

Average Cycle Length (s): NA  
Number of Complete Cycles : 0

Summary of All Intervals

Run Number	1	10	2	3	4	5	6
Start Time	11:30	11:30	11:30	11:30	11:30	11:30	11:30
End Time	12:40	12:40	12:40	12:40	12:40	12:40	12:40
Total Time (min)	70	70	70	70	70	70	70
Time Recorded (min)	55	55	55	55	55	55	55
# of Intervals	5	5	5	5	5	5	5
# of Recorded mScheduledIntervals	4	4	4	4	4	4	4
Vehs Entered	5275	5251	5321	5199	5294	5344	5437
Vehs Exited	5320	5303	5290	5225	5260	5313	5448
Starting Vehs	224	248	163	254	218	184	194
Ending Vehs	179	196	194	228	252	215	183
Denied Entry Before	1	0	0	0	1	1	2
Travel Distance (mi)	3026	3038	2983	2969	3068	3040	3180
Travel Time (hr)	200.8	201.0	202.8	200.7	209.0	207.2	224.8
Total Delay (hr)	102.9	102.6	106.0	104.1	109.6	108.7	122.0
Total Stops	8639	8573	8702	8568	8991	8932	9608
Fuel Used (gal)	142.9	143.0	142.0	140.4	145.1	144.6	152.1

Summary of All Intervals

Run Number	7	8	9	Avg
Start Time	11:30	11:30	11:30	11:30
End Time	12:40	12:40	12:40	12:40
Total Time (min)	70	70	70	70
Time Recorded (min)	55	55	55	55
# of Intervals	5	5	5	5
# of Recorded mScheduledIntervals	4	4	4	4
Vehs Entered	5232	5247	5372	5298
Vehs Exited	5258	5269	5352	5306
Starting Vehs	234	222	226	212
Ending Vehs	208	200	246	206
Denied Entry Before	0	2	1	0
Travel Distance (mi)	3028	3029	3068	3043
Travel Time (hr)	207.3	205.9	217.0	207.7
Total Delay (hr)	109.4	107.6	117.1	109.0
Total Stops	9058	8874	9189	8915
Fuel Used (gal)	144.5	144.1	148.1	144.7

Interval #0 Information Seeding

Start Time	11:30
End Time	11:45
Total Time (min)	15
Volumes adjusted by Growth Factors, Anti PHF.	
No data recorded this interval.	

**Interval #1 Information Recording**

Start Time	11:45
End Time	12:00
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	1	10	2	3	4	5	6
Vehs Entered	1348	1408	1428	1329	1359	1387	1489
Vehs Exited	1393	1435	1361	1414	1382	1355	1420
Starting Vehs	224	248	163	254	218	184	194
Ending Vehs	179	221	230	169	195	216	263
Denied Entry Before	1	0	0	0	1	1	2
Travel Distance (mi)	779	832	799	777	796	787	853
Travel Time (hr)	51.4	55.8	52.6	52.1	53.7	50.4	60.6
Total Delay (hr)	26.0	28.8	26.7	26.8	27.8	24.9	32.9
Total Stops	2210	2386	2322	2202	2299	2193	2689
Fuel Used (gal)	37.1	39.2	37.6	36.6	38.1	36.3	41.1

**Interval #1 Information Recording**

Start Time	11:45
End Time	12:00
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	7	8	9	Avg
Vehs Entered	1396	1373	1360	1387
Vehs Exited	1365	1387	1377	1388
Starting Vehs	234	222	226	212
Ending Vehs	265	208	209	212
Denied Entry Before	0	2	1	0
Travel Distance (mi)	817	808	779	803
Travel Time (hr)	56.4	55.3	50.4	53.9
Total Delay (hr)	29.8	29.0	25.0	27.8
Total Stops	2499	2433	2150	2334
Fuel Used (gal)	38.7	38.6	36.6	38.0

**Interval #2 Information Recording**

Start Time	12:00
End Time	12:15
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	1	10	2	3	4	5	6
Vehs Entered	1408	1347	1416	1380	1363	1433	1422
Vehs Exited	1355	1343	1426	1340	1370	1422	1463
Starting Vehs	179	221	230	169	195	216	263
Ending Vehs	232	225	220	209	188	227	222
Denied Entry Before	0	0	0	2	0	1	2
Travel Distance (mi)	814	788	805	785	815	834	855
Travel Time (hr)	53.5	49.8	53.5	49.7	52.9	58.0	55.8
Total Delay (hr)	27.2	24.3	27.4	24.1	26.6	30.8	28.2
Total Stops	2311	2101	2310	2162	2274	2462	2324
Fuel Used (gal)	37.8	36.4	38.0	36.1	37.7	40.1	39.8

**Interval #2 Information Recording**

Start Time	12:00
End Time	12:15
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	7	8	9	Avg
Vehs Entered	1341	1341	1425	1387
Vehs Exited	1388	1348	1406	1385
Starting Vehs	265	208	209	212
Ending Vehs	218	201	228	213
Denied Entry Before	0	0	1	0
Travel Distance (mi)	792	768	833	809
Travel Time (hr)	52.9	49.8	58.5	53.4
Total Delay (hr)	27.3	24.8	31.4	27.2
Total Stops	2257	2117	2523	2285
Fuel Used (gal)	37.7	36.0	40.1	38.0

**Interval #3 Information Recording**

Start Time	12:15
End Time	12:30
Total Time (min)	15
Volumes adjusted by PHF, Growth Factors.	

Run Number	1	10	2	3	4	5	6
Vehs Entered	1598	1607	1575	1563	1585	1591	1614
Vehs Exited	1571	1587	1551	1540	1504	1592	1553
Starting Vehs	232	225	220	209	188	227	222
Ending Vehs	259	245	244	232	269	226	283
Denied Entry Before	0	3	1	3	1	2	0
Travel Distance (mi)	883	896	852	858	878	876	903
Travel Time (hr)	59.6	60.7	59.8	62.1	60.5	62.3	68.8
Total Delay (hr)	31.2	31.7	32.1	34.1	32.1	34.0	39.5
Total Stops	2580	2589	2478	2654	2638	2661	2939
Fuel Used (gal)	41.9	42.6	40.8	41.8	41.6	42.3	43.8

**Interval #3 Information Recording**

Start Time	12:15
End Time	12:30
Total Time (min)	15
Volumes adjusted by PHF, Growth Factors.	

Run Number	7	8	9	Avg
Vehs Entered	1563	1605	1599	1589
Vehs Exited	1540	1523	1542	1550
Starting Vehs	218	201	228	213
Ending Vehs	241	283	285	255
Denied Entry Before	0	0	1	0
Travel Distance (mi)	865	891	877	878
Travel Time (hr)	59.6	62.2	63.1	61.9
Total Delay (hr)	31.6	33.3	34.6	33.4
Total Stops	2654	2636	2623	2647
Fuel Used (gal)	41.6	42.7	42.3	42.1

**Interval #4 Information Recording**

Start Time	12:30
End Time	12:40
Total Time (min)	10

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	1	10	2	3	4	5	6
Vehs Entered	921	889	902	927	987	933	912
Vehs Exited	1001	938	952	931	1004	944	1012
Starting Vehs	259	245	244	232	269	226	283
Ending Vehs	179	196	194	228	252	215	183
Denied Entry Before	5	4	0	10	6	1	2
Travel Distance (mi)	551	522	528	549	580	543	568
Travel Time (hr)	36.4	34.7	37.0	36.9	41.9	36.5	39.6
Total Delay (hr)	18.6	17.7	19.8	19.1	23.2	19.0	21.3
Total Stops	1538	1497	1592	1550	1780	1616	1656
Fuel Used (gal)	26.1	24.7	25.6	25.8	27.8	25.9	27.4

**Interval #4 Information Recording**

Start Time	12:30
End Time	12:40
Total Time (min)	10

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	7	8	9	Avg
Vehs Entered	932	928	988	930
Vehs Exited	965	1011	1027	977
Starting Vehs	241	283	285	255
Ending Vehs	208	200	246	206
Denied Entry Before	0	3	2	3
Travel Distance (mi)	554	562	579	554
Travel Time (hr)	38.4	38.6	44.9	38.5
Total Delay (hr)	20.6	20.4	26.0	20.6
Total Stops	1648	1688	1893	1641
Fuel Used (gal)	26.5	26.9	29.1	26.6

1: Cottage Hill Road/School Parking & Aviation Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	3.6	0.2	0.2	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1
Total Delay (hr)	0.0	0.3	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.4	0.1	0.0
Total Del/Veh (s)	8.2	3.4	1.3	6.3	4.1	3.0	38.2	34.4	5.8	43.9	40.0	5.5
Stop Delay (hr)	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.3	0.1	0.0
Stop Del/Veh (s)	6.1	1.8	1.0	3.0	1.2	1.1	36.7	31.8	5.5	42.1	37.0	5.6
Total Stops	9	42	0	6	26	3	4	2	7	26	9	24
Stop/Veh	0.64	0.15	0.00	0.35	0.08	0.14	1.00	0.67	0.88	0.90	0.82	0.89
Travel Dist (mi)	0.7	13.8	0.1	1.7	32.7	2.2	0.4	0.4	0.9	0.9	0.3	0.9
Travel Time (hr)	0.1	0.7	0.0	0.1	1.3	0.1	0.1	0.0	0.0	0.4	0.1	0.1
Avg Speed (mph)	12	21	18	19	25	21	7	9	18	2	3	10
Fuel Used (gal)	0.0	0.6	0.0	0.1	1.4	0.1	0.0	0.0	0.0	0.1	0.0	0.0
Fuel Eff. (mpg)	26.7	21.4	41.6	26.4	23.6	29.1	22.3	23.1	35.1	8.7	8.9	34.2
HC Emissions (g)	0	10	0	0	19	1	0	0	0	0	0	0
CO Emissions (g)	6	423	1	21	595	28	1	2	5	11	4	6
NOx Emissions (g)	0	30	0	2	68	3	0	0	0	1	0	1
Vehicles Entered	14	274	2	17	326	22	4	3	8	28	11	27
Vehicles Exited	14	273	2	16	326	22	4	3	8	28	11	27
Hourly Exit Rate	15	298	2	17	356	24	4	3	9	31	12	29
Input Volume	14	293	2	17	355	24	5	3	10	33	12	27
% of Volume	111	102	109	104	100	100	83	100	86	93	99	107
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0

1: Cottage Hill Road/School Parking & Aviation Rd Performance by movement

Movement	All
Denied Delay (hr)	0.0
Denied Del/Veh (s)	0.2
Total Delay (hr)	1.3
Total Del/Veh (s)	6.4
Stop Delay (hr)	0.9
Stop Del/Veh (s)	4.3
Total Stops	158
Stop/Veh	0.21
Travel Dist (mi)	55.0
Travel Time (hr)	3.1
Avg Speed (mph)	18
Fuel Used (gal)	2.4
Fuel Eff. (mpg)	22.7
HC Emissions (g)	30
CO Emissions (g)	1103
NOx Emissions (g)	106
Vehicles Entered	736
Vehicles Exited	734
Hourly Exit Rate	801
Input Volume	796
% of Volume	101
Denied Entry Before	0

2: Church Driveway/School Driveway & Aviation Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
Denied Del/Veh (s)	0.1	0.0	0.0	0.0	0.0	0.0		0.1	0.1	1.9	2.5	0.9
Total Delay (hr)	0.0	0.4	0.0	0.4	1.5	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Total Del/Veh (s)	9.7	4.3	1.7	24.1	15.3	14.6		33.7	5.2	44.5	49.7	4.9
Stop Delay (hr)	0.0	0.2	0.0	0.3	1.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Stop Del/Veh (s)	8.0	2.2	0.5	19.4	10.6	10.9		31.3	5.0	43.9	48.5	5.1
Total Stops	1	50	0	48	141	1	0	2	5	130	1	12
Stop/Veh	0.33	0.16	0.00	0.77	0.40	0.50		0.67	0.83	0.79	1.00	0.75
Travel Dist (mi)	0.3	31.1	0.1	6.8	38.6	0.3	0.0	0.1	0.1	5.0	0.0	0.5
Travel Time (hr)	0.0	1.3	0.0	0.6	2.6	0.0	0.0	0.0	0.0	2.5	0.0	0.1
Avg Speed (mph)	15	24	23	10	15	15	1	2	8	2	2	8
Fuel Used (gal)	0.0	1.2	0.0	0.3	1.4	0.0	0.0	0.0	0.0	0.7	0.0	0.0
Fuel Eff. (mpg)	24.7	26.2	27.5	25.4	27.3	34.1	5.7	8.9	31.5	6.8	6.7	23.7
HC Emissions (g)	0	15	0	1	14	0	0	0	0	4	0	0
CO Emissions (g)	4	496	2	54	350	1	0	1	0	94	0	2
NOx Emissions (g)	0	53	0	6	48	0	0	0	0	11	0	0
Vehicles Entered	3	310	1	62	350	2	0	3	6	164	1	16
Vehicles Exited	3	311	1	61	349	2	0	3	6	163	1	16
Hourly Exit Rate	3	339	1	67	381	2	0	3	7	178	1	17
Input Volume	4	336	2	66	377	3	1	2	5	187	1	15
% of Volume	77	101	55	101	101	73	0	144	124	95	109	114
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0

2: Church Driveway/School Driveway & Aviation Rd Performance by movement

Movement	All
Denied Delay (hr)	0.1
Denied Del/Veh (s)	0.4
Total Delay (hr)	4.4
Total Del/Veh (s)	17.2
Stop Delay (hr)	3.7
Stop Del/Veh (s)	14.3
Total Stops	391
Stop/Veh	0.42
Travel Dist (mi)	82.8
Travel Time (hr)	7.2
Avg Speed (mph)	12
Fuel Used (gal)	3.7
Fuel Eff. (mpg)	22.6
HC Emissions (g)	34
CO Emissions (g)	1004
NOx Emissions (g)	118
Vehicles Entered	918
Vehicles Exited	916
Hourly Exit Rate	999
Input Volume	1001
% of Volume	100
Denied Entry Before	0



3: Adirondack SB On/Off Ramp & Aviation Rd Performance by movement

Movement	EBT	EBR	WBL	WBT	NBL	NBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Denied Del/Veh (s)	0.3	0.2	0.0	0.0	0.1	0.4	0.2
Total Delay (hr)	4.0	0.8	4.1	0.7	0.4	1.1	11.2
Total Del/Veh (s)	27.5	22.8	31.8	5.2	36.3	10.8	19.8
Stop Delay (hr)	3.4	0.8	3.1	0.3	0.4	0.9	8.8
Stop Del/Veh (s)	23.2	20.4	23.9	2.3	34.0	8.7	15.6
Total Stops	319	85	391	69	34	224	1122
Stop/Veh	0.60	0.63	0.85	0.13	0.79	0.62	0.55
Travel Dist (mi)	25.1	6.4	61.4	68.8	2.5	21.2	185.5
Travel Time (hr)	4.9	1.2	6.1	2.8	0.5	2.1	17.7
Avg Speed (mph)	5	5	10	25	5	10	11
Fuel Used (gal)	1.9	0.4	3.0	2.9	0.2	0.9	9.2
Fuel Eff. (mpg)	13.4	16.3	20.5	23.4	14.7	24.6	20.1
HC Emissions (g)	14	2	23	39	1	8	87
CO Emissions (g)	453	66	819	1420	41	284	3084
NOx Emissions (g)	45	7	88	136	3	27	306
Vehicles Entered	525	133	454	510	41	355	2018
Vehicles Exited	526	133	455	511	41	355	2021
Hourly Exit Rate	574	145	496	557	45	387	2205
Input Volume	579	141	499	555	47	380	2201
% of Volume	99	103	100	100	94	102	100
Denied Entry Before	0	0	0	0	0	0	0

4: Aviation Mall Rd/Greenway N & Aviation Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.1	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	4.3	10.1	2.4	0.1	0.1	0.1
Total Delay (hr)	0.2	5.7	0.6	1.0	5.7	0.0	2.4	0.0	0.5	0.1	0.0	0.0
Total Del/Veh (s)	48.3	18.6	10.0	43.0	19.2	19.6	42.4	15.3	12.2	39.7	44.9	10.0
Stop Delay (hr)	0.2	3.1	0.2	0.8	3.4	0.0	2.3	0.0	0.5	0.1	0.0	0.0
Stop Del/Veh (s)	41.7	10.3	3.1	35.6	11.4	12.5	40.3	12.8	12.0	37.9	41.9	10.0
Total Stops	16	495	102	71	496	2	132	0	82	8	1	6
Stop/Veh	1.07	0.45	0.46	0.88	0.46	0.50	0.65	0.00	0.60	0.89	1.00	0.86
Travel Dist (mi)	3.0	218.6	45.5	18.9	250.7	1.0	5.2	0.0	3.5	0.5	0.1	0.4
Travel Time (hr)	0.3	12.4	2.3	1.6	13.0	0.1	2.9	0.0	0.8	0.1	0.0	0.0
Avg Speed (mph)	10	18	20	12	19	18	2	3	5	4	4	10
Fuel Used (gal)	0.2	9.3	1.7	0.8	9.4	0.0	0.9	0.0	0.2	0.0	0.0	0.0
Fuel Eff. (mpg)	19.6	23.5	26.6	23.3	26.6	26.3	6.1	6.5	15.3	15.4	16.3	32.5
HC Emissions (g)	1	109	21	7	99	0	4	0	1	0	0	0
CO Emissions (g)	47	3921	738	216	2979	9	106	0	37	3	0	1
NOx Emissions (g)	3	379	74	26	358	1	12	0	4	0	0	0
Vehicles Entered	14	1073	219	80	1063	4	203	1	136	9	1	7
Vehicles Exited	15	1071	220	79	1059	4	204	1	136	9	1	6
Hourly Exit Rate	16	1168	240	86	1155	4	223	1	148	10	1	7
Input Volume	16	1177	244	88	1165	5	224	1	142	11	1	7
% of Volume	101	99	99	98	99	83	99	109	104	89	109	96
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0

4: Aviation Mall Rd/Greenway N & Aviation Rd Performance by movement

Movement	All
Denied Delay (hr)	0.3
Denied Del/Veh (s)	0.4
Total Delay (hr)	16.2
Total Del/Veh (s)	20.5
Stop Delay (hr)	10.6
Stop Del/Veh (s)	13.4
Total Stops	1411
Stop/Veh	0.50
Travel Dist (mi)	547.4
Travel Time (hr)	33.5
Avg Speed (mph)	17
Fuel Used (gal)	22.6
Fuel Eff. (mpg)	24.2
HC Emissions (g)	243
CO Emissions (g)	8059
NOx Emissions (g)	857
Vehicles Entered	2810
Vehicles Exited	2805
Hourly Exit Rate	3060
Input Volume	3081
% of Volume	99
Denied Entry Before	0

5: Aviation Mall Rd/Starbucks Driveway & Aviation Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.0	0.0	0.0	0.0	0.0	3.4	3.9	0.1	1.1	0.1	0.5
Total Delay (hr)	0.8	4.3	0.0	2.7	3.5	0.2	0.1	0.0	1.1	0.7	0.1	0.3
Total Del/Veh (s)	66.1	13.6	8.8	44.7	10.9	8.9	50.6	68.0	18.1	54.4	51.5	29.1
Stop Delay (hr)	0.7	1.3	0.0	2.4	1.8	0.1	0.1	0.0	1.0	0.7	0.1	0.3
Stop Del/Veh (s)	58.2	4.2	1.9	39.8	5.7	5.2	48.2	62.9	17.8	52.7	48.0	28.8
Total Stops	44	315	2	182	336	22	5	2	164	40	3	33
Stop/Veh	1.00	0.28	0.22	0.84	0.29	0.34	0.83	1.00	0.78	0.89	0.75	0.89
Travel Dist (mi)	9.9	264.7	2.1	26.0	135.8	7.6	0.3	0.1	11.6	1.2	0.1	1.0
Travel Time (hr)	1.1	12.1	0.1	3.7	8.2	0.5	0.1	0.0	1.6	0.8	0.1	0.4
Avg Speed (mph)	9	22	23	7	17	16	3	3	7	2	2	3
Fuel Used (gal)	0.5	10.0	0.1	1.8	7.4	0.4	0.0	0.0	0.6	0.2	0.0	0.1
Fuel Eff. (mpg)	19.2	26.3	30.4	14.3	18.3	20.8	9.4	9.1	19.6	6.2	6.1	9.4
HC Emissions (g)	3	113	0	16	88	4	0	0	4	1	0	1
CO Emissions (g)	106	3440	14	645	3498	170	7	3	162	23	2	19
NOx Emissions (g)	12	422	2	58	330	15	0	0	15	2	0	2
Vehicles Entered	42	1131	9	212	1127	63	6	2	209	45	4	37
Vehicles Exited	43	1130	9	214	1128	63	6	2	210	45	4	37
Hourly Exit Rate	47	1233	10	233	1231	69	7	2	229	49	4	40
Input Volume	43	1244	9	235	1236	71	6	3	224	53	5	42
% of Volume	108	99	106	99	100	97	104	73	102	92	87	96
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0

5: Aviation Mall Rd/Starbucks Driveway & Aviation Rd Performance by movement

Movement	All
Denied Delay (hr)	0.0
Denied Del/Veh (s)	0.0
Total Delay (hr)	13.7
Total Del/Veh (s)	16.8
Stop Delay (hr)	8.5
Stop Del/Veh (s)	10.5
Total Stops	1148
Stop/Veh	0.39
Travel Dist (mi)	460.4
Travel Time (hr)	28.7
Avg Speed (mph)	16
Fuel Used (gal)	21.2
Fuel Eff. (mpg)	21.7
HC Emissions (g)	230
CO Emissions (g)	8088
NOx Emissions (g)	859
Vehicles Entered	2887
Vehicles Exited	2891
Hourly Exit Rate	3154
Input Volume	3174
% of Volume	99
Denied Entry Before	0

6: Glen St/Lake George Rd & Aviation Rd/Quaker Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.0	0.0	0.2	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	2.8	0.3	2.9	2.8	0.3	0.4	2.5	0.2	0.4
Total Delay (hr)	6.1	2.5	1.0	0.9	6.1	0.5	5.7	7.6	0.5	3.4	6.0	2.6
Total Del/Veh (s)	50.1	16.5	8.4	56.5	41.2	11.7	50.8	49.9	35.5	54.1	50.8	19.7
Stop Delay (hr)	5.3	1.6	0.4	0.9	4.8	0.4	4.9	6.0	0.4	3.0	4.9	1.9
Stop Del/Veh (s)	43.7	10.9	3.6	51.7	32.2	9.7	44.3	39.6	30.4	48.3	41.7	14.0
Total Stops	342	219	130	56	427	87	361	516	41	221	388	342
Stop/Veh	0.78	0.41	0.31	0.93	0.80	0.56	0.90	0.94	0.89	0.99	0.92	0.71
Travel Dist (mi)	52.3	65.2	51.2	9.6	88.6	25.6	47.0	64.3	5.5	34.4	65.4	75.1
Travel Time (hr)	8.0	4.5	3.0	1.3	8.4	1.5	7.5	9.3	0.7	4.5	7.7	5.2
Avg Speed (mph)	7	15	17	8	11	19	7	7	8	8	9	15
Fuel Used (gal)	3.3	3.2	1.9	0.5	4.2	1.0	3.0	4.1	0.3	1.9	3.6	2.7
Fuel Eff. (mpg)	15.9	20.4	26.6	17.8	21.0	24.7	15.6	15.8	17.8	18.1	18.3	28.0
HC Emissions (g)	24	36	21	4	44	13	23	37	3	18	35	30
CO Emissions (g)	874	1366	754	229	1970	705	1032	1520	132	844	1622	1425
NOx Emissions (g)	86	129	75	12	133	41	74	120	8	51	106	88
Vehicles Entered	430	534	419	58	533	154	392	534	45	218	414	474
Vehicles Exited	430	534	420	58	532	154	392	534	45	219	413	478
Hourly Exit Rate	469	583	458	63	580	168	428	583	49	239	451	521
Input Volume	478	576	465	63	582	169	434	589	49	248	462	527
% of Volume	98	101	98	100	100	99	99	99	100	96	98	99
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0

6: Glen St/Lake George Rd & Aviation Rd/Quaker Rd Performance by movement

Movement	All
Denied Delay (hr)	0.8
Denied Del/Veh (s)	0.7
Total Delay (hr)	42.8
Total Del/Veh (s)	36.1
Stop Delay (hr)	34.6
Stop Del/Veh (s)	29.1
Total Stops	3130
Stop/Veh	0.73
Travel Dist (mi)	584.3
Travel Time (hr)	61.4
Avg Speed (mph)	10
Fuel Used (gal)	29.8
Fuel Eff. (mpg)	19.6
HC Emissions (g)	288
CO Emissions (g)	12472
NOx Emissions (g)	925
Vehicles Entered	4205
Vehicles Exited	4209
Hourly Exit Rate	4592
Input Volume	4642
% of Volume	99
Denied Entry Before	0

30: Adirondack NB Off Ramp/Adirondack NB On Ramp & Aviation Rd Performance by movement

Movement	EBL	EBT	WBT	WBR	NBL	NBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.1	0.1
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.2	0.5	0.1
Total Delay (hr)	0.5	4.8	4.1	1.0	0.9	3.0	14.4
Total Del/Veh (s)	27.8	21.5	16.8	8.9	34.3	21.2	18.8
Stop Delay (hr)	0.4	3.6	2.0	0.3	0.8	2.3	9.5
Stop Del/Veh (s)	23.1	16.0	8.4	2.4	31.1	16.4	12.4
Total Stops	57	334	371	139	73	317	1291
Stop/Veh	0.88	0.41	0.42	0.36	0.74	0.61	0.47
Travel Dist (mi)	8.7	109.0	183.7	80.7	7.3	38.8	428.3
Travel Time (hr)	0.8	8.3	9.5	3.8	1.2	4.7	28.4
Avg Speed (mph)	11	13	19	22	6	8	15
Fuel Used (gal)	0.5	6.2	7.2	2.8	0.5	1.8	19.0
Fuel Eff. (mpg)	17.9	17.7	25.3	29.2	15.7	21.3	22.6
HC Emissions (g)	6	80	75	32	3	13	209
CO Emissions (g)	231	3032	2495	989	141	487	7375
NOx Emissions (g)	20	275	276	115	11	45	743
Vehicles Entered	64	803	871	380	96	508	2722
Vehicles Exited	64	802	871	380	96	508	2721
Hourly Exit Rate	70	875	950	415	105	554	2968
Input Volume	70	877	949	424	108	563	2991
% of Volume	99	100	100	98	97	98	99
Denied Entry Before	0	0	0	0	0	0	0

33: Burke Drive & Aviation Rd Performance by movement

Movement	EBT	WBL	WBT	NBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.8	0.1
Total Delay (hr)	0.5	0.3	0.1	0.6	1.5
Total Del/Veh (s)	3.8	7.1	1.1	11.8	4.4
Stop Delay (hr)	0.2	0.2	0.0	0.6	0.9
Stop Del/Veh (s)	1.3	4.6	0.1	11.7	2.7
Total Stops	27	68	2	167	264
Stop/Veh	0.05	0.50	0.00	0.97	0.22
Travel Dist (mi)	53.8	7.4	22.5	4.7	88.4
Travel Time (hr)	2.2	0.6	0.8	0.9	4.5
Avg Speed (mph)	24	13	28	6	20
Fuel Used (gal)	2.1	0.3	0.9	0.3	3.6
Fuel Eff. (mpg)	25.5	27.2	24.6	17.5	24.8
HC Emissions (g)	27	2	12	2	44
CO Emissions (g)	985	67	475	45	1572
NOx Emissions (g)	98	8	42	5	153
Vehicles Entered	492	137	415	171	1215
Vehicles Exited	492	137	415	171	1215
Hourly Exit Rate	537	149	453	187	1325
Input Volume	543	154	449	182	1327
% of Volume	99	97	101	103	100
Denied Entry Before	0	0	0	0	0

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Total Network Performance

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Denied Delay (hr)	1.5
Denied Del/Veh (s)	1.0
Total Delay (hr)	107.5
Total Del/Veh (s)	70.2
Stop Delay (hr)	77.6
Stop Del/Veh (s)	50.7
Total Stops	8915
Stop/Veh	1.62
Travel Dist (mi)	3042.9
Travel Time (hr)	207.7
Avg Speed (mph)	15
Fuel Used (gal)	144.7
Fuel Eff. (mpg)	21.0
HC Emissions (g)	1624
CO Emissions (g)	62221
NOx Emissions (g)	5697
Vehicles Entered	5298
Vehicles Exited	5306
Hourly Exit Rate	5788
Input Volume	24855
% of Volume	23
Denied Entry Before	0

Arterial Level of Service: EB Aviation Rd

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed	Run 1 Speed	Run 1 Delay
Cottage Hill Road	1	3.4	8.9	0.1	24	24	3.1
Church Driveway	2	4.2	14.4	0.1	26	27	3.4
Burke Drive	33	4.3	15.5	0.1	26	29	3.0
Adirondack SB On/Off	3	29.0	34.4	0.1	6	6	24.6
Adirondack NB Off Ra	30	17.4	31.7	0.1	15	19	10.8
Aviation Mall Rd	4	19.4	40.2	0.2	19	18	20.9
Aviation Mall Rd	5	13.7	37.8	0.2	23	23	12.7
Glen St	6	13.3	26.0	0.1	18	20	10.5
<b>Total</b>		<b>104.6</b>	<b>208.9</b>	<b>1.0</b>	<b>18</b>	<b>19</b>	<b>89.0</b>

Arterial Level of Service: EB Aviation Rd

Cross Street	Run 10 Speed	Run 10 Delay	Run 2 Speed	Run 2 Delay	Run 3 Speed	Run 3 Delay	Run 4 Speed
Cottage Hill Road	24	3.2	25	3.0	25	2.8	22
Church Driveway	25	4.7	25	4.5	25	4.2	26
Burke Drive	28	3.9	27	4.2	28	3.2	26
Adirondack SB On/Off	6	27.5	5	32.6	6	26.7	5
Adirondack NB Off Ra	16	15.8	17	13.9	18	12.8	14
Aviation Mall Rd	20	16.6	20	17.8	18	20.4	19
Aviation Mall Rd	24	11.8	24	12.3	23	13.5	23
Glen St	21	9.7	13	21.9	18	13.3	17
<b>Total</b>	<b>19</b>	<b>93.3</b>	<b>17</b>	<b>110.3</b>	<b>19</b>	<b>97.0</b>	<b>17</b>

Arterial Level of Service: EB Aviation Rd

Cross Street	Run 4 Delay	Run 5 Speed	Run 5 Delay	Run 6 Speed	Run 6 Delay	Run 7 Speed	Run 7 Delay
Cottage Hill Road	3.9	26	2.6	22	4.0	20	4.7
Church Driveway	4.2	25	4.3	26	4.2	27	3.6
Burke Drive	4.6	29	2.8	19	10.4	30	2.4
Adirondack SB On/Off	30.6	6	27.9	5	35.1	7	23.0
Adirondack NB Off Ra	20.2	16	16.8	10	32.1	19	11.5
Aviation Mall Rd	19.4	20	17.7	18	20.4	19	20.1
Aviation Mall Rd	13.7	23	12.3	21	15.8	21	16.5
Glen St	13.8	18	12.9	17	14.8	20	10.0
<b>Total</b>	<b>110.4</b>	<b>19</b>	<b>97.3</b>	<b>16</b>	<b>136.7</b>	<b>19</b>	<b>91.7</b>



Arterial Level of Service: EB Aviation Rd

Cross Street	Run 8 Speed	Run 8 Delay	Run 9 Speed	Run 9 Delay
Cottage Hill Road	22	3.8	26	2.5
Church Driveway	26	3.9	25	4.6
Burke Drive	25	4.8	28	3.8
Adirondack SB On/Off	6	27.5	5	33.6
Adirondack NB Off Ra	18	13.4	12	24.9
Aviation Mall Rd	18	21.9	19	18.9
Aviation Mall Rd	22	14.4	23	13.6
Glen St	17	13.7	18	13.1
Total	18	103.5	17	115.0

Arterial Level of Service: WB Aviation Rd

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed	Run 1 Speed	Run 1 Delay
Starbucks Driveway	5	18.0	30.7	0.1	15	16	16.6
Greenway N	4	19.7	43.9	0.2	20	21	17.4
Adirondack NB On Ram	30	15.9	37.6	0.2	20	20	15.5
Adirondack SB On/Off	3	4.6	18.6	0.1	26	26	4.5
Burke Drive	33	1.1	6.7	0.1	28	28	1.1
School Driveway	2	15.3	26.7	0.1	15	13	19.9
School Parking	1	4.1	14.5	0.1	25	26	3.6
Total		78.8	178.7	1.0	20	20	78.7

Arterial Level of Service: WB Aviation Rd

Cross Street	Run 10 Speed	Run 10 Delay	Run 2 Speed	Run 2 Delay	Run 3 Speed	Run 3 Delay	Run 4 Speed
Starbucks Driveway	16	17.1	17	15.0	15	19.0	16
Greenway N	20	17.7	20	18.0	19	21.9	19
Adirondack NB On Ram	20	17.2	21	14.8	21	15.2	19
Adirondack SB On/Off	27	4.4	28	3.7	26	4.5	25
Burke Drive	29	0.9	29	0.9	29	1.1	28
School Driveway	17	12.6	15	16.4	16	14.9	15
School Parking	26	3.6	25	4.5	26	3.8	24
Total	20	73.5	20	73.4	20	80.4	20

Arterial Level of Service: WB Aviation Rd

Cross Street	Run 4 Delay	Run 5 Speed	Run 5 Delay	Run 6 Speed	Run 6 Delay	Run 7 Speed	Run 7 Delay
Starbucks Driveway	15.6	16	16.3	15	19.1	13	22.7
Greenway N	20.1	21	17.6	20	19.2	18	23.6
Adirondack NB On Ram	17.4	20	16.4	20	16.6	21	14.8
Adirondack SB On/Off	5.5	27	4.3	26	4.9	27	4.3
Burke Drive	1.1	29	1.0	27	1.3	29	1.0
School Driveway	14.8	15	16.2	15	16.5	16	13.5
School Parking	5.2	26	3.9	26	4.1	23	5.8
Total	79.7	20	75.7	20	81.7	19	85.7

Arterial Level of Service: WB Aviation Rd

Cross Street	Run 8 Speed	Run 8 Delay	Run 9 Speed	Run 9 Delay
Starbucks Driveway	15	18.6	14	20.1
Greenway N	19	20.4	19	20.5
Adirondack NB On Ram	21	14.1	19	17.3
Adirondack SB On/Off	25	5.2	26	4.9
Burke Drive	28	1.1	28	1.2
School Driveway	16	14.5	16	14.3
School Parking	26	3.6	27	3.2
Total	20	77.5	19	81.5

Intersection: 1: Cottage Hill Road/School Parking & Aviation Rd

Phase	1	2	4	5	6	8
Movement(s) Served	EBL	WBTL	NBTL	WBL	EBTL	SBTL
Maximum Green (s)	7.0	51.0	37.0	7.0	51.0	37.0
Minimum Green (s)	5.0	20.0	10.0	5.0	20.0	10.0
Recall	None	Max	None	None	Max	None
Avg. Green (s)	0.0	0.0	0.0	0.0	0.0	0.0
g/C Ratio	NA	NA	NA	NA	NA	NA
Cycles Skipped (%)	NA	NA	NA	NA	NA	NA
Cycles @ Minimum (%)	NA	NA	NA	NA	NA	NA
Cycles Maxed Out (%)	NA	NA	NA	NA	NA	NA
Cycles with Peds (%)	NA	NA	NA	NA	NA	NA

Controller Summary

Average Cycle Length (s): NA  
Number of Complete Cycles : 0

Intersection: 2: Church Driveway/School Driveway & Aviation Rd

Phase	1	2	4	5	6	8
Movement(s) Served	EBL	WBTL	NBTL	WBL	EBTL	SBTL
Maximum Green (s)	10.0	51.0	34.0	10.0	51.0	34.0
Minimum Green (s)	5.0	20.0	10.0	5.0	20.0	10.0
Recall	None	Max	None	None	Max	None
Avg. Green (s)	0.0	0.0	0.0	0.0	0.0	0.0
g/C Ratio	NA	NA	NA	NA	NA	NA
Cycles Skipped (%)	NA	NA	NA	NA	NA	NA
Cycles @ Minimum (%)	NA	NA	NA	NA	NA	NA
Cycles Maxed Out (%)	NA	NA	NA	NA	NA	NA
Cycles with Peds (%)	NA	NA	NA	NA	NA	NA

Controller Summary

Average Cycle Length (s): NA  
Number of Complete Cycles : 0

Intersection: 3: Adirondack SB On/Off Ramp & Aviation Rd

Phase	1	2	3	5	6	7
Movement(s) Served	WBT	WBTL	NBL	WBTL	EBWB	NBL
Maximum Green (s)	39.0	24.0	32.0	39.5	24.0	32.0
Minimum Green (s)	28.0	1.0	1.0	15.0	1.0	1.0
Recall	Max	None	None	Max	None	None
Avg. Green (s)	0.0	0.0	0.0	0.0	0.0	0.0
g/C Ratio	NA	NA	NA	NA	NA	NA
Cycles Skipped (%)	NA	NA	NA	NA	NA	NA
Cycles @ Minimum (%)	NA	NA	NA	NA	NA	NA
Cycles Maxed Out (%)	NA	NA	NA	NA	NA	NA
Cycles with Peds (%)	NA	NA	NA	NA	NA	NA

Controller Summary

Average Cycle Length (s): NA  
Number of Complete Cycles : 0

Intersection: 4: Aviation Mall Rd/Greenway N & Aviation Rd

Phase	1	2	3	5	6	7
Movement(s) Served	EBL	WBT	NBTL	WBL	EBT	SBTL
Maximum Green (s)	18.0	50.0	27.0	18.0	50.0	27.0
Minimum Green (s)	20.0	5.0	5.0	5.0	5.0	5.0
Recall	None	Max	None	None	Max	None
Avg. Green (s)	0.0	0.0	0.0	0.0	0.0	0.0
g/C Ratio	NA	NA	NA	NA	NA	NA
Cycles Skipped (%)	NA	NA	NA	NA	NA	NA
Cycles @ Minimum (%)	NA	NA	NA	NA	NA	NA
Cycles Maxed Out (%)	NA	NA	NA	NA	NA	NA
Cycles with Peds (%)	NA	NA	NA	NA	NA	NA

Controller Summary

Average Cycle Length (s): NA  
Number of Complete Cycles : 0

Intersection: 5: Aviation Mall Rd/Starbucks Driveway & Aviation Rd

Phase	1	2	3	5	6	7
Movement(s) Served	EBL	WBT	SBTL	WBL	EBT	NBTL
Maximum Green (s)	10.0	65.0	20.0	25.0	50.0	20.0
Minimum Green (s)	5.0	15.0	5.0	5.0	15.0	5.0
Recall	None	Max	None	None	Max	None
Avg. Green (s)	0.0	0.0	0.0	0.0	0.0	0.0
g/C Ratio	NA	NA	NA	NA	NA	NA
Cycles Skipped (%)	NA	NA	NA	NA	NA	NA
Cycles @ Minimum (%)	NA	NA	NA	NA	NA	NA
Cycles Maxed Out (%)	NA	NA	NA	NA	NA	NA
Cycles with Peds (%)	NA	NA	NA	NA	NA	NA

Controller Summary

Average Cycle Length (s): NA  
Number of Complete Cycles : 0

Intersection: 6: Glen St/Lake George Rd & Aviation Rd/Quaker Rd

Phase	1	2	3	4	5	6	7	8
Movement(s) Served	EBL	WBTL	SBL	NBT	WBL	EBTL	SBT	NBL
Maximum Green (s)	16.0	37.0	11.0	26.0	5.0	48.0	19.0	18.0
Minimum Green (s)	5.0	15.0	5.0	15.0	5.0	15.0	5.0	5.0
Recall	None	None	None	None	None	Max	None	None
Avg. Green (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
g/C Ratio	NA	NA	NA	NA	NA	NA	NA	NA
Cycles Skipped (%)	NA	NA	NA	NA	NA	NA	NA	NA
Cycles @ Minimum (%)	NA	NA	NA	NA	NA	NA	NA	NA
Cycles Maxed Out (%)	NA	NA	NA	NA	NA	NA	NA	NA
Cycles with Peds (%)	NA	NA	NA	NA	NA	NA	NA	NA

Controller Summary

Average Cycle Length (s): NA  
Number of Complete Cycles : 0

Summary of All Intervals

Run Number	1	10	2	3	4	5	6
Start Time	4:00	4:00	4:00	4:00	4:00	4:00	4:00
End Time	5:15	5:15	5:15	5:15	5:15	5:15	5:15
Total Time (min)	75	75	75	75	75	75	75
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	5	5	5	5	5	5	5
# of Recorded mScheduledIntervals	4	4	4	4	4	4	4
Vehs Entered	4192	4303	4235	4225	4317	4193	4252
Vehs Exited	4193	4266	4230	4260	4311	4223	4240
Starting Vehs	185	160	160	181	151	164	137
Ending Vehs	184	197	165	146	157	134	149
Denied Entry Before	1	1	4	1	2	2	1
Travel Distance (mi)	3265	3333	3259	3272	3299	3351	3250
Travel Time (hr)	173.5	179.6	169.6	170.8	173.8	174.4	167.1
Total Delay (hr)	84.0	87.6	80.1	80.8	83.1	82.4	77.9
Total Stops	6269	6652	6246	6256	6422	6368	6115
Fuel Used (gal)	140.9	144.6	139.9	141.0	142.2	143.2	138.7

Summary of All Intervals

Run Number	7	8	9	Avg
Start Time	4:00	4:00	4:00	4:00
End Time	5:15	5:15	5:15	5:15
Total Time (min)	75	75	75	75
Time Recorded (min)	60	60	60	60
# of Intervals	5	5	5	5
# of Recorded mScheduledIntervals	4	4	4	4
Vehs Entered	4222	4243	4254	4244
Vehs Exited	4215	4267	4266	4245
Starting Vehs	160	179	183	166
Ending Vehs	167	155	171	156
Denied Entry Before	1	1	0	0
Travel Distance (mi)	3266	3281	3314	3289
Travel Time (hr)	175.6	171.0	174.5	173.0
Total Delay (hr)	85.8	80.8	83.5	82.6
Total Stops	6469	6343	6439	6362
Fuel Used (gal)	142.6	141.4	143.9	141.8

Interval #0 Information Seeding

Start Time	4:00
End Time	4:15
Total Time (min)	15
Volumes adjusted by Growth Factors.	
No data recorded this interval.	

Interval #1 Information Recording

Start Time	4:15
End Time	4:30
Total Time (min)	15
Volumes adjusted by Growth Factors, Anti PHF.	

Run Number	1	10	2	3	4	5	6
Vehs Entered	1031	1052	1029	1038	1021	1055	996
Vehs Exited	1049	1057	1036	1054	987	1066	961
Starting Vehs	185	160	160	181	151	164	137
Ending Vehs	167	155	153	165	185	153	172
Denied Entry Before	1	1	4	1	2	2	1
Travel Distance (mi)	866	801	802	817	769	860	765
Travel Time (hr)	44.6	42.3	42.0	42.2	39.5	45.3	38.5
Total Delay (hr)	20.9	20.2	20.0	19.7	18.4	21.7	17.6
Total Stops	1555	1575	1489	1539	1497	1688	1377
Fuel Used (gal)	36.9	34.4	34.5	35.5	33.0	37.0	31.9

Interval #1 Information Recording

Start Time	4:15
End Time	4:30
Total Time (min)	15
Volumes adjusted by Growth Factors, Anti PHF.	

Run Number	7	8	9	Avg
Vehs Entered	968	1056	1048	1029
Vehs Exited	981	1040	1061	1030
Starting Vehs	160	179	183	166
Ending Vehs	147	195	170	160
Denied Entry Before	1	1	0	0
Travel Distance (mi)	779	836	827	812
Travel Time (hr)	38.7	43.8	41.4	41.8
Total Delay (hr)	17.3	20.7	18.7	19.5
Total Stops	1382	1599	1514	1516
Fuel Used (gal)	32.9	35.7	35.0	34.7



Interval #2 Information Recording

Start Time	4:30
End Time	4:45
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	1	10	2	3	4	5	6
Vehs Entered	1043	1014	1014	1016	1034	998	1006
Vehs Exited	1048	997	994	1026	1033	990	1019
Starting Vehs	167	155	153	165	185	153	172
Ending Vehs	162	172	173	155	186	161	159
Denied Entry Before	0	1	0	2	3	3	2
Travel Distance (mi)	800	804	773	776	825	811	783
Travel Time (hr)	42.7	41.9	40.2	39.2	42.6	40.8	39.6
Total Delay (hr)	20.8	19.7	18.9	17.8	19.9	18.5	18.1
Total Stops	1573	1522	1523	1418	1565	1464	1412
Fuel Used (gal)	34.4	34.4	32.9	32.9	35.1	33.9	33.4

Interval #2 Information Recording

Start Time	4:30
End Time	4:45
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	7	8	9	Avg
Vehs Entered	1061	986	988	1012
Vehs Exited	1013	1046	1015	1018
Starting Vehs	147	195	170	160
Ending Vehs	195	135	143	155
Denied Entry Before	1	2	0	0
Travel Distance (mi)	775	766	783	790
Travel Time (hr)	42.4	40.3	40.2	41.0
Total Delay (hr)	21.1	19.2	18.6	19.3
Total Stops	1614	1534	1465	1510
Fuel Used (gal)	34.2	33.4	33.6	33.8

Interval #3 Information Recording

Start Time	4:45
End Time	5:00
Total Time (min)	15
Volumes adjusted by PHF, Growth Factors.	

Run Number	1	10	2	3	4	5	6
Vehs Entered	1137	1210	1153	1177	1198	1142	1183
Vehs Exited	1126	1168	1126	1149	1179	1096	1155
Starting Vehs	162	172	173	155	186	161	159
Ending Vehs	173	214	200	183	205	207	187
Denied Entry Before	1	0	0	1	1	2	1
Travel Distance (mi)	856	938	872	910	876	849	896
Travel Time (hr)	46.8	53.0	45.0	50.2	48.5	45.0	46.9
Total Delay (hr)	23.2	27.2	21.1	25.2	24.3	21.7	22.3
Total Stops	1718	1993	1676	1895	1806	1689	1774
Fuel Used (gal)	37.5	41.5	37.4	40.0	38.6	36.7	38.5

Interval #3 Information Recording

Start Time	4:45
End Time	5:00
Total Time (min)	15
Volumes adjusted by PHF, Growth Factors.	

Run Number	7	8	9	Avg
Vehs Entered	1181	1154	1173	1168
Vehs Exited	1156	1100	1103	1134
Starting Vehs	195	135	143	155
Ending Vehs	220	189	213	197
Denied Entry Before	0	1	3	0
Travel Distance (mi)	928	834	867	883
Travel Time (hr)	52.0	43.0	49.4	48.0
Total Delay (hr)	26.6	20.1	25.6	23.7
Total Stops	1915	1585	1862	1789
Fuel Used (gal)	41.1	36.0	39.1	38.6

Interval #4 Information Recording

Start Time	5:00
End Time	5:15
Total Time (min)	15
Volumes adjusted by Growth Factors, Anti PHF.	

Run Number	1	10	2	3	4	5	6
Vehs Entered	981	1027	1039	994	1064	998	1067
Vehs Exited	970	1044	1074	1031	1112	1071	1105
Starting Vehs	173	214	200	183	205	207	187
Ending Vehs	184	197	165	146	157	134	149
Denied Entry Before	2	2	1	0	2	1	2
Travel Distance (mi)	743	791	812	768	828	830	807
Travel Time (hr)	39.4	42.5	42.5	39.2	43.2	43.4	42.1
Total Delay (hr)	19.1	20.5	20.1	18.2	20.5	20.5	19.9
Total Stops	1423	1562	1558	1404	1554	1527	1552
Fuel Used (gal)	32.1	34.3	35.1	32.6	35.5	35.6	34.9

Interval #4 Information Recording

Start Time	5:00
End Time	5:15
Total Time (min)	15
Volumes adjusted by Growth Factors, Anti PHF.	

Run Number	7	8	9	Avg
Vehs Entered	1012	1047	1045	1023
Vehs Exited	1065	1081	1087	1065
Starting Vehs	220	189	213	197
Ending Vehs	167	155	171	156
Denied Entry Before	0	1	0	0
Travel Distance (mi)	784	845	837	804
Travel Time (hr)	42.4	43.9	43.5	42.2
Total Delay (hr)	20.8	20.7	20.6	20.1
Total Stops	1558	1625	1598	1536
Fuel Used (gal)	34.4	36.3	36.2	34.7

7: Lafayette St & Quaker Rd Performance by movement

Movement	EBT	EBR	WBL	WBT	NBL	NBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Denied Del/Veh (s)	0.2	0.2	0.1	0.0	3.7	0.3	0.2
Total Delay (hr)	2.3	0.0	0.8	1.9	0.4	3.0	8.5
Total Del/Veh (s)	10.3	3.9	17.3	6.9	44.7	50.6	13.6
Stop Delay (hr)	1.4	0.0	0.6	0.6	0.4	2.7	5.7
Stop Del/Veh (s)	6.3	3.0	11.7	2.1	39.8	46.2	9.1
Total Stops	259	8	137	119	36	186	745
Stop/Veh	0.32	0.44	0.79	0.12	1.00	0.89	0.33
Travel Dist (mi)	54.7	1.2	36.6	209.6	2.8	16.5	321.5
Travel Time (hr)	3.8	0.1	2.0	7.6	0.6	3.7	17.6
Avg Speed (mph)	15	17	19	28	5	5	18
Fuel Used (gal)	2.7	0.0	1.6	9.6	0.2	1.3	15.5
Fuel Eff. (mpg)	19.9	31.4	22.9	21.7	12.3	12.9	20.7
HC Emissions (g)	32	0	19	129	2	7	188
CO Emissions (g)	1464	17	837	5432	65	300	8116
NOx Emissions (g)	110	1	68	482	6	25	692
Vehicles Entered	814	18	173	985	36	207	2233
Vehicles Exited	812	18	172	983	35	206	2226
Hourly Exit Rate	812	18	172	983	35	206	2226
Input Volume	813	16	175	974	35	206	2220
% of Volume	100	111	98	101	99	100	100
Denied Entry Before	0	0	0	0	0	0	0

8: Glenwood Ave & Quaker Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.3
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	3.8	0.2	0.2	0.5	0.5	3.6
Total Delay (hr)	1.4	4.3	0.1	0.6	6.2	0.0	0.7	0.9	0.6	0.4	1.1	0.9
Total Del/Veh (s)	29.8	18.5	13.6	25.4	25.5	26.2	49.4	48.4	24.9	48.3	48.7	13.5
Stop Delay (hr)	1.1	2.8	0.1	0.5	4.0	0.0	0.7	0.8	0.5	0.4	1.0	0.9
Stop Del/Veh (s)	23.8	12.2	10.0	18.4	16.5	19.1	45.9	43.4	22.7	44.7	43.7	12.4
Total Stops	149	328	10	84	472	4	46	54	69	31	78	211
Stop/Veh	0.89	0.39	0.45	0.91	0.54	0.67	0.85	0.82	0.84	0.94	0.93	0.83
Travel Dist (mi)	34.5	169.6	4.5	30.7	286.3	2.1	5.0	6.2	7.8	2.2	5.6	17.1
Travel Time (hr)	2.4	8.8	0.2	1.5	13.5	0.1	1.0	1.1	0.9	0.5	1.3	2.0
Avg Speed (mph)	14	19	20	20	21	20	5	6	9	4	4	10
Fuel Used (gal)	1.5	7.2	0.2	0.9	9.0	0.1	0.4	0.4	0.4	0.2	0.5	0.9
Fuel Eff. (mpg)	23.0	23.6	27.4	32.4	31.8	32.8	13.6	15.1	19.6	11.7	11.7	19.1
HC Emissions (g)	16	89	1	9	94	0	3	3	4	1	4	8
CO Emissions (g)	671	3819	65	287	2806	11	110	113	150	36	127	305
NOx Emissions (g)	57	313	5	35	348	1	9	9	13	3	12	28
Vehicles Entered	164	833	22	90	853	6	53	65	81	33	83	252
Vehicles Exited	164	832	22	90	856	6	53	65	82	33	83	252
Hourly Exit Rate	164	832	22	90	856	6	53	65	82	33	83	252
Input Volume	159	840	21	88	850	6	57	65	82	34	80	247
% of Volume	103	99	106	102	101	100	93	100	100	97	103	102
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0

8: Glenwood Ave & Quaker Rd Performance by movement

Movement	All
Denied Delay (hr)	0.3
Denied Del/Veh (s)	0.5
Total Delay (hr)	17.4
Total Del/Veh (s)	24.3
Stop Delay (hr)	12.8
Stop Del/Veh (s)	17.9
Total Stops	1536
Stop/Veh	0.60
Travel Dist (mi)	571.5
Travel Time (hr)	33.5
Avg Speed (mph)	17
Fuel Used (gal)	21.6
Fuel Eff. (mpg)	26.4
HC Emissions (g)	233
CO Emissions (g)	8501
NOx Emissions (g)	833
Vehicles Entered	2535
Vehicles Exited	2538
Hourly Exit Rate	2538
Input Volume	2528
% of Volume	100
Denied Entry Before	0

9: Grocery Parking Lot & Quaker Rd Performance by movement

Movement	EBT	EBR	WBL	WBT	NBL	NBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.1	0.1	0.0
Total Delay (hr)	1.3	0.1	0.1	1.1	0.9	0.1	3.7
Total Del/Veh (s)	5.8	5.4	13.8	4.4	50.0	6.7	6.7
Stop Delay (hr)	0.1	0.0	0.1	0.3	0.9	0.1	1.4
Stop Del/Veh (s)	0.5	0.4	9.8	1.0	47.5	6.2	2.6
Total Stops	35	6	20	70	56	58	245
Stop/Veh	0.04	0.07	0.71	0.08	0.86	0.88	0.12
Travel Dist (mi)	273.5	30.2	2.8	90.0	2.9	3.0	402.3
Travel Time (hr)	8.3	1.0	0.2	3.6	1.0	0.3	14.5
Avg Speed (mph)	33	30	13	25	3	11	28
Fuel Used (gal)	9.6	1.0	0.1	5.7	0.3	0.1	16.9
Fuel Eff. (mpg)	28.4	31.0	19.1	15.7	9.5	33.0	23.8
HC Emissions (g)	119	13	1	80	1	1	215
CO Emissions (g)	4497	436	61	3718	46	21	8780
NOx Emissions (g)	458	47	5	304	4	2	821
Vehicles Entered	811	88	28	898	63	66	1954
Vehicles Exited	808	88	28	899	64	65	1952
Hourly Exit Rate	808	88	28	899	64	65	1952
Input Volume	818	90	28	891	66	62	1955
% of Volume	99	98	100	101	97	105	100
Denied Entry Before	0	0	0	0	0	0	0

10: Bay Rd & Quaker Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.5	0.0	0.4	3.5	0.2	0.2	3.4	0.1	0.2
Total Delay (hr)	0.6	2.3	0.1	1.2	6.6	0.3	2.4	2.5	0.4	2.4	2.7	0.4
Total Del/Veh (s)	23.6	11.8	9.1	47.1	32.9	10.5	60.3	40.5	14.2	65.9	41.3	17.4
Stop Delay (hr)	0.5	1.4	0.1	0.9	4.1	0.1	2.2	2.1	0.3	2.2	2.3	0.4
Stop Del/Veh (s)	20.0	7.1	6.3	37.3	20.3	3.3	56.1	35.3	12.9	61.3	35.3	15.7
Total Stops	68	224	21	80	497	64	138	176	75	124	187	64
Stop/Veh	0.73	0.32	0.38	0.91	0.69	0.65	0.97	0.80	0.78	0.95	0.80	0.78
Travel Dist (mi)	8.8	67.1	5.4	42.9	353.3	48.3	8.0	12.4	5.5	12.0	22.1	7.8
Travel Time (hr)	0.9	4.1	0.4	2.3	15.7	1.6	2.8	2.8	0.6	2.9	3.3	0.7
Avg Speed (mph)	10	16	15	18	23	30	3	4	9	4	7	11
Fuel Used (gal)	0.4	2.8	0.2	1.6	12.8	1.7	0.9	1.0	0.3	1.0	1.4	0.3
Fuel Eff. (mpg)	24.6	24.1	28.0	26.5	27.5	29.1	8.8	11.9	21.5	11.8	15.3	22.4
HC Emissions (g)	2	30	2	18	133	20	6	8	2	5	12	4
CO Emissions (g)	92	1261	83	624	4929	780	194	270	91	273	512	158
NOx Emissions (g)	9	106	7	67	516	74	17	26	7	18	40	14
Vehicles Entered	92	703	56	86	705	96	139	216	96	126	232	81
Vehicles Exited	92	703	56	86	706	97	138	215	96	126	232	81
Hourly Exit Rate	92	703	56	86	706	97	138	215	96	126	232	81
Input Volume	96	700	60	94	703	91	135	218	101	124	232	81
% of Volume	96	100	93	91	100	107	102	99	95	102	100	100
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0

10: Bay Rd & Quaker Rd Performance by movement

Movement	All
Denied Delay (hr)	0.3
Denied Del/Veh (s)	0.4
Total Delay (hr)	21.8
Total Del/Veh (s)	29.4
Stop Delay (hr)	16.7
Stop Del/Veh (s)	22.5
Total Stops	1718
Stop/Veh	0.64
Travel Dist (mi)	593.6
Travel Time (hr)	38.3
Avg Speed (mph)	16
Fuel Used (gal)	24.5
Fuel Eff. (mpg)	24.3
HC Emissions (g)	242
CO Emissions (g)	9269
NOx Emissions (g)	900
Vehicles Entered	2628
Vehicles Exited	2628
Hourly Exit Rate	2628
Input Volume	2635
% of Volume	100
Denied Entry Before	0

11: Meadowbrook Rd & Quaker Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	3.9	0.2	4.2	3.8	0.3	0.3
Total Delay (hr)	1.2	2.2	0.2	0.0	6.9	0.4	0.9	1.4	0.0	0.7	1.2	0.8
Total Del/Veh (s)	42.3	10.4	9.7	39.8	39.0	33.1	43.1	51.9	19.8	43.5	53.8	29.6
Stop Delay (hr)	1.0	1.0	0.1	0.0	5.1	0.3	0.8	1.2	0.0	0.6	1.1	0.7
Stop Del/Veh (s)	35.9	4.5	4.8	33.8	28.8	26.8	39.2	45.8	17.1	38.9	46.3	26.2
Total Stops	83	149	18	3	501	34	68	85	6	51	72	89
Stop/Veh	0.81	0.20	0.27	1.00	0.78	0.83	0.89	0.89	1.20	0.88	0.88	0.90
Travel Dist (mi)	53.4	385.9	34.9	0.8	180.3	11.7	6.7	8.4	0.5	4.6	6.4	7.8
Travel Time (hr)	2.7	12.2	1.2	0.1	11.7	0.7	1.2	1.6	0.1	0.9	1.4	1.1
Avg Speed (mph)	20	32	30	14	15	16	6	5	10	5	5	7
Fuel Used (gal)	1.9	12.7	1.1	0.0	7.6	0.5	0.5	0.6	0.0	0.4	0.5	0.5
Fuel Eff. (mpg)	28.3	30.4	32.1	24.1	23.6	24.6	14.0	13.7	18.9	12.9	13.3	16.9
HC Emissions (g)	22	134	12	0	78	7	3	5	0	2	4	4
CO Emissions (g)	702	4961	411	13	3253	244	145	195	8	103	147	159
NOx Emissions (g)	80	538	47	1	282	23	11	16	1	8	12	13
Vehicles Entered	101	743	65	3	638	41	75	94	5	57	80	98
Vehicles Exited	101	747	65	3	638	41	75	94	5	58	80	98
Hourly Exit Rate	101	747	65	3	638	41	75	94	5	58	80	98
Input Volume	98	749	62	3	635	42	76	90	5	59	81	100
% of Volume	103	100	105	100	100	97	99	104	100	98	98	98
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0

11: Meadowbrook Rd & Quaker Rd Performance by movement

Movement	All
Denied Delay (hr)	0.2
Denied Del/Veh (s)	0.3
Total Delay (hr)	16.0
Total Del/Veh (s)	28.3
Stop Delay (hr)	12.0
Stop Del/Veh (s)	21.3
Total Stops	1159
Stop/Veh	0.57
Travel Dist (mi)	701.5
Travel Time (hr)	34.8
Avg Speed (mph)	20
Fuel Used (gal)	26.2
Fuel Eff. (mpg)	26.7
HC Emissions (g)	271
CO Emissions (g)	10341
NOx Emissions (g)	1032
Vehicles Entered	2000
Vehicles Exited	2005
Hourly Exit Rate	2005
Input Volume	2000
% of Volume	100
Denied Entry Before	0



12: Ridge Rd & Quaker Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.0	0.0	3.1	0.1	0.2	3.9	0.2	0.2	3.6	0.3	0.3
Total Delay (hr)	1.2	2.6	0.1	0.2	2.9	0.1	0.3	1.5	0.1	0.5	1.9	0.9
Total Del/Veh (s)	39.5	14.6	11.7	32.6	18.6	8.5	55.7	43.5	25.5	51.9	50.8	33.2
Stop Delay (hr)	1.1	1.7	0.1	0.2	2.1	0.1	0.3	1.2	0.1	0.5	1.6	0.8
Stop Del/Veh (s)	34.8	9.4	7.6	29.9	13.3	6.6	52.4	36.8	23.6	47.7	41.9	29.8
Total Stops	101	178	8	21	269	16	20	96	13	36	116	85
Stop/Veh	0.90	0.28	0.27	0.84	0.47	0.42	0.91	0.79	0.81	0.95	0.85	0.88
Travel Dist (mi)	31.4	176.8	8.3	2.7	61.6	4.0	1.6	9.5	1.2	2.5	9.4	6.6
Travel Time (hr)	2.1	7.1	0.3	0.3	4.5	0.2	0.4	1.7	0.2	0.7	2.2	1.2
Avg Speed (mph)	15	25	24	9	14	17	4	6	7	4	4	6
Fuel Used (gal)	1.2	6.1	0.3	0.1	2.7	0.1	0.1	0.7	0.1	0.2	0.8	0.4
Fuel Eff. (mpg)	26.2	29.1	31.6	19.2	23.0	29.2	11.0	14.1	17.9	10.6	12.4	14.8
HC Emissions (g)	9	62	5	1	28	2	1	5	0	2	4	4
CO Emissions (g)	374	2434	141	62	1207	80	39	216	22	66	179	135
NOx Emissions (g)	36	239	15	3	94	7	2	17	1	5	15	12
Vehicles Entered	111	632	30	24	562	37	21	121	16	37	135	96
Vehicles Exited	111	630	30	25	562	37	21	122	16	37	136	96
Hourly Exit Rate	111	630	30	25	562	37	21	122	16	37	136	96
Input Volume	110	638	30	25	560	35	23	123	15	40	137	94
% of Volume	101	99	101	99	100	106	90	99	105	92	99	102
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0

12: Ridge Rd & Quaker Rd Performance by movement

Movement	All
Denied Delay (hr)	0.1
Denied Del/Veh (s)	0.3
Total Delay (hr)	12.5
Total Del/Veh (s)	24.3
Stop Delay (hr)	9.8
Stop Del/Veh (s)	19.1
Total Stops	959
Stop/Veh	0.52
Travel Dist (mi)	315.9
Travel Time (hr)	21.0
Avg Speed (mph)	15
Fuel Used (gal)	12.8
Fuel Eff. (mpg)	24.6
HC Emissions (g)	122
CO Emissions (g)	4956
NOx Emissions (g)	449
Vehicles Entered	1822
Vehicles Exited	1823
Hourly Exit Rate	1823
Input Volume	1831
% of Volume	100
Denied Entry Before	0

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Total Network Performance

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Denied Delay (hr)	1.1
Denied Del/Veh (s)	0.9
Total Delay (hr)	81.6
Total Del/Veh (s)	66.7
Stop Delay (hr)	58.5
Stop Del/Veh (s)	47.9
Total Stops	6362
Stop/Veh	1.45
Travel Dist (mi)	3289.0
Travel Time (hr)	173.0
Avg Speed (mph)	19
Fuel Used (gal)	141.8
Fuel Eff. (mpg)	23.2
HC Emissions (g)	1634
CO Emissions (g)	69010
NOx Emissions (g)	5962
Vehicles Entered	4244
Vehicles Exited	4245
Hourly Exit Rate	4245
Input Volume	17222
% of Volume	25
Denied Entry Before	0

Arterial Level of Service: EB Quaker Rd

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed	Run 1 Speed	Run 1 Delay
Lafayette St	7	10.3	16.6	0.1	16	16	10.4
Glenwood Ave	8	19.7	38.0	0.2	20	20	20.6
Grocery Parking Lot	9	5.8	36.4	0.3	34	34	5.9
Bay Rd	10	11.2	19.9	0.1	18	16	13.7
Meadowbrook Rd	11	8.6	54.6	0.5	35	34	10.4
Ridge Rd	12	13.9	38.9	0.3	26	25	15.6
<b>Total</b>		<b>69.6</b>	<b>204.5</b>	<b>1.5</b>	<b>27</b>	<b>26</b>	<b>76.5</b>

Arterial Level of Service: EB Quaker Rd

Cross Street	Run 10 Speed	Run 10 Delay	Run 2 Speed	Run 2 Delay	Run 3 Speed	Run 3 Delay	Run 4 Speed
Lafayette St	15	11.2	17	9.2	17	9.1	17
Glenwood Ave	18	24.6	20	20.5	22	15.9	20
Grocery Parking Lot	33	6.7	33	6.1	35	4.8	34
Bay Rd	18	11.4	19	10.2	18	11.8	18
Meadowbrook Rd	34	10.2	35	8.1	35	8.3	36
Ridge Rd	26	15.1	27	12.9	24	17.3	26
<b>Total</b>	<b>26</b>	<b>79.4</b>	<b>28</b>	<b>67.0</b>	<b>28</b>	<b>67.1</b>	<b>28</b>

Arterial Level of Service: EB Quaker Rd

Cross Street	Run 4 Delay	Run 5 Speed	Run 5 Delay	Run 6 Speed	Run 6 Delay	Run 7 Speed	Run 7 Delay
Lafayette St	9.5	16	10.4	16	10.7	14	12.3
Glenwood Ave	20.2	20	20.6	23	14.5	19	21.5
Grocery Parking Lot	5.8	33	6.8	34	5.5	34	5.9
Bay Rd	11.5	17	12.8	19	9.9	19	10.4
Meadowbrook Rd	6.7	35	8.9	36	7.3	34	10.0
Ridge Rd	13.9	26	14.8	27	12.7	28	11.5
<b>Total</b>	<b>67.6</b>	<b>26</b>	<b>74.3</b>	<b>28</b>	<b>60.6</b>	<b>27</b>	<b>71.6</b>

Arterial Level of Service: EB Quaker Rd

Cross Street	Run 8 Speed	Run 8 Delay	Run 9 Speed	Run 9 Delay
Lafayette St	17	9.4	16	10.8
Glenwood Ave	21	18.7	20	20.1
Grocery Parking Lot	35	5.3	34	5.4
Bay Rd	18	11.7	20	9.1
Meadowbrook Rd	36	8.2	35	8.2
Ridge Rd	27	12.6	28	12.1
<b>Total</b>	<b>28</b>	<b>65.9</b>	<b>28</b>	<b>65.7</b>

Arterial Level of Service: WB Quaker Rd

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed	Run 1 Speed	Run 1 Delay
Ridge Rd	12	18.6	28.6	0.1	15	16	16.2
Meadowbrook Rd	11	42.8	68.3	0.3	15	15	41.2
Bay Rd	10	35.5	79.2	0.5	24	24	37.7
Grocery Parking Lot	9	5.2	14.3	0.1	25	25	5.2
Glenwood Ave	8	26.6	56.4	0.3	22	22	27.0
Lafayette St	7	6.1	25.4	0.2	30	30	6.1
<b>Total</b>		<b>134.7</b>	<b>272.1</b>	<b>1.6</b>	<b>21</b>	<b>21</b>	<b>133.4</b>

Arterial Level of Service: WB Quaker Rd

Cross Street	Run 10 Speed	Run 10 Delay	Run 2 Speed	Run 2 Delay	Run 3 Speed	Run 3 Delay	Run 4 Speed
Ridge Rd	16	17.4	17	16.0	15	18.5	14
Meadowbrook Rd	15	44.5	14	47.7	16	41.0	15
Bay Rd	24	35.5	25	33.3	23	38.5	24
Grocery Parking Lot	24	5.9	26	4.6	26	4.9	26
Glenwood Ave	20	31.7	21	27.9	23	24.0	22
Lafayette St	29	7.0	30	6.2	31	5.6	30
<b>Total</b>	<b>20</b>	<b>142.0</b>	<b>21</b>	<b>135.6</b>	<b>21</b>	<b>132.6</b>	<b>21</b>

Arterial Level of Service: WB Quaker Rd

Cross Street	Run 4 Delay	Run 5 Speed	Run 5 Delay	Run 6 Speed	Run 6 Delay	Run 7 Speed	Run 7 Delay
Ridge Rd	20.5	15	19.5	15	18.0	14	19.7
Meadowbrook Rd	44.6	15	42.0	15	42.7	16	38.8
Bay Rd	34.0	24	35.7	24	35.1	24	35.8
Grocery Parking Lot	4.8	26	4.7	24	5.9	25	5.4
Glenwood Ave	26.1	23	24.0	25	19.6	21	28.9
Lafayette St	5.7	31	5.7	31	5.1	29	7.0
<b>Total</b>	<b>135.6</b>	<b>21</b>	<b>131.7</b>	<b>22</b>	<b>126.3</b>	<b>21</b>	<b>135.6</b>

Arterial Level of Service: WB Quaker Rd

Cross Street	Run 8 Speed	Run 8 Delay	Run 9 Speed	Run 9 Delay
Ridge Rd	14	19.6	14	20.1
Meadowbrook Rd	15	43.1	15	43.2
Bay Rd	25	32.9	24	36.4
Grocery Parking Lot	25	5.3	25	5.1
Glenwood Ave	21	28.8	21	28.2
Lafayette St	30	6.2	30	6.3
<b>Total</b>	<b>21</b>	<b>136.0</b>	<b>21</b>	<b>139.3</b>

Queuing and Blocking Report  
Baseline

1/12/2023

Intersection: 7: Lafayette St & Quaker Rd

Movement	EB	EB	WB	WB	WB	NB	NB
Directions Served	T	TR	L	T	T	L	R
Maximum Queue (ft)	313	235	153	164	171	129	326
Average Queue (ft)	149	82	66	43	63	42	157
95th Queue (ft)	263	194	120	113	127	118	277
Link Distance (ft)	353	353		1045	1045		421
Upstream Blk Time (%)	0						0
Queuing Penalty (veh)	0						0
Storage Bay Dist (ft)			110			90	
Storage Blk Time (%)			2	1		0	35
Queuing Penalty (veh)			8	1		1	13

Intersection: 8: Glenwood Ave & Quaker Rd

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	TR	LT	R
Maximum Queue (ft)	174	318	311	234	400	392	133	197	183	185
Average Queue (ft)	84	138	136	58	177	186	43	81	74	62
95th Queue (ft)	167	262	257	166	346	348	97	158	144	130
Link Distance (ft)		1045	1045		1719	1719		499	335	
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	90			140			100			160
Storage Blk Time (%)	9	20		0	15		1	7	1	0
Queuing Penalty (veh)	35	32		0	13		1	4	2	0

Intersection: 9: Grocery Parking Lot & Quaker Rd

Movement	EB	EB	WB	WB	WB	NB	NB
Directions Served	T	TR	L	T	T	L	R
Maximum Queue (ft)	88	96	56	134	137	130	61
Average Queue (ft)	15	21	18	28	33	54	31
95th Queue (ft)	54	65	47	84	90	103	55
Link Distance (ft)	1719	1719		444	444	240	240
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)			160				
Storage Blk Time (%)				0			
Queuing Penalty (veh)				0			

Queuing and Blocking Report  
Baseline

1/12/2023

Intersection: 10: Bay Rd & Quaker Rd

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	T	R	L	T	TR	L	T
Maximum Queue (ft)	160	243	241	238	367	343	74	208	221	165	192	226
Average Queue (ft)	53	93	101	70	196	195	32	114	116	70	99	116
95th Queue (ft)	118	196	200	161	304	295	61	192	191	139	174	200
Link Distance (ft)		444	444		2710	2710			302	302		497
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	110			130			465	160			170	
Storage Blk Time (%)	1	5		1	19			6	3		3	1
Queuing Penalty (veh)	4	5		4	18			6	4		4	1

Intersection: 10: Bay Rd & Quaker Rd

Movement	SB
Directions Served	TR
Maximum Queue (ft)	201
Average Queue (ft)	73
95th Queue (ft)	163
Link Distance (ft)	497
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 11: Meadowbrook Rd & Quaker Rd

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	T	R	L	TR
Maximum Queue (ft)	159	159	159	18	323	315	129	189	48	154	274
Average Queue (ft)	64	50	60	2	195	196	51	80	6	48	116
95th Queue (ft)	122	119	131	12	303	306	104	155	29	115	215
Link Distance (ft)		2710	2710		1400	1400		464			421
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)	150			150			90		25	90	
Storage Blk Time (%)	0	1			21		3	56	0	2	20
Queuing Penalty (veh)	1	1			1		3	45	1	4	12

Queuing and Blocking Report  
Baseline

1/12/2023

Intersection: 12: Ridge Rd & Quaker Rd

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	TR	L	TR
Maximum Queue (ft)	171	214	222	51	219	204	53	178	150	317
Average Queue (ft)	70	70	87	12	131	91	15	70	33	134
95th Queue (ft)	138	164	183	36	207	178	40	143	98	253
Link Distance (ft)		1400	1400		570	570		396		350
Upstream Blk Time (%)										0
Queuing Penalty (veh)										0
Storage Bay Dist (ft)	190			190			120		120	
Storage Blk Time (%)	0	1			1			3	0	15
Queuing Penalty (veh)	1	1			0			1	0	6

Network Summary

Network wide Queuing Penalty: 233

Summary of All Intervals

Run Number	1	10	2	3	4	5	6
Start Time	11:30	11:30	11:30	11:30	11:30	11:30	11:30
End Time	12:45	12:45	12:45	12:45	12:45	12:45	12:45
Total Time (min)	75	75	75	75	75	75	75
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	5	5	5	5	5	5	5
# of Recorded mScheduledIntervals	4	4	4	4	4	4	4
Vehs Entered	3976	3994	3920	3999	4021	3831	4030
Vehs Exited	3961	3988	3907	4005	4015	3846	4029
Starting Vehs	127	147	128	158	174	142	141
Ending Vehs	142	153	141	152	180	127	142
Denied Entry Before	1	1	1	1	0	1	1
Travel Distance (mi)	3141	3179	3153	3189	3193	3073	3209
Travel Time (hr)	148.6	153.0	149.5	152.4	152.7	144.8	152.6
Total Delay (hr)	62.4	65.9	63.3	65.1	65.0	60.6	65.0
Total Stops	5089	5211	5034	5182	5162	4890	5119
Fuel Used (gal)	129.4	130.9	129.2	131.5	130.4	125.3	132.5

Summary of All Intervals

Run Number	7	8	9	Avg
Start Time	11:30	11:30	11:30	11:30
End Time	12:45	12:45	12:45	12:45
Total Time (min)	75	75	75	75
Time Recorded (min)	60	60	60	60
# of Intervals	5	5	5	5
# of Recorded mScheduledIntervals	4	4	4	4
Vehs Entered	3965	3869	3986	3955
Vehs Exited	3963	3885	4019	3963
Starting Vehs	162	144	165	144
Ending Vehs	164	128	132	142
Denied Entry Before	1	0	1	0
Travel Distance (mi)	3131	3134	3156	3156
Travel Time (hr)	147.0	146.6	152.6	150.0
Total Delay (hr)	61.3	60.8	65.8	63.5
Total Stops	4912	4923	5142	5067
Fuel Used (gal)	127.9	127.2	129.7	129.4

Interval #0 Information Seeding

Start Time	11:30
End Time	11:45
Total Time (min)	15
Volumes adjusted by Growth Factors.	
No data recorded this interval.	



**Interval #1 Information Recording**

Start Time	11:45
End Time	12:00
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	1	10	2	3	4	5	6
Vehs Entered	941	935	958	968	988	921	981
Vehs Exited	913	926	956	986	1021	895	981
Starting Vehs	127	147	128	158	174	142	141
Ending Vehs	155	156	130	140	141	168	141
Denied Entry Before	1	1	1	1	0	1	1
Travel Distance (mi)	729	730	752	793	774	755	733
Travel Time (hr)	34.0	33.0	36.6	37.6	36.4	35.6	34.4
Total Delay (hr)	13.9	13.1	16.0	16.0	15.1	14.9	14.4
Total Stops	1164	1076	1235	1269	1214	1190	1174
Fuel Used (gal)	29.8	29.2	31.3	32.8	31.7	30.6	30.7

**Interval #1 Information Recording**

Start Time	11:45
End Time	12:00
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	7	8	9	Avg
Vehs Entered	955	935	912	948
Vehs Exited	993	943	971	958
Starting Vehs	162	144	165	144
Ending Vehs	124	136	106	134
Denied Entry Before	1	0	1	0
Travel Distance (mi)	784	771	748	757
Travel Time (hr)	36.3	36.2	34.6	35.5
Total Delay (hr)	14.9	15.0	14.2	14.8
Total Stops	1221	1209	1148	1189
Fuel Used (gal)	32.2	31.3	30.4	31.0

**Interval #2 Information Recording**

Start Time	12:00
End Time	12:15
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	1	10	2	3	4	5	6
Vehs Entered	1007	989	924	953	969	947	1028
Vehs Exited	1015	996	903	936	937	990	993
Starting Vehs	155	156	130	140	141	168	141
Ending Vehs	147	149	151	157	173	125	176
Denied Entry Before	0	1	1	0	2	3	0
Travel Distance (mi)	800	792	771	737	750	761	820
Travel Time (hr)	38.5	37.5	35.0	34.5	35.3	36.2	38.4
Total Delay (hr)	16.5	15.8	13.9	14.3	14.7	15.2	16.1
Total Stops	1346	1308	1178	1182	1172	1248	1285
Fuel Used (gal)	33.0	32.7	30.9	29.9	30.2	31.1	33.1

**Interval #2 Information Recording**

Start Time	12:00
End Time	12:15
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	7	8	9	Avg
Vehs Entered	958	966	965	971
Vehs Exited	950	966	930	962
Starting Vehs	124	136	106	134
Ending Vehs	132	136	141	145
Denied Entry Before	0	0	0	0
Travel Distance (mi)	744	761	725	766
Travel Time (hr)	33.9	35.6	34.1	35.9
Total Delay (hr)	13.6	14.6	14.2	14.9
Total Stops	1125	1164	1192	1224
Fuel Used (gal)	29.5	30.9	29.4	31.1

**Interval #3 Information Recording**

Start Time	12:15
End Time	12:30
Total Time (min)	15
Volumes adjusted by PHF, Growth Factors.	

Run Number	1	10	2	3	4	5	6
Vehs Entered	1047	1128	1096	1116	1030	1039	1055
Vehs Exited	1045	1076	1082	1110	1060	1028	1035
Starting Vehs	147	149	151	157	173	125	176
Ending Vehs	149	201	165	163	143	136	196
Denied Entry Before	1	1	2	0	2	1	2
Travel Distance (mi)	824	876	859	903	855	818	835
Travel Time (hr)	38.6	43.5	41.7	45.2	42.1	38.9	41.6
Total Delay (hr)	16.0	19.5	18.1	20.5	18.6	16.6	18.7
Total Stops	1291	1492	1407	1557	1473	1317	1407
Fuel Used (gal)	33.7	36.8	35.9	38.4	35.6	33.6	35.2

**Interval #3 Information Recording**

Start Time	12:15
End Time	12:30
Total Time (min)	15
Volumes adjusted by PHF, Growth Factors.	

Run Number	7	8	9	Avg
Vehs Entered	1062	1011	1127	1071
Vehs Exited	1016	1002	1089	1055
Starting Vehs	132	136	141	145
Ending Vehs	178	145	179	163
Denied Entry Before	1	3	3	0
Travel Distance (mi)	805	816	876	847
Travel Time (hr)	39.4	37.8	44.5	41.3
Total Delay (hr)	17.3	15.5	20.3	18.1
Total Stops	1331	1291	1491	1405
Fuel Used (gal)	33.8	32.8	36.9	35.3

**Interval #4 Information Recording**

Start Time	12:30
End Time	12:45
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	1	10	2	3	4	5	6
Vehs Entered	981	942	942	962	1034	924	966
Vehs Exited	988	990	966	973	997	933	1020
Starting Vehs	149	201	165	163	143	136	196
Ending Vehs	142	153	141	152	180	127	142
Denied Entry Before	2	0	2	1	1	0	0
Travel Distance (mi)	789	781	771	757	814	739	820
Travel Time (hr)	37.6	39.0	36.3	35.0	38.9	34.2	38.2
Total Delay (hr)	16.0	17.6	15.3	14.3	16.6	13.9	15.9
Total Stops	1288	1335	1214	1174	1303	1135	1253
Fuel Used (gal)	33.0	32.3	31.1	30.4	32.8	30.0	33.5

**Interval #4 Information Recording**

Start Time	12:30
End Time	12:45
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	7	8	9	Avg
Vehs Entered	990	957	982	962
Vehs Exited	1004	974	1029	987
Starting Vehs	178	145	179	163
Ending Vehs	164	128	132	142
Denied Entry Before	1	1	0	0
Travel Distance (mi)	798	785	808	786
Travel Time (hr)	37.4	37.0	39.4	37.3
Total Delay (hr)	15.5	15.6	17.1	15.8
Total Stops	1235	1259	1311	1248
Fuel Used (gal)	32.5	32.2	32.9	32.1

7: Lafayette St & Quaker Rd Performance by movement

Movement	EBT	EBR	WBL	WBT	NBL	NBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Denied Del/Veh (s)	0.2	0.3	0.2	0.0	3.7	0.3	0.2
Total Delay (hr)	2.4	0.0	0.9	1.4	0.4	3.2	8.2
Total Del/Veh (s)	10.6	4.8	17.1	5.2	45.7	49.1	13.3
Stop Delay (hr)	1.4	0.0	0.6	0.4	0.3	2.9	5.8
Stop Del/Veh (s)	6.5	3.4	12.4	1.5	40.6	44.4	9.3
Total Stops	263	11	148	89	28	209	748
Stop/Veh	0.33	0.34	0.80	0.09	1.00	0.88	0.34
Travel Dist (mi)	53.6	2.1	38.4	197.7	2.3	18.7	312.7
Travel Time (hr)	3.8	0.1	2.1	6.6	0.5	4.1	17.1
Avg Speed (mph)	14	16	19	30	5	5	18
Fuel Used (gal)	2.7	0.1	1.5	7.8	0.2	1.4	13.7
Fuel Eff. (mpg)	19.8	29.3	26.5	25.2	12.6	13.2	22.9
HC Emissions (g)	30	2	17	103	1	9	162
CO Emissions (g)	1428	51	684	4140	48	346	6698
NOx Emissions (g)	105	4	60	381	4	29	584
Vehicles Entered	796	32	184	944	28	234	2218
Vehicles Exited	797	32	184	944	28	234	2219
Hourly Exit Rate	797	32	184	944	28	234	2219
Input Volume	801	32	182	952	28	241	2235
% of Volume	100	101	101	99	101	97	99
Denied Entry Before	0	0	0	0	0	0	0

8: Glenwood Ave & Quaker Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.2
Denied Del/Veh (s)	0.0	0.0	0.0	0.1	0.0	0.0	3.8	0.3	0.2	0.2	0.3	3.8
Total Delay (hr)	0.8	3.4	0.1	0.5	2.8	0.0	0.8	0.7	0.5	0.2	0.9	0.5
Total Del/Veh (s)	22.8	13.7	10.5	19.5	11.4	8.6	52.3	47.9	22.1	52.2	53.5	11.8
Stop Delay (hr)	0.6	2.1	0.1	0.3	1.3	0.0	0.7	0.6	0.5	0.2	0.8	0.5
Stop Del/Veh (s)	17.4	8.3	7.6	14.2	5.4	4.3	48.7	43.0	20.1	49.2	49.0	11.1
Total Stops	110	278	11	69	189	4	50	44	76	13	53	138
Stop/Veh	0.87	0.31	0.38	0.82	0.21	0.33	0.91	0.85	0.88	0.87	0.90	0.87
Travel Dist (mi)	26.2	177.7	6.1	27.9	292.5	3.9	5.3	5.0	8.3	1.0	3.9	10.6
Travel Time (hr)	1.6	8.1	0.3	1.2	10.3	0.1	1.1	0.9	0.9	0.3	1.0	1.2
Avg Speed (mph)	16	22	22	22	28	27	5	6	9	4	4	10
Fuel Used (gal)	1.1	7.6	0.2	0.9	9.4	0.1	0.4	0.3	0.4	0.1	0.3	0.5
Fuel Eff. (mpg)	24.1	23.5	26.9	31.2	31.2	34.2	13.4	15.5	20.5	11.3	11.4	19.6
HC Emissions (g)	12	94	4	9	110	1	2	2	4	0	1	6
CO Emissions (g)	512	4195	139	298	3552	27	100	87	152	15	65	215
NOx Emissions (g)	41	336	13	34	414	3	7	7	13	1	5	20
Vehicles Entered	124	878	29	82	870	12	55	52	86	15	58	156
Vehicles Exited	125	882	29	83	870	12	55	52	86	14	58	156
Hourly Exit Rate	125	882	29	83	870	12	55	52	86	14	58	156
Input Volume	131	878	33	82	869	12	58	53	84	14	58	162
% of Volume	95	100	89	101	100	98	95	99	102	98	100	96
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0

8: Glenwood Ave & Quaker Rd Performance by movement

Movement	All
Denied Delay (hr)	0.2
Denied Del/Veh (s)	0.4
Total Delay (hr)	11.2
Total Del/Veh (s)	16.4
Stop Delay (hr)	7.8
Stop Del/Veh (s)	11.4
Total Stops	1035
Stop/Veh	0.42
Travel Dist (mi)	568.2
Travel Time (hr)	27.0
Avg Speed (mph)	21
Fuel Used (gal)	21.4
Fuel Eff. (mpg)	26.6
HC Emissions (g)	245
CO Emissions (g)	9357
NOx Emissions (g)	895
Vehicles Entered	2417
Vehicles Exited	2422
Hourly Exit Rate	2422
Input Volume	2435
% of Volume	99
Denied Entry Before	0

9: Grocery Parking Lot & Quaker Rd Performance by movement

Movement	EBT	EBR	WBL	WBT	NBL	NBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.2	0.2	0.0
Total Delay (hr)	1.4	0.2	0.1	1.5	1.2	0.2	4.6
Total Del/Veh (s)	6.3	5.6	11.4	6.1	49.6	7.4	8.2
Stop Delay (hr)	0.2	0.0	0.1	0.6	1.2	0.2	2.3
Stop Del/Veh (s)	1.0	0.8	7.6	2.5	46.8	6.8	4.0
Total Stops	71	14	27	151	77	86	426
Stop/Veh	0.09	0.11	0.63	0.17	0.87	0.89	0.21
Travel Dist (mi)	264.1	41.9	4.3	86.2	4.0	4.4	404.8
Travel Time (hr)	8.2	1.4	0.3	3.8	1.4	0.4	15.5
Avg Speed (mph)	32	30	15	22	3	10	26
Fuel Used (gal)	9.0	1.3	0.2	4.7	0.4	0.1	15.8
Fuel Eff. (mpg)	29.5	32.2	21.4	18.2	9.4	30.4	25.7
HC Emissions (g)	113	17	2	63	2	1	197
CO Emissions (g)	4117	561	84	2749	70	38	7621
NOx Emissions (g)	426	62	8	238	7	4	745
Vehicles Entered	796	122	43	861	87	97	2006
Vehicles Exited	794	122	43	862	87	97	2005
Hourly Exit Rate	794	122	43	862	87	97	2005
Input Volume	789	122	44	864	84	93	1996
% of Volume	101	100	98	100	104	105	100
Denied Entry Before	0	0	0	0	0	0	0

10: Bay Rd & Quaker Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.2	0.0	0.2	3.6	0.1	0.2	3.5	0.1	0.2
Total Delay (hr)	0.6	2.3	0.1	0.7	4.7	0.2	1.4	1.9	0.2	2.2	1.9	0.3
Total Del/Veh (s)	18.2	11.9	10.0	24.9	23.2	6.2	56.5	40.1	11.2	61.5	40.3	14.3
Stop Delay (hr)	0.5	1.4	0.1	0.5	3.0	0.0	1.3	1.6	0.2	2.0	1.6	0.3
Stop Del/Veh (s)	14.8	7.2	7.0	17.8	14.9	1.7	53.0	35.0	10.2	57.1	34.6	13.0
Total Stops	75	225	12	79	299	40	82	132	59	120	135	66
Stop/Veh	0.65	0.32	0.38	0.83	0.41	0.41	0.90	0.78	0.78	0.95	0.79	0.79
Travel Dist (mi)	10.9	65.7	3.0	48.7	370.8	49.9	5.1	9.5	4.3	11.6	15.8	7.9
Travel Time (hr)	1.0	4.1	0.2	2.0	14.3	1.6	1.7	2.2	0.4	2.7	2.4	0.7
Avg Speed (mph)	11	16	15	24	26	32	3	4	10	5	7	12
Fuel Used (gal)	0.4	2.9	0.1	1.5	12.0	1.5	0.5	0.8	0.2	1.0	1.0	0.3
Fuel Eff. (mpg)	24.8	22.4	24.7	32.3	30.9	32.9	9.3	12.0	24.3	12.0	15.4	24.8
HC Emissions (g)	3	33	2	17	134	24	3	5	2	6	9	5
CO Emissions (g)	142	1401	59	512	4338	750	113	194	79	286	370	151
NOx Emissions (g)	12	117	5	63	507	82	9	18	7	20	28	13
Vehicles Entered	114	693	32	94	719	97	89	165	75	123	165	83
Vehicles Exited	114	693	32	93	720	97	88	166	76	122	167	83
Hourly Exit Rate	114	693	32	93	720	97	88	166	76	122	167	83
Input Volume	116	678	33	84	725	93	89	169	75	121	171	83
% of Volume	98	102	98	110	99	105	99	98	101	101	98	100
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0

10: Bay Rd & Quaker Rd Performance by movement

Movement	All
Denied Delay (hr)	0.2
Denied Del/Veh (s)	0.4
Total Delay (hr)	16.4
Total Del/Veh (s)	23.8
Stop Delay (hr)	12.6
Stop Del/Veh (s)	18.2
Total Stops	1324
Stop/Veh	0.53
Travel Dist (mi)	603.3
Travel Time (hr)	33.1
Avg Speed (mph)	18
Fuel Used (gal)	22.3
Fuel Eff. (mpg)	27.0
HC Emissions (g)	241
CO Emissions (g)	8394
NOx Emissions (g)	882
Vehicles Entered	2449
Vehicles Exited	2451
Hourly Exit Rate	2451
Input Volume	2436
% of Volume	101
Denied Entry Before	0



11: Meadowbrook Rd & Quaker Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.5	0.0	0.0	3.9	0.2	3.8	3.9	0.2	0.2
Total Delay (hr)	1.1	2.5	0.1	0.0	2.6	0.1	1.0	0.8	0.0	0.5	0.7	0.6
Total Del/Veh (s)	73.2	11.7	11.0	19.6	13.6	8.2	45.6	52.7	12.4	39.4	50.3	22.3
Stop Delay (hr)	1.0	1.1	0.1	0.0	1.6	0.0	0.9	0.7	0.0	0.5	0.6	0.5
Stop Del/Veh (s)	67.1	5.0	5.3	15.0	8.4	5.0	42.2	47.1	11.2	35.8	43.4	19.8
Total Stops	54	219	18	3	152	8	69	47	5	39	43	82
Stop/Veh	0.96	0.28	0.38	0.75	0.22	0.24	0.86	0.85	0.83	0.78	0.86	0.91
Travel Dist (mi)	29.5	362.1	24.2	1.1	189.4	9.1	7.1	4.9	0.5	4.0	4.0	7.2
Travel Time (hr)	1.9	11.9	0.8	0.1	7.5	0.4	1.4	0.9	0.0	0.7	0.8	0.9
Avg Speed (mph)	15	31	29	21	25	26	6	5	12	6	5	9
Fuel Used (gal)	1.1	11.9	0.7	0.0	7.2	0.3	0.5	0.3	0.0	0.3	0.3	0.4
Fuel Eff. (mpg)	25.7	30.4	32.4	27.3	26.3	28.8	14.2	13.9	21.6	14.2	14.2	19.5
HC Emissions (g)	7	156	9	0	88	8	3	3	0	1	2	4
CO Emissions (g)	309	5073	292	13	3386	229	137	109	8	85	80	156
NOx Emissions (g)	31	587	35	1	328	25	10	8	1	5	6	13
Vehicles Entered	55	764	46	4	697	34	79	54	6	49	50	89
Vehicles Exited	56	761	45	4	697	34	78	54	6	50	50	90
Hourly Exit Rate	56	761	45	4	697	34	78	54	6	50	50	90
Input Volume	54	753	44	5	692	33	78	55	4	46	49	86
% of Volume	103	101	102	80	101	104	100	98	141	108	102	104
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0

11: Meadowbrook Rd & Quaker Rd Performance by movement

Movement	All
Denied Delay (hr)	0.2
Denied Del/Veh (s)	0.3
Total Delay (hr)	10.2
Total Del/Veh (s)	18.8
Stop Delay (hr)	7.2
Stop Del/Veh (s)	13.2
Total Stops	739
Stop/Veh	0.38
Travel Dist (mi)	643.1
Travel Time (hr)	27.3
Avg Speed (mph)	24
Fuel Used (gal)	23.2
Fuel Eff. (mpg)	27.8
HC Emissions (g)	281
CO Emissions (g)	9876
NOx Emissions (g)	1050
Vehicles Entered	1927
Vehicles Exited	1925
Hourly Exit Rate	1925
Input Volume	1900
% of Volume	101
Denied Entry Before	0

12: Ridge Rd & Quaker Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	3.1	0.1	0.2	4.0	0.2	0.2	3.8	0.3	0.3
Total Delay (hr)	0.6	1.5	0.1	0.2	2.8	0.1	0.2	1.4	0.1	2.1	1.1	0.3
Total Del/Veh (s)	27.8	9.9	9.5	43.8	16.4	9.1	49.3	48.0	26.9	68.3	47.2	24.7
Stop Delay (hr)	0.5	0.9	0.0	0.2	1.9	0.1	0.2	1.2	0.1	2.0	0.9	0.3
Stop Del/Veh (s)	23.3	5.6	6.0	41.2	11.5	7.2	45.9	40.9	24.5	64.3	39.6	22.7
Total Stops	62	95	5	14	263	20	16	88	16	110	70	36
Stop/Veh	0.82	0.17	0.22	0.88	0.43	0.44	0.89	0.85	0.80	0.97	0.83	0.86
Travel Dist (mi)	21.5	154.1	6.5	1.7	65.9	4.8	1.3	8.1	1.6	7.5	5.8	2.9
Travel Time (hr)	1.2	5.5	0.3	0.3	4.5	0.3	0.3	1.6	0.2	2.5	1.2	0.4
Avg Speed (mph)	18	28	26	7	15	17	5	5	7	3	5	7
Fuel Used (gal)	0.9	5.8	0.2	0.1	2.7	0.2	0.1	0.6	0.1	0.8	0.4	0.2
Fuel Eff. (mpg)	25.2	26.8	28.7	16.9	24.2	28.5	11.8	13.5	17.3	9.0	12.8	16.7
HC Emissions (g)	9	76	4	0	30	3	0	4	0	5	4	3
CO Emissions (g)	370	2821	120	36	1241	108	32	174	29	207	150	79
NOx Emissions (g)	34	284	12	2	102	9	2	14	2	17	12	7
Vehicles Entered	76	552	23	15	601	44	17	104	20	110	83	41
Vehicles Exited	76	553	23	16	601	44	18	104	20	110	83	41
Hourly Exit Rate	76	553	23	16	601	44	18	104	20	110	83	41
Input Volume	77	538	24	16	597	43	16	100	18	114	85	36
% of Volume	99	103	97	102	101	102	111	104	110	96	98	113
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0

12: Ridge Rd & Quaker Rd Performance by movement

Movement	All
Denied Delay (hr)	0.2
Denied Del/Veh (s)	0.4
Total Delay (hr)	10.6
Total Del/Veh (s)	22.3
Stop Delay (hr)	8.4
Stop Del/Veh (s)	17.7
Total Stops	795
Stop/Veh	0.47
Travel Dist (mi)	281.7
Travel Time (hr)	18.3
Avg Speed (mph)	16
Fuel Used (gal)	12.1
Fuel Eff. (mpg)	23.3
HC Emissions (g)	140
CO Emissions (g)	5366
NOx Emissions (g)	497
Vehicles Entered	1686
Vehicles Exited	1689
Hourly Exit Rate	1689
Input Volume	1664
% of Volume	101
Denied Entry Before	0

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Total Network Performance

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Denied Delay (hr)	1.0
Denied Del/Veh (s)	0.9
Total Delay (hr)	62.6
Total Del/Veh (s)	54.9
Stop Delay (hr)	44.1
Stop Del/Veh (s)	38.6
Total Stops	5067
Stop/Veh	1.23
Travel Dist (mi)	3155.7
Travel Time (hr)	150.0
Avg Speed (mph)	21
Fuel Used (gal)	129.4
Fuel Eff. (mpg)	24.4
HC Emissions (g)	1592
CO Emissions (g)	64111
NOx Emissions (g)	5739
Vehicles Entered	3955
Vehicles Exited	3963
Hourly Exit Rate	3963
Input Volume	16298
% of Volume	24
Denied Entry Before	0

Arterial Level of Service: EB Quaker Rd

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed	Run 1 Speed	Run 1 Delay
Lafayette St	7	10.6	16.9	0.1	16	16	10.0
Glenwood Ave	8	16.3	34.5	0.2	22	24	13.7
Grocery Parking Lot	9	6.2	36.2	0.3	34	35	5.2
Bay Rd	10	11.1	19.7	0.1	18	18	11.7
Meadowbrook Rd	11	13.9	55.9	0.5	34	34	14.0
Ridge Rd	12	10.5	35.5	0.3	29	31	7.8
<b>Total</b>		<b>68.7</b>	<b>198.7</b>	<b>1.5</b>	<b>28</b>	<b>29</b>	<b>62.5</b>

Arterial Level of Service: EB Quaker Rd

Cross Street	Run 10 Speed	Run 10 Delay	Run 2 Speed	Run 2 Delay	Run 3 Speed	Run 3 Delay	Run 4 Speed
Lafayette St	15	11.2	16	10.6	16	9.9	15
Glenwood Ave	21	17.8	23	15.1	21	18.5	21
Grocery Parking Lot	34	6.9	36	5.1	33	7.0	34
Bay Rd	19	10.1	18	11.8	18	11.1	19
Meadowbrook Rd	34	14.9	34	14.0	34	13.7	34
Ridge Rd	29	10.6	28	11.9	28	11.3	29
<b>Total</b>	<b>28</b>	<b>71.4</b>	<b>28</b>	<b>68.5</b>	<b>28</b>	<b>71.6</b>	<b>28</b>

Arterial Level of Service: EB Quaker Rd

Cross Street	Run 4 Delay	Run 5 Speed	Run 5 Delay	Run 6 Speed	Run 6 Delay	Run 7 Speed	Run 7 Delay
Lafayette St	11.4	15	11.2	15	11.9	17	9.4
Glenwood Ave	18.2	22	15.9	22	17.0	24	13.7
Grocery Parking Lot	6.6	33	7.2	34	5.8	33	6.6
Bay Rd	10.5	21	8.5	17	11.9	16	14.2
Meadowbrook Rd	13.7	34	13.2	35	14.0	34	14.4
Ridge Rd	11.0	27	12.4	31	8.3	28	12.4
<b>Total</b>	<b>71.5</b>	<b>28</b>	<b>68.3</b>	<b>28</b>	<b>68.8</b>	<b>28</b>	<b>70.7</b>

Arterial Level of Service: EB Quaker Rd

Cross Street	Run 8 Speed	Run 8 Delay	Run 9 Speed	Run 9 Delay
Lafayette St	17	9.5	15	10.9
Glenwood Ave	24	14.0	20	19.0
Grocery Parking Lot	34	6.0	34	5.9
Bay Rd	17	12.3	21	8.5
Meadowbrook Rd	35	13.6	34	14.0
Ridge Rd	30	9.0	29	9.7
<b>Total</b>	<b>29</b>	<b>64.3</b>	<b>28</b>	<b>67.9</b>

Arterial Level of Service: WB Quaker Rd

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed	Run 1 Speed	Run 1 Delay
Ridge Rd	12	16.4	26.5	0.1	16	16	16.5
Meadowbrook Rd	11	14.0	38.5	0.3	27	27	14.2
Bay Rd	10	21.0	67.1	0.5	29	28	22.2
Grocery Parking Lot	9	6.1	15.3	0.1	23	23	6.7
Glenwood Ave	8	12.2	42.1	0.3	29	29	13.2
Lafayette St	7	4.2	23.2	0.2	33	33	4.1
<b>Total</b>		<b>74.0</b>	<b>212.6</b>	<b>1.6</b>	<b>27</b>	<b>26</b>	<b>76.8</b>

Arterial Level of Service: WB Quaker Rd

Cross Street	Run 10 Speed	Run 10 Delay	Run 2 Speed	Run 2 Delay	Run 3 Speed	Run 3 Delay	Run 4 Speed
Ridge Rd	15	18.1	16	16.6	16	17.2	15
Meadowbrook Rd	26	15.1	27	13.2	27	13.5	28
Bay Rd	30	17.3	29	19.8	28	21.0	28
Grocery Parking Lot	21	7.7	25	5.3	24	6.0	24
Glenwood Ave	27	15.4	29	13.2	29	13.1	30
Lafayette St	32	5.0	32	4.8	32	4.8	34
<b>Total</b>	<b>26</b>	<b>78.6</b>	<b>27</b>	<b>72.8</b>	<b>27</b>	<b>75.7</b>	<b>27</b>

Arterial Level of Service: WB Quaker Rd

Cross Street	Run 4 Delay	Run 5 Speed	Run 5 Delay	Run 6 Speed	Run 6 Delay	Run 7 Speed	Run 7 Delay
Ridge Rd	17.9	17	15.2	16	17.1	17	14.7
Meadowbrook Rd	12.1	28	12.0	26	15.3	26	15.1
Bay Rd	21.8	29	20.7	28	22.7	29	20.1
Grocery Parking Lot	6.0	23	6.3	25	5.1	24	6.1
Glenwood Ave	10.5	30	11.6	31	10.6	30	11.3
Lafayette St	3.6	34	3.7	33	4.2	34	3.9
<b>Total</b>	<b>72.0</b>	<b>28</b>	<b>69.6</b>	<b>27</b>	<b>75.0</b>	<b>27</b>	<b>71.2</b>

Arterial Level of Service: WB Quaker Rd

Cross Street	Run 8 Speed	Run 8 Delay	Run 9 Speed	Run 9 Delay
Ridge Rd	16	16.2	17	14.8
Meadowbrook Rd	27	14.1	26	15.1
Bay Rd	28	23.4	29	21.2
Grocery Parking Lot	23	6.5	24	5.5
Glenwood Ave	31	9.4	29	13.4
Lafayette St	34	3.5	32	4.6
<b>Total</b>	<b>27</b>	<b>73.2</b>	<b>27</b>	<b>74.5</b>

Queuing and Blocking Report  
Baseline

1/12/2023

Intersection: 7: Lafayette St & Quaker Rd

Movement	EB	EB	WB	WB	WB	NB	NB
Directions Served	T	TR	L	T	T	L	R
Maximum Queue (ft)	302	238	163	94	108	129	320
Average Queue (ft)	146	83	70	34	45	30	177
95th Queue (ft)	257	191	127	76	93	100	285
Link Distance (ft)	353	353		1045	1045		421
Upstream Blk Time (%)	0						
Queuing Penalty (veh)	0						
Storage Bay Dist (ft)			110			90	
Storage Blk Time (%)			3	0		0	40
Queuing Penalty (veh)			13	0		1	11

Intersection: 8: Glenwood Ave & Quaker Rd

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	TR	LT	R
Maximum Queue (ft)	172	284	288	144	277	282	130	187	115	109
Average Queue (ft)	59	125	116	32	72	79	43	72	45	36
95th Queue (ft)	127	231	225	89	193	201	98	144	93	81
Link Distance (ft)		1045	1045		1719	1719		499	335	
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	90			140			100			160
Storage Blk Time (%)	2	14		0	2		1	5	0	0
Queuing Penalty (veh)	9	19		0	2		1	3	0	0

Intersection: 9: Grocery Parking Lot & Quaker Rd

Movement	EB	EB	WB	WB	WB	NB	NB
Directions Served	T	TR	L	T	T	L	R
Maximum Queue (ft)	136	150	67	180	175	159	91
Average Queue (ft)	30	42	21	60	67	73	39
95th Queue (ft)	94	108	54	139	143	133	72
Link Distance (ft)	1719	1719		444	444	240	240
Upstream Blk Time (%)						0	
Queuing Penalty (veh)						0	
Storage Bay Dist (ft)			160				
Storage Blk Time (%)				0			
Queuing Penalty (veh)				0			

Queuing and Blocking Report  
Baseline

1/12/2023

Intersection: 10: Bay Rd & Quaker Rd

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	T	R	L	T	TR	L	T
Maximum Queue (ft)	165	231	242	129	252	260	58	151	181	146	191	188
Average Queue (ft)	50	92	104	45	124	123	22	75	94	52	97	92
95th Queue (ft)	107	199	209	93	217	219	49	133	160	115	167	164
Link Distance (ft)		444	444		2710	2710			302	302		497
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	110			130			465	160			170	
Storage Blk Time (%)	0	5		0	8			0	1		2	0
Queuing Penalty (veh)	1	6		1	7			0	1		2	0

Intersection: 10: Bay Rd & Quaker Rd

Movement	SB
Directions Served	TR
Maximum Queue (ft)	154
Average Queue (ft)	56
95th Queue (ft)	126
Link Distance (ft)	497
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 11: Meadowbrook Rd & Quaker Rd

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	T	R	L	TR
Maximum Queue (ft)	113	190	219	18	189	185	119	115	47	124	201
Average Queue (ft)	49	71	89	2	66	56	49	42	6	34	78
95th Queue (ft)	97	157	184	11	141	136	96	91	31	88	155
Link Distance (ft)		2710	2710		1400	1400		464			421
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)	150			150			90		25	90	
Storage Blk Time (%)	0	1			1		5	45	1	1	10
Queuing Penalty (veh)	0	0			0		3	37	1	1	5

Queuing and Blocking Report  
Baseline

1/12/2023

Intersection: 12: Ridge Rd & Quaker Rd

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	TR	L	TR
Maximum Queue (ft)	121	160	187	36	241	211	82	189	158	228
Average Queue (ft)	42	40	56	7	135	96	13	68	87	73
95th Queue (ft)	93	114	138	24	219	185	48	141	155	169
Link Distance (ft)		1400	1400		570	570		396		350
Upstream Blk Time (%)										0
Queuing Penalty (veh)										0
Storage Bay Dist (ft)	190			190			120		120	
Storage Blk Time (%)		0			2			4	7	2
Queuing Penalty (veh)		0			0			1	9	3

Network Summary

Network wide Queuing Penalty: 138



Summary of All Intervals

Run Number	1	10	2	3	4	5	6
Start Time	4:00	4:00	4:00	4:00	4:00	4:00	4:00
End Time	5:15	5:15	5:15	5:15	5:15	5:15	5:15
Total Time (min)	75	75	75	75	75	75	75
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	5	5	5	5	5	5	5
# of Recorded mScheduledIntervals	4	4	4	4	4	4	4
Vehs Entered	3290	3323	3353	3252	3323	3337	3306
Vehs Exited	3270	3350	3340	3254	3300	3359	3288
Starting Vehs	76	104	85	74	79	89	89
Ending Vehs	96	77	98	72	102	67	107
Denied Entry Before	3	0	0	1	2	1	1
Travel Distance (mi)	1369	1381	1409	1360	1373	1368	1338
Travel Time (hr)	94.0	94.6	94.8	91.2	93.0	94.5	91.8
Total Delay (hr)	52.2	52.5	51.7	49.7	50.9	52.8	51.0
Total Stops	4062	4068	4119	3939	3970	4068	3911
Fuel Used (gal)	72.3	73.0	74.0	71.3	71.9	72.8	71.7

Summary of All Intervals

Run Number	7	8	9	Avg
Start Time	4:00	4:00	4:00	4:00
End Time	5:15	5:15	5:15	5:15
Total Time (min)	75	75	75	75
Time Recorded (min)	60	60	60	60
# of Intervals	5	5	5	5
# of Recorded mScheduledIntervals	4	4	4	4
Vehs Entered	3277	3341	3405	3321
Vehs Exited	3290	3349	3385	3320
Starting Vehs	85	101	86	85
Ending Vehs	72	93	106	87
Denied Entry Before	0	0	1	0
Travel Distance (mi)	1358	1399	1405	1376
Travel Time (hr)	92.1	96.7	98.9	94.2
Total Delay (hr)	50.6	54.0	55.9	52.1
Total Stops	4010	4144	4268	4053
Fuel Used (gal)	71.7	74.4	75.1	72.8

Interval #0 Information Seeding

Start Time	4:00
End Time	4:15
Total Time (min)	15
Volumes adjusted by Growth Factors.	
No data recorded this interval.	

**Interval #1 Information Recording**

Start Time	4:15
End Time	4:30
Total Time (min)	15
Volumes adjusted by Growth Factors, Anti PHF.	

Run Number	1	10	2	3	4	5	6
Vehs Entered	770	797	858	799	768	731	708
Vehs Exited	766	819	869	780	753	745	717
Starting Vehs	76	104	85	74	79	89	89
Ending Vehs	80	82	74	93	94	75	80
Denied Entry Before	3	0	0	1	2	1	1
Travel Distance (mi)	327	337	374	346	316	309	295
Travel Time (hr)	21.6	23.2	25.5	23.8	20.0	20.9	19.5
Total Delay (hr)	11.7	13.0	14.1	13.2	10.3	11.4	10.5
Total Stops	923	957	1120	1036	845	869	844
Fuel Used (gal)	17.0	17.8	19.9	18.2	16.3	16.2	15.5

**Interval #1 Information Recording**

Start Time	4:15
End Time	4:30
Total Time (min)	15
Volumes adjusted by Growth Factors, Anti PHF.	

Run Number	7	8	9	Avg
Vehs Entered	787	760	795	779
Vehs Exited	797	802	807	785
Starting Vehs	85	101	86	85
Ending Vehs	75	59	74	77
Denied Entry Before	0	0	1	0
Travel Distance (mi)	336	326	332	330
Travel Time (hr)	22.0	21.5	21.7	22.0
Total Delay (hr)	11.6	11.5	11.5	11.9
Total Stops	976	922	957	945
Fuel Used (gal)	17.6	17.1	17.3	17.3

**Interval #2 Information Recording**

Start Time	4:30
End Time	4:45
Total Time (min)	15
Volumes adjusted by Growth Factors, Anti PHF.	

Run Number	1	10	2	3	4	5	6
Vehs Entered	802	753	781	769	798	877	811
Vehs Exited	800	760	785	781	794	834	793
Starting Vehs	80	82	74	93	94	75	80
Ending Vehs	82	75	70	81	98	118	98
Denied Entry Before	1	1	1	0	0	3	0
Travel Distance (mi)	329	314	330	327	344	363	321
Travel Time (hr)	21.7	20.6	21.5	20.9	22.7	25.3	21.0
Total Delay (hr)	11.6	11.0	11.4	10.9	12.2	14.2	11.2
Total Stops	947	868	919	926	958	1094	902
Fuel Used (gal)	17.0	16.4	17.2	16.8	17.7	19.2	17.0

**Interval #2 Information Recording**

Start Time	4:30
End Time	4:45
Total Time (min)	15
Volumes adjusted by Growth Factors, Anti PHF.	

Run Number	7	8	9	Avg
Vehs Entered	807	818	795	802
Vehs Exited	784	798	788	790
Starting Vehs	75	59	74	77
Ending Vehs	98	79	81	86
Denied Entry Before	2	0	1	0
Travel Distance (mi)	327	336	326	332
Travel Time (hr)	22.4	22.2	21.8	22.0
Total Delay (hr)	12.3	12.0	11.8	11.9
Total Stops	983	949	973	952
Fuel Used (gal)	17.1	17.5	17.2	17.3

**Interval #3 Information Recording**

Start Time	4:45
End Time	5:00
Total Time (min)	15
Volumes adjusted by PHF, Growth Factors.	

Run Number	1	10	2	3	4	5	6
Vehs Entered	949	962	921	906	929	954	974
Vehs Exited	925	936	890	891	912	964	952
Starting Vehs	82	75	70	81	98	118	98
Ending Vehs	106	101	101	96	115	108	120
Denied Entry Before	0	1	2	1	1	0	0
Travel Distance (mi)	386	383	374	366	368	375	382
Travel Time (hr)	28.8	27.3	25.7	24.6	26.9	26.5	27.1
Total Delay (hr)	16.9	15.6	14.3	13.5	15.7	15.1	15.4
Total Stops	1285	1222	1127	1086	1148	1175	1139
Fuel Used (gal)	21.1	20.5	19.6	19.2	19.7	20.4	20.6

**Interval #3 Information Recording**

Start Time	4:45
End Time	5:00
Total Time (min)	15
Volumes adjusted by PHF, Growth Factors.	

Run Number	7	8	9	Avg
Vehs Entered	912	940	952	942
Vehs Exited	912	919	916	920
Starting Vehs	98	79	81	86
Ending Vehs	98	100	117	104
Denied Entry Before	0	1	2	0
Travel Distance (mi)	372	385	375	377
Travel Time (hr)	25.5	28.5	28.3	26.9
Total Delay (hr)	14.1	16.8	16.9	15.4
Total Stops	1109	1229	1210	1174
Fuel Used (gal)	19.8	20.9	20.4	20.2

**Interval #4 Information Recording**

Start Time	5:00
End Time	5:15
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	1	10	2	3	4	5	6
Vehs Entered	769	811	793	778	828	775	813
Vehs Exited	779	835	796	802	841	816	826
Starting Vehs	106	101	101	96	115	108	120
Ending Vehs	96	77	98	72	102	67	107
Denied Entry Before	1	0	2	4	1	4	1
Travel Distance (mi)	327	348	331	321	346	321	340
Travel Time (hr)	21.9	23.5	22.0	21.9	23.4	21.9	24.3
Total Delay (hr)	12.0	12.9	11.8	12.2	12.7	12.1	13.9
Total Stops	907	1021	953	891	1019	930	1026
Fuel Used (gal)	17.2	18.3	17.3	17.0	18.2	17.0	18.6

**Interval #4 Information Recording**

Start Time	5:00
End Time	5:15
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	7	8	9	Avg
Vehs Entered	771	823	863	801
Vehs Exited	797	830	874	819
Starting Vehs	98	100	117	104
Ending Vehs	72	93	106	87
Denied Entry Before	2	1	0	0
Travel Distance (mi)	323	352	372	338
Travel Time (hr)	22.2	24.4	27.1	23.3
Total Delay (hr)	12.5	13.6	15.7	12.9
Total Stops	942	1044	1128	985
Fuel Used (gal)	17.1	18.9	20.1	18.0

13: Quaker Rd & Parking Lot/Quaker Ridge Blvd Performance by movement

Movement	EBL	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT	All
Denied Delay (hr)	0.0	0.0	0.2	0.1	0.0	0.0	0.0	0.1	0.1	0.5
Denied Del/Veh (s)	0.1	0.1	3.7	3.6	0.0	0.0	0.1	3.1	0.6	1.1
Total Delay (hr)	0.1	0.0	3.1	0.3	0.0	4.3	0.4	0.8	1.8	10.8
Total Del/Veh (s)	62.1	10.0	52.4	11.4	16.4	26.4	8.5	24.8	9.7	20.8
Stop Delay (hr)	0.1	0.0	2.9	0.3	0.0	2.6	0.1	0.7	0.9	7.6
Stop Del/Veh (s)	60.9	10.2	48.4	11.1	8.4	16.4	2.2	21.6	5.0	14.7
Total Stops	2	4	192	86	1	301	71	80	216	953
Stop/Veh	0.67	1.00	0.89	0.81	1.00	0.52	0.40	0.71	0.32	0.51
Travel Dist (mi)	0.1	0.2	20.5	10.4	0.2	158.0	49.1	8.1	48.8	295.5
Travel Time (hr)	0.1	0.0	4.1	0.9	0.0	8.8	2.0	1.2	3.2	20.3
Avg Speed (mph)	2	10	5	13	20	18	24	8	16	15
Fuel Used (gal)	0.0	0.0	1.4	0.4	0.0	6.7	1.9	0.5	2.4	13.3
Fuel Eff. (mpg)	9.0	31.8	14.6	25.3	24.2	23.6	26.4	16.6	20.1	22.2
HC Emissions (g)	0	0	8	4	0	86	26	3	29	157
CO Emissions (g)	1	2	283	130	5	3333	1025	186	1192	6156
NOx Emissions (g)	0	0	23	12	0	292	89	12	102	530
Vehicles Entered	3	4	210	105	1	575	176	112	670	1856
Vehicles Exited	2	4	212	105	1	574	176	111	669	1854
Hourly Exit Rate	2	4	212	105	1	574	176	111	669	1854
Input Volume	3	4	212	106	1	580	180	113	665	1865
% of Volume	62	94	100	99	100	99	98	98	101	99
Denied Entry Before	0	0	0	0	0	0	0	0	0	0

14: Quaker Rd & Dix Ave Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.1	0.0	0.1	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	3.5	0.4	3.5	0.6	0.6	3.5	0.1	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	1.1	1.9	1.0	0.2	2.3	2.4	0.5	2.0	0.0	2.9	2.6	0.2
Total Del/Veh (s)	55.8	36.4	29.5	94.8	67.0	25.0	20.6	21.6	9.3	27.0	20.6	9.9
Stop Delay (hr)	1.1	1.6	1.0	0.2	2.0	2.1	0.4	1.4	0.0	2.0	1.4	0.0
Stop Del/Veh (s)	52.7	30.4	28.3	91.5	60.7	22.3	16.1	15.1	3.4	19.0	11.2	2.3
Total Stops	67	138	89	8	111	250	63	137	1	296	207	12
Stop/Veh	0.92	0.74	0.70	1.00	0.92	0.73	0.73	0.41	0.25	0.76	0.46	0.18
Travel Dist (mi)	6.8	18.4	12.9	0.6	9.3	27.3	14.5	55.1	0.6	106.4	119.3	16.5
Travel Time (hr)	1.4	2.4	1.7	0.2	2.5	4.0	0.9	3.5	0.0	6.1	5.7	0.6
Avg Speed (mph)	5	8	8	2	4	7	15	16	22	18	21	26
Fuel Used (gal)	0.5	1.1	0.7	0.1	0.9	1.6	0.6	2.4	0.0	4.0	4.4	0.5
Fuel Eff. (mpg)	13.1	16.5	17.5	8.0	10.4	16.5	23.3	23.2	28.7	26.7	27.3	31.7
HC Emissions (g)	3	12	7	0	6	16	6	30	0	45	51	7
CO Emissions (g)	166	432	314	12	243	594	294	1112	8	1562	1797	233
NOx Emissions (g)	10	36	20	1	20	50	23	105	1	162	188	25
Vehicles Entered	71	186	128	7	119	339	85	331	4	382	439	65
Vehicles Exited	71	186	127	8	120	338	85	333	4	382	437	65
Hourly Exit Rate	71	186	127	8	120	338	85	333	4	382	437	65
Input Volume	74	179	130	9	122	337	82	340	4	389	424	67
% of Volume	96	104	98	89	99	100	104	98	94	98	103	97
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0

14: Quaker Rd & Dix Ave Performance by movement

Movement	All
Denied Delay (hr)	0.6
Denied Del/Veh (s)	1.0
Total Delay (hr)	17.1
Total Del/Veh (s)	28.2
Stop Delay (hr)	13.3
Stop Del/Veh (s)	21.9
Total Stops	1379
Stop/Veh	0.63
Travel Dist (mi)	387.7
Travel Time (hr)	29.2
Avg Speed (mph)	14
Fuel Used (gal)	16.9
Fuel Eff. (mpg)	23.0
HC Emissions (g)	183
CO Emissions (g)	6768
NOx Emissions (g)	640
Vehicles Entered	2156
Vehicles Exited	2156
Hourly Exit Rate	2156
Input Volume	2158
% of Volume	100
Denied Entry Before	0

15: Quaker Rd & Highland Ave Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.2	0.2	0.4	0.2	0.2	0.3	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	0.6	1.1	0.0	0.2	0.9	0.0	0.0	1.0	0.0	0.0	1.3	0.1
Total Del/Veh (s)	49.3	44.6	29.2	43.6	40.4	34.9	17.5	9.6	7.4	18.5	9.0	6.8
Stop Delay (hr)	0.6	1.0	0.0	0.2	0.8	0.0	0.0	0.5	0.0	0.0	0.4	0.0
Stop Del/Veh (s)	45.8	40.1	26.9	40.4	36.2	32.9	13.4	4.9	4.2	13.4	3.1	2.6
Total Stops	42	74	5	16	61	2	3	106	5	3	92	8
Stop/Veh	0.89	0.81	0.83	0.84	0.78	1.00	0.75	0.29	0.36	0.75	0.18	0.21
Travel Dist (mi)	2.7	5.3	0.4	1.2	5.2	0.2	0.4	43.2	1.7	0.7	95.0	7.0
Travel Time (hr)	0.8	1.3	0.1	0.3	1.1	0.0	0.0	2.3	0.1	0.0	3.9	0.3
Avg Speed (mph)	4	4	6	4	5	6	12	19	18	16	24	23
Fuel Used (gal)	0.3	0.5	0.0	0.1	0.4	0.0	0.0	2.2	0.1	0.0	4.0	0.3
Fuel Eff. (mpg)	10.8	11.5	15.2	13.1	13.5	17.2	19.7	20.0	22.6	21.2	23.6	25.4
HC Emissions (g)	1	3	0	1	3	0	0	34	1	0	52	4
CO Emissions (g)	46	110	4	24	105	2	10	1348	39	16	2199	157
NOx Emissions (g)	4	11	0	2	10	0	1	115	2	1	189	14
Vehicles Entered	46	88	6	18	75	2	4	366	14	4	518	38
Vehicles Exited	46	88	6	18	76	2	4	367	14	4	519	38
Hourly Exit Rate	46	88	6	18	76	2	4	367	14	4	519	38
Input Volume	49	90	5	20	76	2	3	370	12	5	508	38
% of Volume	94	98	114	91	100	89	133	99	119	80	102	99
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0

15: Quaker Rd & Highland Ave Performance by movement

Movement	All
Denied Delay (hr)	0.0
Denied Del/Veh (s)	0.0
Total Delay (hr)	5.4
Total Del/Veh (s)	16.2
Stop Delay (hr)	3.7
Stop Del/Veh (s)	11.2
Total Stops	417
Stop/Veh	0.35
Travel Dist (mi)	163.0
Travel Time (hr)	10.2
Avg Speed (mph)	16
Fuel Used (gal)	7.8
Fuel Eff. (mpg)	20.8
HC Emissions (g)	100
CO Emissions (g)	4060
NOx Emissions (g)	349
Vehicles Entered	1179
Vehicles Exited	1182
Hourly Exit Rate	1182
Input Volume	1178
% of Volume	100
Denied Entry Before	0



16: Quaker Rd & Boulevard Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.2	0.2	0.2	0.2	0.3	0.3	0.0	0.0	0.0	0.1	0.0	0.1
Total Delay (hr)	0.2	1.8	0.1	0.1	1.3	1.1	0.0	0.8	0.0	0.6	0.9	0.0
Total Del/Veh (s)	66.8	49.0	28.8	49.3	47.9	29.0	7.6	11.5	6.5	12.3	8.2	6.4
Stop Delay (hr)	0.2	1.6	0.1	0.1	1.1	1.0	0.0	0.6	0.0	0.4	0.4	0.0
Stop Del/Veh (s)	63.0	42.4	26.3	44.1	39.9	25.2	6.0	8.8	5.9	7.8	4.0	3.6
Total Stops	10	109	6	8	80	119	1	87	7	87	81	1
Stop/Veh	1.00	0.83	0.75	0.89	0.82	0.88	1.00	0.36	0.39	0.52	0.21	0.25
Travel Dist (mi)	0.6	8.9	0.5	0.6	6.9	9.8	0.1	19.8	1.5	19.6	44.8	0.4
Travel Time (hr)	0.2	2.0	0.1	0.1	1.5	1.5	0.0	1.6	0.1	1.2	2.0	0.0
Avg Speed (mph)	3	4	6	4	5	6	13	13	13	16	22	19
Fuel Used (gal)	0.1	0.7	0.0	0.1	0.5	0.6	0.0	1.5	0.1	0.8	2.0	0.0
Fuel Eff. (mpg)	10.0	11.9	14.8	12.5	13.3	16.7	16.2	13.1	16.9	25.0	22.8	27.3
HC Emissions (g)	0	5	0	0	4	6	0	25	1	7	30	0
CO Emissions (g)	11	192	9	10	137	192	2	1077	44	318	1168	6
NOx Emissions (g)	1	16	1	1	12	17	0	79	3	27	101	0
Vehicles Entered	10	131	8	9	96	136	1	239	18	166	381	4
Vehicles Exited	9	131	8	9	96	136	1	238	18	166	381	4
Hourly Exit Rate	9	131	8	9	96	136	1	238	18	166	381	4
Input Volume	10	125	7	8	97	134	2	239	17	159	375	4
% of Volume	88	105	110	109	99	101	50	99	104	104	102	94
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0

16: Quaker Rd & Boulevard Performance by movement

Movement	All
Denied Delay (hr)	0.0
Denied Del/Veh (s)	0.1
Total Delay (hr)	6.8
Total Del/Veh (s)	20.3
Stop Delay (hr)	5.3
Stop Del/Veh (s)	15.9
Total Stops	596
Stop/Veh	0.49
Travel Dist (mi)	113.7
Travel Time (hr)	10.4
Avg Speed (mph)	11
Fuel Used (gal)	6.4
Fuel Eff. (mpg)	17.8
HC Emissions (g)	77
CO Emissions (g)	3165
NOx Emissions (g)	258
Vehicles Entered	1199
Vehicles Exited	1197
Hourly Exit Rate	1197
Input Volume	1179
% of Volume	102
Denied Entry Before	0

17: Lower Warren St/River St & Quaker Rd Performance by movement

Movement	EBL	EBT	WBT	WBR	SBL	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.3
Denied Del/Veh (s)	0.3	0.1	0.2	3.5	0.1	0.0	0.0	0.9
Total Delay (hr)	0.6	5.2	2.0	0.4	0.4	0.0	0.0	8.5
Total Del/Veh (s)	123.0	69.2	46.1	6.0	4.0	1.3	1.1	28.5
Stop Delay (hr)	0.6	4.5	1.7	0.3	0.2	0.0	0.0	7.2
Stop Del/Veh (s)	117.0	60.2	39.1	4.2	1.7	0.0	0.4	23.9
Total Stops	20	281	127	215	39	0	0	682
Stop/Veh	1.18	1.04	0.83	0.90	0.10	0.00	0.00	0.63
Travel Dist (mi)	1.8	30.1	14.2	22.2	33.6	0.4	0.4	102.6
Travel Time (hr)	0.6	5.9	2.3	1.5	1.6	0.0	0.0	12.0
Avg Speed (mph)	3	5	6	18	21	30	25	9
Fuel Used (gal)	0.2	2.3	1.0	0.8	1.0	0.0	0.0	5.3
Fuel Eff. (mpg)	9.2	13.0	14.6	27.3	34.9	17.7	33.8	19.4
HC Emissions (g)	1	19	8	11	11	1	0	50
CO Emissions (g)	41	833	352	443	438	24	7	2139
NOx Emissions (g)	2	59	25	34	36	2	0	158
Vehicles Entered	16	268	153	239	388	8	4	1076
Vehicles Exited	16	267	152	239	387	8	4	1073
Hourly Exit Rate	16	267	152	239	387	8	4	1073
Input Volume	17	271	156	238	377	8	4	1071
% of Volume	94	99	98	101	103	94	100	100
Denied Entry Before	0	0	0	0	0	0	0	0

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Total Network Performance

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Denied Delay (hr)	1.4
Denied Del/Veh (s)	1.5
Total Delay (hr)	50.7
Total Del/Veh (s)	53.6
Stop Delay (hr)	37.3
Stop Del/Veh (s)	39.4
Total Stops	4053
Stop/Veh	1.19
Travel Dist (mi)	1376.0
Travel Time (hr)	94.2
Avg Speed (mph)	15
Fuel Used (gal)	72.8
Fuel Eff. (mpg)	18.9
HC Emissions (g)	922
CO Emissions (g)	41304
NOx Emissions (g)	3138
Vehicles Entered	3321
Vehicles Exited	3320
Hourly Exit Rate	3320
Input Volume	10695
% of Volume	31
Denied Entry Before	0

Arterial Level of Service  
Baseline

1/12/2023

Arterial Level of Service: NB Quaker Rd

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed	Run 1 Speed	Run 1 Delay
Boulevard	16	11.2	23.4	0.1	14	15	9.3
Highland Ave	15	9.4	20.2	0.1	22	21	9.8
Dix Ave	14	22.4	37.4	0.2	17	16	25.4
Quaker Ridge Blvd	13	15.5	40.1	0.3	25	25	17.1
Total		58.5	121.1	0.7	20	20	61.6

Arterial Level of Service: NB Quaker Rd

Cross Street	Run 10 Speed	Run 10 Delay	Run 2 Speed	Run 2 Delay	Run 3 Speed	Run 3 Delay	Run 4 Speed
Boulevard	14	10.7	15	10.2	14	11.0	14
Highland Ave	22	9.6	22	9.3	22	9.4	23
Dix Ave	17	23.0	18	21.5	19	19.5	16
Quaker Ridge Blvd	26	14.0	25	15.0	24	17.0	25
Total	20	57.3	20	56.0	20	56.9	20

Arterial Level of Service: NB Quaker Rd

Cross Street	Run 4 Delay	Run 5 Speed	Run 5 Delay	Run 6 Speed	Run 6 Delay	Run 7 Speed	Run 7 Delay
Boulevard	11.3	14	11.0	14	10.7	13	12.9
Highland Ave	7.9	21	10.0	22	8.7	23	8.2
Dix Ave	25.0	18	20.6	20	18.1	19	19.6
Quaker Ridge Blvd	16.0	26	14.7	27	12.9	26	15.8
Total	60.2	20	56.3	21	50.4	21	56.5

Arterial Level of Service: NB Quaker Rd

Cross Street	Run 8 Speed	Run 8 Delay	Run 9 Speed	Run 9 Delay
Boulevard	13	12.9	14	11.9
Highland Ave	21	10.1	20	11.0
Dix Ave	16	24.9	16	25.0
Quaker Ridge Blvd	25	16.5	25	15.6
Total	19	64.5	19	63.5

Arterial Level of Service  
Baseline

1/12/2023

Arterial Level of Service: SB Quaker Rd

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed	Run 1 Speed	Run 1 Delay
Parking Lot	13	9.7	17.0	0.1	18	17	10.5
Dix Ave	14	22.1	46.2	0.3	22	22	22.5
Highland Ave	15	7.3	24.0	0.2	27	26	8.3
Boulevard	16	8.4	19.1	0.1	23	23	8.2
Lower Warren St	17	3.9	14.7	0.1	23	22	4.1
Total		51.4	121.0	0.8	23	22	53.5

Arterial Level of Service: SB Quaker Rd

Cross Street	Run 10 Speed	Run 10 Delay	Run 2 Speed	Run 2 Delay	Run 3 Speed	Run 3 Delay	Run 4 Speed
Parking Lot	17	10.6	19	8.6	17	10.3	18
Dix Ave	22	22.0	23	20.9	23	20.3	22
Highland Ave	28	6.3	25	9.4	26	8.2	28
Boulevard	23	8.3	22	9.1	23	8.4	23
Lower Warren St	23	3.8	22	4.5	23	3.6	22
Total	23	50.9	22	52.5	23	50.7	23

Arterial Level of Service: SB Quaker Rd

Cross Street	Run 4 Delay	Run 5 Speed	Run 5 Delay	Run 6 Speed	Run 6 Delay	Run 7 Speed	Run 7 Delay
Parking Lot	9.3	19	8.5	18	9.6	18	9.8
Dix Ave	22.7	22	22.3	22	22.3	21	23.4
Highland Ave	6.4	28	6.7	27	7.5	28	6.1
Boulevard	8.2	22	9.0	23	8.4	23	8.1
Lower Warren St	4.0	23	3.7	23	3.3	23	3.8
Total	50.4	23	50.2	23	51.1	23	51.1

Arterial Level of Service: SB Quaker Rd

Cross Street	Run 8 Speed	Run 8 Delay	Run 9 Speed	Run 9 Delay
Parking Lot	18	9.9	17	10.4
Dix Ave	21	24.0	23	20.6
Highland Ave	28	6.4	26	7.7
Boulevard	23	8.7	23	8.0
Lower Warren St	23	3.8	22	4.0
Total	22	52.8	23	50.7

Queuing and Blocking Report  
Baseline

1/12/2023

Intersection: 13: Quaker Rd & Parking Lot/Quaker Ridge Blvd

Movement	EB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	LTR	L	T	R	L	T	R	L	TR
Maximum Queue (ft)	24	280	113	73	44	470	270	222	357
Average Queue (ft)	5	148	6	34	1	236	92	63	141
95th Queue (ft)	19	247	65	66	19	382	262	137	283
Link Distance (ft)	245		510			1383			376
Upstream Blk Time (%)									1
Queuing Penalty (veh)									0
Storage Bay Dist (ft)		260		50	90		170	190	
Storage Blk Time (%)		1	0	4		31			3
Queuing Penalty (veh)		1	0	8		57			4

Intersection: 14: Quaker Rd & Dix Ave

Movement	EB	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	R	LT	R	L	TR	L	TR
Maximum Queue (ft)	109	207	122	284	293	120	286	344	361
Average Queue (ft)	44	78	34	77	115	31	111	153	163
95th Queue (ft)	95	161	91	201	238	83	222	273	295
Link Distance (ft)		488		378			844		1383
Upstream Blk Time (%)				0	0				
Queuing Penalty (veh)				0	0				
Storage Bay Dist (ft)	250		250		220	300		320	
Storage Blk Time (%)		0		3	2		0	1	1
Queuing Penalty (veh)		0		9	2		0	3	2

Intersection: 15: Quaker Rd & Highland Ave

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	206	155	217	280
Average Queue (ft)	103	72	87	81
95th Queue (ft)	176	136	181	191
Link Distance (ft)	313	366	578	844
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

## Queuing and Blocking Report Baseline

1/12/2023

### Intersection: 16: Quaker Rd & Boulevard

Movement	EB	WB	NB	NB	SB	SB
Directions Served	LTR	LTR	L	TR	L	TR
Maximum Queue (ft)	224	318	14	185	167	246
Average Queue (ft)	102	141	1	77	55	74
95th Queue (ft)	184	254	7	151	119	170
Link Distance (ft)	355	378		401		578
Upstream Blk Time (%)		0				
Queuing Penalty (veh)		0				
Storage Bay Dist (ft)			100		190	
Storage Blk Time (%)				4	0	1
Queuing Penalty (veh)				0	0	1

### Intersection: 17: Lower Warren St/River St & Quaker Rd

Movement	EB	EB	WB	WB	WB	SB	SB
Directions Served	LT	T	T	T	R	L	R
Maximum Queue (ft)	263	235	168	158	76	107	5
Average Queue (ft)	169	125	89	36	51	34	0
95th Queue (ft)	240	226	147	108	76	84	3
Link Distance (ft)	594	594	489	489			401
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)					50	100	
Storage Blk Time (%)				3	5	0	
Queuing Penalty (veh)				8	4	0	

### Network Summary

Network wide Queuing Penalty: 100

# Appendix E. ASCT Conditions Simulation

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Summary of All Intervals

Run Number	1	10	2	3	4	5	6
Start Time	7:00	7:00	7:00	7:00	7:00	7:00	7:00
End Time	8:15	8:15	8:15	8:15	8:15	8:15	8:15
Total Time (min)	75	75	75	75	75	75	75
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	5	5	5	5	5	5	5
# of Recorded mScheduledIntervals	4	4	4	4	4	4	4
Vehs Entered	3902	3860	3775	3753	3938	3925	3894
Vehs Exited	3918	3854	3733	3758	3944	3930	3883
Starting Vehs	118	119	81	112	118	126	104
Ending Vehs	102	125	123	107	112	121	115
Denied Entry Before	4	0	0	0	0	0	1
Travel Distance (mi)	2319	2270	2215	2235	2365	2314	2328
Travel Time (hr)	123.5	121.6	115.0	116.1	124.2	122.5	125.9
Total Delay (hr)	48.6	48.3	43.5	44.0	47.9	48.0	51.0
Total Stops	4929	4857	4644	4648	4980	4900	5086
Fuel Used (gal)	99.5	96.9	93.0	94.2	100.2	98.2	100.3

Summary of All Intervals

Run Number	7	8	9	Avg
Start Time	7:00	7:00	7:00	7:00
End Time	8:15	8:15	8:15	8:15
Total Time (min)	75	75	75	75
Time Recorded (min)	60	60	60	60
# of Intervals	5	5	5	5
# of Recorded mScheduledIntervals	4	4	4	4
Vehs Entered	3960	3686	3983	3869
Vehs Exited	3981	3691	4002	3870
Starting Vehs	136	114	133	110
Ending Vehs	115	109	114	112
Denied Entry Before	1	1	0	0
Travel Distance (mi)	2333	2213	2351	2294
Travel Time (hr)	126.1	115.4	125.1	121.5
Total Delay (hr)	50.6	44.3	49.0	47.5
Total Stops	5226	4616	5105	4900
Fuel Used (gal)	100.8	93.5	100.5	97.7

Interval #0 Information Seeding

Start Time	7:00
End Time	7:15
Total Time (min)	15
Volumes adjusted by Growth Factors.	
No data recorded this interval.	

**Interval #1 Information Recording**

Start Time	7:15
End Time	7:30
Total Time (min)	15
Volumes adjusted by Growth Factors, Anti PHF.	

Run Number	1	10	2	3	4	5	6
Vehs Entered	852	894	853	856	921	871	921
Vehs Exited	874	900	838	875	920	892	907
Starting Vehs	118	119	81	112	118	126	104
Ending Vehs	96	113	96	93	119	105	118
Denied Entry Before	4	0	0	0	0	0	1
Travel Distance (mi)	527	542	512	516	566	521	551
Travel Time (hr)	27.0	27.6	25.7	26.8	28.3	27.0	28.2
Total Delay (hr)	10.1	10.1	9.4	10.2	10.0	10.1	10.4
Total Stops	1055	1070	1010	1062	1149	1060	1150
Fuel Used (gal)	22.3	22.4	21.3	21.8	23.3	21.8	23.5

**Interval #1 Information Recording**

Start Time	7:15
End Time	7:30
Total Time (min)	15
Volumes adjusted by Growth Factors, Anti PHF.	

Run Number	7	8	9	Avg
Vehs Entered	928	855	908	883
Vehs Exited	946	871	945	894
Starting Vehs	136	114	133	110
Ending Vehs	118	98	96	101
Denied Entry Before	1	1	0	0
Travel Distance (mi)	547	522	559	536
Travel Time (hr)	28.7	26.4	28.1	27.4
Total Delay (hr)	11.0	9.5	10.1	10.1
Total Stops	1245	1059	1148	1100
Fuel Used (gal)	23.4	21.7	23.4	22.5

**Interval #2 Information Recording**

Start Time	7:30
End Time	7:45
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	1	10	2	3	4	5	6
Vehs Entered	927	885	873	863	918	939	883
Vehs Exited	902	883	865	857	939	922	890
Starting Vehs	96	113	96	93	119	105	118
Ending Vehs	121	115	104	99	98	122	111
Denied Entry Before	1	2	0	0	0	0	0
Travel Distance (mi)	566	530	512	518	575	563	542
Travel Time (hr)	28.1	27.7	26.2	24.9	28.2	29.8	27.6
Total Delay (hr)	9.8	10.7	9.7	8.2	9.6	11.7	10.3
Total Stops	1141	1133	1112	993	1162	1203	1111
Fuel Used (gal)	23.3	22.6	21.0	21.3	23.7	23.7	22.8

**Interval #2 Information Recording**

Start Time	7:30
End Time	7:45
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	7	8	9	Avg
Vehs Entered	913	825	936	895
Vehs Exited	937	820	920	893
Starting Vehs	118	98	96	101
Ending Vehs	94	103	112	105
Denied Entry Before	0	2	0	0
Travel Distance (mi)	575	513	554	545
Travel Time (hr)	29.3	27.0	28.1	27.7
Total Delay (hr)	10.8	10.5	10.2	10.2
Total Stops	1219	1058	1132	1124
Fuel Used (gal)	24.3	21.8	23.1	22.8

**Interval #3 Information Recording**

Start Time	7:45
End Time	8:00
Total Time (min)	15
Volumes adjusted by PHF, Growth Factors.	

Run Number	1	10	2	3	4	5	6
Vehs Entered	1233	1168	1131	1152	1219	1182	1195
Vehs Exited	1191	1125	1104	1118	1132	1160	1129
Starting Vehs	121	115	104	99	98	122	111
Ending Vehs	163	158	131	133	185	144	177
Denied Entry Before	0	2	1	3	0	4	0
Travel Distance (mi)	669	646	633	659	678	654	654
Travel Time (hr)	38.8	35.4	33.7	36.6	38.2	36.2	39.0
Total Delay (hr)	17.1	14.5	13.1	15.3	16.3	15.1	17.8
Total Stops	1552	1516	1370	1504	1574	1469	1591
Fuel Used (gal)	29.8	28.3	27.0	28.7	29.6	28.5	29.3

**Interval #3 Information Recording**

Start Time	7:45
End Time	8:00
Total Time (min)	15
Volumes adjusted by PHF, Growth Factors.	

Run Number	7	8	9	Avg
Vehs Entered	1197	1095	1239	1182
Vehs Exited	1141	1069	1195	1136
Starting Vehs	94	103	112	105
Ending Vehs	150	129	156	152
Denied Entry Before	0	0	0	0
Travel Distance (mi)	634	609	694	653
Travel Time (hr)	36.4	32.2	39.1	36.6
Total Delay (hr)	15.7	12.7	16.6	15.4
Total Stops	1547	1355	1643	1515
Fuel Used (gal)	28.1	26.1	30.4	28.6

**Interval #4 Information Recording**

Start Time	8:00
End Time	8:15
Total Time (min)	15
Volumes adjusted by Growth Factors, Anti PHF.	

Run Number	1	10	2	3	4	5	6
Vehs Entered	890	913	918	882	880	933	895
Vehs Exited	951	946	926	908	953	956	957
Starting Vehs	163	158	131	133	185	144	177
Ending Vehs	102	125	123	107	112	121	115
Denied Entry Before	3	9	5	1	0	4	1
Travel Distance (mi)	558	553	558	542	547	576	580
Travel Time (hr)	29.6	30.9	29.3	27.8	29.5	29.6	31.2
Total Delay (hr)	11.6	13.1	11.3	10.3	11.9	11.0	12.6
Total Stops	1181	1138	1152	1089	1095	1168	1234
Fuel Used (gal)	24.1	23.6	23.6	22.4	23.6	24.1	24.8

**Interval #4 Information Recording**

Start Time	8:00
End Time	8:15
Total Time (min)	15
Volumes adjusted by Growth Factors, Anti PHF.	

Run Number	7	8	9	Avg
Vehs Entered	922	911	900	903
Vehs Exited	957	931	942	942
Starting Vehs	150	129	156	152
Ending Vehs	115	109	114	112
Denied Entry Before	7	2	0	2
Travel Distance (mi)	576	569	544	560
Travel Time (hr)	31.6	29.9	29.8	29.9
Total Delay (hr)	13.1	11.6	12.1	11.8
Total Stops	1215	1144	1182	1157
Fuel Used (gal)	25.0	23.8	23.5	23.9

1: Cottage Hill Road/School Parking & Aviation Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	3.4	0.5	0.4	0.0	0.0	0.0	0.1	0.2	0.2	2.7	3.5	1.4
Total Delay (hr)	0.4	0.7	0.0	0.0	0.5	0.1	0.0	1.0	0.3	1.1	0.9	0.1
Total Del/Veh (s)	9.6	7.7	5.6	7.6	8.1	5.7	44.4	35.4	18.9	76.0	61.5	4.6
Stop Delay (hr)	0.3	0.4	0.0	0.0	0.2	0.0	0.0	0.8	0.3	1.1	0.8	0.1
Stop Del/Veh (s)	6.6	4.2	4.0	3.8	4.0	3.4	41.6	30.8	16.8	74.1	58.2	4.6
Total Stops	99	111	2	9	54	12	2	79	46	48	40	69
Stop/Veh	0.59	0.33	0.40	0.50	0.26	0.35	1.00	0.80	0.81	0.92	0.80	0.80
Travel Dist (mi)	8.3	16.8	0.2	1.8	21.0	3.4	0.2	10.5	6.0	1.7	1.6	2.9
Travel Time (hr)	0.9	1.2	0.0	0.1	1.1	0.2	0.0	1.3	0.6	1.2	1.0	0.3
Avg Speed (mph)	11	14	12	17	19	18	7	8	11	1	2	10
Fuel Used (gal)	0.4	1.0	0.0	0.1	1.2	0.2	0.0	0.6	0.3	0.3	0.3	0.1
Fuel Eff. (mpg)	20.4	17.5	25.7	20.7	18.2	21.2	17.4	18.5	22.3	5.2	5.9	30.7
HC Emissions (g)	3	11	0	1	14	3	0	4	3	1	1	1
CO Emissions (g)	106	465	2	41	663	104	3	172	103	30	33	27
NOx Emissions (g)	12	41	0	3	50	8	0	14	9	2	3	3
Vehicles Entered	166	334	5	18	211	34	2	97	56	50	49	86
Vehicles Exited	166	333	5	17	210	34	2	97	56	51	49	86
Hourly Exit Rate	166	333	5	17	210	34	2	97	56	51	49	86
Input Volume	170	322	4	17	212	33	2	96	54	54	51	87
% of Volume	98	103	118	100	99	104	89	101	103	94	96	99
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0

1: Cottage Hill Road/School Parking & Aviation Rd Performance by movement

Movement	All
Denied Delay (hr)	0.3
Denied Del/Veh (s)	1.1
Total Delay (hr)	5.1
Total Del/Veh (s)	16.5
Stop Delay (hr)	4.1
Stop Del/Veh (s)	13.3
Total Stops	571
Stop/Veh	0.51
Travel Dist (mi)	74.5
Travel Time (hr)	8.0
Avg Speed (mph)	10
Fuel Used (gal)	4.3
Fuel Eff. (mpg)	17.3
HC Emissions (g)	41
CO Emissions (g)	1750
NOx Emissions (g)	145
Vehicles Entered	1108
Vehicles Exited	1106
Hourly Exit Rate	1106
Input Volume	1104
% of Volume	100
Denied Entry Before	0

2: Church Driveway/School Driveway & Aviation Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBT	SBL	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.4
Denied Del/Veh (s)	0.1	0.0	0.0		0.0	0.0	0.1	6.1	4.3	1.2
Total Delay (hr)	1.2	0.8	0.0	0.0	0.6	0.6	0.0	2.9	0.0	6.1
Total Del/Veh (s)	36.7	8.2	5.4		9.3	5.9	44.0	44.0	4.2	16.6
Stop Delay (hr)	1.1	0.5	0.0	0.0	0.2	0.2	0.0	2.8	0.0	4.9
Stop Del/Veh (s)	33.5	5.1	4.4		2.9	2.2	41.2	43.4	4.4	13.3
Total Stops	99	87	2	0	57	110	2	184	27	568
Stop/Veh	0.84	0.26	0.40		0.24	0.30	1.00	0.78	0.77	0.43
Travel Dist (mi)	11.5	32.4	0.5	0.0	25.5	40.0	0.1	7.1	1.0	118.1
Travel Time (hr)	1.6	1.8	0.0	0.0	1.4	2.1	0.0	3.8	0.2	10.8
Avg Speed (mph)	7	18	18	18	19	19	2	2	9	11
Fuel Used (gal)	0.7	1.6	0.0	0.0	0.7	1.0	0.0	1.1	0.1	5.1
Fuel Eff. (mpg)	16.3	20.6	26.4	46.3	35.5	41.4	7.9	6.4	20.8	22.9
HC Emissions (g)	6	21	0	0	6	9	0	5	1	47
CO Emissions (g)	241	827	8	0	184	225	1	139	11	1636
NOx Emissions (g)	20	72	1	0	21	28	0	15	1	156
Vehicles Entered	117	331	5	0	237	365	2	233	35	1325
Vehicles Exited	116	330	5	0	237	364	2	234	35	1323
Hourly Exit Rate	116	330	5	0	237	364	2	234	35	1323
Input Volume	118	322	4	1	239	365	2	232	34	1318
% of Volume	98	103	125	0	99	100	89	101	103	100
Denied Entry Before	0	0	0	0	0	0	0	0	0	0

3: Adirondack SB On/Off Ramp & Aviation Rd Performance by movement

Movement	EBT	EBR	WBL	WBT	NBL	NBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.1	0.3	0.0
Total Delay (hr)	0.8	0.3	0.9	0.4	0.6	0.5	3.4
Total Del/Veh (s)	6.2	3.9	10.7	2.3	42.1	6.4	6.4
Stop Delay (hr)	0.5	0.2	0.6	0.1	0.6	0.4	2.3
Stop Del/Veh (s)	4.1	2.7	6.8	0.7	39.4	5.0	4.4
Total Stops	107	71	163	50	48	191	630
Stop/Veh	0.24	0.29	0.55	0.09	0.91	0.74	0.33
Travel Dist (mi)	21.4	12.1	39.5	79.3	3.1	15.3	170.7
Travel Time (hr)	1.5	0.9	2.2	2.8	0.7	1.2	9.3
Avg Speed (mph)	15	14	18	28	4	13	18
Fuel Used (gal)	1.0	0.3	1.4	3.1	0.2	0.5	6.7
Fuel Eff. (mpg)	20.8	35.3	27.3	25.8	13.3	29.1	25.6
HC Emissions (g)	13	3	16	37	1	5	75
CO Emissions (g)	506	92	619	1377	50	203	2847
NOx Emissions (g)	43	11	56	128	4	17	259
Vehicles Entered	443	247	291	582	52	256	1871
Vehicles Exited	444	247	292	583	53	257	1876
Hourly Exit Rate	444	247	292	583	53	257	1876
Input Volume	436	243	292	588	54	245	1859
% of Volume	102	102	100	99	97	105	101
Denied Entry Before	0	0	0	0	0	0	0



4: Aviation Mall Rd/Greenway N & Aviation Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBR	SBL	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.2	0.0	0.0	0.1	0.1	0.1	0.1	0.0
Total Delay (hr)	0.1	1.3	0.0	0.1	1.5	0.0	0.3	0.0	0.2	0.0	3.6
Total Del/Veh (s)	45.6	4.6	3.1	41.9	6.7	4.6	41.4	7.9	40.4	11.4	6.5
Stop Delay (hr)	0.1	0.5	0.0	0.1	0.7	0.0	0.3	0.0	0.2	0.0	1.8
Stop Del/Veh (s)	42.7	1.6	0.8	38.7	3.0	2.5	39.9	7.9	38.5	11.0	3.3
Total Stops	6	122	5	5	168	2	24	17	18	4	371
Stop/Veh	1.00	0.12	0.14	1.00	0.21	0.29	0.92	0.89	0.90	1.00	0.19
Travel Dist (mi)	1.2	214.1	7.3	1.1	191.6	1.5	0.7	0.5	1.1	0.3	419.3
Travel Time (hr)	0.1	8.0	0.3	0.1	7.1	0.1	0.3	0.1	0.3	0.0	16.3
Avg Speed (mph)	10	27	25	12	27	25	2	7	4	10	26
Fuel Used (gal)	0.1	8.6	0.3	0.0	6.3	0.0	0.1	0.0	0.1	0.0	15.5
Fuel Eff. (mpg)	21.2	24.8	27.7	25.4	30.4	32.7	7.7	26.5	14.9	28.3	27.0
HC Emissions (g)	0	112	4	0	72	0	0	0	0	0	189
CO Emissions (g)	14	4011	125	6	2059	9	9	2	9	1	6244
NOx Emissions (g)	1	389	12	1	251	1	1	0	1	0	657
Vehicles Entered	6	1040	35	5	808	6	26	19	19	4	1968
Vehicles Exited	6	1038	35	5	805	6	26	19	20	4	1964
Hourly Exit Rate	6	1038	35	5	805	6	26	19	20	4	1964
Input Volume	5	1018	36	6	804	6	24	18	20	4	1942
% of Volume	114	102	97	80	100	96	108	107	100	94	101
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0

5: Aviation Mall Rd/Starbucks Driveway & Aviation Rd Performance by movement

Movement	EBL	EBT	WBL	WBT	WBR	NBL	NBR	SBL	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0		0.1	0.4	0.1	0.3	0.0
Total Delay (hr)	0.7	1.4	0.4	1.4	0.1	0.0	0.0	0.8	0.0	0.2	5.0
Total Del/Veh (s)	52.5	4.9	55.0	6.4	4.7		9.5	43.9	42.0	22.2	8.7
Stop Delay (hr)	0.6	0.5	0.3	0.7	0.1	0.0	0.0	0.8	0.0	0.2	3.3
Stop Del/Veh (s)	49.1	1.7	52.0	3.2	2.5		10.0	42.1	39.2	21.8	5.7
Total Stops	43	123	23	143	16	0	16	62	2	26	454
Stop/Veh	0.93	0.12	0.96	0.18	0.20		0.89	0.90	1.00	0.87	0.22
Travel Dist (mi)	10.5	236.4	2.9	97.0	9.6	0.0	1.0	1.9	0.0	0.8	360.2
Travel Time (hr)	1.0	8.2	0.5	4.6	0.5	0.0	0.1	0.9	0.0	0.2	16.1
Avg Speed (mph)	10	29	6	21	19	6	10	2	2	4	22
Fuel Used (gal)	0.4	7.4	0.2	4.8	0.4	0.0	0.0	0.3	0.0	0.1	13.6
Fuel Eff. (mpg)	23.8	31.9	14.2	20.2	23.1	16.5	32.7	7.1	7.3	11.6	26.4
HC Emissions (g)	3	80	1	60	5	0	0	1	0	1	151
CO Emissions (g)	92	2053	66	2458	213	0	6	28	0	16	4933
NOx Emissions (g)	11	285	5	219	17	0	0	3	0	2	542
Vehicles Entered	44	1012	23	786	78	0	18	68	2	30	2061
Vehicles Exited	45	1014	23	788	78	0	18	68	2	30	2066
Hourly Exit Rate	45	1014	23	788	78	0	18	68	2	30	2066
Input Volume	44	991	24	783	76	1	16	66	1	30	2032
% of Volume	103	102	95	101	102	0	111	103	200	98	102
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0

6: Glen St/Lake George Rd & Aviation Rd/Quaker Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.0	0.0	0.1	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	3.3	0.2	3.1	3.5	0.1	0.2	3.5	0.1	0.2
Total Delay (hr)	1.9	1.6	0.3	0.1	2.5	0.1	2.5	1.7	0.0	1.0	1.6	0.4
Total Del/Veh (s)	50.1	8.7	3.4	50.0	17.2	3.2	48.3	34.4	12.2	49.5	39.1	7.3
Stop Delay (hr)	1.8	1.1	0.1	0.1	1.8	0.0	2.3	1.4	0.0	0.9	1.4	0.3
Stop Del/Veh (s)	46.9	5.7	1.2	48.3	12.1	2.1	44.0	28.0	11.5	46.0	32.5	5.8
Total Stops	128	182	59	4	259	31	172	134	8	68	120	127
Stop/Veh	0.91	0.27	0.22	0.80	0.49	0.40	0.92	0.76	0.80	0.93	0.79	0.72
Travel Dist (mi)	16.8	82.1	33.1	0.7	88.0	12.8	21.9	21.1	1.2	11.3	23.4	27.6
Travel Time (hr)	2.5	4.1	1.5	0.1	4.8	0.5	3.4	2.2	0.1	1.4	2.2	1.3
Avg Speed (mph)	7	20	22	8	18	27	7	10	16	8	10	22
Fuel Used (gal)	0.9	3.1	1.0	0.0	3.2	0.4	1.4	1.1	0.0	0.6	1.2	0.8
Fuel Eff. (mpg)	18.1	26.7	32.8	20.1	27.2	28.9	15.6	18.9	28.7	17.6	20.3	32.7
HC Emissions (g)	7	32	12	0	38	7	13	13	0	5	16	12
CO Emissions (g)	251	1105	431	13	1666	313	637	584	16	306	669	506
NOx Emissions (g)	20	113	40	1	124	22	36	40	1	14	46	36
Vehicles Entered	138	671	268	4	528	77	183	176	10	72	148	175
Vehicles Exited	137	672	267	4	528	76	184	175	10	71	149	175
Hourly Exit Rate	137	672	267	4	528	76	184	175	10	71	149	175
Input Volume	143	648	256	4	524	74	188	169	8	69	144	171
% of Volume	96	104	104	94	101	102	98	104	121	103	103	102
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0

6: Glen St/Lake George Rd & Aviation Rd/Quaker Rd Performance by movement

Movement	All
Denied Delay (hr)	0.4
Denied Del/Veh (s)	0.5
Total Delay (hr)	13.7
Total Del/Veh (s)	20.0
Stop Delay (hr)	11.2
Stop Del/Veh (s)	16.3
Total Stops	1292
Stop/Veh	0.52
Travel Dist (mi)	340.0
Travel Time (hr)	24.1
Avg Speed (mph)	14
Fuel Used (gal)	13.9
Fuel Eff. (mpg)	24.4
HC Emissions (g)	154
CO Emissions (g)	6496
NOx Emissions (g)	494
Vehicles Entered	2450
Vehicles Exited	2448
Hourly Exit Rate	2448
Input Volume	2399
% of Volume	102
Denied Entry Before	0

30: Adirondack NB Off Ramp/Adirondack NB On Ramp & Aviation Rd Performance by movement

Movement	EBL	EBT	WBT	WBR	NBL	NBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Denied Del/Veh (s)	0.1	0.0	0.0	0.1	0.3	0.4	0.1
Total Delay (hr)	0.3	2.0	1.1	0.2	2.2	1.6	7.5
Total Del/Veh (s)	20.2	11.2	6.1	4.1	37.8	12.9	12.1
Stop Delay (hr)	0.3	1.4	0.5	0.1	1.9	1.2	5.4
Stop Del/Veh (s)	17.4	7.6	2.9	1.2	33.2	10.0	8.7
Total Stops	40	203	114	43	173	287	860
Stop/Veh	0.74	0.31	0.17	0.23	0.84	0.64	0.39
Travel Dist (mi)	7.3	86.5	140.0	38.7	15.7	34.2	322.3
Travel Time (hr)	0.6	4.8	5.2	1.5	2.8	3.1	17.9
Avg Speed (mph)	13	18	27	25	6	11	18
Fuel Used (gal)	0.3	4.1	4.7	1.1	1.1	1.4	12.7
Fuel Eff. (mpg)	21.1	21.0	29.9	33.7	14.5	25.0	25.3
HC Emissions (g)	3	59	48	14	7	12	143
CO Emissions (g)	154	2306	1425	376	306	470	5037
NOx Emissions (g)	11	194	174	46	26	42	493
Vehicles Entered	53	640	668	184	205	448	2198
Vehicles Exited	54	640	668	185	205	447	2199
Hourly Exit Rate	54	640	668	185	205	447	2199
Input Volume	53	620	675	176	205	446	2175
% of Volume	102	103	99	105	100	100	101
Denied Entry Before	0	0	0	0	0	0	0

33: Burke Drive & Aviation Rd Performance by movement

Movement	EBT	WBL	WBT	NBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.1	0.0	0.1	0.0
Total Delay (hr)	0.3	0.1	0.2	0.2	0.7
Total Del/Veh (s)	1.9	6.2	0.9	5.5	2.0
Stop Delay (hr)	0.0	0.1	0.0	0.2	0.3
Stop Del/Veh (s)	0.1	4.2	0.1	5.4	0.7
Total Stops	0	24	5	125	154
Stop/Veh	0.00	0.50	0.01	1.00	0.11
Travel Dist (mi)	62.7	2.6	32.2	3.4	100.9
Travel Time (hr)	2.3	0.2	1.1	0.4	4.0
Avg Speed (mph)	27	14	29	9	25
Fuel Used (gal)	2.7	0.1	1.2	0.1	4.1
Fuel Eff. (mpg)	23.0	30.9	26.8	27.5	24.4
HC Emissions (g)	38	0	14	1	53
CO Emissions (g)	1332	17	521	22	1891
NOx Emissions (g)	138	2	49	3	192
Vehicles Entered	561	48	604	124	1337
Vehicles Exited	562	48	603	124	1337
Hourly Exit Rate	562	48	603	124	1337
Input Volume	552	50	608	124	1334
% of Volume	102	96	99	100	100
Denied Entry Before	0	0	0	0	0

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Total Network Performance

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Denied Delay (hr)	1.3
Denied Del/Veh (s)	1.2
Total Delay (hr)	46.3
Total Del/Veh (s)	41.8
Stop Delay (hr)	33.4
Stop Del/Veh (s)	30.2
Total Stops	4900
Stop/Veh	1.23
Travel Dist (mi)	2294.3
Travel Time (hr)	121.5
Avg Speed (mph)	19
Fuel Used (gal)	97.7
Fuel Eff. (mpg)	23.5
HC Emissions (g)	1171
CO Emissions (g)	44511
NOx Emissions (g)	4012
Vehicles Entered	3869
Vehicles Exited	3870
Hourly Exit Rate	3870
Input Volume	17845
% of Volume	22
Denied Entry Before	0

Arterial Level of Service  
Baseline

1/12/2023

Arterial Level of Service: EB Aviation Rd

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed	Run 1 Speed	Run 1 Delay
Cottage Hill Road	1	7.7	13.4	0.1	16	16	7.5
Church Driveway	2	9.1	19.2	0.1	19	19	9.5
Burke Drive	33	1.8	13.3	0.1	31	31	1.9
Adirondack SB On/Off	3	5.8	10.9	0.1	17	16	6.8
Adirondack NB Off Ra	30	9.0	23.2	0.1	21	21	8.8
Aviation Mall Rd	4	4.5	25.9	0.2	29	30	3.8
Aviation Mall Rd	5	4.8	28.8	0.2	30	29	5.3
Glen St	6	8.2	20.8	0.1	22	21	9.9
<b>Total</b>		<b>51.1</b>	<b>155.6</b>	<b>1.0</b>	<b>24</b>	<b>24</b>	<b>53.6</b>

Arterial Level of Service: EB Aviation Rd

Cross Street	Run 10 Speed	Run 10 Delay	Run 2 Speed	Run 2 Delay	Run 3 Speed	Run 3 Delay	Run 4 Speed
Cottage Hill Road	16	7.6	16	7.3	17	6.8	16
Church Driveway	19	9.4	22	6.8	21	6.9	19
Burke Drive	31	1.8	32	1.5	31	1.7	30
Adirondack SB On/Off	18	5.5	20	4.3	18	5.3	18
Adirondack NB Off Ra	20	9.9	21	9.3	22	8.3	22
Aviation Mall Rd	29	4.8	30	3.9	30	4.0	29
Aviation Mall Rd	30	4.9	30	4.3	29	5.0	30
Glen St	24	6.8	22	8.5	22	8.3	21
<b>Total</b>	<b>24</b>	<b>50.7</b>	<b>25</b>	<b>45.9</b>	<b>25</b>	<b>46.2</b>	<b>24</b>

Arterial Level of Service: EB Aviation Rd

Cross Street	Run 4 Delay	Run 5 Speed	Run 5 Delay	Run 6 Speed	Run 6 Delay	Run 7 Speed	Run 7 Delay
Cottage Hill Road	7.2	17	7.0	16	7.5	13	9.9
Church Driveway	9.6	20	8.3	17	11.1	16	13.4
Burke Drive	2.0	31	1.7	30	2.2	30	2.1
Adirondack SB On/Off	5.5	18	5.4	15	8.0	17	6.3
Adirondack NB Off Ra	8.2	21	8.9	20	10.5	22	8.0
Aviation Mall Rd	4.5	29	4.6	27	6.4	29	4.7
Aviation Mall Rd	4.5	30	4.6	29	5.3	29	5.0
Glen St	9.1	22	8.9	25	6.3	20	10.1
<b>Total</b>	<b>50.4</b>	<b>24</b>	<b>49.4</b>	<b>23</b>	<b>57.1</b>	<b>23</b>	<b>59.4</b>

Arterial Level of Service: EB Aviation Rd

Cross Street	Run 8 Speed	Run 8 Delay	Run 9 Speed	Run 9 Delay
Cottage Hill Road	17	6.7	14	9.5
Church Driveway	22	6.4	20	8.9
Burke Drive	32	1.3	30	2.0
Adirondack SB On/Off	18	5.7	18	5.2
Adirondack NB Off Ra	20	9.9	22	8.3
Aviation Mall Rd	29	4.6	30	4.2
Aviation Mall Rd	30	4.3	30	4.8
Glen St	23	7.4	23	7.2
Total	25	46.4	24	50.2



Arterial Level of Service: WB Aviation Rd

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed	Run 1 Speed	Run 1 Delay
Starbucks Driveway	5	7.2	20.0	0.1	23	22	7.7
Greenway N	4	6.8	31.2	0.2	27	29	5.5
Adirondack NB On Ram	30	6.3	27.8	0.2	27	29	4.7
Adirondack SB On/Off	3	2.7	16.6	0.1	29	30	2.4
Burke Drive	33	0.9	6.4	0.1	30	30	0.8
School Driveway	2	9.3	20.4	0.1	20	20	9.0
School Parking	1	7.9	18.3	0.1	20	18	9.8
Total		41.1	140.8	1.0	25	25	40.0

Arterial Level of Service: WB Aviation Rd

Cross Street	Run 10 Speed	Run 10 Delay	Run 2 Speed	Run 2 Delay	Run 3 Speed	Run 3 Delay	Run 4 Speed
Starbucks Driveway	25	5.4	23	6.9	24	6.5	23
Greenway N	28	6.8	28	6.4	28	6.1	28
Adirondack NB On Ram	27	6.6	28	5.6	27	6.1	26
Adirondack SB On/Off	29	2.8	28	3.3	30	2.5	31
Burke Drive	30	0.8	29	1.1	30	0.9	32
School Driveway	20	9.1	20	9.2	21	8.7	21
School Parking	21	7.3	19	9.1	23	5.6	21
Total	26	38.8	25	41.6	26	36.5	25

Arterial Level of Service: WB Aviation Rd

Cross Street	Run 4 Delay	Run 5 Speed	Run 5 Delay	Run 6 Speed	Run 6 Delay	Run 7 Speed	Run 7 Delay
Starbucks Driveway	7.1	23	7.1	23	6.9	20	9.5
Greenway N	6.5	28	6.8	27	7.8	26	8.0
Adirondack NB On Ram	7.8	28	5.4	26	8.2	28	5.6
Adirondack SB On/Off	2.1	30	2.2	29	3.1	29	2.9
Burke Drive	0.5	30	0.8	30	1.0	28	1.3
School Driveway	8.7	20	9.9	21	8.4	20	9.5
School Parking	7.1	21	7.6	20	8.3	19	9.2
Total	39.8	25	39.9	25	43.7	24	46.0

Arterial Level of Service: WB Aviation Rd

Cross Street	Run 8 Speed	Run 8 Delay	Run 9 Speed	Run 9 Delay
Starbucks Driveway	23	6.7	22	7.7
Greenway N	27	7.3	27	6.9
Adirondack NB On Ram	28	5.7	27	6.6
Adirondack SB On/Off	29	2.6	29	2.6
Burke Drive	29	1.0	30	0.9
School Driveway	19	9.8	18	11.0
School Parking	21	7.1	20	8.3
Total	25	40.2	24	44.0

Queuing and Blocking Report  
Baseline

1/12/2023

Intersection: 1: Cottage Hill Road/School Parking & Aviation Rd

Movement	EB	EB	WB	WB	NB	SB	SB
Directions Served	L	TR	L	TR	LTR	LT	R
Maximum Queue (ft)	75	247	66	171	173	178	69
Average Queue (ft)	44	76	8	50	81	84	24
95th Queue (ft)	76	182	41	121	147	167	50
Link Distance (ft)		261		458	567	167	167
Upstream Blk Time (%)		0				6	
Queuing Penalty (veh)		0				0	
Storage Bay Dist (ft)	50		110				
Storage Blk Time (%)	6	9		1			
Queuing Penalty (veh)	21	16		0			

Intersection: 2: Church Driveway/School Driveway & Aviation Rd

Movement	EB	EB	WB	WB	NB	SB	SB
Directions Served	L	TR	L	TR	TR	LT	R
Maximum Queue (ft)	196	206	12	261	21	190	63
Average Queue (ft)	64	63	0	89	2	142	21
95th Queue (ft)	146	156	6	185	12	204	52
Link Distance (ft)		458		531	122	159	159
Upstream Blk Time (%)						17	
Queuing Penalty (veh)						0	
Storage Bay Dist (ft)	190		50				
Storage Blk Time (%)	1	0		10			
Queuing Penalty (veh)	5	0		0			

Intersection: 3: Adirondack SB On/Off Ramp & Aviation Rd

Movement	EB	EB	WB	WB	WB	NB	NB
Directions Served	T	TR	L	T	T	L	R
Maximum Queue (ft)	153	176	206	84	90	110	125
Average Queue (ft)	51	71	77	18	27	44	58
95th Queue (ft)	114	143	153	62	76	87	99
Link Distance (ft)	210	210		655	655	314	314
Upstream Blk Time (%)		0					
Queuing Penalty (veh)		0					
Storage Bay Dist (ft)			370				
Storage Blk Time (%)			0				
Queuing Penalty (veh)			0				

Queuing and Blocking Report  
Baseline

1/12/2023

Intersection: 4: Aviation Mall Rd/Greenway N & Aviation Rd

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	SB
Directions Served	L	T	T	R	L	T	TR	LT	R	LTR
Maximum Queue (ft)	34	149	186	88	29	209	227	67	32	62
Average Queue (ft)	7	37	59	7	5	56	65	20	12	19
95th Queue (ft)	26	106	139	45	21	152	167	52	33	49
Link Distance (ft)		1048	1048			1173	1173	130	130	308
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	70			130	140					
Storage Blk Time (%)		2	1			1				
Queuing Penalty (veh)		0	0			0				

Intersection: 5: Aviation Mall Rd/Starbucks Driveway & Aviation Rd

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Directions Served	L	T	T	L	L	T	TR	LT	R	R	LTR
Maximum Queue (ft)	91	146	191	20	57	174	190	6	22	14	138
Average Queue (ft)	32	37	59	1	21	58	65	0	6	2	56
95th Queue (ft)	70	102	139	11	50	136	150	4	20	9	115
Link Distance (ft)		1173	1173			553	553		277	277	131
Upstream Blk Time (%)											1
Queuing Penalty (veh)											0
Storage Bay Dist (ft)	80			150	150			170			
Storage Blk Time (%)	2	1	1			1					
Queuing Penalty (veh)	8	0	0			0					

Queuing and Blocking Report  
Baseline

1/12/2023

Intersection: 6: Glen St/Lake George Rd & Aviation Rd/Quaker Rd

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB
Directions Served	L	L	T	T	R	L	T	T	R	L	L	T
Maximum Queue (ft)	112	123	156	178	94	27	195	176	46	152	180	141
Average Queue (ft)	39	63	61	70	30	5	108	78	15	44	91	70
95th Queue (ft)	86	105	127	141	70	20	176	148	35	112	158	123
Link Distance (ft)			553	553			873	873				625
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	170	170			280	280			430	310	310	
Storage Blk Time (%)	0	0	0									
Queuing Penalty (veh)	0	0	0									

Intersection: 6: Glen St/Lake George Rd & Aviation Rd/Quaker Rd

Movement	NB	SB	SB	SB	SB	SB
Directions Served	TR	L	L	T	T	R
Maximum Queue (ft)	116	62	125	158	97	98
Average Queue (ft)	24	8	51	76	23	48
95th Queue (ft)	67	37	98	130	68	81
Link Distance (ft)	625			833	833	833
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)		240	240			
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 30: Adirondack NB Off Ramp/Adirondack NB On Ramp Aviation Rd

Movement	EB	EB	EB	WB	WB	WB	NB	NB
Directions Served	L	T	T	T	T	R	L	R
Maximum Queue (ft)	70	148	169	190	170	103	248	251
Average Queue (ft)	28	70	79	48	39	22	124	116
95th Queue (ft)	60	130	142	129	108	60	219	209
Link Distance (ft)		655	655	1048	1048		402	402
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	120					140		
Storage Blk Time (%)		1			1	0		
Queuing Penalty (veh)		1			1	0		

# Queuing and Blocking Report

## Baseline

1/12/2023

### Intersection: 33: Burke Drive & Aviation Rd

Movement	EB	WB	WB	WB	NB
Directions Served	T	L	T	T	LR
Maximum Queue (ft)	10	59	36	22	90
Average Queue (ft)	0	20	2	1	41
95th Queue (ft)	8	50	16	12	71
Link Distance (ft)	531		210	210	143
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)		85			
Storage Blk Time (%)		0	0		
Queuing Penalty (veh)		0	0		

### Network Summary

Network wide Queuing Penalty: 55

Summary of All Intervals

Run Number	1	10	2	3	4	5	6
Start Time	3:45	3:45	3:45	3:45	3:45	3:45	3:45
End Time	5:15	5:15	5:15	5:15	5:15	5:15	5:15
Total Time (min)	90	90	90	90	90	90	90
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	5	5	5	5	5	5	5
# of Recorded mScheduledIntervals	4	4	4	4	4	4	4
Vehs Entered	5636	5659	5455	5553	5622	5734	5635
Vehs Exited	5576	5629	5497	5553	5648	5803	5661
Starting Vehs	182	186	226	205	220	254	232
Ending Vehs	242	216	184	205	194	185	206
Denied Entry Before	1	0	0	0	1	0	2
Travel Distance (mi)	3285	3382	3278	3330	3347	3401	3366
Travel Time (hr)	209.4	216.4	205.3	212.9	220.4	221.7	216.9
Total Delay (hr)	103.4	107.8	99.7	105.6	112.5	112.2	108.2
Total Stops	8928	9031	8635	8840	8740	9095	9108
Fuel Used (gal)	152.6	155.7	150.5	153.5	155.8	158.2	155.9

Summary of All Intervals

Run Number	7	8	9	Avg
Start Time	3:45	3:45	3:45	3:45
End Time	5:15	5:15	5:15	5:15
Total Time (min)	90	90	90	90
Time Recorded (min)	60	60	60	60
# of Intervals	5	5	5	5
# of Recorded mScheduledIntervals	4	4	4	4
Vehs Entered	5647	5626	5647	5617
Vehs Exited	5680	5648	5689	5639
Starting Vehs	236	229	223	217
Ending Vehs	203	207	181	200
Denied Entry Before	0	0	0	0
Travel Distance (mi)	3390	3307	3367	3345
Travel Time (hr)	223.7	213.5	215.8	215.6
Total Delay (hr)	114.5	106.7	107.1	107.8
Total Stops	8899	8601	8909	8879
Fuel Used (gal)	157.6	152.6	154.9	154.7

Interval #0 Information Seeding

Start Time	3:45
End Time	4:15
Total Time (min)	30
Volumes adjusted by Growth Factors.	
No data recorded this interval.	

**Interval #1 Information Recording**

Start Time	4:15
End Time	4:30
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	1	10	2	3	4	5	6
Vehs Entered	1353	1354	1313	1308	1320	1339	1382
Vehs Exited	1352	1347	1352	1338	1366	1386	1388
Starting Vehs	182	186	226	205	220	254	232
Ending Vehs	183	193	187	175	174	207	226
Denied Entry Before	1	0	0	0	1	0	2
Travel Distance (mi)	803	815	790	811	822	819	822
Travel Time (hr)	49.9	51.5	49.0	50.3	50.3	50.4	51.4
Total Delay (hr)	23.9	25.3	23.4	24.2	23.9	24.1	24.8
Total Stops	2130	2202	1986	2068	2124	1986	2209
Fuel Used (gal)	37.2	37.5	36.4	36.8	37.3	37.2	37.9

**Interval #1 Information Recording**

Start Time	4:15
End Time	4:30
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	7	8	9	Avg
Vehs Entered	1380	1338	1371	1339
Vehs Exited	1370	1362	1371	1363
Starting Vehs	236	229	223	217
Ending Vehs	246	205	223	198
Denied Entry Before	0	0	0	0
Travel Distance (mi)	850	806	823	816
Travel Time (hr)	55.0	49.1	51.7	50.8
Total Delay (hr)	27.7	23.0	25.1	24.5
Total Stops	2181	2105	2196	2115
Fuel Used (gal)	39.2	36.5	37.8	37.4



**Interval #2 Information Recording**

Start Time	4:30
End Time	4:45
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	1	10	2	3	4	5	6
Vehs Entered	1346	1386	1290	1311	1342	1431	1345
Vehs Exited	1347	1359	1315	1289	1328	1416	1366
Starting Vehs	183	193	187	175	174	207	226
Ending Vehs	182	220	162	197	188	222	205
Denied Entry Before	2	1	1	1	2	1	0
Travel Distance (mi)	765	828	795	766	781	844	819
Travel Time (hr)	46.7	51.8	49.7	47.2	49.0	56.5	51.2
Total Delay (hr)	22.1	25.2	24.1	22.6	23.9	29.4	24.8
Total Stops	2051	2172	2178	2089	2091	2349	2150
Fuel Used (gal)	35.1	37.5	36.6	34.8	35.6	39.6	37.1

**Interval #2 Information Recording**

Start Time	4:30
End Time	4:45
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	7	8	9	Avg
Vehs Entered	1379	1397	1368	1356
Vehs Exited	1416	1409	1382	1363
Starting Vehs	246	205	223	198
Ending Vehs	209	193	209	197
Denied Entry Before	1	1	1	0
Travel Distance (mi)	818	819	821	806
Travel Time (hr)	51.6	51.5	51.6	50.7
Total Delay (hr)	25.3	25.0	25.0	24.7
Total Stops	2075	2212	2076	2143
Fuel Used (gal)	37.4	37.9	37.1	36.9

**Interval #3 Information Recording**

Start Time	4:45
End Time	5:00
Total Time (min)	15
Volumes adjusted by PHF, Growth Factors.	

Run Number	1	10	2	3	4	5	6
Vehs Entered	1498	1515	1503	1527	1572	1569	1502
Vehs Exited	1450	1492	1424	1512	1482	1529	1435
Starting Vehs	182	220	162	197	188	222	205
Ending Vehs	230	243	241	212	278	262	272
Denied Entry Before	1	0	1	0	7	2	1
Travel Distance (mi)	854	886	847	882	875	891	859
Travel Time (hr)	55.5	59.6	54.2	58.2	64.3	60.3	56.0
Total Delay (hr)	27.9	31.2	26.9	29.7	35.9	31.6	28.3
Total Stops	2306	2489	2322	2532	2454	2494	2418
Fuel Used (gal)	39.9	41.8	38.9	41.5	42.7	42.3	39.9

**Interval #3 Information Recording**

Start Time	4:45
End Time	5:00
Total Time (min)	15
Volumes adjusted by PHF, Growth Factors.	

Run Number	7	8	9	Avg
Vehs Entered	1540	1519	1582	1531
Vehs Exited	1500	1498	1518	1485
Starting Vehs	209	193	209	197
Ending Vehs	249	214	273	241
Denied Entry Before	1	0	0	0
Travel Distance (mi)	865	865	890	871
Travel Time (hr)	61.6	57.9	60.1	58.8
Total Delay (hr)	33.5	30.0	31.3	30.6
Total Stops	2451	2317	2523	2431
Fuel Used (gal)	41.5	40.3	41.8	41.1

**Interval #4 Information Recording**

Start Time	5:00
End Time	5:15
Total Time (min)	15
Volumes adjusted by Growth Factors, Anti PHF.	

Run Number	1	10	2	3	4	5	6
Vehs Entered	1439	1404	1349	1407	1388	1395	1406
Vehs Exited	1427	1431	1406	1414	1472	1472	1472
Starting Vehs	230	243	241	212	278	262	272
Ending Vehs	242	216	184	205	194	185	206
Denied Entry Before	0	4	3	3	1	0	2
Travel Distance (mi)	863	853	846	871	870	847	866
Travel Time (hr)	57.3	53.5	52.5	57.2	56.9	54.5	58.3
Total Delay (hr)	29.6	26.1	25.3	29.2	28.9	27.2	30.3
Total Stops	2441	2168	2149	2151	2071	2266	2331
Fuel Used (gal)	40.5	38.9	38.5	40.3	40.2	39.1	41.0

**Interval #4 Information Recording**

Start Time	5:00
End Time	5:15
Total Time (min)	15
Volumes adjusted by Growth Factors, Anti PHF.	

Run Number	7	8	9	Avg
Vehs Entered	1348	1372	1326	1384
Vehs Exited	1394	1379	1418	1428
Starting Vehs	249	214	273	241
Ending Vehs	203	207	181	200
Denied Entry Before	1	0	1	0
Travel Distance (mi)	857	817	832	852
Travel Time (hr)	55.5	55.0	52.5	55.3
Total Delay (hr)	27.9	28.7	25.7	27.9
Total Stops	2192	1967	2114	2185
Fuel Used (gal)	39.6	37.9	38.2	39.4

3: Adirondack SB On/Off Ramp & Aviation Rd Performance by movement

Movement	EBT	EBR	WBL	WBT	NBL	NBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.1	0.3	0.0
Total Delay (hr)	1.2	0.2	3.0	0.6	0.7	0.5	6.3
Total Del/Veh (s)	8.6	5.8	20.1	3.1	52.7	7.1	10.3
Stop Delay (hr)	0.9	0.2	2.0	0.1	0.7	0.4	4.3
Stop Del/Veh (s)	6.2	4.9	13.3	0.8	49.9	5.6	7.0
Total Stops	144	51	375	54	45	194	863
Stop/Veh	0.29	0.34	0.69	0.08	0.90	0.72	0.39
Travel Dist (mi)	24.5	7.3	72.3	96.4	2.9	16.1	219.4
Travel Time (hr)	2.0	0.6	5.5	3.5	0.8	1.3	13.8
Avg Speed (mph)	12	12	13	27	3	13	16
Fuel Used (gal)	1.3	0.3	3.1	4.0	0.3	0.6	9.5
Fuel Eff. (mpg)	19.3	29.1	23.3	23.9	11.2	27.8	23.1
HC Emissions (g)	13	2	28	48	1	7	100
CO Emissions (g)	553	64	1028	1799	54	239	3736
NOx Emissions (g)	47	7	106	177	4	22	363
Vehicles Entered	495	148	534	711	48	270	2206
Vehicles Exited	496	148	535	712	49	270	2210
Hourly Exit Rate	496	148	535	712	49	270	2210
Input Volume	502	151	530	726	51	270	2230
% of Volume	99	98	101	98	96	100	99
Denied Entry Before	0	0	0	0	0	0	0

Arterial Level of Service: EB Aviation Rd

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed	Run 1 Speed	Run 1 Delay
Cottage Hill Road	1	4.6	10.1	0.1	21	21	4.4
Church Driveway	2	4.1	14.5	0.1	25	26	4.0
Burke Drive	33	1.5	13.1	0.1	31	31	1.5
Adirondack SB On/Off	3	8.2	13.4	0.1	14	16	7.0
Adirondack NB Off Ra	30	13.7	27.7	0.1	18	18	13.7
Aviation Mall Rd	4	10.5	31.6	0.2	24	26	8.5
Aviation Mall Rd	5	19.8	43.9	0.2	20	19	22.2
Glen St	6	16.4	28.8	0.1	16	16	15.8
<b>Total</b>		<b>78.7</b>	<b>183.0</b>	<b>1.0</b>	<b>20</b>	<b>21</b>	<b>77.0</b>

Arterial Level of Service: EB Aviation Rd

Cross Street	Run 10 Speed	Run 10 Delay	Run 2 Speed	Run 2 Delay	Run 3 Speed	Run 3 Delay	Run 4 Speed
Cottage Hill Road	19	5.4	21	4.4	20	5.1	22
Church Driveway	25	4.4	26	3.9	26	3.7	25
Burke Drive	31	1.8	32	1.4	31	1.5	31
Adirondack SB On/Off	13	9.1	14	8.8	15	7.2	14
Adirondack NB Off Ra	19	12.4	17	14.7	16	15.8	16
Aviation Mall Rd	24	10.0	24	11.0	24	10.8	25
Aviation Mall Rd	20	18.5	20	19.7	19	21.7	20
Glen St	16	16.6	16	16.0	15	19.3	18
<b>Total</b>	<b>21</b>	<b>78.2</b>	<b>20</b>	<b>80.0</b>	<b>20</b>	<b>85.0</b>	<b>21</b>

Arterial Level of Service: EB Aviation Rd

Cross Street	Run 4 Delay	Run 5 Speed	Run 5 Delay	Run 6 Speed	Run 6 Delay	Run 7 Speed	Run 7 Delay
Cottage Hill Road	4.1	21	4.4	22	4.1	17	6.5
Church Driveway	4.3	25	4.3	25	4.2	28	2.9
Burke Drive	1.6	31	1.6	31	1.6	32	1.4
Adirondack SB On/Off	8.8	11	11.6	15	7.3	15	7.2
Adirondack NB Off Ra	15.6	19	12.1	18	13.1	18	13.2
Aviation Mall Rd	8.8	24	10.9	24	10.4	22	13.1
Aviation Mall Rd	18.2	20	20.0	18	22.7	21	16.5
Glen St	13.9	15	18.3	16	15.8	16	16.3
<b>Total</b>	<b>75.4</b>	<b>20</b>	<b>83.2</b>	<b>20</b>	<b>79.2</b>	<b>21</b>	<b>77.1</b>

Arterial Level of Service: EB Aviation Rd

Cross Street	Run 8 Speed	Run 8 Delay	Run 9 Speed	Run 9 Delay
Cottage Hill Road	24	3.2	22	3.8
Church Driveway	25	4.5	25	4.4
Burke Drive	32	1.2	31	1.5
Adirondack SB On/Off	15	7.2	15	7.8
Adirondack NB Off Ra	18	13.1	18	12.5
Aviation Mall Rd	25	10.0	23	11.5
Aviation Mall Rd	21	17.3	19	21.2
Glen St	17	15.6	16	16.3
Total	21	72.1	20	79.0

Arterial Level of Service: WB Aviation Rd

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed	Run 1 Speed	Run 1 Delay
Starbucks Driveway	5	16.4	29.2	0.1	16	16	16.1
Greenway N	4	7.0	31.5	0.2	27	28	6.4
Adirondack NB On Ram	30	20.1	41.6	0.2	18	18	20.6
Adirondack SB On/Off	3	3.4	17.4	0.1	28	28	3.2
Burke Drive	33	0.9	6.5	0.1	29	29	0.8
School Driveway	2	7.0	18.3	0.1	22	22	7.0
School Parking	1	5.2	15.4	0.1	24	24	5.2
Total		60.1	159.9	1.0	22	22	59.2

Arterial Level of Service: WB Aviation Rd

Cross Street	Run 10 Speed	Run 10 Delay	Run 2 Speed	Run 2 Delay	Run 3 Speed	Run 3 Delay	Run 4 Speed
Starbucks Driveway	14	19.0	16	15.3	18	12.6	16
Greenway N	27	7.4	28	6.2	27	6.9	26
Adirondack NB On Ram	19	18.0	19	18.0	19	19.1	17
Adirondack SB On/Off	28	3.4	27	3.9	29	2.9	29
Burke Drive	29	0.9	29	1.0	29	0.8	30
School Driveway	22	7.1	22	6.9	23	6.3	23
School Parking	25	4.8	22	6.5	24	4.9	23
Total	22	60.6	22	57.8	23	53.5	21

Arterial Level of Service: WB Aviation Rd

Cross Street	Run 4 Delay	Run 5 Speed	Run 5 Delay	Run 6 Speed	Run 6 Delay	Run 7 Speed	Run 7 Delay
Starbucks Driveway	16.3	15	18.1	15	17.1	17	14.4
Greenway N	8.2	28	6.8	27	8.0	28	6.7
Adirondack NB On Ram	24.0	19	18.2	20	16.5	15	28.0
Adirondack SB On/Off	3.0	28	3.8	29	3.1	27	4.0
Burke Drive	0.7	29	1.0	30	0.8	28	1.1
School Driveway	6.4	21	8.1	23	6.4	22	7.1
School Parking	5.4	25	4.8	25	4.4	22	6.3
Total	64.1	22	60.9	23	56.3	21	67.7

Arterial Level of Service: WB Aviation Rd

Cross Street	Run 8 Speed	Run 8 Delay	Run 9 Speed	Run 9 Delay
Starbucks Driveway	15	17.3	15	17.3
Greenway N	27	6.7	27	7.1
Adirondack NB On Ram	18	19.6	18	19.4
Adirondack SB On/Off	28	3.2	28	3.6
Burke Drive	29	1.0	29	1.0
School Driveway	22	7.4	23	6.6
School Parking	25	4.2	24	5.2
Total	22	59.4	22	60.2



Intersection: 3: Adirondack SB On/Off Ramp & Aviation Rd

Movement	EB	EB	WB	WB	WB	NB	NB
Directions Served	T	TR	L	T	T	L	R
Maximum Queue (ft)	162	201	390	137	93	114	131
Average Queue (ft)	67	85	169	27	27	44	64
95th Queue (ft)	135	163	326	129	76	87	108
Link Distance (ft)	210	210		655	655	314	314
Upstream Blk Time (%)		0					
Queuing Penalty (veh)		1					
Storage Bay Dist (ft)			370				
Storage Blk Time (%)			1				
Queuing Penalty (veh)			4				

Summary of All Intervals

Run Number	1	10	2	3	4	5	6
Start Time	11:30	11:30	11:30	11:30	11:30	11:30	11:30
End Time	12:45	12:45	12:45	12:45	12:45	12:45	12:45
Total Time (min)	75	75	75	75	75	75	75
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	5	5	5	5	5	5	5
# of Recorded mScheduledIntervals	4	4	4	4	4	4	4
Vehs Entered	5817	5746	5652	5747	5727	5625	5826
Vehs Exited	5822	5813	5651	5711	5743	5633	5802
Starting Vehs	226	269	218	219	241	209	220
Ending Vehs	221	202	219	255	225	201	244
Denied Entry Before	5	6	3	1	0	0	0
Travel Distance (mi)	3407	3382	3268	3290	3313	3244	3379
Travel Time (hr)	224.0	230.6	218.8	219.1	219.7	217.9	222.6
Total Delay (hr)	113.7	121.1	112.9	112.5	112.3	112.6	112.9
Total Stops	8900	9086	8887	8610	8740	8809	9164
Fuel Used (gal)	158.5	159.8	153.6	153.4	154.7	152.6	158.0

Summary of All Intervals

Run Number	7	8	9	Avg
Start Time	11:30	11:30	11:30	11:30
End Time	12:45	12:45	12:45	12:45
Total Time (min)	75	75	75	75
Time Recorded (min)	60	60	60	60
# of Intervals	5	5	5	5
# of Recorded mScheduledIntervals	4	4	4	4
Vehs Entered	5805	5746	5774	5750
Vehs Exited	5837	5729	5773	5751
Starting Vehs	231	191	203	222
Ending Vehs	199	208	204	211
Denied Entry Before	0	1	0	1
Travel Distance (mi)	3380	3367	3397	3343
Travel Time (hr)	230.1	215.9	222.9	222.1
Total Delay (hr)	120.4	106.7	112.8	113.8
Total Stops	8962	8960	8925	8904
Fuel Used (gal)	159.4	154.8	158.7	156.4

Interval #0 Information Seeding

Start Time	11:30
End Time	11:45
Total Time (min)	15
Volumes adjusted by Growth Factors.	
No data recorded this interval.	

**Interval #1 Information Recording**

Start Time	11:45
End Time	12:00
Total Time (min)	15

Volumes adjusted by Growth Factors.

Run Number	1	10	2	3	4	5	6
Vehs Entered	1443	1463	1463	1381	1475	1397	1442
Vehs Exited	1424	1510	1442	1409	1506	1389	1465
Starting Vehs	226	269	218	219	241	209	220
Ending Vehs	245	222	239	191	210	217	197
Denied Entry Before	5	6	3	1	0	0	0
Travel Distance (mi)	843	857	828	819	873	792	830
Travel Time (hr)	55.6	62.5	57.9	55.0	60.2	50.9	54.6
Total Delay (hr)	28.3	34.6	31.0	28.6	31.9	25.3	27.7
Total Stops	2171	2232	2294	2071	2229	2027	2250
Fuel Used (gal)	39.2	41.7	39.8	38.3	41.0	36.5	38.9

**Interval #1 Information Recording**

Start Time	11:45
End Time	12:00
Total Time (min)	15

Volumes adjusted by Growth Factors.

Run Number	7	8	9	Avg
Vehs Entered	1527	1446	1437	1446
Vehs Exited	1505	1424	1416	1446
Starting Vehs	231	191	203	222
Ending Vehs	253	213	224	222
Denied Entry Before	0	1	0	1
Travel Distance (mi)	870	830	830	837
Travel Time (hr)	58.7	51.2	55.1	56.2
Total Delay (hr)	30.4	24.3	28.2	29.0
Total Stops	2276	2172	2112	2179
Fuel Used (gal)	41.0	38.0	38.8	39.3

**Interval #2 Information Recording**

Start Time	12:00
End Time	12:15
Total Time (min)	15

Volumes adjusted by Growth Factors.

Run Number	1	10	2	3	4	5	6
Vehs Entered	1513	1417	1318	1488	1380	1461	1502
Vehs Exited	1532	1438	1361	1437	1394	1434	1441
Starting Vehs	245	222	239	191	210	217	197
Ending Vehs	226	201	196	242	196	244	258
Denied Entry Before	6	4	0	13	4	2	10
Travel Distance (mi)	879	840	757	820	796	852	860
Travel Time (hr)	57.8	54.2	50.5	54.7	50.4	58.6	58.1
Total Delay (hr)	29.4	27.1	26.0	28.1	24.5	31.0	30.3
Total Stops	2307	2145	2061	2151	2113	2493	2425
Fuel Used (gal)	40.9	38.9	35.6	38.4	36.8	40.8	40.2

**Interval #2 Information Recording**

Start Time	12:00
End Time	12:15
Total Time (min)	15

Volumes adjusted by Growth Factors.

Run Number	7	8	9	Avg
Vehs Entered	1366	1412	1431	1425
Vehs Exited	1394	1410	1460	1428
Starting Vehs	253	213	224	222
Ending Vehs	225	215	195	218
Denied Entry Before	2	0	2	3
Travel Distance (mi)	813	825	857	830
Travel Time (hr)	53.6	51.6	56.0	54.5
Total Delay (hr)	27.2	25.0	28.2	27.7
Total Stops	2117	2153	2145	2207
Fuel Used (gal)	37.9	37.8	39.8	38.7

**Interval #3 Information Recording**

Start Time	12:15
End Time	12:30
Total Time (min)	15

Volumes adjusted by Growth Factors.

Run Number	1	10	2	3	4	5	6
Vehs Entered	1418	1457	1484	1393	1433	1373	1383
Vehs Exited	1450	1411	1447	1457	1415	1410	1431
Starting Vehs	226	201	196	242	196	244	258
Ending Vehs	194	247	233	178	214	207	210
Denied Entry Before	3	1	1	1	2	1	0
Travel Distance (mi)	841	844	863	817	810	799	831
Travel Time (hr)	55.4	55.0	56.5	52.9	54.3	54.6	54.1
Total Delay (hr)	28.3	27.8	28.6	26.3	28.0	28.7	27.1
Total Stops	2215	2410	2365	2192	2113	2109	2124
Fuel Used (gal)	39.3	39.2	40.0	37.9	38.1	37.8	38.6

**Interval #3 Information Recording**

Start Time	12:15
End Time	12:30
Total Time (min)	15

Volumes adjusted by Growth Factors.

Run Number	7	8	9	Avg
Vehs Entered	1458	1427	1477	1427
Vehs Exited	1459	1452	1429	1437
Starting Vehs	225	215	195	218
Ending Vehs	224	190	243	212
Denied Entry Before	0	1	0	0
Travel Distance (mi)	847	858	851	836
Travel Time (hr)	59.6	57.5	56.7	55.7
Total Delay (hr)	32.2	29.7	29.1	28.6
Total Stops	2311	2343	2367	2253
Fuel Used (gal)	40.3	39.7	39.9	39.1

**Interval #4 Information Recording**

Start Time	12:30
End Time	12:45
Total Time (min)	15

Volumes adjusted by Growth Factors.

Run Number	1	10	2	3	4	5	6
Vehs Entered	1443	1409	1387	1485	1439	1394	1499
Vehs Exited	1416	1454	1401	1408	1428	1400	1465
Starting Vehs	194	247	233	178	214	207	210
Ending Vehs	221	202	219	255	225	201	244
Denied Entry Before	0	1	0	1	2	5	4
Travel Distance (mi)	843	841	820	833	834	801	858
Travel Time (hr)	55.1	58.9	53.9	56.5	54.9	53.7	55.7
Total Delay (hr)	27.7	31.6	27.2	29.5	27.9	27.6	27.8
Total Stops	2207	2299	2167	2196	2285	2180	2365
Fuel Used (gal)	39.1	39.9	38.3	38.9	38.9	37.6	40.3

**Interval #4 Information Recording**

Start Time	12:30
End Time	12:45
Total Time (min)	15

Volumes adjusted by Growth Factors.

Run Number	7	8	9	Avg
Vehs Entered	1454	1461	1429	1439
Vehs Exited	1479	1443	1468	1435
Starting Vehs	224	190	243	212
Ending Vehs	199	208	204	211
Denied Entry Before	4	2	2	0
Travel Distance (mi)	851	854	860	840
Travel Time (hr)	58.2	55.5	55.1	55.8
Total Delay (hr)	30.5	27.7	27.4	28.5
Total Stops	2258	2292	2301	2254
Fuel Used (gal)	40.1	39.4	40.3	39.3

1: Cottage Hill Road/School Parking & Aviation Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	3.7	0.2	0.1	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1
Total Delay (hr)	0.0	0.3	0.0	0.0	0.4	0.0	0.1	0.0	0.0	0.5	0.2	0.0
Total Del/Veh (s)	7.2	3.3	0.4	4.7	4.2	3.2	49.0	35.2	8.1	51.3	52.6	5.8
Stop Delay (hr)	0.0	0.1	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.5	0.2	0.0
Stop Del/Veh (s)	5.1	1.9	0.2	1.8	1.2	1.4	47.4	32.6	8.0	49.3	49.7	6.0
Total Stops	8	40	0	6	35	4	4	3	10	29	10	26
Stop/Veh	0.57	0.14	0.00	0.38	0.10	0.14	0.80	0.75	0.91	0.88	0.83	0.90
Travel Dist (mi)	0.7	14.4	0.1	1.6	36.3	2.8	0.5	0.4	1.2	1.1	0.4	1.0
Travel Time (hr)	0.1	0.7	0.0	0.1	1.5	0.1	0.1	0.1	0.1	0.5	0.2	0.1
Avg Speed (mph)	12	21	20	21	25	21	6	7	16	2	2	9
Fuel Used (gal)	0.0	0.7	0.0	0.1	1.4	0.1	0.0	0.0	0.0	0.1	0.1	0.0
Fuel Eff. (mpg)	27.6	21.4	43.1	30.7	26.0	32.5	18.1	20.6	35.4	7.4	7.2	34.5
HC Emissions (g)	0	9	0	0	17	0	0	0	0	0	0	0
CO Emissions (g)	5	424	1	14	540	23	3	3	4	13	5	4
NOx Emissions (g)	0	28	0	1	63	2	0	0	0	1	0	0
Vehicles Entered	14	285	2	16	358	27	5	4	11	32	11	29
Vehicles Exited	14	285	2	16	358	27	5	3	11	33	11	29
Hourly Exit Rate	14	285	2	16	358	27	5	3	11	33	11	29
Input Volume	14	292	2	17	349	24	5	3	10	33	12	27
% of Volume	100	98	100	94	103	112	100	100	110	100	92	107
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0

1: Cottage Hill Road/School Parking & Aviation Rd Performance by movement

Movement	All
Denied Delay (hr)	0.0
Denied Del/Veh (s)	0.2
Total Delay (hr)	1.6
Total Del/Veh (s)	7.1
Stop Delay (hr)	1.1
Stop Del/Veh (s)	5.0
Total Stops	175
Stop/Veh	0.22
Travel Dist (mi)	60.4
Travel Time (hr)	3.5
Avg Speed (mph)	17
Fuel Used (gal)	2.5
Fuel Eff. (mpg)	23.8
HC Emissions (g)	28
CO Emissions (g)	1040
NOx Emissions (g)	98
Vehicles Entered	794
Vehicles Exited	794
Hourly Exit Rate	794
Input Volume	788
% of Volume	101
Denied Entry Before	0

2: Church Driveway/School Driveway & Aviation Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	4.6	2.3	3.3
Total Delay (hr)	0.0	0.3	0.0	0.2	0.7	0.0	0.0	0.0	0.0	3.1	0.0	0.0
Total Del/Veh (s)	7.2	3.4	2.1	10.6	6.6	3.4	17.3	40.9	6.0	59.1	48.2	4.5
Stop Delay (hr)	0.0	0.2	0.0	0.1	0.4	0.0	0.0	0.0	0.0	3.1	0.0	0.0
Stop Del/Veh (s)	4.9	1.7	1.5	7.3	3.4	2.1	16.6	38.7	5.9	58.4	47.9	4.7
Total Stops	2	47	0	38	88	1	0	2	5	149	1	12
Stop/Veh	0.50	0.15	0.00	0.56	0.23	0.25	0.00	1.00	0.83	0.78	1.00	0.80
Travel Dist (mi)	0.4	32.8	0.2	7.5	43.0	0.4	0.0	0.0	0.1	5.6	0.0	0.5
Travel Time (hr)	0.0	1.3	0.0	0.5	1.9	0.0	0.0	0.0	0.0	3.7	0.0	0.1
Avg Speed (mph)	18	25	22	16	22	21	3	2	7	2	2	9
Fuel Used (gal)	0.0	1.2	0.0	0.2	1.4	0.0	0.0	0.0	0.0	1.1	0.0	0.0
Fuel Eff. (mpg)	27.2	26.3	30.4	32.3	31.8	40.4	10.6	7.5	27.4	5.3	6.2	21.1
HC Emissions (g)	0	14	0	1	16	0	0	0	0	5	0	0
CO Emissions (g)	5	509	2	51	395	1	0	1	0	129	0	2
NOx Emissions (g)	0	50	0	6	55	0	0	0	0	13	0	0
Vehicles Entered	4	323	2	68	387	4	1	2	6	187	1	15
Vehicles Exited	4	323	2	68	387	3	1	2	6	186	1	15
Hourly Exit Rate	4	323	2	68	387	3	1	2	6	186	1	15
Input Volume	4	329	2	66	375	3	1	2	5	186	1	15
% of Volume	100	98	100	103	103	100	100	100	120	100	100	100
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0

2: Church Driveway/School Driveway & Aviation Rd Performance by movement

Movement	All
Denied Delay (hr)	0.3
Denied Del/Veh (s)	0.9
Total Delay (hr)	4.4
Total Del/Veh (s)	15.8
Stop Delay (hr)	3.8
Stop Del/Veh (s)	13.7
Total Stops	345
Stop/Veh	0.34
Travel Dist (mi)	90.6
Travel Time (hr)	7.6
Avg Speed (mph)	12
Fuel Used (gal)	4.0
Fuel Eff. (mpg)	22.9
HC Emissions (g)	37
CO Emissions (g)	1096
NOx Emissions (g)	124
Vehicles Entered	1000
Vehicles Exited	998
Hourly Exit Rate	998
Input Volume	989
% of Volume	101
Denied Entry Before	0



3: Adirondack SB On/Off Ramp & Aviation Rd Performance by movement

Movement	EBT	EBR	WBL	WBT	NBL	NBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.2	0.3	0.1
Total Delay (hr)	1.4	0.2	2.8	0.4	0.7	1.1	6.5
Total Del/Veh (s)	8.8	5.5	20.1	2.7	56.0	10.4	10.8
Stop Delay (hr)	1.0	0.2	2.0	0.1	0.6	0.9	4.8
Stop Del/Veh (s)	6.4	4.5	14.1	0.8	53.2	8.5	7.9
Total Stops	150	42	335	40	40	270	877
Stop/Veh	0.27	0.29	0.67	0.07	0.93	0.71	0.40
Travel Dist (mi)	27.4	7.1	66.7	76.1	2.5	22.5	202.3
Travel Time (hr)	2.3	0.6	5.0	2.7	0.8	2.2	13.5
Avg Speed (mph)	12	12	13	29	3	11	15
Fuel Used (gal)	1.5	0.3	2.7	2.9	0.2	0.9	8.5
Fuel Eff. (mpg)	18.5	28.2	25.0	26.1	10.9	24.7	23.9
HC Emissions (g)	14	3	22	40	1	7	88
CO Emissions (g)	614	72	816	1371	48	276	3198
NOx Emissions (g)	54	9	83	137	4	26	312
Vehicles Entered	556	145	492	559	42	378	2172
Vehicles Exited	555	144	492	560	42	377	2170
Hourly Exit Rate	555	144	492	560	42	377	2170
Input Volume	561	140	498	549	47	379	2174
% of Volume	99	103	99	102	89	99	100
Denied Entry Before	0	0	0	0	0	0	0

4: Aviation Mall Rd/Greenway N & Aviation Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.0	0.3	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	9.6	9.6	6.9	0.1	0.1	0.1
Total Delay (hr)	0.3	3.8	0.5	1.5	2.2	0.0	3.3	0.0	0.6	0.1	0.0	0.0
Total Del/Veh (s)	63.2	11.5	6.8	59.1	6.6	6.8	54.3	62.8	15.3	49.8	35.8	14.6
Stop Delay (hr)	0.2	1.9	0.1	1.3	0.5	0.0	3.2	0.0	0.6	0.1	0.0	0.0
Stop Del/Veh (s)	58.3	5.7	1.9	52.6	1.6	2.0	52.3	58.6	15.2	47.7	32.1	14.3
Total Stops	14	349	72	87	109	1	141	1	98	9	1	6
Stop/Veh	0.93	0.30	0.30	0.98	0.09	0.20	0.64	1.00	0.72	0.90	1.00	0.86
Travel Dist (mi)	3.1	238.2	49.7	20.9	278.4	1.3	5.6	0.0	3.5	0.6	0.1	0.4
Travel Time (hr)	0.4	11.2	2.2	2.1	10.2	0.1	4.2	0.0	1.1	0.2	0.0	0.0
Avg Speed (mph)	8	21	22	10	27	24	2	2	4	4	5	9
Fuel Used (gal)	0.2	9.8	1.9	1.0	10.2	0.0	1.2	0.0	0.3	0.0	0.0	0.0
Fuel Eff. (mpg)	18.5	24.3	26.7	20.6	27.3	27.7	4.7	5.0	11.8	13.9	17.6	27.4
HC Emissions (g)	1	107	22	5	117	0	3	0	2	0	0	0
CO Emissions (g)	40	4148	810	206	3610	13	107	0	49	4	1	3
NOx Emissions (g)	3	386	78	23	435	1	10	0	5	0	0	0
Vehicles Entered	15	1170	239	88	1173	5	219	1	137	10	1	7
Vehicles Exited	15	1167	239	86	1171	5	218	1	137	10	1	7
Hourly Exit Rate	15	1167	239	86	1171	5	218	1	137	10	1	7
Input Volume	16	1174	243	87	1154	5	224	1	142	11	1	7
% of Volume	94	99	98	99	101	100	97	100	96	91	100	100
Denied Entry Before	0	0	0	0	0	0	1	0	0	0	0	0

4: Aviation Mall Rd/Greenway N & Aviation Rd Performance by movement

Movement	All
Denied Delay (hr)	0.9
Denied Del/Veh (s)	1.0
Total Delay (hr)	12.2
Total Del/Veh (s)	14.3
Stop Delay (hr)	8.1
Stop Del/Veh (s)	9.4
Total Stops	888
Stop/Veh	0.29
Travel Dist (mi)	601.7
Travel Time (hr)	31.7
Avg Speed (mph)	20
Fuel Used (gal)	24.6
Fuel Eff. (mpg)	24.4
HC Emissions (g)	257
CO Emissions (g)	8991
NOx Emissions (g)	942
Vehicles Entered	3065
Vehicles Exited	3057
Hourly Exit Rate	3057
Input Volume	3065
% of Volume	100
Denied Entry Before	1

5: Aviation Mall Rd/Starbucks Driveway & Aviation Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1
Denied Del/Veh (s)	0.1	0.0	0.0	0.0	0.0	0.0	3.4	3.9	0.1	4.6	8.9	4.7
Total Delay (hr)	0.7	6.3	0.0	3.9	4.5	0.2	0.1	0.1	1.0	1.0	0.1	0.5
Total Del/Veh (s)	59.0	18.3	7.2	58.2	12.8	10.3	59.1	71.6	16.4	69.9	61.1	39.6
Stop Delay (hr)	0.6	4.0	0.0	3.5	2.5	0.1	0.1	0.1	1.0	1.0	0.1	0.5
Stop Del/Veh (s)	52.9	11.5	2.7	52.8	7.1	6.5	57.0	67.4	16.1	68.2	57.8	39.3
Total Stops	42	520	4	226	439	28	6	3	183	41	4	35
Stop/Veh	1.05	0.42	0.36	0.94	0.35	0.38	1.00	1.00	0.83	0.80	0.80	0.78
Travel Dist (mi)	9.1	287.0	2.5	28.6	150.5	8.8	0.3	0.2	12.1	1.4	0.1	1.2
Travel Time (hr)	0.9	14.7	0.1	5.0	9.7	0.6	0.1	0.1	1.6	1.1	0.1	0.6
Avg Speed (mph)	10	19	23	6	15	15	3	3	7	1	2	2
Fuel Used (gal)	0.4	11.0	0.1	2.2	8.2	0.4	0.0	0.0	0.6	0.3	0.0	0.2
Fuel Eff. (mpg)	20.5	26.0	29.0	13.0	18.3	20.7	8.7	8.7	20.5	4.7	5.0	7.0
HC Emissions (g)	3	107	0	17	96	4	0	0	4	1	0	1
CO Emissions (g)	105	3313	17	690	3696	174	7	4	161	29	3	25
NOx Emissions (g)	12	401	2	63	359	16	0	0	15	2	0	2
Vehicles Entered	39	1223	11	234	1250	72	6	3	219	50	5	45
Vehicles Exited	39	1229	10	235	1250	72	6	3	219	50	5	44
Hourly Exit Rate	39	1229	10	235	1250	72	6	3	219	50	5	44
Input Volume	43	1239	9	235	1232	71	6	3	223	53	5	42
% of Volume	91	99	111	100	101	101	100	100	98	94	100	105
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0

5: Aviation Mall Rd/Starbucks Driveway & Aviation Rd Performance by movement

Movement	All
Denied Delay (hr)	0.2
Denied Del/Veh (s)	0.2
Total Delay (hr)	18.3
Total Del/Veh (s)	20.6
Stop Delay (hr)	13.4
Stop Del/Veh (s)	15.1
Total Stops	1531
Stop/Veh	0.48
Travel Dist (mi)	501.8
Travel Time (hr)	34.8
Avg Speed (mph)	14
Fuel Used (gal)	23.5
Fuel Eff. (mpg)	21.3
HC Emissions (g)	234
CO Emissions (g)	8224
NOx Emissions (g)	873
Vehicles Entered	3157
Vehicles Exited	3162
Hourly Exit Rate	3162
Input Volume	3161
% of Volume	100
Denied Entry Before	0

6: Glen St/Lake George Rd & Aviation Rd/Quaker Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.1	0.0	0.2	0.0	0.1
Denied Del/Veh (s)	0.0	0.0	0.0	2.8	0.3	2.9	2.8	0.3	0.4	2.5	0.2	0.4
Total Delay (hr)	8.6	3.3	1.1	1.1	7.2	0.6	7.1	7.9	0.4	4.5	6.8	3.2
Total Del/Veh (s)	63.0	20.7	8.5	65.8	43.8	12.6	57.3	48.0	31.4	61.2	52.1	21.5
Stop Delay (hr)	7.6	2.4	0.6	1.0	5.8	0.5	6.3	6.2	0.4	4.0	5.7	2.3
Stop Del/Veh (s)	55.9	15.3	4.4	60.9	34.8	10.4	50.5	37.8	26.9	55.2	43.1	15.4
Total Stops	446	281	162	58	471	103	415	532	41	265	414	382
Stop/Veh	0.91	0.49	0.35	0.95	0.79	0.57	0.93	0.90	0.85	1.01	0.88	0.71
Travel Dist (mi)	57.7	69.3	56.3	9.9	97.7	29.7	52.4	70.1	5.7	40.5	73.3	84.0
Travel Time (hr)	10.7	5.4	3.3	1.5	9.8	1.7	9.1	9.7	0.6	5.9	8.7	6.0
Avg Speed (mph)	5	13	17	7	10	19	6	7	9	7	8	14
Fuel Used (gal)	4.0	3.5	2.1	0.6	4.8	1.2	3.5	4.4	0.3	2.3	4.0	3.0
Fuel Eff. (mpg)	14.4	20.1	26.8	16.8	20.5	24.0	14.8	16.0	18.9	17.4	18.1	27.6
HC Emissions (g)	28	32	21	5	44	17	28	39	5	18	41	35
CO Emissions (g)	934	1296	792	261	2107	852	1163	1646	164	907	1851	1601
NOx Emissions (g)	94	120	79	15	137	50	88	129	13	54	123	101
Vehicles Entered	471	566	461	60	587	178	438	581	47	257	464	532
Vehicles Exited	482	567	460	59	587	178	438	583	47	254	462	530
Hourly Exit Rate	482	567	460	59	587	178	438	583	47	254	462	530
Input Volume	477	574	464	63	579	169	433	588	49	247	461	526
% of Volume	101	99	99	94	101	105	101	99	96	103	100	101
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0

6: Glen St/Lake George Rd & Aviation Rd/Quaker Rd Performance by movement

Movement	All
Denied Delay (hr)	0.9
Denied Del/Veh (s)	0.7
Total Delay (hr)	51.9
Total Del/Veh (s)	39.6
Stop Delay (hr)	42.8
Stop Del/Veh (s)	32.6
Total Stops	3570
Stop/Veh	0.76
Travel Dist (mi)	646.6
Travel Time (hr)	72.5
Avg Speed (mph)	9
Fuel Used (gal)	33.8
Fuel Eff. (mpg)	19.1
HC Emissions (g)	313
CO Emissions (g)	13574
NOx Emissions (g)	1001
Vehicles Entered	4642
Vehicles Exited	4647
Hourly Exit Rate	4647
Input Volume	4630
% of Volume	100
Denied Entry Before	0

30: Adirondack NB Off Ramp/Adirondack NB On Ramp & Aviation Rd Performance by movement

Movement	EBL	EBT	WBT	WBR	NBL	NBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.1	0.1
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.2	0.5	0.1
Total Delay (hr)	0.5	3.4	3.1	0.7	1.5	4.0	13.3
Total Del/Veh (s)	25.5	14.1	11.7	6.2	49.7	25.2	15.9
Stop Delay (hr)	0.5	2.4	1.8	0.3	1.4	3.2	9.6
Stop Del/Veh (s)	21.7	9.9	6.9	2.5	45.9	20.2	11.4
Total Stops	63	282	283	136	92	401	1257
Stop/Veh	0.84	0.33	0.30	0.32	0.84	0.70	0.42
Travel Dist (mi)	10.1	117.0	200.8	90.6	8.2	43.4	470.1
Travel Time (hr)	0.9	7.2	9.0	3.9	1.8	5.9	28.7
Avg Speed (mph)	11	16	22	23	5	7	16
Fuel Used (gal)	0.5	5.8	7.1	2.7	0.6	2.2	19.0
Fuel Eff. (mpg)	19.1	20.0	28.4	33.1	12.7	19.8	24.7
HC Emissions (g)	4	68	75	26	4	13	190
CO Emissions (g)	220	2888	2332	872	167	503	6983
NOx Emissions (g)	17	239	259	91	13	47	666
Vehicles Entered	74	859	946	426	107	570	2982
Vehicles Exited	74	858	945	425	106	567	2975
Hourly Exit Rate	74	858	945	425	106	567	2975
Input Volume	70	871	939	423	108	563	2974
% of Volume	106	99	101	100	98	101	100
Denied Entry Before	0	0	0	0	0	0	0

33: Burke Drive & Aviation Rd Performance by movement

Movement	EBT	WBL	WBT	NBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.2	0.0
Total Delay (hr)	0.3	0.3	0.1	0.3	0.9
Total Del/Veh (s)	1.8	6.3	0.7	6.0	2.5
Stop Delay (hr)	0.0	0.2	0.0	0.3	0.5
Stop Del/Veh (s)	0.1	4.1	0.1	5.7	1.3
Total Stops	1	73	1	186	261
Stop/Veh	0.00	0.50	0.00	0.99	0.20
Travel Dist (mi)	58.5	7.9	25.0	5.1	96.5
Travel Time (hr)	2.1	0.6	0.8	0.6	4.2
Avg Speed (mph)	28	14	30	8	23
Fuel Used (gal)	2.4	0.3	0.9	0.2	3.8
Fuel Eff. (mpg)	24.5	30.9	27.0	24.5	25.6
HC Emissions (g)	30	2	12	1	46
CO Emissions (g)	1077	62	422	36	1597
NOx Emissions (g)	111	8	42	5	165
Vehicles Entered	516	145	457	186	1304
Vehicles Exited	516	145	458	186	1305
Hourly Exit Rate	516	145	458	186	1305
Input Volume	521	153	443	181	1298
% of Volume	99	95	103	103	101
Denied Entry Before	0	0	0	0	0

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Total Network Performance

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Denied Delay (hr)	2.3
Denied Del/Veh (s)	1.5
Total Delay (hr)	111.5
Total Del/Veh (s)	67.3
Stop Delay (hr)	84.2
Stop Del/Veh (s)	50.8
Total Stops	8904
Stop/Veh	1.49
Travel Dist (mi)	3342.7
Travel Time (hr)	222.1
Avg Speed (mph)	15
Fuel Used (gal)	156.4
Fuel Eff. (mpg)	21.4
HC Emissions (g)	1679
CO Emissions (g)	65768
NOx Emissions (g)	5932
Vehicles Entered	5750
Vehicles Exited	5751
Hourly Exit Rate	5751
Input Volume	24705
% of Volume	23
Denied Entry Before	1

Arterial Level of Service  
Baseline

1/12/2023

Arterial Level of Service: EB Aviation Rd

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed	Run 1 Speed	Run 1 Delay
Cottage Hill Road	1	3.3	8.8	0.1	24	23	3.6
Church Driveway	2	3.7	14.2	0.1	26	26	3.6
Burke Drive	33	1.6	13.3	0.1	31	31	1.5
Adirondack SB On/Off	3	7.9	13.1	0.1	14	16	6.5
Adirondack NB Off Ra	30	10.1	24.4	0.1	20	21	9.2
Aviation Mall Rd	4	10.2	31.3	0.2	24	24	10.2
Aviation Mall Rd	5	18.5	42.6	0.2	20	21	17.1
Glen St	6	17.8	30.5	0.1	15	16	16.0
<b>Total</b>		<b>73.0</b>	<b>178.1</b>	<b>1.0</b>	<b>21</b>	<b>22</b>	<b>67.8</b>

Arterial Level of Service: EB Aviation Rd

Cross Street	Run 10 Speed	Run 10 Delay	Run 2 Speed	Run 2 Delay	Run 3 Speed	Run 3 Delay	Run 4 Speed
Cottage Hill Road	25	2.9	25	2.9	26	2.6	25
Church Driveway	26	3.8	27	3.3	27	3.2	27
Burke Drive	30	1.8	31	1.4	31	1.4	31
Adirondack SB On/Off	14	8.6	16	6.3	14	8.4	15
Adirondack NB Off Ra	21	9.5	20	10.1	20	9.9	20
Aviation Mall Rd	25	9.6	23	12.4	24	10.0	25
Aviation Mall Rd	18	23.3	20	19.9	21	16.2	21
Glen St	13	21.7	17	13.8	17	14.3	15
<b>Total</b>	<b>20</b>	<b>81.2</b>	<b>21</b>	<b>70.0</b>	<b>22</b>	<b>65.9</b>	<b>21</b>

Arterial Level of Service: EB Aviation Rd

Cross Street	Run 4 Delay	Run 5 Speed	Run 5 Delay	Run 6 Speed	Run 6 Delay	Run 7 Speed	Run 7 Delay
Cottage Hill Road	3.0	18	6.1	22	4.1	25	2.7
Church Driveway	3.2	25	4.2	27	3.2	25	3.9
Burke Drive	1.4	31	1.6	31	1.5	30	1.8
Adirondack SB On/Off	7.1	15	7.8	12	10.8	14	8.1
Adirondack NB Off Ra	9.9	21	9.4	20	9.8	19	11.8
Aviation Mall Rd	9.7	25	9.7	24	10.7	23	12.1
Aviation Mall Rd	17.1	19	20.0	20	19.0	21	16.3
Glen St	18.8	15	18.9	15	17.4	17	14.9
<b>Total</b>	<b>70.3</b>	<b>21</b>	<b>77.6</b>	<b>21</b>	<b>76.5</b>	<b>21</b>	<b>71.6</b>



Arterial Level of Service: EB Aviation Rd

Cross Street	Run 8 Speed	Run 8 Delay	Run 9 Speed	Run 9 Delay
Cottage Hill Road	26	2.6	26	2.6
Church Driveway	25	4.3	25	4.0
Burke Drive	30	1.6	30	1.7
Adirondack SB On/Off	15	7.5	15	7.6
Adirondack NB Off Ra	19	11.4	20	9.9
Aviation Mall Rd	25	9.0	26	8.4
Aviation Mall Rd	20	19.3	21	16.7
Glen St	15	17.1	12	24.6
Total	21	72.9	21	75.5

Arterial Level of Service: WB Aviation Rd

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed	Run 1 Speed	Run 1 Delay
Starbucks Driveway	5	22.2	35.0	0.1	13	13	23.4
Greenway N	4	6.3	30.8	0.2	28	28	6.4
Adirondack NB On Ram	30	13.4	35.2	0.2	22	23	11.1
Adirondack SB On/Off	3	2.7	16.8	0.1	29	30	2.4
Burke Drive	33	0.7	6.4	0.1	30	30	0.7
School Driveway	2	6.6	18.1	0.1	23	21	7.8
School Parking	1	4.3	14.8	0.1	25	25	4.4
Total		56.3	156.9	1.0	22	22	56.1

Arterial Level of Service: WB Aviation Rd

Cross Street	Run 10 Speed	Run 10 Delay	Run 2 Speed	Run 2 Delay	Run 3 Speed	Run 3 Delay	Run 4 Speed
Starbucks Driveway	15	18.4	12	25.2	12	25.3	14
Greenway N	27	7.1	27	7.4	29	5.3	28
Adirondack NB On Ram	20	16.2	21	14.4	21	14.5	23
Adirondack SB On/Off	30	2.3	29	2.9	29	2.6	29
Burke Drive	31	0.6	29	0.9	30	0.7	30
School Driveway	25	4.8	22	6.9	24	5.7	21
School Parking	24	4.7	22	5.9	28	2.8	27
Total	23	54.0	22	63.6	22	56.9	23

Arterial Level of Service: WB Aviation Rd

Cross Street	Run 4 Delay	Run 5 Speed	Run 5 Delay	Run 6 Speed	Run 6 Delay	Run 7 Speed	Run 7 Delay
Starbucks Driveway	21.5	14	19.7	13	22.2	12	24.6
Greenway N	5.7	28	5.7	28	6.6	27	7.0
Adirondack NB On Ram	10.8	21	14.5	21	14.3	21	14.0
Adirondack SB On/Off	2.7	29	2.7	29	2.9	28	3.1
Burke Drive	0.7	31	0.5	30	0.8	29	0.8
School Driveway	7.6	23	6.1	22	6.7	21	7.8
School Parking	3.1	24	4.7	22	6.6	27	3.3
Total	52.1	23	53.8	22	60.1	22	60.7

Arterial Level of Service: WB Aviation Rd

Cross Street	Run 8 Speed	Run 8 Delay	Run 9 Speed	Run 9 Delay
Starbucks Driveway	13	22.3	14	19.3
Greenway N	28	6.2	28	6.1
Adirondack NB On Ram	22	12.8	23	12.0
Adirondack SB On/Off	28	3.5	29	2.6
Burke Drive	29	0.9	30	0.7
School Driveway	24	5.5	22	6.9
School Parking	27	3.1	25	3.9
Total	23	54.0	23	51.5

Queuing and Blocking Report  
Baseline

1/12/2023

Intersection: 1: Cottage Hill Road/School Parking & Aviation Rd

Movement	EB	EB	WB	WB	NB	SB	SB
Directions Served	L	TR	L	TR	LTR	LT	R
Maximum Queue (ft)	33	135	45	204	53	104	42
Average Queue (ft)	7	33	5	33	15	34	13
95th Queue (ft)	28	93	30	130	42	78	34
Link Distance (ft)		261		458	567	167	167
Upstream Blk Time (%)						0	
Queuing Penalty (veh)						0	
Storage Bay Dist (ft)	50		110				
Storage Blk Time (%)	0	4		1			
Queuing Penalty (veh)	0	1		0			

Intersection: 2: Church Driveway/School Driveway & Aviation Rd

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	TR	L	TR	LT	R
Maximum Queue (ft)	23	104	74	211	12	39	183	32
Average Queue (ft)	2	37	27	76	1	6	142	10
95th Queue (ft)	13	86	63	168	7	27	206	34
Link Distance (ft)		458		531	122	122	159	159
Upstream Blk Time (%)							19	
Queuing Penalty (veh)							0	
Storage Bay Dist (ft)	190		50					
Storage Blk Time (%)			2	9				
Queuing Penalty (veh)			8	6				

Intersection: 3: Adirondack SB On/Off Ramp & Aviation Rd

Movement	EB	EB	WB	WB	WB	NB	NB
Directions Served	T	TR	L	T	T	L	R
Maximum Queue (ft)	171	182	354	140	85	118	198
Average Queue (ft)	68	85	168	18	18	41	94
95th Queue (ft)	133	159	299	67	61	91	166
Link Distance (ft)	210	210		655	655	314	314
Upstream Blk Time (%)	0	0					0
Queuing Penalty (veh)	0	1					0
Storage Bay Dist (ft)			370				
Storage Blk Time (%)			0				
Queuing Penalty (veh)			1				

Queuing and Blocking Report  
Baseline

1/12/2023

Intersection: 4: Aviation Mall Rd/Greenway N & Aviation Rd

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	SB
Directions Served	L	T	T	R	L	T	TR	LT	R	LTR
Maximum Queue (ft)	57	270	286	204	140	220	171	149	131	59
Average Queue (ft)	16	135	142	58	70	47	41	134	53	15
95th Queue (ft)	46	228	243	156	127	142	120	170	106	43
Link Distance (ft)		1048	1048			1173	1173	130	130	308
Upstream Blk Time (%)								32	1	
Queuing Penalty (veh)								0	0	
Storage Bay Dist (ft)	70			130	140					
Storage Blk Time (%)	1	15	6	0	1	1				
Queuing Penalty (veh)	3	2	16	0	6	0				

Intersection: 5: Aviation Mall Rd/Starbucks Driveway & Aviation Rd

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Directions Served	L	T	T	R	L	L	T	TR	LT	R	R	LTR
Maximum Queue (ft)	179	415	403	66	159	182	312	304	42	126	78	149
Average Queue (ft)	45	189	206	5	84	110	176	182	7	52	21	66
95th Queue (ft)	120	336	343	36	149	164	282	283	28	102	54	140
Link Distance (ft)		1173	1173				553	553		277	277	131
Upstream Blk Time (%)												6
Queuing Penalty (veh)												0
Storage Bay Dist (ft)	80			120	150	150			170			
Storage Blk Time (%)	1	23	21		0	2	10			0		
Queuing Penalty (veh)	8	10	2		3	14	23			0		

Queuing and Blocking Report  
Baseline

1/12/2023

Intersection: 6: Glen St/Lake George Rd & Aviation Rd/Quaker Rd

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB
Directions Served	L	L	T	T	R	L	T	T	R	L	L	T
Maximum Queue (ft)	272	368	428	411	179	151	392	305	138	293	339	444
Average Queue (ft)	176	198	135	129	78	55	212	176	53	157	176	220
95th Queue (ft)	278	324	312	275	147	117	336	285	109	253	281	349
Link Distance (ft)			553	553			873	873				625
Upstream Blk Time (%)			1	0			0					0
Queuing Penalty (veh)			4	0			0					0
Storage Bay Dist (ft)	170	170			280	280			430	310	310	
Storage Blk Time (%)	13	20	2				2			0	1	1
Queuing Penalty (veh)	38	58	7				1			0	2	6

Intersection: 6: Glen St/Lake George Rd & Aviation Rd/Quaker Rd

Movement	NB	SB	SB	SB	SB	SB
Directions Served	TR	L	L	T	T	R
Maximum Queue (ft)	335	201	245	319	296	404
Average Queue (ft)	185	102	155	191	157	175
95th Queue (ft)	292	202	224	276	252	308
Link Distance (ft)	625			833	833	833
Upstream Blk Time (%)						0
Queuing Penalty (veh)						0
Storage Bay Dist (ft)		240	240			
Storage Blk Time (%)			0	3		
Queuing Penalty (veh)			0	7		

Intersection: 30: Adirondack NB Off Ramp/Adirondack NB On Ramp Aviation Rd

Movement	EB	EB	EB	WB	WB	WB	NB	NB
Directions Served	L	T	T	T	T	R	L	R
Maximum Queue (ft)	154	234	244	398	257	195	183	413
Average Queue (ft)	46	108	119	151	74	60	81	224
95th Queue (ft)	106	190	201	317	183	134	149	374
Link Distance (ft)		655	655	1048	1048		402	402
Upstream Blk Time (%)								1
Queuing Penalty (veh)								0
Storage Bay Dist (ft)	120					140		
Storage Blk Time (%)	0	5			2	1		
Queuing Penalty (veh)	0	4			9	3		

# Queuing and Blocking Report

## Baseline

1/12/2023

### Intersection: 33: Burke Drive & Aviation Rd

Movement	EB	WB	WB	WB	NB
Directions Served	T	L	T	T	LR
Maximum Queue (ft)	27	97	25	6	102
Average Queue (ft)	1	39	1	0	51
95th Queue (ft)	16	78	17	5	86
Link Distance (ft)	531		210	210	143
Upstream Blk Time (%)					0
Queuing Penalty (veh)					0
Storage Bay Dist (ft)		85			
Storage Blk Time (%)		1			
Queuing Penalty (veh)		2			

### Network Summary

Network wide Queuing Penalty: 246

Summary of All Intervals

Run Number	1	10	2	3	4	5	6
Start Time	3:45	3:45	3:45	3:45	3:45	3:45	3:45
End Time	5:15	5:15	5:15	5:15	5:15	5:15	5:15
Total Time (min)	90	90	90	90	90	90	90
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	5	5	5	5	5	5	5
# of Recorded mScheduledIntervals	4	4	4	4	4	4	4
Vehs Entered	5636	5659	5455	5553	5622	5734	5635
Vehs Exited	5576	5629	5497	5553	5648	5803	5661
Starting Vehs	182	186	226	205	220	254	232
Ending Vehs	242	216	184	205	194	185	206
Denied Entry Before	1	0	0	0	1	0	2
Travel Distance (mi)	3285	3382	3278	3330	3347	3401	3366
Travel Time (hr)	209.4	216.4	205.3	212.9	220.4	221.7	216.9
Total Delay (hr)	103.4	107.8	99.7	105.6	112.5	112.2	108.2
Total Stops	8928	9031	8635	8840	8740	9095	9108
Fuel Used (gal)	152.6	155.7	150.5	153.5	155.8	158.2	155.9

Summary of All Intervals

Run Number	7	8	9	Avg
Start Time	3:45	3:45	3:45	3:45
End Time	5:15	5:15	5:15	5:15
Total Time (min)	90	90	90	90
Time Recorded (min)	60	60	60	60
# of Intervals	5	5	5	5
# of Recorded mScheduledIntervals	4	4	4	4
Vehs Entered	5647	5626	5647	5617
Vehs Exited	5680	5648	5689	5639
Starting Vehs	236	229	223	217
Ending Vehs	203	207	181	200
Denied Entry Before	0	0	0	0
Travel Distance (mi)	3390	3307	3367	3345
Travel Time (hr)	223.7	213.5	215.8	215.6
Total Delay (hr)	114.5	106.7	107.1	107.8
Total Stops	8899	8601	8909	8879
Fuel Used (gal)	157.6	152.6	154.9	154.7

Interval #0 Information Seeding

Start Time	3:45
End Time	4:15
Total Time (min)	30
Volumes adjusted by Growth Factors.	
No data recorded this interval.	



**Interval #1 Information Recording**

Start Time	4:15
End Time	4:30
Total Time (min)	15
Volumes adjusted by Growth Factors, Anti PHF.	

Run Number	1	10	2	3	4	5	6
Vehs Entered	1353	1354	1313	1308	1320	1339	1382
Vehs Exited	1352	1347	1352	1338	1366	1386	1388
Starting Vehs	182	186	226	205	220	254	232
Ending Vehs	183	193	187	175	174	207	226
Denied Entry Before	1	0	0	0	1	0	2
Travel Distance (mi)	803	815	790	811	822	819	822
Travel Time (hr)	49.9	51.5	49.0	50.3	50.3	50.4	51.4
Total Delay (hr)	23.9	25.3	23.4	24.2	23.9	24.1	24.8
Total Stops	2130	2202	1986	2068	2124	1986	2209
Fuel Used (gal)	37.2	37.5	36.4	36.8	37.3	37.2	37.9

**Interval #1 Information Recording**

Start Time	4:15
End Time	4:30
Total Time (min)	15
Volumes adjusted by Growth Factors, Anti PHF.	

Run Number	7	8	9	Avg
Vehs Entered	1380	1338	1371	1339
Vehs Exited	1370	1362	1371	1363
Starting Vehs	236	229	223	217
Ending Vehs	246	205	223	198
Denied Entry Before	0	0	0	0
Travel Distance (mi)	850	806	823	816
Travel Time (hr)	55.0	49.1	51.7	50.8
Total Delay (hr)	27.7	23.0	25.1	24.5
Total Stops	2181	2105	2196	2115
Fuel Used (gal)	39.2	36.5	37.8	37.4

**Interval #2 Information Recording**

Start Time	4:30
End Time	4:45
Total Time (min)	15
Volumes adjusted by Growth Factors, Anti PHF.	

Run Number	1	10	2	3	4	5	6
Vehs Entered	1346	1386	1290	1311	1342	1431	1345
Vehs Exited	1347	1359	1315	1289	1328	1416	1366
Starting Vehs	183	193	187	175	174	207	226
Ending Vehs	182	220	162	197	188	222	205
Denied Entry Before	2	1	1	1	2	1	0
Travel Distance (mi)	765	828	795	766	781	844	819
Travel Time (hr)	46.7	51.8	49.7	47.2	49.0	56.5	51.2
Total Delay (hr)	22.1	25.2	24.1	22.6	23.9	29.4	24.8
Total Stops	2051	2172	2178	2089	2091	2349	2150
Fuel Used (gal)	35.1	37.5	36.6	34.8	35.6	39.6	37.1

**Interval #2 Information Recording**

Start Time	4:30
End Time	4:45
Total Time (min)	15
Volumes adjusted by Growth Factors, Anti PHF.	

Run Number	7	8	9	Avg
Vehs Entered	1379	1397	1368	1356
Vehs Exited	1416	1409	1382	1363
Starting Vehs	246	205	223	198
Ending Vehs	209	193	209	197
Denied Entry Before	1	1	1	0
Travel Distance (mi)	818	819	821	806
Travel Time (hr)	51.6	51.5	51.6	50.7
Total Delay (hr)	25.3	25.0	25.0	24.7
Total Stops	2075	2212	2076	2143
Fuel Used (gal)	37.4	37.9	37.1	36.9

**Interval #3 Information Recording**

Start Time	4:45
End Time	5:00
Total Time (min)	15

Volumes adjusted by PHF, Growth Factors.

Run Number	1	10	2	3	4	5	6
Vehs Entered	1498	1515	1503	1527	1572	1569	1502
Vehs Exited	1450	1492	1424	1512	1482	1529	1435
Starting Vehs	182	220	162	197	188	222	205
Ending Vehs	230	243	241	212	278	262	272
Denied Entry Before	1	0	1	0	7	2	1
Travel Distance (mi)	854	886	847	882	875	891	859
Travel Time (hr)	55.5	59.6	54.2	58.2	64.3	60.3	56.0
Total Delay (hr)	27.9	31.2	26.9	29.7	35.9	31.6	28.3
Total Stops	2306	2489	2322	2532	2454	2494	2418
Fuel Used (gal)	39.9	41.8	38.9	41.5	42.7	42.3	39.9

**Interval #3 Information Recording**

Start Time	4:45
End Time	5:00
Total Time (min)	15

Volumes adjusted by PHF, Growth Factors.

Run Number	7	8	9	Avg
Vehs Entered	1540	1519	1582	1531
Vehs Exited	1500	1498	1518	1485
Starting Vehs	209	193	209	197
Ending Vehs	249	214	273	241
Denied Entry Before	1	0	0	0
Travel Distance (mi)	865	865	890	871
Travel Time (hr)	61.6	57.9	60.1	58.8
Total Delay (hr)	33.5	30.0	31.3	30.6
Total Stops	2451	2317	2523	2431
Fuel Used (gal)	41.5	40.3	41.8	41.1

**Interval #4 Information Recording**

Start Time	5:00
End Time	5:15
Total Time (min)	15
Volumes adjusted by Growth Factors, Anti PHF.	

Run Number	1	10	2	3	4	5	6
Vehs Entered	1439	1404	1349	1407	1388	1395	1406
Vehs Exited	1427	1431	1406	1414	1472	1472	1472
Starting Vehs	230	243	241	212	278	262	272
Ending Vehs	242	216	184	205	194	185	206
Denied Entry Before	0	4	3	3	1	0	2
Travel Distance (mi)	863	853	846	871	870	847	866
Travel Time (hr)	57.3	53.5	52.5	57.2	56.9	54.5	58.3
Total Delay (hr)	29.6	26.1	25.3	29.2	28.9	27.2	30.3
Total Stops	2441	2168	2149	2151	2071	2266	2331
Fuel Used (gal)	40.5	38.9	38.5	40.3	40.2	39.1	41.0

**Interval #4 Information Recording**

Start Time	5:00
End Time	5:15
Total Time (min)	15
Volumes adjusted by Growth Factors, Anti PHF.	

Run Number	7	8	9	Avg
Vehs Entered	1348	1372	1326	1384
Vehs Exited	1394	1379	1418	1428
Starting Vehs	249	214	273	241
Ending Vehs	203	207	181	200
Denied Entry Before	1	0	1	0
Travel Distance (mi)	857	817	832	852
Travel Time (hr)	55.5	55.0	52.5	55.3
Total Delay (hr)	27.9	28.7	25.7	27.9
Total Stops	2192	1967	2114	2185
Fuel Used (gal)	39.6	37.9	38.2	39.4

1: Cottage Hill Road/School Parking & Aviation Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	3.4	0.3	0.2	0.2	0.0	0.0	0.2	0.2	0.2	0.2	0.1	0.1
Total Delay (hr)	0.1	0.4	0.0	0.1	0.6	0.0	0.1	0.6	0.1	0.4	0.4	0.1
Total Del/Veh (s)	7.2	4.6	2.7	6.6	5.1	3.8	43.8	44.0	23.4	66.5	57.1	5.8
Stop Delay (hr)	0.1	0.2	0.0	0.0	0.2	0.0	0.1	0.6	0.1	0.4	0.4	0.1
Stop Del/Veh (s)	4.8	2.3	1.7	3.1	1.7	1.5	40.8	39.8	21.5	64.5	53.9	5.8
Total Stops	38	63	0	12	51	4	6	43	18	20	24	65
Stop/Veh	0.55	0.20	0.00	0.38	0.13	0.20	0.86	0.84	0.90	0.91	0.92	0.87
Travel Dist (mi)	3.4	16.2	0.1	3.1	38.3	2.0	0.7	5.4	2.1	0.7	0.8	2.5
Travel Time (hr)	0.3	0.9	0.0	0.2	1.7	0.1	0.1	0.8	0.2	0.4	0.4	0.3
Avg Speed (mph)	12	19	16	19	23	20	6	7	10	2	2	9
Fuel Used (gal)	0.1	0.8	0.0	0.1	1.8	0.1	0.0	0.3	0.1	0.1	0.1	0.1
Fuel Eff. (mpg)	24.7	19.8	32.6	24.2	21.3	26.0	16.5	17.5	20.7	6.2	7.0	30.1
HC Emissions (g)	1	10	0	1	23	0	0	2	1	0	0	0
CO Emissions (g)	39	469	1	58	896	28	10	78	36	11	16	15
NOx Emissions (g)	4	33	0	5	84	2	1	6	3	1	1	2
Vehicles Entered	68	320	2	32	391	20	7	50	19	22	26	75
Vehicles Exited	69	320	2	32	390	20	7	51	20	22	25	75
Hourly Exit Rate	69	320	2	32	390	20	7	51	20	22	25	75
Input Volume	74	321	2	32	398	20	8	49	21	25	27	73
% of Volume	93	100	100	99	98	100	90	104	96	88	92	103
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0

1: Cottage Hill Road/School Parking & Aviation Rd Performance by movement

Movement	All
Denied Delay (hr)	0.1
Denied Del/Veh (s)	0.4
Total Delay (hr)	3.0
Total Del/Veh (s)	10.3
Stop Delay (hr)	2.2
Stop Del/Veh (s)	7.6
Total Stops	344
Stop/Veh	0.33
Travel Dist (mi)	75.6
Travel Time (hr)	5.5
Avg Speed (mph)	14
Fuel Used (gal)	3.7
Fuel Eff. (mpg)	20.2
HC Emissions (g)	40
CO Emissions (g)	1657
NOx Emissions (g)	143
Vehicles Entered	1032
Vehicles Exited	1033
Hourly Exit Rate	1033
Input Volume	1050
% of Volume	98
Denied Entry Before	0

2: Church Driveway/School Driveway & Aviation Rd Performance by movement

Movement	EBL	EBT	EBR	WBT	WBR	SBL	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1
Denied Del/Veh (s)	0.1	0.0		0.0	0.0	1.8	0.4	0.3
Total Delay (hr)	0.1	0.4	0.0	0.8	0.2	2.2	0.0	3.7
Total Del/Veh (s)	15.9	3.7		7.0	4.2	50.4	5.7	11.8
Stop Delay (hr)	0.1	0.2	0.0	0.2	0.1	2.2	0.0	2.8
Stop Del/Veh (s)	13.7	1.8		1.9	1.3	49.8	5.9	8.8
Total Stops	15	49	0	71	33	132	18	318
Stop/Veh	0.65	0.14		0.17	0.19	0.82	0.86	0.28
Travel Dist (mi)	2.2	34.4	0.1	45.6	19.2	4.8	0.6	106.8
Travel Time (hr)	0.2	1.4	0.0	2.1	0.9	2.6	0.1	7.3
Avg Speed (mph)	12	25	15	21	21	2	8	15
Fuel Used (gal)	0.1	1.4	0.0	1.3	0.4	0.8	0.0	4.0
Fuel Eff. (mpg)	24.2	24.7	19.8	35.5	42.8	6.2	23.1	26.6
HC Emissions (g)	0	17	0	11	4	3	0	35
CO Emissions (g)	30	627	1	294	90	85	3	1130
NOx Emissions (g)	2	60	0	40	12	9	0	124
Vehicles Entered	22	342	0	417	174	156	21	1132
Vehicles Exited	22	342	0	416	174	158	21	1133
Hourly Exit Rate	22	342	0	416	174	158	21	1133
Input Volume	23	346	1	422	178	161	24	1155
% of Volume	97	99	0	99	98	98	88	98
Denied Entry Before	0	0	0	0	0	0	0	0

3: Adirondack SB On/Off Ramp & Aviation Rd Performance by movement

Movement	EBT	EBR	WBL	WBT	NBL	NBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.1	0.3	0.0
Total Delay (hr)	1.2	0.2	3.0	0.6	0.7	0.5	6.3
Total Del/Veh (s)	8.6	5.8	20.1	3.1	52.7	7.1	10.3
Stop Delay (hr)	0.9	0.2	2.0	0.1	0.7	0.4	4.3
Stop Del/Veh (s)	6.2	4.9	13.3	0.8	49.9	5.6	7.0
Total Stops	144	51	375	54	45	194	863
Stop/Veh	0.29	0.34	0.69	0.08	0.90	0.72	0.39
Travel Dist (mi)	24.5	7.3	72.3	96.4	2.9	16.1	219.4
Travel Time (hr)	2.0	0.6	5.5	3.5	0.8	1.3	13.8
Avg Speed (mph)	12	12	13	27	3	13	16
Fuel Used (gal)	1.3	0.3	3.1	4.0	0.3	0.6	9.5
Fuel Eff. (mpg)	19.3	29.1	23.3	23.9	11.2	27.8	23.1
HC Emissions (g)	13	2	28	48	1	7	100
CO Emissions (g)	553	64	1028	1799	54	239	3736
NOx Emissions (g)	47	7	106	177	4	22	363
Vehicles Entered	495	148	534	711	48	270	2206
Vehicles Exited	496	148	535	712	49	270	2210
Hourly Exit Rate	496	148	535	712	49	270	2210
Input Volume	502	151	530	726	51	270	2230
% of Volume	99	98	101	98	96	100	99
Denied Entry Before	0	0	0	0	0	0	0

4: Aviation Mall Rd/Greenway N & Aviation Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.1	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	4.6	16.3	2.8	0.1	0.1	0.1
Total Delay (hr)	0.3	3.7	0.5	0.7	2.6	0.0	2.4	0.0	0.4	0.2	0.1	0.0
Total Del/Veh (s)	57.7	11.0	10.1	50.9	7.1	5.6	50.2	11.8	14.1	44.6	38.3	18.8
Stop Delay (hr)	0.2	1.8	0.3	0.6	0.6	0.0	2.3	0.0	0.4	0.2	0.0	0.0
Stop Del/Veh (s)	53.2	5.2	5.0	44.5	1.7	2.0	48.3	9.2	14.0	42.3	35.0	18.3
Total Stops	15	351	54	49	158	1	128	0	72	17	4	7
Stop/Veh	0.94	0.29	0.29	0.98	0.12	0.10	0.74	0.00	0.74	0.85	0.80	0.88
Travel Dist (mi)	3.2	247.0	38.6	11.7	306.6	2.3	4.3	0.0	2.5	1.2	0.3	0.5
Travel Time (hr)	0.4	11.5	1.9	1.1	11.4	0.1	2.8	0.0	0.6	0.3	0.1	0.1
Avg Speed (mph)	9	21	20	11	27	25	2	5	5	4	5	7
Fuel Used (gal)	0.2	10.5	1.5	0.5	10.6	0.1	0.8	0.0	0.2	0.1	0.0	0.0
Fuel Eff. (mpg)	18.2	23.5	25.3	22.3	28.8	31.0	5.4	6.8	14.6	13.4	14.6	21.6
HC Emissions (g)	1	126	21	2	116	0	3	0	1	0	0	0
CO Emissions (g)	54	4834	721	86	3382	17	90	0	28	12	4	4
NOx Emissions (g)	4	444	72	10	428	2	9	0	3	1	0	0
Vehicles Entered	16	1204	186	49	1290	10	170	1	97	20	5	8
Vehicles Exited	15	1206	187	49	1296	10	169	1	97	20	5	8
Hourly Exit Rate	15	1206	187	49	1296	10	169	1	97	20	5	8
Input Volume	16	1198	191	54	1313	9	170	1	100	19	4	6
% of Volume	94	101	98	91	99	111	99	100	97	107	118	123
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0

4: Aviation Mall Rd/Greenway N & Aviation Rd Performance by movement

Movement	All
Denied Delay (hr)	0.3
Denied Del/Veh (s)	0.4
Total Delay (hr)	10.9
Total Del/Veh (s)	12.7
Stop Delay (hr)	6.5
Stop Del/Veh (s)	7.6
Total Stops	856
Stop/Veh	0.28
Travel Dist (mi)	618.3
Travel Time (hr)	30.3
Avg Speed (mph)	21
Fuel Used (gal)	24.6
Fuel Eff. (mpg)	25.2
HC Emissions (g)	270
CO Emissions (g)	9231
NOx Emissions (g)	972
Vehicles Entered	3056
Vehicles Exited	3063
Hourly Exit Rate	3063
Input Volume	3081
% of Volume	99
Denied Entry Before	0



5: Aviation Mall Rd/Starbucks Driveway & Aviation Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.1	0.0	0.0	0.0	3.7	3.9	0.1	0.6	0.3	0.8
Total Delay (hr)	0.1	6.9	0.2	2.4	3.7	0.1	0.1	0.1	2.3	0.7	0.0	0.1
Total Del/Veh (s)	60.5	19.3	18.8	51.1	9.9	8.4	55.7	61.7	47.2	65.2	75.0	35.7
Stop Delay (hr)	0.1	4.1	0.1	2.1	1.8	0.1	0.1	0.1	2.3	0.7	0.0	0.1
Stop Del/Veh (s)	54.3	11.6	12.8	46.3	4.8	5.1	52.7	57.1	45.8	63.6	71.5	35.6
Total Stops	9	629	19	154	390	12	6	4	157	34	1	11
Stop/Veh	1.12	0.49	0.66	0.92	0.29	0.29	1.00	1.00	0.88	0.85	1.00	0.79
Travel Dist (mi)	1.9	297.1	6.7	20.1	164.4	5.1	0.3	0.2	9.7	1.1	0.0	0.4
Travel Time (hr)	0.2	15.6	0.4	3.2	9.4	0.3	0.1	0.1	2.8	0.8	0.0	0.2
Avg Speed (mph)	10	19	18	6	18	16	3	3	3	1	1	2
Fuel Used (gal)	0.1	11.2	0.2	1.4	8.7	0.2	0.0	0.0	0.9	0.2	0.0	0.0
Fuel Eff. (mpg)	21.8	26.5	27.3	13.9	18.9	20.8	9.0	8.5	10.9	5.3	5.1	8.2
HC Emissions (g)	0	110	4	10	100	4	0	0	5	1	0	0
CO Emissions (g)	15	3299	103	462	3941	136	7	5	178	25	1	4
NOx Emissions (g)	2	407	14	40	383	15	1	0	15	2	0	0
Vehicles Entered	8	1268	29	163	1351	42	6	4	175	39	1	14
Vehicles Exited	8	1265	28	164	1344	41	6	4	176	39	1	14
Hourly Exit Rate	8	1265	28	164	1344	41	6	4	176	39	1	14
Input Volume	9	1265	26	162	1369	41	6	5	177	41	1	16
% of Volume	89	100	107	101	98	101	100	80	100	95	100	89
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0

5: Aviation Mall Rd/Starbucks Driveway & Aviation Rd Performance by movement

Movement	All
Denied Delay (hr)	0.0
Denied Del/Veh (s)	0.0
Total Delay (hr)	16.8
Total Del/Veh (s)	19.3
Stop Delay (hr)	11.7
Stop Del/Veh (s)	13.4
Total Stops	1426
Stop/Veh	0.46
Travel Dist (mi)	507.0
Travel Time (hr)	33.0
Avg Speed (mph)	15
Fuel Used (gal)	23.1
Fuel Eff. (mpg)	21.9
HC Emissions (g)	235
CO Emissions (g)	8177
NOx Emissions (g)	879
Vehicles Entered	3100
Vehicles Exited	3090
Hourly Exit Rate	3090
Input Volume	3118
% of Volume	99
Denied Entry Before	0

6: Glen St/Lake George Rd & Aviation Rd/Quaker Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.1	0.1	0.4	0.0	0.0	0.2	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	2.8	0.3	2.8	3.0	0.3	0.4	2.6	0.2	0.3
Total Delay (hr)	6.0	3.6	1.2	1.2	7.2	0.9	7.0	4.6	0.4	3.3	6.4	3.8
Total Del/Veh (s)	56.6	18.8	10.3	70.7	37.1	18.0	55.9	40.7	37.9	55.5	50.3	32.5
Stop Delay (hr)	5.3	2.4	0.7	1.1	5.5	0.8	6.2	3.6	0.4	3.0	5.3	3.0
Stop Del/Veh (s)	50.4	12.8	5.5	65.7	28.2	15.4	49.4	32.2	34.6	50.0	41.4	26.0
Total Stops	336	319	153	61	518	98	425	336	33	210	406	336
Stop/Veh	0.88	0.47	0.36	0.98	0.74	0.53	0.95	0.83	0.79	0.97	0.89	0.80
Travel Dist (mi)	45.6	81.7	51.7	10.1	115.0	30.7	52.8	48.1	5.0	33.3	70.7	65.2
Travel Time (hr)	7.6	6.1	3.2	1.6	10.2	2.1	9.1	5.8	0.6	4.5	8.2	6.0
Avg Speed (mph)	6	13	16	7	11	16	6	8	8	8	9	11
Fuel Used (gal)	3.0	4.0	2.0	0.6	5.2	1.3	3.5	2.9	0.3	1.9	3.8	2.8
Fuel Eff. (mpg)	15.2	20.5	25.8	16.6	22.1	23.7	15.0	16.8	17.6	17.8	18.4	23.1
HC Emissions (g)	22	43	18	3	53	19	27	31	3	15	39	29
CO Emissions (g)	745	1507	696	225	2347	879	1188	1324	141	800	1779	1395
NOx Emissions (g)	76	155	72	11	166	55	84	96	9	44	117	86
Vehicles Entered	375	680	421	61	690	184	442	399	41	210	447	412
Vehicles Exited	373	682	423	61	694	184	440	400	42	212	449	413
Hourly Exit Rate	373	682	423	61	694	184	440	400	42	212	449	413
Input Volume	378	674	427	63	700	183	444	398	41	215	436	419
% of Volume	99	101	99	96	99	101	99	101	102	98	103	99
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0

6: Glen St/Lake George Rd & Aviation Rd/Quaker Rd Performance by movement

Movement	All
Denied Delay (hr)	0.9
Denied Del/Veh (s)	0.7
Total Delay (hr)	45.6
Total Del/Veh (s)	37.1
Stop Delay (hr)	37.3
Stop Del/Veh (s)	30.3
Total Stops	3231
Stop/Veh	0.73
Travel Dist (mi)	609.8
Travel Time (hr)	64.9
Avg Speed (mph)	10
Fuel Used (gal)	31.3
Fuel Eff. (mpg)	19.5
HC Emissions (g)	303
CO Emissions (g)	13027
NOx Emissions (g)	970
Vehicles Entered	4362
Vehicles Exited	4373
Hourly Exit Rate	4373
Input Volume	4378
% of Volume	100
Denied Entry Before	0

30: Adirondack NB Off Ramp/Adirondack NB On Ramp & Aviation Rd Performance by movement

Movement	EBL	EBT	WBT	WBR	NBL	NBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.1	0.2
Denied Del/Veh (s)	0.1	0.0	0.0	0.0	0.5	0.7	0.2
Total Delay (hr)	0.4	3.4	5.5	0.9	2.1	4.6	16.9
Total Del/Veh (s)	31.6	16.8	18.2	8.2	37.8	23.8	19.3
Stop Delay (hr)	0.4	2.5	3.5	0.4	1.9	3.4	11.9
Stop Del/Veh (s)	27.8	12.0	11.6	3.5	33.6	17.6	13.7
Total Stops	44	287	483	179	150	462	1605
Stop/Veh	0.88	0.39	0.45	0.46	0.75	0.67	0.51
Travel Dist (mi)	6.7	98.2	223.9	81.3	15.1	52.4	477.6
Travel Time (hr)	0.7	6.6	12.1	3.7	2.7	6.9	32.6
Avg Speed (mph)	10	15	19	22	6	8	15
Fuel Used (gal)	0.4	4.9	8.3	2.5	1.0	2.6	19.7
Fuel Eff. (mpg)	18.6	20.0	26.9	31.9	14.6	20.5	24.2
HC Emissions (g)	3	64	78	28	8	16	198
CO Emissions (g)	140	2509	2462	860	306	556	6834
NOx Emissions (g)	10	214	280	98	27	55	684
Vehicles Entered	49	730	1066	382	198	685	3110
Vehicles Exited	49	731	1068	383	198	686	3115
Hourly Exit Rate	49	731	1068	383	198	686	3115
Input Volume	51	733	1077	388	202	684	3135
% of Volume	96	100	99	99	98	100	99
Denied Entry Before	0	0	0	0	0	0	0

33: Burke Drive & Aviation Rd Performance by movement

Movement	EBT	WBL	WBT	NBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.2	0.0
Total Delay (hr)	0.2	0.3	0.1	0.2	0.9
Total Del/Veh (s)	1.6	5.7	0.9	5.3	2.2
Stop Delay (hr)	0.0	0.2	0.0	0.2	0.4
Stop Del/Veh (s)	0.1	3.3	0.1	5.1	1.0
Total Stops	0	88	2	146	236
Stop/Veh	0.00	0.50	0.00	1.00	0.17
Travel Dist (mi)	56.4	9.5	31.8	4.0	101.8
Travel Time (hr)	2.0	0.7	1.1	0.5	4.2
Avg Speed (mph)	28	14	29	9	24
Fuel Used (gal)	2.2	0.3	1.2	0.1	3.8
Fuel Eff. (mpg)	25.2	30.7	27.6	27.7	26.4
HC Emissions (g)	27	3	13	1	43
CO Emissions (g)	1004	82	472	20	1577
NOx Emissions (g)	99	10	47	2	158
Vehicles Entered	502	175	585	146	1408
Vehicles Exited	502	176	586	146	1410
Hourly Exit Rate	502	176	586	146	1410
Input Volume	509	182	594	149	1434
% of Volume	99	97	99	98	98
Denied Entry Before	0	0	0	0	0

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Total Network Performance

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Denied Delay (hr)	1.6
Denied Del/Veh (s)	1.0
Total Delay (hr)	106.2
Total Del/Veh (s)	65.5
Stop Delay (hr)	77.3
Stop Del/Veh (s)	47.7
Total Stops	8879
Stop/Veh	1.52
Travel Dist (mi)	3345.3
Travel Time (hr)	215.6
Avg Speed (mph)	16
Fuel Used (gal)	154.7
Fuel Eff. (mpg)	21.6
HC Emissions (g)	1705
CO Emissions (g)	66110
NOx Emissions (g)	5992
Vehicles Entered	5617
Vehicles Exited	5639
Hourly Exit Rate	5639
Input Volume	25056
% of Volume	23
Denied Entry Before	0

Arterial Level of Service  
Baseline

1/12/2023

Arterial Level of Service: EB Aviation Rd

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed	Run 1 Speed	Run 1 Delay
Cottage Hill Road	1	4.6	10.1	0.1	21	21	4.4
Church Driveway	2	4.1	14.5	0.1	25	26	4.0
Burke Drive	33	1.5	13.1	0.1	31	31	1.5
Adirondack SB On/Off	3	8.2	13.4	0.1	14	16	7.0
Adirondack NB Off Ra	30	13.7	27.7	0.1	18	18	13.7
Aviation Mall Rd	4	10.5	31.6	0.2	24	26	8.5
Aviation Mall Rd	5	19.8	43.9	0.2	20	19	22.2
Glen St	6	16.4	28.8	0.1	16	16	15.8
<b>Total</b>		<b>78.7</b>	<b>183.0</b>	<b>1.0</b>	<b>20</b>	<b>21</b>	<b>77.0</b>

Arterial Level of Service: EB Aviation Rd

Cross Street	Run 10 Speed	Run 10 Delay	Run 2 Speed	Run 2 Delay	Run 3 Speed	Run 3 Delay	Run 4 Speed
Cottage Hill Road	19	5.4	21	4.4	20	5.1	22
Church Driveway	25	4.4	26	3.9	26	3.7	25
Burke Drive	31	1.8	32	1.4	31	1.5	31
Adirondack SB On/Off	13	9.1	14	8.8	15	7.2	14
Adirondack NB Off Ra	19	12.4	17	14.7	16	15.8	16
Aviation Mall Rd	24	10.0	24	11.0	24	10.8	25
Aviation Mall Rd	20	18.5	20	19.7	19	21.7	20
Glen St	16	16.6	16	16.0	15	19.3	18
<b>Total</b>	<b>21</b>	<b>78.2</b>	<b>20</b>	<b>80.0</b>	<b>20</b>	<b>85.0</b>	<b>21</b>

Arterial Level of Service: EB Aviation Rd

Cross Street	Run 4 Delay	Run 5 Speed	Run 5 Delay	Run 6 Speed	Run 6 Delay	Run 7 Speed	Run 7 Delay
Cottage Hill Road	4.1	21	4.4	22	4.1	17	6.5
Church Driveway	4.3	25	4.3	25	4.2	28	2.9
Burke Drive	1.6	31	1.6	31	1.6	32	1.4
Adirondack SB On/Off	8.8	11	11.6	15	7.3	15	7.2
Adirondack NB Off Ra	15.6	19	12.1	18	13.1	18	13.2
Aviation Mall Rd	8.8	24	10.9	24	10.4	22	13.1
Aviation Mall Rd	18.2	20	20.0	18	22.7	21	16.5
Glen St	13.9	15	18.3	16	15.8	16	16.3
<b>Total</b>	<b>75.4</b>	<b>20</b>	<b>83.2</b>	<b>20</b>	<b>79.2</b>	<b>21</b>	<b>77.1</b>

Arterial Level of Service: EB Aviation Rd

Cross Street	Run 8 Speed	Run 8 Delay	Run 9 Speed	Run 9 Delay
Cottage Hill Road	24	3.2	22	3.8
Church Driveway	25	4.5	25	4.4
Burke Drive	32	1.2	31	1.5
Adirondack SB On/Off	15	7.2	15	7.8
Adirondack NB Off Ra	18	13.1	18	12.5
Aviation Mall Rd	25	10.0	23	11.5
Aviation Mall Rd	21	17.3	19	21.2
Glen St	17	15.6	16	16.3
Total	21	72.1	20	79.0

Arterial Level of Service: WB Aviation Rd

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed	Run 1 Speed	Run 1 Delay
Starbucks Driveway	5	16.4	29.2	0.1	16	16	16.1
Greenway N	4	7.0	31.5	0.2	27	28	6.4
Adirondack NB On Ram	30	20.1	41.6	0.2	18	18	20.6
Adirondack SB On/Off	3	3.4	17.4	0.1	28	28	3.2
Burke Drive	33	0.9	6.5	0.1	29	29	0.8
School Driveway	2	7.0	18.3	0.1	22	22	7.0
School Parking	1	5.2	15.4	0.1	24	24	5.2
Total		60.1	159.9	1.0	22	22	59.2

Arterial Level of Service: WB Aviation Rd

Cross Street	Run 10 Speed	Run 10 Delay	Run 2 Speed	Run 2 Delay	Run 3 Speed	Run 3 Delay	Run 4 Speed
Starbucks Driveway	14	19.0	16	15.3	18	12.6	16
Greenway N	27	7.4	28	6.2	27	6.9	26
Adirondack NB On Ram	19	18.0	19	18.0	19	19.1	17
Adirondack SB On/Off	28	3.4	27	3.9	29	2.9	29
Burke Drive	29	0.9	29	1.0	29	0.8	30
School Driveway	22	7.1	22	6.9	23	6.3	23
School Parking	25	4.8	22	6.5	24	4.9	23
Total	22	60.6	22	57.8	23	53.5	21

Arterial Level of Service: WB Aviation Rd

Cross Street	Run 4 Delay	Run 5 Speed	Run 5 Delay	Run 6 Speed	Run 6 Delay	Run 7 Speed	Run 7 Delay
Starbucks Driveway	16.3	15	18.1	15	17.1	17	14.4
Greenway N	8.2	28	6.8	27	8.0	28	6.7
Adirondack NB On Ram	24.0	19	18.2	20	16.5	15	28.0
Adirondack SB On/Off	3.0	28	3.8	29	3.1	27	4.0
Burke Drive	0.7	29	1.0	30	0.8	28	1.1
School Driveway	6.4	21	8.1	23	6.4	22	7.1
School Parking	5.4	25	4.8	25	4.4	22	6.3
Total	64.1	22	60.9	23	56.3	21	67.7



Arterial Level of Service: WB Aviation Rd

Cross Street	Run 8 Speed	Run 8 Delay	Run 9 Speed	Run 9 Delay
Starbucks Driveway	15	17.3	15	17.3
Greenway N	27	6.7	27	7.1
Adirondack NB On Ram	18	19.6	18	19.4
Adirondack SB On/Off	28	3.2	28	3.6
Burke Drive	29	1.0	29	1.0
School Driveway	22	7.4	23	6.6
School Parking	25	4.2	24	5.2
Total	22	59.4	22	60.2

Queuing and Blocking Report  
Baseline

1/12/2023

Intersection: 1: Cottage Hill Road/School Parking & Aviation Rd

Movement	EB	EB	WB	WB	NB	SB	SB
Directions Served	L	TR	L	TR	LTR	LT	R
Maximum Queue (ft)	66	190	60	208	120	106	73
Average Queue (ft)	25	49	9	46	52	38	25
95th Queue (ft)	56	128	39	131	106	89	55
Link Distance (ft)		261		458	567	167	167
Upstream Blk Time (%)		0					0
Queuing Penalty (veh)		0					0
Storage Bay Dist (ft)	50		110				
Storage Blk Time (%)	1	5	0	1			
Queuing Penalty (veh)	4	4	0	0			

Intersection: 2: Church Driveway/School Driveway & Aviation Rd

Movement	EB	EB	WB	SB	SB
Directions Served	L	TR	TR	LT	R
Maximum Queue (ft)	50	128	215	177	50
Average Queue (ft)	11	36	73	118	15
95th Queue (ft)	37	93	160	190	43
Link Distance (ft)		458	531	159	159
Upstream Blk Time (%)				8	
Queuing Penalty (veh)				0	
Storage Bay Dist (ft)	190				
Storage Blk Time (%)		0	7		
Queuing Penalty (veh)		0	0		

Intersection: 3: Adirondack SB On/Off Ramp & Aviation Rd

Movement	EB	EB	WB	WB	WB	NB	NB
Directions Served	T	TR	L	T	T	L	R
Maximum Queue (ft)	162	201	390	137	93	114	131
Average Queue (ft)	67	85	169	27	27	44	64
95th Queue (ft)	135	163	326	129	76	87	108
Link Distance (ft)	210	210		655	655	314	314
Upstream Blk Time (%)		0					
Queuing Penalty (veh)		1					
Storage Bay Dist (ft)			370				
Storage Blk Time (%)			1				
Queuing Penalty (veh)			4				

Queuing and Blocking Report  
Baseline

1/12/2023

Intersection: 4: Aviation Mall Rd/Greenway N & Aviation Rd

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	SB
Directions Served	L	T	T	R	L	T	TR	LT	R	LTR
Maximum Queue (ft)	67	240	273	204	138	215	222	146	115	71
Average Queue (ft)	17	125	145	64	41	63	63	114	40	24
95th Queue (ft)	50	216	242	168	89	173	173	170	83	58
Link Distance (ft)		1048	1048			1173	1173	130	130	308
Upstream Blk Time (%)								15	0	
Queuing Penalty (veh)								0	0	
Storage Bay Dist (ft)	70			130	140					
Storage Blk Time (%)	0	14	7	0	0	1				
Queuing Penalty (veh)	0	2	14	1	0	1				

Intersection: 5: Aviation Mall Rd/Starbucks Driveway & Aviation Rd

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Directions Served	L	T	T	R	L	L	T	TR	LT	R	R	LTR
Maximum Queue (ft)	109	385	424	170	122	151	298	303	35	169	134	118
Average Queue (ft)	10	203	235	29	48	81	146	148	8	77	38	37
95th Queue (ft)	55	347	385	116	101	132	253	261	27	143	97	94
Link Distance (ft)		1173	1173				553	553		277	277	131
Upstream Blk Time (%)												1
Queuing Penalty (veh)												0
Storage Bay Dist (ft)	80			120	150	150			170			
Storage Blk Time (%)		22	22	0	0	0	6			0		
Queuing Penalty (veh)		2	6	0	0	2	9			0		

Queuing and Blocking Report  
Baseline

1/12/2023

Intersection: 6: Glen St/Lake George Rd & Aviation Rd/Quaker Rd

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB
Directions Served	L	L	T	T	R	L	T	T	R	L	L	T
Maximum Queue (ft)	248	271	245	239	225	183	362	324	163	288	314	269
Average Queue (ft)	128	147	122	127	86	58	215	176	71	152	177	149
95th Queue (ft)	212	228	216	217	173	127	319	279	136	251	272	233
Link Distance (ft)			553	553			873	873				625
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	170	170			280	280			430	310	310	
Storage Blk Time (%)	4	7	2	0	0		3			0	1	0
Queuing Penalty (veh)	11	22	8	0	0		2			0	1	0

Intersection: 6: Glen St/Lake George Rd & Aviation Rd/Quaker Rd

Movement	NB	SB	SB	SB	SB	SB
Directions Served	TR	L	L	T	T	R
Maximum Queue (ft)	240	174	231	300	349	418
Average Queue (ft)	116	68	129	179	146	185
95th Queue (ft)	205	166	203	263	266	333
Link Distance (ft)	625			833	833	833
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)		240	240			
Storage Blk Time (%)			0	2		
Queuing Penalty (veh)			0	5		

Intersection: 30: Adirondack NB Off Ramp/Adirondack NB On Ramp Aviation Rd

Movement	EB	EB	EB	WB	WB	WB	NB	NB
Directions Served	L	T	T	T	T	R	L	R
Maximum Queue (ft)	116	235	243	493	417	248	362	425
Average Queue (ft)	35	104	120	222	144	78	136	257
95th Queue (ft)	81	198	217	420	319	184	272	420
Link Distance (ft)		655	655	1048	1048		402	402
Upstream Blk Time (%)							0	2
Queuing Penalty (veh)							0	0
Storage Bay Dist (ft)	120					140		
Storage Blk Time (%)	0	5			7	1		
Queuing Penalty (veh)	0	3			29	3		

# Queuing and Blocking Report

## Baseline

1/12/2023

### Intersection: 33: Burke Drive & Aviation Rd

Movement	EB	WB	WB	WB	NB
Directions Served	T	L	T	T	LR
Maximum Queue (ft)	13	95	38	8	85
Average Queue (ft)	0	43	2	0	43
95th Queue (ft)	8	79	19	6	74
Link Distance (ft)	531		210	210	143
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)		85			
Storage Blk Time (%)		0	0		
Queuing Penalty (veh)		1	0		

### Network Summary

Network wide Queuing Penalty: 137

Summary of All Intervals

Run Number	1	10	2	3	4	5	6
Start Time	4:00	4:00	4:00	4:00	4:00	4:00	4:00
End Time	5:15	5:15	5:15	5:15	5:15	5:15	5:15
Total Time (min)	75	75	75	75	75	75	75
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	5	5	5	5	5	5	5
# of Recorded mScheduledIntervals	4	4	4	4	4	4	4
Vehs Entered	3313	3323	3372	3278	3220	3303	3325
Vehs Exited	3310	3310	3368	3274	3187	3336	3303
Starting Vehs	65	75	85	81	63	113	72
Ending Vehs	68	88	89	85	96	80	94
Denied Entry Before	1	2	2	1	1	1	0
Travel Distance (mi)	1375	1377	1397	1377	1324	1358	1376
Travel Time (hr)	91.7	90.6	93.2	91.1	87.6	88.1	92.6
Total Delay (hr)	49.7	48.6	50.5	49.0	47.1	46.7	50.7
Total Stops	4116	4060	4422	4227	4049	4055	4050
Fuel Used (gal)	71.5	71.5	73.1	71.3	68.8	70.5	71.6

Summary of All Intervals

Run Number	7	8	9	Avg
Start Time	4:00	4:00	4:00	4:00
End Time	5:15	5:15	5:15	5:15
Total Time (min)	75	75	75	75
Time Recorded (min)	60	60	60	60
# of Intervals	5	5	5	5
# of Recorded mScheduledIntervals	4	4	4	4
Vehs Entered	3282	3347	3315	3304
Vehs Exited	3271	3328	3321	3301
Starting Vehs	78	79	100	80
Ending Vehs	89	98	94	83
Denied Entry Before	1	2	0	0
Travel Distance (mi)	1357	1392	1381	1371
Travel Time (hr)	87.7	91.1	94.8	90.9
Total Delay (hr)	46.2	48.5	52.6	49.0
Total Stops	4071	4206	4265	4150
Fuel Used (gal)	69.8	72.6	72.6	71.3

Interval #0 Information Seeding

Start Time	4:00
End Time	4:15
Total Time (min)	15
Volumes adjusted by Growth Factors.	
No data recorded this interval.	

**Interval #1 Information Recording**

Start Time	4:15
End Time	4:30
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	1	10	2	3	4	5	6
Vehs Entered	790	844	794	796	701	756	782
Vehs Exited	782	836	800	786	691	788	761
Starting Vehs	65	75	85	81	63	113	72
Ending Vehs	73	83	79	91	73	81	93
Denied Entry Before	1	2	2	1	1	1	0
Travel Distance (mi)	327	356	340	335	298	321	317
Travel Time (hr)	20.2	23.0	21.3	21.3	18.6	20.6	19.8
Total Delay (hr)	10.3	12.1	11.0	11.1	9.5	10.8	10.2
Total Stops	944	1074	1063	992	865	928	872
Fuel Used (gal)	16.6	18.4	17.4	17.2	15.2	16.6	16.1

**Interval #1 Information Recording**

Start Time	4:15
End Time	4:30
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	7	8	9	Avg
Vehs Entered	804	836	792	791
Vehs Exited	814	830	808	789
Starting Vehs	78	79	100	80
Ending Vehs	68	85	84	80
Denied Entry Before	1	2	0	0
Travel Distance (mi)	341	347	325	331
Travel Time (hr)	21.3	22.1	21.6	21.0
Total Delay (hr)	10.9	11.5	11.7	10.9
Total Stops	1009	1041	1011	979
Fuel Used (gal)	17.4	18.0	17.0	17.0

**Interval #2 Information Recording**

Start Time	4:30						
End Time	4:45						
Total Time (min)	15						
Volumes adjusted by Growth Factors, Anti PHF.							

Run Number	1	10	2	3	4	5	6
Vehs Entered	805	816	770	743	771	804	770
Vehs Exited	802	803	790	758	748	781	792
Starting Vehs	73	83	79	91	73	81	93
Ending Vehs	76	96	59	76	96	104	71
Denied Entry Before	2	3	1	2	5	0	2
Travel Distance (mi)	341	347	326	309	310	329	320
Travel Time (hr)	22.1	21.9	20.8	18.6	20.2	20.9	19.4
Total Delay (hr)	11.6	11.4	10.8	9.1	10.8	10.8	9.6
Total Stops	1048	978	984	868	980	984	906
Fuel Used (gal)	17.4	17.7	16.7	15.8	15.8	16.8	16.4

**Interval #2 Information Recording**

Start Time	4:30			
End Time	4:45			
Total Time (min)	15			
Volumes adjusted by Growth Factors, Anti PHF.				

Run Number	7	8	9	Avg
Vehs Entered	736	794	758	778
Vehs Exited	727	796	765	776
Starting Vehs	68	85	84	80
Ending Vehs	77	83	77	80
Denied Entry Before	1	2	0	0
Travel Distance (mi)	305	328	318	323
Travel Time (hr)	18.8	19.8	20.0	20.2
Total Delay (hr)	9.4	9.7	10.2	10.3
Total Stops	901	943	935	949
Fuel Used (gal)	15.3	16.7	16.2	16.5



**Interval #3 Information Recording**

Start Time	4:45
End Time	5:00
Total Time (min)	15
Volumes adjusted by PHF, Growth Factors.	

Run Number	1	10	2	3	4	5	6
Vehs Entered	933	892	996	946	958	949	970
Vehs Exited	900	900	923	890	937	963	889
Starting Vehs	76	96	59	76	96	104	71
Ending Vehs	109	88	132	132	117	90	152
Denied Entry Before	1	1	1	1	3	1	1
Travel Distance (mi)	383	368	374	379	378	369	380
Travel Time (hr)	26.8	25.8	25.2	25.4	26.8	26.2	27.2
Total Delay (hr)	15.1	14.5	13.8	13.8	15.2	15.0	15.6
Total Stops	1231	1156	1290	1300	1209	1191	1212
Fuel Used (gal)	20.3	19.5	19.8	19.5	20.1	20.0	20.1

**Interval #3 Information Recording**

Start Time	4:45
End Time	5:00
Total Time (min)	15
Volumes adjusted by PHF, Growth Factors.	

Run Number	7	8	9	Avg
Vehs Entered	920	931	938	944
Vehs Exited	882	905	918	913
Starting Vehs	77	83	77	80
Ending Vehs	115	109	97	112
Denied Entry Before	0	1	1	0
Travel Distance (mi)	371	386	388	378
Travel Time (hr)	25.3	27.4	28.0	26.4
Total Delay (hr)	14.0	15.5	16.2	14.9
Total Stops	1185	1267	1249	1228
Fuel Used (gal)	19.4	20.6	20.7	20.0

**Interval #4 Information Recording**

Start Time	5:00
End Time	5:15
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	1	10	2	3	4	5	6
Vehs Entered	785	771	812	793	790	794	803
Vehs Exited	826	771	855	840	811	804	861
Starting Vehs	109	88	132	132	117	90	152
Ending Vehs	68	88	89	85	96	80	94
Denied Entry Before	2	1	0	1	0	1	0
Travel Distance (mi)	324	306	357	354	338	339	359
Travel Time (hr)	22.6	19.9	25.8	25.7	22.0	20.4	26.1
Total Delay (hr)	12.8	10.5	14.9	14.9	11.6	10.0	15.2
Total Stops	893	852	1085	1067	995	952	1060
Fuel Used (gal)	17.1	15.9	19.1	18.8	17.6	17.1	19.1

**Interval #4 Information Recording**

Start Time	5:00
End Time	5:15
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	7	8	9	Avg
Vehs Entered	822	786	827	799
Vehs Exited	848	797	830	823
Starting Vehs	115	109	97	112
Ending Vehs	89	98	94	83
Denied Entry Before	3	0	0	0
Travel Distance (mi)	341	331	350	340
Travel Time (hr)	22.4	21.9	25.2	23.2
Total Delay (hr)	11.8	11.8	14.5	12.8
Total Stops	976	955	1070	987
Fuel Used (gal)	17.7	17.3	18.7	17.8

13: Quaker Rd & Parking Lot/Quaker Ridge Blvd Performance by movement

Movement	EBL	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT	All
Denied Delay (hr)	0.0	0.0	0.2	0.1	0.0	0.0	0.0	0.1	0.1	0.5
Denied Del/Veh (s)	0.1	0.1	3.7	3.6		0.0	0.1	3.1	0.6	1.1
Total Delay (hr)	0.1	0.0	3.8	0.3	0.0	3.5	0.4	0.7	1.6	10.3
Total Del/Veh (s)	71.5	9.7	62.4	11.3		21.3	7.4	22.7	8.7	19.9
Stop Delay (hr)	0.1	0.0	3.5	0.3	0.0	2.0	0.1	0.6	0.7	7.4
Stop Del/Veh (s)	69.6	9.9	58.0	10.8		12.1	1.7	19.7	4.1	14.1
Total Stops	3	4	224	92	0	273	60	80	200	936
Stop/Veh	1.00	1.00	1.02	0.84		0.46	0.32	0.71	0.31	0.50
Travel Dist (mi)	0.2	0.2	20.9	10.7	0.1	159.4	51.5	8.1	47.1	298.2
Travel Time (hr)	0.1	0.0	4.8	0.9	0.0	8.0	2.1	1.1	2.9	19.9
Avg Speed (mph)	2	10	5	13	19	20	25	8	17	15
Fuel Used (gal)	0.0	0.0	1.6	0.4	0.0	6.8	2.0	0.5	2.3	13.5
Fuel Eff. (mpg)	9.6	30.8	13.3	25.2	22.0	23.6	25.9	17.5	20.5	22.0
HC Emissions (g)	0	0	7	4	0	82	32	3	27	156
CO Emissions (g)	1	1	284	138	2	3399	1194	181	1164	6366
NOx Emissions (g)	0	0	22	13	0	291	105	11	97	539
Vehicles Entered	3	4	215	108	0	581	185	112	647	1855
Vehicles Exited	3	4	216	108	0	579	185	112	646	1853
Hourly Exit Rate	3	4	216	108	0	579	185	112	646	1853
Input Volume	3	4	212	106	1	580	180	113	665	1865
% of Volume	92	94	102	102	0	100	102	99	97	99
Denied Entry Before	0	0	0	0	0	0	0	0	0	0

14: Quaker Rd & Dix Ave Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.1	0.0	0.1	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	3.7	0.4	3.5	0.7	1.1	4.0	0.1	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	1.0	1.6	0.9	0.2	2.4	2.4	0.5	3.0	0.0	3.1	2.5	0.2
Total Del/Veh (s)	46.4	32.0	25.1	100.0	67.4	24.5	22.3	31.3	10.0	29.9	20.5	8.3
Stop Delay (hr)	0.9	1.3	0.9	0.2	2.2	2.1	0.4	2.2	0.0	2.3	1.4	0.0
Stop Del/Veh (s)	43.6	26.3	24.2	97.0	61.2	21.8	17.9	23.3	4.6	22.1	11.7	1.4
Total Stops	64	126	86	10	116	258	73	226	2	308	184	11
Stop/Veh	0.86	0.71	0.66	1.11	0.91	0.74	0.85	0.66	0.40	0.81	0.42	0.16
Travel Dist (mi)	7.0	17.6	13.1	0.7	9.7	27.7	14.6	56.6	0.7	103.8	116.2	17.0
Travel Time (hr)	1.3	2.1	1.6	0.3	2.7	4.1	1.0	4.5	0.0	6.2	5.5	0.6
Avg Speed (mph)	6	8	9	2	4	7	15	13	21	17	21	27
Fuel Used (gal)	0.5	1.0	0.7	0.1	0.9	1.7	0.6	2.4	0.0	4.0	4.3	0.5
Fuel Eff. (mpg)	14.5	17.8	18.6	8.1	10.3	16.5	24.9	23.2	31.1	26.2	27.0	31.5
HC Emissions (g)	3	10	7	0	4	15	6	28	0	40	45	9
CO Emissions (g)	165	384	308	12	214	590	289	1030	8	1505	1725	274
NOx Emissions (g)	9	31	20	1	16	49	21	92	1	148	171	29
Vehicles Entered	72	178	130	8	125	345	86	341	5	372	427	67
Vehicles Exited	72	177	129	8	125	344	86	341	5	372	426	67
Hourly Exit Rate	72	177	129	8	125	344	86	341	5	372	426	67
Input Volume	74	179	130	9	122	337	82	340	4	389	424	67
% of Volume	97	99	99	89	103	102	105	100	118	96	100	100
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0

14: Quaker Rd & Dix Ave Performance by movement

Movement	All
Denied Delay (hr)	0.6
Denied Del/Veh (s)	1.1
Total Delay (hr)	17.7
Total Del/Veh (s)	29.3
Stop Delay (hr)	14.0
Stop Del/Veh (s)	23.2
Total Stops	1464
Stop/Veh	0.67
Travel Dist (mi)	384.7
Travel Time (hr)	29.9
Avg Speed (mph)	13
Fuel Used (gal)	16.7
Fuel Eff. (mpg)	23.0
HC Emissions (g)	166
CO Emissions (g)	6503
NOx Emissions (g)	588
Vehicles Entered	2156
Vehicles Exited	2152
Hourly Exit Rate	2152
Input Volume	2158
% of Volume	100
Denied Entry Before	0

15: Quaker Rd & Highland Ave Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.2	0.2	0.2	0.2	0.2	0.3	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	0.6	1.1	0.1	0.2	0.9	0.0	0.0	0.7	0.0	0.0	1.5	0.1
Total Del/Veh (s)	45.4	43.7	30.3	45.5	39.3	19.0	14.9	6.9	4.5	17.3	10.7	8.5
Stop Delay (hr)	0.6	0.9	0.0	0.2	0.8	0.0	0.0	0.4	0.0	0.0	0.7	0.1
Stop Del/Veh (s)	41.9	39.0	27.8	42.4	35.2	16.7	12.6	3.7	3.0	12.0	4.8	4.5
Total Stops	44	74	5	16	62	1	2	91	3	3	148	15
Stop/Veh	0.88	0.85	0.83	0.89	0.79	0.50	0.67	0.24	0.27	0.60	0.29	0.36
Travel Dist (mi)	2.9	5.1	0.4	1.3	5.4	0.2	0.3	44.2	1.3	0.8	92.4	7.7
Travel Time (hr)	0.8	1.2	0.1	0.3	1.0	0.0	0.0	2.0	0.1	0.1	4.1	0.4
Avg Speed (mph)	4	4	5	5	5	9	13	22	20	17	23	21
Fuel Used (gal)	0.3	0.4	0.0	0.1	0.4	0.0	0.0	2.2	0.1	0.0	4.0	0.3
Fuel Eff. (mpg)	11.6	11.8	14.0	13.2	14.0	19.4	19.4	19.9	21.8	23.0	23.0	25.2
HC Emissions (g)	1	4	0	0	3	0	0	35	1	0	49	6
CO Emissions (g)	43	120	5	19	102	2	8	1535	36	17	2167	202
NOx Emissions (g)	4	12	0	1	9	0	0	117	2	1	179	18
Vehicles Entered	50	86	6	18	78	2	3	374	11	5	506	42
Vehicles Exited	49	85	6	18	77	2	3	374	11	5	506	42
Hourly Exit Rate	49	85	6	18	77	2	3	374	11	5	506	42
Input Volume	49	90	5	20	76	2	3	370	12	5	508	38
% of Volume	100	95	114	91	101	89	100	101	94	100	100	110
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0

15: Quaker Rd & Highland Ave Performance by movement

Movement	All
Denied Delay (hr)	0.0
Denied Del/Veh (s)	0.0
Total Delay (hr)	5.2
Total Del/Veh (s)	15.8
Stop Delay (hr)	3.7
Stop Del/Veh (s)	11.2
Total Stops	464
Stop/Veh	0.39
Travel Dist (mi)	161.9
Travel Time (hr)	10.0
Avg Speed (mph)	16
Fuel Used (gal)	7.9
Fuel Eff. (mpg)	20.6
HC Emissions (g)	99
CO Emissions (g)	4257
NOx Emissions (g)	345
Vehicles Entered	1181
Vehicles Exited	1178
Hourly Exit Rate	1178
Input Volume	1178
% of Volume	100
Denied Entry Before	0

16: Quaker Rd & Boulevard Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.2	0.2	0.2	0.3	0.2	0.3	0.0	0.0	0.0	0.1	0.0	0.0
Total Delay (hr)	0.1	1.6	0.1	0.1	1.3	1.0	0.0	0.5	0.0	0.4	0.9	0.0
Total Del/Veh (s)	60.2	45.2	34.0	54.7	47.2	28.5	11.4	6.8	4.2	9.8	8.8	5.1
Stop Delay (hr)	0.1	1.4	0.1	0.1	1.0	0.9	0.0	0.3	0.0	0.2	0.3	0.0
Stop Del/Veh (s)	56.8	38.7	31.0	50.3	39.3	24.9	8.9	4.7	3.8	5.0	3.3	2.4
Total Stops	8	104	7	7	80	111	1	63	5	86	108	2
Stop/Veh	1.00	0.81	0.78	0.88	0.83	0.85	1.00	0.25	0.31	0.55	0.29	0.40
Travel Dist (mi)	0.5	8.5	0.6	0.6	6.8	9.2	0.1	20.9	1.4	18.3	44.3	0.5
Travel Time (hr)	0.2	1.8	0.1	0.1	1.4	1.4	0.0	1.3	0.1	1.0	2.1	0.0
Avg Speed (mph)	3	5	5	4	5	7	13	16	15	18	21	21
Fuel Used (gal)	0.0	0.7	0.0	0.0	0.5	0.6	0.0	1.6	0.1	0.7	1.8	0.0
Fuel Eff. (mpg)	10.7	12.7	13.6	12.6	13.2	16.3	15.0	13.1	17.5	25.7	25.2	29.0
HC Emissions (g)	0	4	0	0	4	5	0	28	1	7	21	0
CO Emissions (g)	10	174	11	8	144	178	3	1256	41	295	852	7
NOx Emissions (g)	1	14	1	1	12	15	0	88	3	26	76	0
Vehicles Entered	8	126	8	8	94	128	1	250	16	154	376	5
Vehicles Exited	8	126	8	8	94	128	1	251	16	154	377	5
Hourly Exit Rate	8	126	8	8	94	128	1	251	16	154	377	5
Input Volume	10	125	7	8	97	134	2	239	17	159	375	4
% of Volume	78	101	110	97	97	96	50	105	93	97	101	118
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0

16: Quaker Rd & Boulevard Performance by movement

Movement	All
Denied Delay (hr)	0.0
Denied Del/Veh (s)	0.1
Total Delay (hr)	6.1
Total Del/Veh (s)	18.5
Stop Delay (hr)	4.6
Stop Del/Veh (s)	13.8
Total Stops	582
Stop/Veh	0.49
Travel Dist (mi)	111.7
Travel Time (hr)	9.6
Avg Speed (mph)	12
Fuel Used (gal)	6.1
Fuel Eff. (mpg)	18.4
HC Emissions (g)	69
CO Emissions (g)	2978
NOx Emissions (g)	238
Vehicles Entered	1174
Vehicles Exited	1176
Hourly Exit Rate	1176
Input Volume	1179
% of Volume	100
Denied Entry Before	0

17: Lower Warren St/River St & Quaker Rd Performance by movement

Movement	EBL	EBT	WBT	WBR	SBL	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.3
Denied Del/Veh (s)	0.3	0.1	0.2	3.5	0.1	0.0	0.0	0.9
Total Delay (hr)	0.1	1.4	0.7	0.3	3.6	0.0	0.0	6.1
Total Del/Veh (s)	26.2	19.6	16.2	3.8	33.7	3.0	3.8	20.4
Stop Delay (hr)	0.1	1.1	0.5	0.2	3.0	0.0	0.0	4.9
Stop Del/Veh (s)	22.4	14.6	12.3	2.3	28.1	0.7	2.9	16.2
Total Stops	14	140	72	138	308	0	4	676
Stop/Veh	0.78	0.53	0.46	0.56	0.80	0.00	0.80	0.62
Travel Dist (mi)	2.0	29.9	14.3	23.0	33.1	0.4	0.4	103.2
Travel Time (hr)	0.2	2.2	1.1	1.4	4.8	0.0	0.0	9.7
Avg Speed (mph)	10	14	14	20	7	23	19	11
Fuel Used (gal)	0.1	1.3	0.6	0.8	1.9	0.0	0.0	4.8
Fuel Eff. (mpg)	22.2	23.0	23.1	29.4	17.0	14.2	24.5	21.5
HC Emissions (g)	0	15	8	11	14	1	0	50
CO Emissions (g)	31	639	302	440	536	29	9	1986
NOx Emissions (g)	2	50	26	33	49	2	1	163
Vehicles Entered	18	265	154	247	381	9	5	1079
Vehicles Exited	18	265	154	248	379	9	5	1078
Hourly Exit Rate	18	265	154	248	379	9	5	1078
Input Volume	17	271	156	238	377	8	4	1071
% of Volume	106	98	99	104	101	106	125	101
Denied Entry Before	0	0	0	0	0	0	0	0

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Total Network Performance

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Denied Delay (hr)	1.5
Denied Del/Veh (s)	1.6
Total Delay (hr)	47.5
Total Del/Veh (s)	50.5
Stop Delay (hr)	34.7
Stop Del/Veh (s)	36.9
Total Stops	4150
Stop/Veh	1.23
Travel Dist (mi)	1371.4
Travel Time (hr)	90.9
Avg Speed (mph)	15
Fuel Used (gal)	71.3
Fuel Eff. (mpg)	19.2
HC Emissions (g)	880
CO Emissions (g)	40309
NOx Emissions (g)	3025
Vehicles Entered	3304
Vehicles Exited	3301
Hourly Exit Rate	3301
Input Volume	10695
% of Volume	31
Denied Entry Before	0



Arterial Level of Service  
Baseline

1/12/2023

Arterial Level of Service: NB Quaker Rd

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed	Run 1 Speed	Run 1 Delay
Boulevard	16	7.1	19.4	0.1	17	17	6.7
Highland Ave	15	9.0	19.7	0.1	22	23	8.6
Dix Ave	14	29.0	43.9	0.2	15	15	28.4
Quaker Ridge Blvd	13	25.2	49.4	0.3	21	19	28.3
Total		70.4	132.4	0.7	18	18	72.0

Arterial Level of Service: NB Quaker Rd

Cross Street	Run 10 Speed	Run 10 Delay	Run 2 Speed	Run 2 Delay	Run 3 Speed	Run 3 Delay	Run 4 Speed
Boulevard	18	5.6	17	6.7	17	6.6	17
Highland Ave	24	7.5	22	9.4	20	11.0	22
Dix Ave	17	23.5	12	41.0	14	32.9	17
Quaker Ridge Blvd	22	21.7	19	29.5	19	29.4	19
Total	20	58.3	16	86.5	17	79.9	19

Arterial Level of Service: NB Quaker Rd

Cross Street	Run 4 Delay	Run 5 Speed	Run 5 Delay	Run 6 Speed	Run 6 Delay	Run 7 Speed	Run 7 Delay
Boulevard	7.4	18	6.3	16	8.0	17	7.2
Highland Ave	9.3	22	9.1	23	8.2	22	8.5
Dix Ave	24.0	15	27.7	16	24.8	16	25.8
Quaker Ridge Blvd	27.4	20	27.6	23	20.6	20	25.7
Total	68.1	18	70.7	20	61.6	19	67.1

Arterial Level of Service: NB Quaker Rd

Cross Street	Run 8 Speed	Run 8 Delay	Run 9 Speed	Run 9 Delay
Boulevard	17	7.2	15	9.2
Highland Ave	22	9.2	21	9.7
Dix Ave	17	24.0	13	36.4
Quaker Ridge Blvd	21	23.2	24	19.3
Total	19	63.6	18	74.6

Arterial Level of Service: SB Quaker Rd

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed	Run 1 Speed	Run 1 Delay
Parking Lot	13	8.7	15.9	0.1	19	20	7.7
Dix Ave	14	23.7	48.1	0.3	21	21	24.9
Highland Ave	15	12.5	29.1	0.2	22	23	11.3
Boulevard	16	8.9	19.6	0.1	22	24	7.0
Lower Warren St	17	34.6	45.6	0.1	7	7	33.4
Total		88.3	158.2	0.8	17	18	84.3

Arterial Level of Service: SB Quaker Rd

Cross Street	Run 10 Speed	Run 10 Delay	Run 2 Speed	Run 2 Delay	Run 3 Speed	Run 3 Delay	Run 4 Speed
Parking Lot	16	11.7	18	9.6	18	9.3	19
Dix Ave	21	23.4	22	21.8	22	22.5	21
Highland Ave	25	9.2	21	13.8	20	16.2	23
Boulevard	23	8.6	22	9.4	21	10.2	23
Lower Warren St	7	34.4	8	32.9	7	35.8	7
Total	17	87.3	17	87.4	17	94.1	17

Arterial Level of Service: SB Quaker Rd

Cross Street	Run 4 Delay	Run 5 Speed	Run 5 Delay	Run 6 Speed	Run 6 Delay	Run 7 Speed	Run 7 Delay
Parking Lot	8.4	20	7.6	20	8.1	21	7.5
Dix Ave	24.3	22	21.2	21	24.0	21	23.0
Highland Ave	11.8	22	13.0	22	12.5	22	13.1
Boulevard	8.3	23	8.2	22	9.3	20	10.8
Lower Warren St	33.7	7	35.2	7	33.4	7	37.4
Total	86.5	18	85.1	17	87.3	17	91.8

Arterial Level of Service: SB Quaker Rd

Cross Street	Run 8 Speed	Run 8 Delay	Run 9 Speed	Run 9 Delay
Parking Lot	19	8.8	20	7.9
Dix Ave	20	26.5	21	25.3
Highland Ave	23	11.1	22	12.4
Boulevard	23	8.1	23	8.6
Lower Warren St	7	34.7	7	35.5
Total	17	89.2	17	89.7

Queuing and Blocking Report  
Baseline

1/12/2023

Intersection: 13: Quaker Rd & Parking Lot/Quaker Ridge Blvd

Movement	EB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	LTR	L	T	R	L	T	R	L	TR
Maximum Queue (ft)	30	281	241	72	9	392	270	168	318
Average Queue (ft)	5	162	22	33	0	198	59	53	121
95th Queue (ft)	21	269	158	64	5	335	189	111	244
Link Distance (ft)	245		510			1383			376
Upstream Blk Time (%)			0						0
Queuing Penalty (veh)			0						0
Storage Bay Dist (ft)		260		50	90		170	190	
Storage Blk Time (%)		4	0	4		25			2
Queuing Penalty (veh)		5	0	8		46			2

Intersection: 14: Quaker Rd & Dix Ave

Movement	EB	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	R	LT	R	L	TR	L	TR
Maximum Queue (ft)	101	183	115	311	301	180	374	328	350
Average Queue (ft)	37	66	29	84	112	37	163	141	140
95th Queue (ft)	83	149	79	215	246	122	327	266	270
Link Distance (ft)		488		378			844		1383
Upstream Blk Time (%)				1	0				
Queuing Penalty (veh)				0	0				
Storage Bay Dist (ft)	250		250		220	300		320	
Storage Blk Time (%)		0		3	2		3	1	0
Queuing Penalty (veh)		0		10	3		2	4	0

Intersection: 15: Quaker Rd & Highland Ave

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	196	169	203	289
Average Queue (ft)	94	66	74	123
95th Queue (ft)	163	132	156	241
Link Distance (ft)	313	366	578	844
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Queuing and Blocking Report  
Baseline

1/12/2023

Intersection: 16: Quaker Rd & Boulevard

Movement	EB	WB	NB	NB	SB	SB
Directions Served	LTR	LTR	L	TR	L	TR
Maximum Queue (ft)	218	266	16	144	126	219
Average Queue (ft)	95	132	1	51	46	84
95th Queue (ft)	176	229	8	110	93	177
Link Distance (ft)	355	378		401		578
Upstream Blk Time (%)	0					
Queuing Penalty (veh)	0					
Storage Bay Dist (ft)			100		190	
Storage Blk Time (%)				1		0
Queuing Penalty (veh)				0		1

Intersection: 17: Lower Warren St/River St & Quaker Rd

Movement	EB	EB	WB	WB	WB	SB	SB
Directions Served	LT	T	T	T	R	L	R
Maximum Queue (ft)	194	154	123	78	72	304	389
Average Queue (ft)	95	31	57	15	43	202	40
95th Queue (ft)	160	95	107	53	69	317	220
Link Distance (ft)	594	594	489	489			401
Upstream Blk Time (%)							0
Queuing Penalty (veh)							1
Storage Bay Dist (ft)					50	100	
Storage Blk Time (%)				0	3	31	0
Queuing Penalty (veh)				1	2	1	0

Network Summary

Network wide Queuing Penalty: 86
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## **Appendix F. Cost-Benefit Analysis Calculations**

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# Cost Estimate

COORDINATED SIGNAL SYSTEM

				NYS DOT PAY ITEM CATALOG (2019/2023) OR CONSULTANT BID HISTORY FOR MUNICIPALITIES			QUEENSBURY ASCT FEASIBILITY STUDY- COORDINATED SIGNAL SYSTEM ORDER OF MAGNITUDE COST ESTIMATE		
			LOW BID	WT AVG BID	HIGH BID	TOTAL QUANTITY	ENGINEER'S ESTIMATE		
ITEM NUMBER	DESCRIPTION	UNIT	COST/UNIT	COST/UNIT	COST/UNIT		COST/UNIT	AMOUNT	
<b>CLUSTER 1</b>									
680.80100108	INSTALL OPTIMIZED TRAFFIC SIGNAL PROGRAMMING AND CABINET REWIRING	EA		\$ 2,000.00		6	\$ 2,000.00	\$ 12,000.00	
680.05010007	360 DEGREE CAMERA VIDEO DETECTION SYSTEM	EA		\$ 21,000.00		8	\$ 21,000.00	\$ 168,000.00	
680.93510008	GPS TIME SYNCHRONIZATION ANTENNA AND INTERFACE MODULE	EA	\$ 750.00		\$ 1,000.00	6	\$ 875.00	\$ 5,250.00	
N/A	336 S CABINET	EA		\$ 12,000.00		6	\$ 12,000.00	\$ 72,000.00	
<b>EQUIPMENT SUBTOTAL</b>								<b>\$ 257,250.00</b>	
% WZTC based on project complexity						1	10%	\$ 25,725.00	
% for Incidentals, Inflation and Contingencies						1	20%	\$ 51,450.00	
% for Mobilization						1	5%	\$ 12,862.50	
<b>TOTAL ESTIMATED CONSTRUCTION COST</b>								<b>\$ 347,287.50</b>	
% for Survey						1	10%	\$ 34,728.75	
\$10,000 + 10% for Design (adjust for project complexity)						1	10%	\$ 44,728.75	
% for Construction Inspection (adjust for project complexity)						1	15%	\$ 52,093.13	
<b>TOTAL ESTIMATED PROJECT COST</b>								<b>\$ 478,838.13</b>	
<b>CLUSTER 2</b>									
680.80100108	INSTALL OPTIMIZED TRAFFIC SIGNAL PROGRAMMING AND CABINET REWIRING	EA		\$ 2,000.00		6	\$ 2,000.00	\$ 12,000.00	
680.05010007	360 DEGREE CAMERA VIDEO DETECTION SYSTEM	EA		\$ 21,000.00		8	\$ 21,000.00	\$ 168,000.00	
680.93510008	GPS TIME SYNCHRONIZATION ANTENNA AND INTERFACE MODULE	EA	\$ 750.00		\$ 1,000.00	6	\$ 875.00	\$ 5,250.00	
680.33601210	2070 CONTROLLER AND 12 POSITION 336 S CABINET	EA		\$ 19,883.78		3	\$ 19,883.78	\$ 59,651.34	
N/A	336 S CABINET	EA		\$ 12,000.00		3	\$ 12,000.00	\$ 36,000.00	
<b>EQUIPMENT SUBTOTAL</b>								<b>\$ 280,901.34</b>	
% WZTC based on project complexity						1	10%	\$ 28,090.13	
% for Incidentals, Inflation and Contingencies						1	20%	\$ 56,180.27	
% for Mobilization						1	5%	\$ 14,045.07	
<b>TOTAL ESTIMATED CONSTRUCTION COST</b>								<b>\$ 379,216.81</b>	
% for Survey						1	10%	\$ 37,921.68	
\$10,000 + 10% for Design (adjust for project complexity)						1	10%	\$ 47,921.68	
% for Construction Inspection (adjust for project complexity)						1	15%	\$ 56,882.52	
<b>TOTAL ESTIMATED PROJECT COST</b>								<b>\$ 521,942.69</b>	
<b>CLUSTER 3</b>									
680.80100108	INSTALL OPTIMIZED TRAFFIC SIGNAL PROGRAMMING AND CABINET REWIRING	EA		\$ 2,000.00		5	\$ 2,000.00	\$ 10,000.00	
680.05010007	360 DEGREE CAMERA VIDEO DETECTION SYSTEM	EA		\$ 21,000.00		6	\$ 21,000.00	\$ 126,000.00	
680.93510008	GPS TIME SYNCHRONIZATION ANTENNA AND INTERFACE MODULE	EA	\$ 750.00		\$ 1,000.00	5	\$ 875.00	\$ 4,375.00	
680.33601210	2070 CONTROLLER AND 12 POSITION 336 S CABINET	EA		\$ 19,883.78		2	\$ 19,883.78	\$ 39,767.56	
N/A	336 S CABINET	EA		\$ 12,000.00		3	\$ 12,000.00	\$ 36,000.00	
<b>EQUIPMENT SUBTOTAL</b>								<b>\$ 216,142.56</b>	
% WZTC based on project complexity						1	10%	\$ 21,614.26	
% for Incidentals, Inflation and Contingencies						1	20%	\$ 43,228.51	
% for Mobilization						1	5%	\$ 10,807.13	
<b>TOTAL ESTIMATED CONSTRUCTION COST</b>								<b>\$ 291,792.46</b>	
% for Survey						1	10%	\$ 29,179.25	
\$10,000 + 10% for Design (adjust for project complexity)						1	10%	\$ 39,179.25	
% for Construction Inspection (adjust for project complexity)						1	15%	\$ 43,768.87	
<b>TOTAL ESTIMATED PROJECT COST</b>								<b>\$ 403,919.82</b>	

# Cost Estimate

ADAPTIVE SIGNAL CONTROL TECHNOLOGY (NYS DOT OPERATED)

			NYS DOT PAY ITEM CATALOG (2019/2023) OR CONSULTANT BID HISTORY FOR MUNICIPALITIES			QUEENSBURY ASCT FEASIBILITY STUDY- ASCT (NYS DOT OPERATED) ORDER OF MAGNITUDE COST ESTIMATE		
			LOW BID	WT AVG BID	HIGH BID	TOTAL QUANTITY	ENGINEER'S ESTIMATE	
ITEM NUMBER	DESCRIPTION	UNIT	COST/UNIT	COST/UNIT	COST/UNIT		COST/UNIT	AMOUNT
<b>CLUSTER 1</b>								
680.80150103	ADAPTIVE TRAFFIC CONTROL SYSTEM - CENTRAL SERVER SOFTWARE	EA	\$ 17,900.00	\$ 21,142.00		1	\$ 17,900.00	\$ 17,900.00
680.80150203	ADAPTIVE TRAFFIC CONTROL SYSTEM - LOCAL INTERSECTION SOFTWARE	EA	\$ 15,500.00	\$ 26,394.00		6	\$ 15,500.00	\$ 93,000.00
N/A	INSTALL 1C (LINUX) MODULE FOR 2070 CONTROLLER	EA		\$ 900.00		4	\$ 900.00	\$ 3,600.00
N/A	2070 CONTROLLER WITH NAZTEC V76	EA		\$ 3,500.00		2	\$ 3,500.00	\$ 7,000.00
683.08020104	3G/4G LTE GATEWAY MODEM W/ANTENNA	EA	\$ 3,500.00	\$ 4,596.50	\$ 5,222.00	6	\$ 4,596.50	\$ 27,579.00
680.05040004	ADVANCE VEHICLE VIDEO DETECTION CAMERA FOR TRAFFIC SIGNALS	EA	\$ 3,131.00	\$ 4,245.64	\$ 5,850.00	4	\$ 4,245.64	\$ 16,982.56
680.05010007	360 DEGREE CAMERA VIDEO DETECTION SYSTEM	EA		\$ 21,000.00		8	\$ 21,000.00	\$ 168,000.00
N/A	336 S CABINET	EA		\$ 12,000.00		6	\$ 12,000.00	\$ 72,000.00
<b>EQUIPMENT SUBTOTAL</b>								<b>\$ 406,061.56</b>
% WZTC based on project complexity						1	10%	\$ 40,606.16
% for Incidentals, Inflation and Contingencies						1	20%	\$ 81,212.31
% for Mobilization						1	5%	\$ 20,303.08
<b>TOTAL ESTIMATED CONSTRUCTION COST</b>								<b>\$ 548,183.11</b>
% for Survey						1	10%	\$ 54,818.31
\$10,000 + 10% for Design (adjust for project complexity)						1	10%	\$ 64,818.31
% for Construction Inspection (adjust for project complexity)						1	15%	\$ 82,227.47
<b>TOTAL ESTIMATED PROJECT COST</b>								<b>\$ 750,047.19</b>
<b>CLUSTER 2</b>								
680.80150103	ADAPTIVE TRAFFIC CONTROL SYSTEM - CENTRAL SERVER SOFTWARE	EA	\$ 17,900.00	\$ 21,142.00		1	\$ 17,900.00	\$ 17,900.00
680.80150203	ADAPTIVE TRAFFIC CONTROL SYSTEM - LOCAL INTERSECTION SOFTWARE	EA	\$ 15,500.00	\$ 26,394.00		6	\$ 15,500.00	\$ 93,000.00
N/A	INSTALL 1C (LINUX) MODULE FOR 2070 CONTROLLER	EA		\$ 900.00		1	\$ 900.00	\$ 900.00
N/A	2070 CONTROLLER WITH NAZTEC V76	EA		\$ 3,500.00		2	\$ 3,500.00	\$ 7,000.00
683.08020104	3G/4G LTE GATEWAY MODEM W/ANTENNA	EA	\$ 3,500.00	\$ 4,596.50	\$ 5,222.00	6	\$ 4,596.50	\$ 27,579.00
680.05040004	ADVANCE VEHICLE VIDEO DETECTION CAMERA FOR TRAFFIC SIGNALS	EA	\$ 3,131.00	\$ 4,245.64	\$ 5,850.00	7	\$ 4,245.64	\$ 29,719.48
680.33601210	2070 CONTROLLER AND 12 POSITION 336 S CABINET	EA		\$ 19,883.78		3	\$ 19,883.78	\$ 59,651.34
N/A	336 S CABINET	EA		\$ 12,000.00		3	\$ 12,000.00	\$ 36,000.00
680.05010007	360 DEGREE CAMERA VIDEO DETECTION SYSTEM	EA		\$ 21,000.00		8	\$ 21,000.00	\$ 168,000.00
<b>EQUIPMENT SUBTOTAL</b>								<b>\$ 439,749.82</b>
% WZTC based on project complexity						1	10%	\$ 43,974.98
% for Incidentals, Inflation and Contingencies						1	20%	\$ 87,949.96
% for Mobilization						1	5%	\$ 21,987.49
<b>TOTAL ESTIMATED CONSTRUCTION COST</b>								<b>\$ 593,662.26</b>
% for Survey						1	10%	\$ 59,366.23
\$10,000 + 10% for Design (adjust for project complexity)						1	10%	\$ 69,366.23
% for Construction Inspection (adjust for project complexity)						1	15%	\$ 89,049.34
<b>TOTAL ESTIMATED PROJECT COST</b>								<b>\$ 811,444.05</b>
<b>CLUSTER 3</b>								
680.80150103	ADAPTIVE TRAFFIC CONTROL SYSTEM - CENTRAL SERVER SOFTWARE	EA	\$ 17,900.00	\$ 21,142.00		1	\$ 17,900.00	\$ 17,900.00
680.80150203	ADAPTIVE TRAFFIC CONTROL SYSTEM - LOCAL INTERSECTION SOFTWARE	EA	\$ 15,500.00	\$ 26,394.00		5	\$ 15,500.00	\$ 77,500.00
N/A	INSTALL 1C (LINUX) MODULE FOR 2070 CONTROLLER	EA		\$ 900.00		3	\$ 900.00	\$ 2,700.00
683.08020104	3G/4G LTE GATEWAY MODEM W/ANTENNA	EA	\$ 3,500.00	\$ 4,596.50	\$ 5,222.00	5	\$ 4,596.50	\$ 22,982.50
680.05040004	ADVANCE VEHICLE VIDEO DETECTION CAMERA FOR TRAFFIC SIGNALS	EA	\$ 3,131.00	\$ 4,245.64	\$ 5,850.00	5	\$ 4,245.64	\$ 21,228.20
680.05010007	360 DEGREE CAMERA VIDEO DETECTION SYSTEM	EA		\$ 21,000.00		6	\$ 21,000.00	\$ 126,000.00
680.33601210	2070 CONTROLLER AND 12 POSITION 336 S CABINET	EA		\$ 19,883.78		2	\$ 19,883.78	\$ 39,767.56
N/A	336 S CABINET	EA		\$ 12,000.00		3	\$ 12,000.00	\$ 36,000.00
<b>EQUIPMENT SUBTOTAL</b>								<b>\$ 344,078.26</b>
% WZTC based on project complexity						1	10%	\$ 34,407.83
% for Incidentals, Inflation and Contingencies						1	20%	\$ 68,815.65
% for Mobilization						1	5%	\$ 17,203.91
<b>TOTAL ESTIMATED CONSTRUCTION COST</b>								<b>\$ 464,505.65</b>
% for Survey						1	10%	\$ 46,450.57
\$10,000 + 10% for Design (adjust for project complexity)						1	10%	\$ 56,450.57
% for Construction Inspection (adjust for project complexity)						1	15%	\$ 69,675.85
<b>TOTAL ESTIMATED PROJECT COST</b>								<b>\$ 637,082.63</b>

# Cost Estimate

ADAPTIVE SIGNAL CONTROL TECHNOLOGY (TOWN OPERATED)

NYS DOT PAY ITEM CATALOG (2019/2023) OR  
CONSULTANT BID HISTORY FOR MUNICIPALITIES

QUEENSBURY ASCT FEASIBILITY STUDY- ASCT (TOWN  
OPERATED) ORDER OF MAGNITUDE COST ESTIMATE

ITEM NUMBER	DESCRIPTION	UNIT	LOW BID	WT AVG BID	HIGH BID	TOTAL QUANTITY	ENGINEER'S ESTIMATE		
			COST/UNIT	COST/UNIT	COST/UNIT		COST/UNIT	AMOUNT	
<b>CLUSTER 1</b>									
680.80150103	ADAPTIVE TRAFFIC CONTROL SYSTEM - CENTRAL SERVER SOFTWARE	EA	\$ 17,900.00	\$ 21,142.00		1	\$ 17,900.00	\$ 17,900.00	
680.80150203	ADAPTIVE TRAFFIC CONTROL SYSTEM - LOCAL INTERSECTION SOFTWARE	EA	\$ 15,500.00	\$ 26,394.00		6	\$ 15,500.00	\$ 93,000.00	
N/A	INSTALL 1C (LINUX) MODULE FOR 2070 CONTROLLER	EA		\$ 900.00		4	\$ 900.00	\$ 3,600.00	
N/A	2070 CONTROLLER WITH NAZTEC V76	EA		\$ 3,500.00		2	\$ 3,500.00	\$ 7,000.00	
683.08020104	3G/4G LTE GATEWAY MODEM W/ANTENNA	EA	\$ 3,500.00	\$ 4,596.50	\$ 5,222.00	6	\$ 4,596.50	\$ 27,579.00	
680.05040004	ADVANCE VEHICLE VIDEO DETECTION CAMERA FOR TRAFFIC SIGNALS	EA	\$ 3,131.00	\$ 4,245.64	\$ 5,850.00	4	\$ 4,245.64	\$ 16,982.56	
680.05010007	360 DEGREE CAMERA VIDEO DETECTION SYSTEM	EA		\$ 21,000.00		8	\$ 21,000.00	\$ 168,000.00	
N/A	336 S CABINET	EA		\$ 12,000.00		6	\$ 12,000.00	\$ 72,000.00	
N/A	ATMS CENTRAL MANAGEMENT SOFTWARE	EA		\$ 17,900.00		1	\$ 17,900.00	\$ 17,900.00	
N/A	CLOUD COMPUTING	MO		\$ 350.00		120	\$ 350.00	\$ 42,000.00	
<b>EQUIPMENT SUBTOTAL</b>								<b>\$ 465,961.56</b>	
						% WZTC based on project complexity	1	10%	\$ 46,596.16
						% for Incidentals, Inflation and Contingencies	1	20%	\$ 93,192.31
						% for Mobilization	1	5%	\$ 23,298.08
<b>TOTAL ESTIMATED CONSTRUCTION COST</b>								<b>\$ 629,048.11</b>	
						% for Survey	1	10%	\$ 62,904.81
						\$10,000 + 10% for Design (adjust for project complexity)	1	10%	\$ 72,904.81
						% for Construction Inspection (adjust for project complexity)	1	15%	\$ 94,357.22
<b>TOTAL ESTIMATED PROJECT COST</b>								<b>\$ 859,214.94</b>	
<b>CLUSTER 2</b>									
680.80150103	ADAPTIVE TRAFFIC CONTROL SYSTEM - CENTRAL SERVER SOFTWARE	EA	\$ 17,900.00	\$ 21,142.00		1	\$ 17,900.00	\$ 17,900.00	
680.80150203	ADAPTIVE TRAFFIC CONTROL SYSTEM - LOCAL INTERSECTION SOFTWARE	EA	\$ 15,500.00	\$ 26,394.00		6	\$ 15,500.00	\$ 93,000.00	
N/A	INSTALL 1C (LINUX) MODULE FOR 2070 CONTROLLER	EA		\$ 900.00		1	\$ 900.00	\$ 900.00	
N/A	2070 CONTROLLER WITH NAZTEC V76	EA		\$ 3,500.00		2	\$ 3,500.00	\$ 7,000.00	
683.08020104	3G/4G LTE GATEWAY MODEM W/ANTENNA	EA	\$ 3,500.00	\$ 4,596.50	\$ 5,222.00	6	\$ 4,596.50	\$ 27,579.00	
680.05040004	ADVANCE VEHICLE VIDEO DETECTION CAMERA FOR TRAFFIC SIGNALS	EA	\$ 3,131.00	\$ 4,245.64	\$ 5,850.00	7	\$ 4,245.64	\$ 29,719.48	
680.33601210	2070 CONTROLLER AND 12 POSITION 336 S CABINET	EA		\$ 19,883.78		3	\$ 19,883.78	\$ 59,651.34	
N/A	336 S CABINET	EA		\$ 12,000.00		3	\$ 12,000.00	\$ 36,000.00	
680.05010007	360 DEGREE CAMERA VIDEO DETECTION SYSTEM	EA		\$ 21,000.00		8	\$ 21,000.00	\$ 168,000.00	
N/A	ATMS CENTRAL MANAGEMENT SOFTWARE	EA		\$ 17,900.00		1	\$ 17,900.00	\$ 17,900.00	
N/A	CLOUD COMPUTING	MO		\$ 350.00		120	\$ 350.00	\$ 42,000.00	
<b>EQUIPMENT SUBTOTAL</b>								<b>\$ 499,649.82</b>	
						% WZTC based on project complexity	1	10%	\$ 49,964.98
						% for Incidentals, Inflation and Contingencies	1	20%	\$ 99,929.96
						% for Mobilization	1	5%	\$ 24,982.49
<b>TOTAL ESTIMATED CONSTRUCTION COST</b>								<b>\$ 674,527.26</b>	
						% for Survey	1	10%	\$ 67,452.73
						\$10,000 + 10% for Design (adjust for project complexity)	1	10%	\$ 77,452.73
						% for Construction Inspection (adjust for project complexity)	1	15%	\$ 101,179.09
<b>TOTAL ESTIMATED PROJECT COST</b>								<b>\$ 920,611.80</b>	
<b>CLUSTER 3</b>									
680.80150103	ADAPTIVE TRAFFIC CONTROL SYSTEM - CENTRAL SERVER SOFTWARE	EA	\$ 17,900.00	\$ 21,142.00		1	\$ 17,900.00	\$ 17,900.00	
680.80150203	ADAPTIVE TRAFFIC CONTROL SYSTEM - LOCAL INTERSECTION SOFTWARE	EA	\$ 15,500.00	\$ 26,394.00		5	\$ 15,500.00	\$ 77,500.00	
N/A	INSTALL 1C (LINUX) MODULE FOR 2070 CONTROLLER	EA		\$ 900.00		3	\$ 900.00	\$ 2,700.00	
683.08020104	3G/4G LTE GATEWAY MODEM W/ANTENNA	EA	\$ 3,500.00	\$ 4,596.50	\$ 5,222.00	5	\$ 4,596.50	\$ 22,982.50	
680.05040004	ADVANCE VEHICLE VIDEO DETECTION CAMERA FOR TRAFFIC SIGNALS	EA	\$ 3,131.00	\$ 4,245.64	\$ 5,850.00	5	\$ 4,245.64	\$ 21,228.20	
680.05010007	360 DEGREE CAMERA VIDEO DETECTION SYSTEM	EA		\$ 21,000.00		6	\$ 21,000.00	\$ 126,000.00	
680.33601210	2070 CONTROLLER AND 12 POSITION 336 S CABINET	EA		\$ 19,883.78		2	\$ 19,883.78	\$ 39,767.56	
N/A	336 S CABINET	EA		\$ 12,000.00		3	\$ 12,000.00	\$ 36,000.00	
N/A	ATMS CENTRAL MANAGEMENT SOFTWARE	EA		\$ 17,900.00		1	\$ 17,900.00	\$ 17,900.00	
N/A	CLOUD COMPUTING	MO		\$ 350.00		120	\$ 350.00	\$ 42,000.00	
<b>EQUIPMENT SUBTOTAL</b>								<b>\$ 403,978.26</b>	
						% WZTC based on project complexity	1	10%	\$ 40,397.83
						% for Incidentals, Inflation and Contingencies	1	20%	\$ 80,795.65
						% for Mobilization	1	5%	\$ 20,198.91
<b>TOTAL ESTIMATED CONSTRUCTION COST</b>								<b>\$ 545,370.65</b>	
						% for Survey	1	10%	\$ 54,537.07
						\$10,000 + 10% for Design (adjust for project complexity)	1	10%	\$ 64,537.07
						% for Construction Inspection (adjust for project complexity)	1	15%	\$ 81,805.60
<b>TOTAL ESTIMATED PROJECT COST</b>								<b>\$ 746,250.38</b>	



# Appendix G. Detailed Cost Estimates

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**Town of Queensbury  
Adaptive Signal Control Technologies Feasibility Study (NY 254 (Aviation/Quaker Road) Corridor)  
Benefit Cost Analysis  
January 27, 2023**



This spreadsheet model is provided to the Town of Queensbury (the "Recipient") in support of the Benefit Cost Analysis for the Adaptive Signal Control Technologies Feasibility Study (NY 254 (Aviation/Quaker Road) Corridor). The Spreadsheet Model shall not be used for any other purpose.

By using this Model, the Recipients represent to AKRF, Inc. that they are capable of making their own independent assessment as to the validity of the assumptions, data and results contained in this model. AKRF, Inc., in consultation with the Recipient, used the best available methodology and data at the time of the analysis.

Town of Queensbury  
 Adaptive Signal Control Technologies Feasibility Study (NY 254 (Aviation/Quaker Road) Corridor)  
 Benefit Cost Analysis  
 BCA Parameter Values  
 Prepared by AKRF, Inc.  
 January 27, 2023

The following legend illustrates the general nature of shaded cells within this spreadsheet model:

USDOT Recommended Values	
Other Researched Values (sources provided)	
Input parameters specific to this BCA	

This BCA evaluates the following alternatives:

Coordinated Signal System (Signal Optimization)
Adaptive Signal Control Technology (NYSDOT Operated)
Adaptive Signal Control Technology (Town Operated)

The following tables include parameters which are reflected in the Benefit Cost Analysis, where applicable.

Parameter	Value	Unit	Notes and Sources
<b>GENERAL ASSUMPTIONS</b>			
Discount rate	7%	Percent per year	USDOT, <i>Benefit-Cost Analysis Guidance for Discretionary Grant Programs</i> , Revised January 2023
Discount year (Year Dollars) / Base Year / Year of Analysis	2021		
Construction Start Year	2024		AKRF Assumption
Construction Complete	2026		
Year 1 of Benefits	2027		Begins one (1) year after construction completion
Benefit Cost Analysis Period	10	years	USDOT, <i>Benefit-Cost Analysis Guidance for Discretionary Grant Programs</i> , Revised January 2023
Final Year of Benefits (Horizon Year)	2036		
<b>USDOT RECOMMENDED VALUES - MONETIZED CRASH COSTS (KABCO LEVEL) [2021 \$]</b>			
Injuries per Injury Crash	\$307,800	per crash	USDOT, <i>Benefit-Cost Analysis Guidance for Discretionary Grant Programs</i> , Revised January 2023. Table A-1
Fatalities per Fatality Crash	\$13,046,800	per crash	
Property Damage Only	\$4,800	per vehicle	USDOT, <i>Benefit-Cost Analysis Guidance for Discretionary Grant Programs</i> , Revised January 2023. Table A-2
<b>USDOT RECOMMENDED VALUES - TRAVEL TIME SAVINGS [2021 \$]</b>			
General Travel Time			
Personal	\$17.00		
Business	\$31.90	per person-hour	USDOT, <i>Benefit-Cost Analysis Guidance for Discretionary Grant Programs</i> , Revised January 2023. Table A-3
All Purposes **	\$18.80		
**Walking, cycling, waiting, standing, and transfer time**	\$34.00		
Commercial Vehicle Operators			
Truck drivers	\$32.40		
Bus Drivers	\$35.00	per person-hour	USDOT, <i>Benefit-Cost Analysis Guidance for Discretionary Grant Programs</i> , Revised January 2023. Table A-3
Transit Rail operators	\$58.40		
Locomotive Engineers	\$57.40		
<b>USDOT RECOMMENDED VALUES - AVERAGE PASSENGER VEHICLE OCCUPANCY RATES</b>			
Weekday Peak (6-9AM & 4-7PM)	1.48		
Weekday Off-Peak	1.58	passengers per vehicle	USDOT, <i>Benefit-Cost Analysis Guidance for Discretionary Grant Programs</i> , Revised January 2023. Table A-4
Weekend	2.02		
All Travel	1.67		
<b>USDOT RECOMMENDED VALUES - VEHICLE OPERATING COSTS [2021 \$]</b>			
Light Duty Vehicles	\$0.46	per mile	USDOT, <i>Benefit-Cost Analysis Guidance for Discretionary Grant Programs</i> , Revised January 2023. Table A-5
Commercial Vehicles	\$1.01		
<b>USDOT RECOMMENDED VALUES - PEDESTRIAN FACILITY IMPROVEMENTS REVEALED PREFERENCE [2021 \$]</b>			
Expand Sidewalk (per foot of added width)	\$0.11		
Reducing Upslope by 1%	\$1.05	per Person-Mile Walked	USDOT, <i>Benefit-Cost Analysis Guidance for Discretionary Grant Programs</i> , Revised January 2023. Table A-8
Reducing Traffic Speed by 1 mph (for speeds ≥ 45 mph)	\$0.09		
Reducing Traffic Volume by 1 Vehicle per Hour (for ADT ≤ 55,000)	\$0.0009		
Install Marked Crosswalk on Roadway (ADT ≥ 10,000)	\$0.18	per use	
Install Signal for Pedestrian Crossing on Roadway (ADT ≥ 13,000)	\$0.48		
<b>USDOT RECOMMENDED VALUES - CYCLING FACILITY IMPROVEMENT REVEALED PREFERENCE [2021 \$]</b>			
Cycling Path with At-Grade Crossings	\$1.49		
Cycling Path with no At-Grade Crossings	\$1.87		
Dedicated Cycling Lane	\$1.77	per Cycling Mile	USDOT, <i>Benefit-Cost Analysis Guidance for Discretionary Grant Programs</i> , Revised January 2023. Table A-9
Cycling Boulevard/"Sharrow"	\$0.28		
Separated Cycle Track	\$1.77		

USDOT Recommended Values  
 Other Researcher Values (Source provided)  
 Input parameters specific to this BCA

	Coordinated Signal System (Signal Optimization)	Adaptive Signal Control Technology (WSDOT Operated)	Adaptive Signal Control Technology (Town Operated)
Discount Rate	7%	7%	7%
Base Year	2021	2021	2021
Construction Start Year	2024	2024	2024
Construction End Year	2026	2026	2026
First Year of Benefits	2027	2027	2027
Final Year of Benefits	2036	2036	2036
Summary	Undiscounted	Discounted	Undiscounted
Total Benefits	\$ 8,100,346	\$ 4,962,381	\$ 13,907,281
Total Capital Costs	\$ 275,800	\$ 208,633	\$ 232,232
Net Present Value	\$ 7,824,546	\$ 3,852,748	\$ 13,484,144
Benefit / Cost Ratio	184.7%	205.9%	159.0%
Return on Investment	184.7%	205.9%	159.0%
Internal Rate of Return (%)	110%	127%	113%

Alternative: Coordinated Signal System (Signal Optimization)										Summary of Undiscounted Project Benefits & Costs										Summary of Discounted Project Benefits & Costs										Summary of Project Benefits and Costs			
Calendar Year	CBA Analysis Year	Construction Analysis Period (1-Active, 0-Inactive)	Benefits Analysis Period (1-Active, 0-Inactive)	Discount Adjustment Factor (%)	Safety Benefits	Mobility Benefits	Pedestrian Facility Benefits	Energy & Environment (Emissions) Benefits	Capital Costs	Operation & Maintenance Costs	Safety Benefits	Mobility Benefits	Pedestrian Facility Benefits	Energy & Environment (Emissions) Benefits	Capital Costs	Operation & Maintenance Costs	Undiscounted Benefits	Discounted Benefits (%)	Undiscounted Costs	Discounted Costs (%)	Undiscounted Net Present Value	Discounted Net Present Value (%)											
2021	1	0	0	1.000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-										
2022	2	0	0	0.935	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-										
2023	3	0	0	0.873	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-										
2024	4	1	0	0.816	-	-	-	-	-	89,250	-	-	-	-	-	-	-	-	-	89,250	72,855	89,250	72,855										
2025	5	1	0	0.763	-	-	-	-	-	89,250	-	-	-	-	-	-	-	-	-	89,250	68,088	89,250	68,088										
2026	6	1	0	0.713	-	-	-	-	-	89,250	-	-	-	-	-	-	-	-	-	89,250	63,834	89,250	63,834										
2027	7	0	1	0.666	100,118	688,360	17,820	4,726	-	810	86,713	458,882	11,874	3,149	-	348	811,025	546,420	810	540	810,215	539,880											
2028	8	0	1	0.623	100,118	688,360	17,820	4,726	-	810	82,809	438,876	11,874	2,843	-	508	811,025	505,065	810	504	810,215	504,561											
2029	9	0	1	0.582	100,118	688,360	17,820	4,726	-	810	78,270	400,632	10,371	2,751	-	472	811,025	472,024	810	472	810,215	473,512											
2030	10	0	1	0.544	100,118	688,360	17,820	4,726	-	810	74,468	374,423	9,083	2,571	-	441	811,025	441,144	810	441	810,215	440,703											
2031	11	0	1	0.508	100,118	688,360	17,820	4,726	-	810	70,895	349,927	8,058	2,403	-	412	811,025	412,384	810	412	810,215	411,972											
2032	12	0	1	0.475	100,118	688,360	17,820	4,726	-	810	67,566	327,051	7,246	2,246	-	385	811,025	385,312	810	385	810,215	384,927											
2033	13	0	1	0.444	100,118	688,360	17,820	4,726	-	810	64,454	306,600	6,593	2,098	-	360	811,025	360,105	810	360	810,215	359,745											
2034	14	0	1	0.415	100,118	688,360	17,820	4,726	-	810	61,546	286,645	6,031	1,961	-	334	811,025	334,546	810	334	810,215	336,103											
2035	15	0	1	0.388	100,118	688,360	17,820	4,726	-	810	58,828	266,708	5,513	1,831	-	314	811,025	314,529	810	314	810,215	314,215											
2036	16	0	1	0.362	100,118	688,360	17,820	4,726	-	810	56,288	249,493	5,029	1,713	-	294	811,025	293,933	810	294	810,215	294,609											
Analysis Period Totals					1,001,184	6,883,597	178,200	47,265	267,750	8,100	501,365	3,447,110	89,233	2,466	204,577	4,056	8,110,246	4,064,181	275,800	208,633	7,824,546	3,852,748											
																						Internal Rate of Return		116%									

Alternative: Adaptive Signal Control Technology (WSDOT Operated)										Summary of Undiscounted Project Benefits & Costs										Summary of Discounted Project Benefits & Costs										Summary of Project Benefits and Costs			
Calendar Year	CBA Analysis Year	Construction Analysis Period (1-Active, 0-Inactive)	Benefits Analysis Period (1-Active, 0-Inactive)	Discount Adjustment Factor (%)	Safety Benefits	Mobility Benefits	Pedestrian Facility Benefits	Energy & Environment (Emissions) Benefits	Capital Costs	Operation & Maintenance Costs	Safety Benefits	Mobility Benefits	Pedestrian Facility Benefits	Energy & Environment (Emissions) Benefits	Capital Costs	Operation & Maintenance Costs	Undiscounted Benefits	Discounted Benefits (%)	Undiscounted Costs	Discounted Costs (%)	Undiscounted Net Present Value	Discounted Net Present Value (%)											
2021	1	0	0	1.000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-											
2022	2	0	0	0.935	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-											
2023	3	0	0	0.873	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-											
2024	4	1	0	0.816	-	-	-	-	-	138,854	-	-	-	-	-	-	-	-	-	138,854	113,346	138,854											
2025	5	1	0	0.763	-	-	-	-	-	138,854	-	-	-	-	-	-	-	-	-	138,854	105,911	138,854											
2026	6	1	0	0.713	-	-	-	-	-	138,854	-	-	-	-	-	-	-	-	-	138,854	99,001	138,854											
2027	7	0	1	0.666	260,308	1,103,533	17,820	7,577	-	788	171,484	735,344	11,874	3,049	-	525	1,389,258	925,721	788	525	1,388,471	925,237											
2028	8	0	1	0.623	260,308	1,103,533	17,820	7,577	-	788	162,107	697,237	11,874	2,719	-	490	1,389,258	865,160	788	490	1,388,471	864,770											
2029	9	0	1	0.582	260,308	1,103,533	17,820	7,577	-	788	151,502	662,278	10,371	2,420	-	458	1,389,258	808,561	788	458	1,388,471	808,103											
2030	10	0	1	0.544	260,308	1,103,533	17,820	7,577	-	788	141,589	630,280	9,083	2,212	-	428	1,389,258	755,664	788	428	1,388,471	755,216											
2031	11	0	1	0.508	260,308	1,103,533	17,820	7,577	-	788	132,327	596,990	8,058	2,023	-	400	1,389,258	706,228	788	400	1,388,471	705,828											
2032	12	0	1	0.475	260,308	1,103,533	17,820	7,577	-	788	123,670	562,300	7,246	1,860	-	374	1,389,258	660,027	788	374	1,388,471	659,612											
2033	13	0	1	0.444	260,308	1,103,533	17,820	7,577	-	788	115,680	528,801	6,593	1,713	-	350	1,389,258	616,947	788	350	1,388,471	616,466											
2034	14	0	1	0.415	260,308	1,103,533	17,820	7,577	-	788	108,018	497,935	6,031	1,581	-	327	1,389,258	576,493	788	327	1,388,471	575,166											
2035	15	0	1	0.388	260,308	1,103,533	17,820	7,577	-	788	100,952	472,977	5,513	1,459	-	305	1,389,258	538,778	788	305	1,388,471	538,473											
2036	16	0	1	0.362	260,308	1,103,533	17,820	7,577	-	788	94,268	449,478	5,029	1,345	-	285	1,389,258	503,531	788	285	1,388,471	503,246											
Analysis Period Totals					2,603,078	11,035,529	178,200	75,773	416,982	7,875	1,303,548	5,526,280	89,233	3,745	318,278	3,944	13,870,581	6,957,011	424,437	322,232	13,484,144	6,634,288											
																						Internal Rate of Return		127%									

Alternative: Adaptive Signal Control Technology (Town Operated)										Summary of Undiscounted Project Benefits & Costs										Summary of Discounted Project Benefits & Costs										Summary of Project Benefits and Costs			
Calendar Year	CBA Analysis Year	Construction Analysis Period (1-Active, 0-Inactive)	Benefits Analysis Period (1-Active, 0-Inactive)	Discount Adjustment Factor (%)	Safety Benefits	Mobility Benefits	Pedestrian Facility Benefits	Energy & Environment (Emissions) Benefits	Capital Costs	Operation & Maintenance Costs	Safety Benefits	Mobility Benefits	Pedestrian Facility Benefits	Energy & Environment (Emissions) Benefits	Capital Costs	Operation & Maintenance Costs	Undiscounted Benefits	Discounted Benefits (%)	Undiscounted Costs	Discounted Costs (%)	Undiscounted Net Present Value	Discounted Net Present Value (%)											
2021	1	0	0	1.000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-											
2022	2	0	0	0.935	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-											
2023	3	0	0	0.873	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-											
2024	4	1	0	0.816	-	-	-	-	-	158,821	-	-	-	-	-	-	-	-	-	158,821	129,645	158,821											
2025	5	1	0	0.763	-	-	-	-	-	158,821	-	-	-	-	-	-	-	-	-	158,821	121,163	158,821											
2026	6	1	0	0.713	-	-	-	-	-	158,821	-	-	-	-	-	-	-	-	-	158,821	113,237	158,821											
2027	7	0	1	0.666	260,308	1,103,533	17,820	7,577	-	948	171,484	735,344	11,874	3,049	-	525	1,389,258	925,721	948	525	1,379,771	919,399											
2028	8	0	1	0.623	260,308	1,103,533	17,820	7,577	-	948	162,107	697,237	11,874	2,719	-	490	1,389,258	865,160	948	490	1,379,771	859,312											
2029	9	0	1	0.582	260,308	1,103,533	17,820	7,577	-	948	151,502	662,278	10,371	2,420	-	452	1,389,258	808,561	948	452	1,379,771	803,289											
2030	10	0	1	0.544	260,308	1,103,533	17,820	7,577	-	948	141,589	630,280	9,083	2,212	-	421	1,389,258	755,664	948	421	1,379,771	750,504											
2031	11	0	1	0.508	260,308	1,103,533	17,820	7,577	-	948	132,327	596,990	8,058	2,023	-	393	1,389,258	706,228	948	393	1,379,771	705,405											
2032	12	0	1	0.475	260,308	1,103,533	17,820	7,577	-	948	123,670	562,300	7,246	1,860	-	367	1,389,258	660,027	948	367	1,379,771	655,519											
2033	13																																

USDOT Recommended Values  
 Other Researcher Values (Source provided)  
 Input parameters specific to this BCA

Summary	Coordinated Signal System (Signal Operated)		Adaptive Signal Control Technology (WYSOT Operated)		Adaptive Signal Control Technology (Town Operated)	
	Undiscounted	Discounted	Undiscounted	Discounted	Undiscounted	Discounted
Total Benefits	\$ 3,820,071	\$ 1,982,284	\$ 8,498,598	\$ 4,356,851	\$ 8,498,598	\$ 4,356,851
Total Capital Costs	\$ 285,001	\$ 223,266	\$ 453,625	\$ 344,533	\$ 600,525	\$ 433,857
Net Present Value	\$ 3,535,071	\$ 1,689,018	\$ 8,044,973	\$ 3,911,318	\$ 7,898,073	\$ 3,822,994
Benefit / Cost Ratio		15.37		12.35		9.31
Return-on-Investment		75.7%		115%		81%
Internal Rate of Return (%)		71%		87%		81%

Alternative: Coordinated Signal System Signal Optimization												Summary of Undiscounted Project Benefits & Costs						Summary of Discounted Project Benefits & Costs						Summary of Project Benefits and Costs																				
Calendar Year	CBA Analysis Year	Construction Active (0-Inactive)	Benefits Analysis Period (1-Active, 0-Inactive)	Discount Adjustment Factor (7% Rate)	Safety Benefits	Mobility Benefits	Pedestrian Facility Benefits	Energy & Environment (Emissions) Benefits	Capital Costs	Operation & Maintenance Costs	Safety Benefits	Mobility Benefits	Pedestrian Facility Benefits	Energy & Environment (Emissions) Benefits	Capital Costs	Operation & Maintenance Costs	Undiscounted Benefits	Discounted Benefits (%)	Undiscounted Costs	Discounted Costs (%)	Undiscounted Net Present Value	Discounted Net Present Value (%)																						
2021	1	0	0	1.000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-																					
2022	2	0	0	0.935	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-																					
2023	3	0	0	0.873	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-																					
2024	4	1	0	0.816	-	-	-	-	-	95,634	-	-	-	-	-	78,966	-	-	-	95,634	-	78,966	(16,668)																					
2025	5	1	0	0.763	-	-	-	-	-	95,634	-	-	-	-	-	79,950	-	-	-	95,634	-	72,950	(22,684)																					
2026	6	1	0	0.713	-	-	-	-	-	95,634	-	-	-	-	-	81,188	-	-	-	95,634	-	68,188	(27,446)																					
2027	7	0	1	0.668	96,600	281,797	1,584	2,026	-	810	64,360	167,773	1,056	1,590	-	540	382,007	254,548	810	540	381,197	254,008																						
2028	8	0	1	0.623	96,600	281,797	1,584	2,026	-	810	60,168	157,980	988	1,363	-	508	382,007	237,995	810	508	381,197	237,900																						
2029	9	0	1	0.582	96,600	281,797	1,584	2,026	-	810	56,222	144,008	922	1,179	-	472	382,007	222,332	810	472	381,197	223,800																						
2030	10	0	1	0.544	96,600	281,797	1,584	2,026	-	810	52,544	132,279	862	1,101	-	442	382,007	207,787	810	442	381,197	207,346																						
2031	11	0	1	0.508	96,600	281,797	1,584	2,026	-	810	49,107	121,351	805	1,030	-	412	382,007	194,193	810	412	381,197	193,791																						
2032	12	0	1	0.475	96,600	281,797	1,584	2,026	-	810	45,884	111,880	751	963	-	385	382,007	181,489	810	385	381,197	181,104																						
2033	13	0	1	0.444	96,600	281,797	1,584	2,026	-	810	42,892	103,721	703	909	-	360	382,007	169,616	810	360	381,197	169,256																						
2034	14	0	1	0.415	96,600	281,797	1,584	2,026	-	810	40,086	96,936	657	841	-	336	382,007	158,519	810	336	381,197	158,183																						
2035	15	0	1	0.388	96,600	281,797	1,584	2,026	-	810	37,463	90,266	614	784	-	314	382,007	148,149	810	314	381,197	147,235																						
2036	16	0	1	0.362	96,600	281,797	1,584	2,026	-	810	35,012	84,719	574	734	-	294	382,007	138,457	810	294	381,197	138,163																						
Analysis Period Totals																						\$ 966,000	\$ 2,817,969	\$ 15,840	\$ 20,263	\$ 286,903	\$ 8,100	\$ 483,745	\$ 1,431,159	\$ 7,932	\$ 1,184,547	\$ 219,210	\$ 3,044	\$ 3,820,072	\$ 2,951,001	\$ 223,266	\$ 3,535,071	\$ 1,689,018	\$ 223,266	\$ 1,689,018	\$ 1,689,018	\$ 1,689,018		
																																										Internal Rate of Return		71%

Alternative: Adaptive Signal Control Technology (WYSOT Operated)												Summary of Undiscounted Project Benefits & Costs						Summary of Discounted Project Benefits & Costs						Summary of Project Benefits and Costs																				
Calendar Year	CBA Analysis Year	Construction Active (0-Inactive)	Benefits Analysis Period (1-Active, 0-Inactive)	Discount Adjustment Factor (7% Rate)	Safety Benefits	Mobility Benefits	Pedestrian Facility Benefits	Energy & Environment (Emissions) Benefits	Capital Costs	Operation & Maintenance Costs	Safety Benefits	Mobility Benefits	Pedestrian Facility Benefits	Energy & Environment (Emissions) Benefits	Capital Costs	Operation & Maintenance Costs	Undiscounted Benefits	Discounted Benefits (%)	Undiscounted Costs	Discounted Costs (%)	Undiscounted Net Present Value	Discounted Net Present Value (%)																						
2021	1	0	0	1.000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-																					
2022	2	0	0	0.935	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-																					
2023	3	0	0	0.873	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-																					
2024	4	1	0	0.816	-	-	-	-	-	148,583	-	-	-	-	-	121,288	-	-	-	148,583	-	121,288	(27,295)																					
2025	5	1	0	0.763	-	-	-	-	-	148,583	-	-	-	-	-	113,921	-	-	-	148,583	-	113,921	(34,662)																					
2026	6	1	0	0.713	-	-	-	-	-	148,583	-	-	-	-	-	105,938	-	-	-	148,583	-	105,938	(42,645)																					
2027	7	0	1	0.668	251,160	592,853	1,584	4,263	-	788	167,300	395,083	1,056	2,843	-	525	849,860	566,977	788	525	849,072	566,773																						
2028	8	0	1	0.623	251,160	592,853	1,584	4,263	-	788	154,401	369,190	988	2,603	-	490	849,860	529,250	788	490	849,072	528,760																						
2029	9	0	1	0.582	251,160	592,853	1,584	4,263	-	788	141,777	345,066	922	2,481	-	458	849,860	494,626	788	458	849,072	494,148																						
2030	10	0	1	0.544	251,160	592,853	1,584	4,263	-	788	130,614	322,473	862	2,319	-	428	849,860	462,267	788	428	849,072	461,830																						
2031	11	0	1	0.508	251,160	592,853	1,584	4,263	-	788	120,577	301,376	805	2,157	-	400	849,860	432,026	788	400	849,072	431,625																						
2032	12	0	1	0.475	251,160	592,853	1,584	4,263	-	788	111,624	281,660	751	2,026	-	374	849,860	403,762	788	374	849,072	403,388																						
2033	13	0	1	0.444	251,160	592,853	1,584	4,263	-	788	103,838	263,284	703	1,903	-	350	849,860	377,348	788	350	849,072	376,966																						
2034	14	0	1	0.415	251,160	592,853	1,584	4,263	-	788	97,202	246,013	657	1,769	-	327	849,860	352,662	788	327	849,072	352,339																						
2035	15	0	1	0.388	251,160	592,853	1,584	4,263	-	788	91,604	229,939	614	1,653	-	305	849,860	329,590	788	305	849,072	329,295																						
2036	16	0	1	0.362	251,160	592,853	1,584	4,263	-	788	86,012	214,877	574	1,545	-	285	849,860	308,028	788	285	849,072	307,748																						
Analysis Period Totals																						\$ 2,511,600	\$ 5,928,527	\$ 15,840	\$ 42,631	\$ 445,730	\$ 7,875	\$ 1,257,738	\$ 2,968,881	\$ 7,932	\$ 2,134,348	\$ 340,578	\$ 3,044	\$ 4,498,598	\$ 4,255,857	\$ 453,625	\$ 3,444,973	\$ 1,689,018	\$ 453,625	\$ 1,689,018	\$ 1,689,018	\$ 1,689,018		
																																										Internal Rate of Return		87%

Alternative: Adaptive Signal Control Technology (Town Operated)												Summary of Undiscounted Project Benefits & Costs						Summary of Discounted Project Benefits & Costs						Summary of Project Benefits and Costs										
Calendar Year	CBA Analysis Year	Construction Active (0-Inactive)	Benefits Analysis Period (1-Active, 0-Inactive)	Discount Adjustment Factor (7% Rate)	Safety Benefits	Mobility Benefits	Pedestrian Facility Benefits	Energy & Environment (Emissions) Benefits	Capital Costs	Operation & Maintenance Costs	Safety Benefits	Mobility Benefits	Pedestrian Facility Benefits	Energy & Environment (Emissions) Benefits	Capital Costs	Operation & Maintenance Costs	Undiscounted Benefits	Discounted Benefits (%)	Undiscounted Costs	Discounted Costs (%)	Undiscounted Net Present Value	Discounted Net Present Value (%)												
2021	1	0	0	1.000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-											
2022	2	0	0	0.935	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-											
2023	3	0	0	0.873	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-											
2024	4	1	0	0.816	-	-	-	-	-	168,550	-	-	-	-	-	137,587	-	-	-	168,550	-	137,587	(30,963)											
2025	5	1	0	0.763	-	-	-	-	-	168,550	-	-	-	-	-	128,568	-	-	-	168,550	-	128,568	(39,982)											
2026	6	1	0	0.713	-	-	-	-	-	168,550	-	-	-	-	-	120,174	-	-	-	168,550	-	120,174	(48,376)											
2027	7	0	1	0.668	251,160	592,853	1,584	4,263	-	9,488	167,300	395,083	1,056	2,843	-	522	849,860	566,977	9,488	522	849,072	569,255												
2028	8	0	1	0.623	251,160	592,853	1,584	4,263	-	9,488	154,401	369,190	988	2,603	-	498	849,860	529,250	9,488	498	849,072	529,847												
2029	9	0	1	0.582	251,160	592,853	1,584	4,263	-	9,488	141,777	345,066	922	2,481	-	462	849,860	494,626	9,488	462	849,072	495,104												
2030	10	0	1	0.544	251,160	592,853	1,584	4,263	-	9,488	130,614	322,473	862	2,319	-	432	849,860	462,267	9,488	432	849,072	462,307												
2031	11	0	1	0.508	251,160	592,853	1,584	4,263	-	9,488	120,577	301,376	805	2,157	-	402	849,860	432,026	9,488	402	849,072	432,209												
2032	12	0	1	0.475	251,160	592,853	1,584	4,263	-	9,488	111,624	281,660	751	2,026	-	376	849,860	403,762	9,488	376	849,072	399,255												
2033	13	0	1	0.444	251,160	592,853	1,584	4,263	-	9,488	103,838	263,284	703	1,903	-	352	849,860	377,348	9,488	352	849,072	373,335												
2034	14	0	1	0.415	251,160	592,853	1,584	4,263	-	9,488	97,202	246,013	657	1,769	-	327	849,860	352,662	9,488	327	849,072	348,725												
2035	15	0	1	0.388	251,160	592,853	1,584	4,263	-	9,488	91,604	229,939	614	1,653	-	307	849,860	329,590	9,488	307	849,072	325,011												
2036	16	0	1	0.362	251,160	592,853	1,584	4,263	-	9,488	86,012	214,877	574	1,545	-	287	849,860	308,028	9,488	287	849,072	304,900												
Analysis Period Totals																						\$ 2,511,600	\$ 5,928,527	\$ 15,840	\$ 42,631	\$ 505,600	\$ 9,487	\$ 1,257,738	\$ 2,968,881	\$ 9,488	\$ 2,134,348	\$ 386,347	\$ 47,511	\$ 4,498,59



USDOT Recommended Values  
 Other Researched Values (sources provided)  
 Input parameters specific to this BCA

Crash Data					Notes and Sources
Case Year	Accident Severity			Totals	
	Injury	Fatality	PDO <sup>a</sup>		
2017	18	0	55	73	From NYSDOT 8/11/2022 Accident Severity Summary Report for NY 254 from I-84 Exit 19 to Glen St <sup>a</sup> Property Damage Only Crashes do not include Non-Reportable Crashes
2018	16	0	80	96	
2019	13	0	98	111	
2020	14	0	50	64	
2021	15	0	58	73	
5-Year Total	76	0	341	417	Calculated totals and averages
Annual Average	15.2	0.0	68.2	83.4	
<b>Crash Modification Factors (CMF) - Proposed Alternatives</b>					<b>Notes and Sources</b>
Coordinated Signal System (Signal Optimization)				0.98	Taken from FHWA TOPS-BC V 5.0, <i>Strategy Default Impacts</i> spreadsheet for signal coordination
Adaptive Traffic Signal Control (either NYSDOT or Town operated)				0.948	USDOT Crash Modification Factors Clearinghouse ID 10559 (Install ATSC, reduction in all crash types)
<b>Estimated Annual Reduction of Crashes - Cluster 1</b>					
<b>Proposed Alternatives</b>					<b>Notes and Sources</b>
	Injury	Fatality	PDO	Totals	
Coordinated Signal System (Signal Optimization)	0.30	0.00	1.36	1.67	Calculated by applying the strategy CMF to the annual average crash rates, by crash severity
Adaptive Signal Control Technology (NYSDOT Operated)	0.79	0.00	3.55	4.34	
Adaptive Signal Control Technology (Town Operated)	0.79	0.00	3.55	4.34	
<b>Monetized Crash Costs</b>					<b>Notes and Sources</b>
	Injury Crash	\$	307,800		Refer to the BCA Parameter Values table.
	Fatality Crash	\$	13,046,800		
	Property Damage Only Crash	\$	4,800		
<b>Estimation of Monetized Annual Safety Benefits - Coordinated Signal System (Signal Optimization)</b>					<b>Notes and Sources</b>
	Injury Crash	\$	93,571		Calculated by multiplying the estimated annual reduction of crashes and the monetized crash costs
	Fatality Crash	\$	-		
	Property Damage Only Crash	\$	6,547		
<b>Monetized Annual Safety Benefit (Undiscounted) - Coordinated Signal System (Signal Optimization)</b>				<b>\$ 100,118</b>	
<b>Estimation of Monetized Annual Safety Benefits - Adaptive Signal Control Technology (NYSDOT Operated)</b>					<b>Notes and Sources</b>
	Injury Crash	\$	243,285		Calculated by multiplying the estimated annual reduction of crashes and the monetized crash costs
	Fatality Crash	\$	-		
	Property Damage Only Crash	\$	17,023		
<b>Monetized Annual Safety Benefit (Undiscounted) - Adaptive Signal Control Technology (NYSDOT Operated)</b>				<b>\$ 260,308</b>	
<b>Estimation of Monetized Annual Safety Benefits - Adaptive Signal Control Technology (Town Operated)</b>					<b>Notes and Sources</b>
	Injury Crash	\$	243,285		Calculated by multiplying the estimated annual reduction of crashes and the monetized crash costs
	Fatality Crash	\$	-		
	Property Damage Only Crash	\$	17,023		
<b>Monetized Annual Safety Benefit (Undiscounted) - Adaptive Signal Control Technology (Town Operated)</b>				<b>\$ 260,308</b>	

USDOT Recommended Values  
 Other Researched Values (sources provided)  
 Input parameters specific to this BCA

Crash Data					Totals	Notes and Sources
Case Year	Accident Severity					
	Injury	Fatality	PDO <sup>a</sup>			
2017	22	0	38	60		
2018	14	0	63	77		
2019	19	0	75	94		
2020	15	0	48	63		
2021	4	0	62	66		
5-Year Total	74	0	286	360	Calculated totals and averages	
Annual Average	14.8	0.0	57.2	72.0		
<b>Crash Modification Factors (CMF) - Proposed Alternatives</b>						<b>Notes and Sources</b>
Coordinated Signal System (Signal Optimization)					0.98	Taken from FHWA TOPS-BC V 5.0, <i>Strategy Default Impacts</i> spreadsheet for signal coordination
Adaptive Traffic Signal Control (either NYSDOT or Town operated)					0.948	USDOT Crash Modification Factors Clearinghouse ID 10559 (Install ATSC, reduction in all crash types)
<b>Estimated Annual Reduction of Crashes - Cluster 2</b>						
<b>Proposed Alternatives</b>						<b>Notes and Sources</b>
	Injury	Fatality	PDO	Totals		
Coordinated Signal System (Signal Optimization)	0.30	0.00	1.14	1.44		
Adaptive Signal Control Technology (NYSDOT Operated)	0.77	0.00	2.97	3.74	Calculated by applying the strategy CMF to the annual average crash rates, by crash severity	
Adaptive Signal Control Technology (Town Operated)	0.77	0.00	2.97	3.74		
<b>Monetized Crash Costs</b>						<b>Notes and Sources</b>
	Injury Crash	\$	307,800			
	Fatality Crash	\$	13,046,800		Refer to the BCA Parameter Values table.	
	Property Damage Only Crash	\$	4,800			
<b>Estimation of Monetized Annual Safety Benefits - Coordinated Signal System (Signal Optimization)</b>						<b>Notes and Sources</b>
	Injury Crash	\$	91,109			
	Fatality Crash	\$	-			
	Property Damage Only Crash	\$	5,491		Calculated by multiplying the estimated annual reduction of crashes and the monetized crash costs	
<b>Monetized Annual Safety Benefit (Undiscounted) - Coordinated Signal System (Signal Optimization)</b>						<b>\$ 96,600</b>
<b>Estimation of Monetized Annual Safety Benefits - Adaptive Signal Control Technology (NYSDOT Operated)</b>						<b>Notes and Sources</b>
	Injury Crash	\$	236,883			
	Fatality Crash	\$	-			
	Property Damage Only Crash	\$	14,277		Calculated by multiplying the estimated annual reduction of crashes and the monetized crash costs	
<b>Monetized Annual Safety Benefit (Undiscounted) - Adaptive Signal Control Technology (NYSDOT Operated)</b>						<b>\$ 251,160</b>
<b>Estimation of Monetized Annual Safety Benefits - Adaptive Signal Control Technology (Town Operated)</b>						<b>Notes and Sources</b>
	Injury Crash	\$	236,883			
	Fatality Crash	\$	-			
	Property Damage Only Crash	\$	14,277		Calculated by multiplying the estimated annual reduction of crashes and the monetized crash costs	
<b>Monetized Annual Safety Benefit (Undiscounted) - Adaptive Signal Control Technology (Town Operated)</b>						<b>\$ 251,160</b>



USDOT Recommended Values  
 Other Researched Values (sources provided)  
 Input parameters specific to this BCA

Crash Data					Notes and Sources
Case Year	Accident Severity			Totals	
	Injury	Fatality	PDO <sup>a</sup>		
2017	11	0	29	40	From NYSDOT 8/11/2022 Accident Severity Summary Report for NY 254 from Quaker Ridge Road to River Road <sup>a</sup> Property Damage Only Crashes do not include Non-Reportable Crashes
2018	16	0	32	48	
2019	9	0	43	52	
2020	6	0	36	42	
2021	6	1	44	51	
5-Year Total	48	1	184	233	Calculated totals and averages
Annual Average	9.6	0.2	36.8	46.6	
<b>Crash Modification Factors (CMF) - Proposed Alternatives</b>					<b>Notes and Sources</b>
Coordinated Signal System (Signal Optimization)				0.98	Taken from FHWA TOPS-BC V 5.0, <i>Strategy Default Impacts</i> spreadsheet for signal coordination
Adaptive Traffic Signal Control (either NYSDOT or Town operated)				0.948	USDOT Crash Modification Factors Clearinghouse ID 10559 (Install ATSC, reduction in all crash types)
<b>Estimated Annual Reduction of Crashes - Cluster 3</b>					<b>Notes and Sources</b>
<b>Proposed Alternatives</b>					<b>Notes and Sources</b>
	Injury	Fatality	PDO	Totals	
Coordinated Signal System (Signal Optimization)	0.19	0.00	0.74	0.93	Calculated by applying the strategy CMF to the annual average crash rates, by crash severity
Adaptive Signal Control Technology (NYSDOT Operated)	0.50	0.01	1.91	2.42	
Adaptive Signal Control Technology (Town Operated)	0.50	0.01	1.91	2.42	
<b>Monetized Crash Costs</b>					<b>Notes and Sources</b>
	Injury Crash	\$	307,800		Refer to the BCA Parameter Values table.
	Fatality Crash	\$	13,046,800		
	Property Damage Only Crash	\$	4,800		
<b>Estimation of Monetized Annual Safety Benefits - Coordinated Signal System (Signal Optimization)</b>					<b>Notes and Sources</b>
	Injury Crash	\$	59,098		Calculated by multiplying the estimated annual reduction of crashes and the monetized crash costs
	Fatality Crash	\$	52,187		
	Property Damage Only Crash	\$	3,533		
<b>Monetized Annual Safety Benefit (Undiscounted) - Coordinated Signal System (Signal Optimization)</b>				<b>\$ 114,818</b>	
<b>Estimation of Monetized Annual Safety Benefits - Adaptive Signal Control Technology (NYSDOT Operated)</b>					<b>Notes and Sources</b>
	Injury Crash	\$	153,654		Calculated by multiplying the estimated annual reduction of crashes and the monetized crash costs
	Fatality Crash	\$	135,687		
	Property Damage Only Crash	\$	9,185		
<b>Monetized Annual Safety Benefit (Undiscounted) - Adaptive Signal Control Technology (NYSDOT Operated)</b>				<b>\$ 298,526</b>	
<b>Estimation of Monetized Annual Safety Benefits - Adaptive Signal Control Technology (Town Operated)</b>					<b>Notes and Sources</b>
	Injury Crash	\$	153,654		Calculated by multiplying the estimated annual reduction of crashes and the monetized crash costs
	Fatality Crash	\$	135,687		
	Property Damage Only Crash	\$	9,185		
<b>Monetized Annual Safety Benefit (Undiscounted) - Adaptive Signal Control Technology (Town Operated)</b>				<b>\$ 298,526</b>	

USDOT Recommended Values  
 Other Researched Values (sources provided)  
 Input parameters specific to this BCA

Travel Time Data (minutes)														Totals	Notes and Sources
Peak Hour	Existing			Coordinated Signal System (Signal Optimization)			Adaptive Signal Control Technology (NYS DOT Operated)			Adaptive Signal Control Technology (Town Operated)					
	EB NY 254	WB NY 254	Total	EB NY 254	WB NY 254	Total	EB NY 254	WB NY 254	Total	EB NY 254	WB NY 254	Total			
Weekday AM	3.31	2.96	6.27	3.01	2.74	5.75	2.59	2.35	4.94	2.59	2.35	4.94			
Weekday PM	4.29	3.18	7.47	3.33	2.99	6.31	3.05	2.67	5.72	3.05	2.67	5.72			
Average Peak Hour Travel Time (AM & PM) [1]			6.87			6.03			5.33			5.33			
Change in Average Travel Time - Each Alternative Against Existing Conditions (AM & PM) [2]						-12.2%			-22.5%			-22.5%			
Saturday MD [3]	4.42	3.23	7.65	3.48	2.98	6.46	2.97	2.62	5.58	2.97	2.62	5.58			
Change in Average Travel Time - Each Alternative Against Existing Conditions (Saturday MD) [4]						-15.6%			-27.0%			-27.0%			
<b>Traffic Data</b>														<b>Notes and Sources</b>	
Percent Passenger Vehicles on Corridor														97.0%	NYS DOT Traffic Data Viewer, Station 170020 - NY 254 from I-87 to JCT US 9. The truck percentage is based on 2017 traffic data.
Percent Commercial Vehicles on Corridor														3.0%	
Average Vehicle Occupancy Factor (Weekday Peak Hour) [5A]														1.67	Refer to the BCA Parameter Values table.
Average Vehicle Occupancy Factor (Weekend) [5B]														1.67	
Weekday AM Peak Hour Volume (two-way)														550	September 2022 Traffic Count Data. The volumes represent the highest two-way volumes within the cluster segment.
Weekday PM Peak Hour Volume (two-way)														700	
Average Weekday Peak Hour Volume (two-way) [6]														625	
Number of Peak Hours per Weekday (Duration of Peak Periods) [7]														4	September 2022 Traffic Count Data.
Number of Weekdays per Year [8]														220	AKRF Assumption (Maximum of 260 weekdays per year - 40 days for holidays and other atypical days)
Saturday MD Peak Hour Volume (two-way) [9]														740	September 2022 Traffic Count Data. The volumes represent the highest two-way volumes within the cluster segment.
Number of Peak Hours per Saturday (Duration of Peak Periods) [10]														2	September 2022 Traffic Count Data.
Number of Saturdays per Year [11]														52	AKRF Assumption (52 Saturdays per year)
<b>Estimated Annual Travel Time (Mobility) Savings</b>														<b>Notes and Sources</b>	
Annual Person-Hour Travel Time Savings - Coordinated Signal System (Signal Optimization)														13,445	This is estimated by calculating Person-Hour Travel Time Savings for the weekday and Saturday peak hours. Weekday travel time savings is the product of [1], [2], [5A], [6], [7], and [8] whereas Saturday travel time savings is the product of [3], [4], [5B], [9], [10], and [11].
Annual Person-Hour Travel Time Savings - Adaptive Signal Control Technology (NYS DOT Operated)														21,554	
Annual Person-Hour Travel Time Savings - Adaptive Signal Control Technology (Town Operated)														21,554	
<b>Monetized Value of Time</b>														<b>Notes and Sources</b>	
Passenger Vehicles (All Trip Purposes)														\$ 18.80	Refer to the BCA Parameter Values table. Used the value of time rather than the USDOT suggested hourly values of delay time to be conservative.
Commercial Vehicles (Truck Drivers)														\$ 32.40	
<b>Estimation of Monetized Annual Mobility Benefits - Coordinated Signal System (Signal Optimization)</b>														<b>Notes and Sources</b>	
Passenger Vehicles														\$ 252,757	Calculated by multiplying the estimated annual reduction of crashes and the monetized crash costs
Commercial Vehicles														\$ 435,603	
<b>Monetized Annual Mobility Benefit (Undiscounted) - Coordinated Signal System (Signal Optimization)</b>														\$ 688,360	
<b>Estimation of Monetized Annual Mobility Benefits - Adaptive Signal Control Technology (NYS DOT Operated)</b>														<b>Notes and Sources</b>	
Passenger Vehicles														\$ 405,211	Calculated by multiplying the estimated annual reduction of crashes and the monetized crash costs
Commercial Vehicles														\$ 698,342	
<b>Monetized Annual Mobility Benefit (Undiscounted) - Adaptive Signal Control Technology (NYS DOT Operated)</b>														\$ 1,103,553	
<b>Estimation of Monetized Annual Mobility Benefits - Adaptive Signal Control Technology (Town Operated)</b>														<b>Notes and Sources</b>	
Passenger Vehicles														\$ 405,211	Calculated by multiplying the estimated annual reduction of crashes and the monetized crash costs
Commercial Vehicles														\$ 698,342	
<b>Monetized Annual Mobility Benefit (Undiscounted) - Adaptive Signal Control Technology (Town Operated)</b>														\$ 1,103,553	

USDOT Recommended Values  
 Other Researched Values (sources provided)  
 Input parameters specific to this BCA

Travel Time Data (minutes)														Totals	Notes and Sources
Peak Hour	Existing			Coordinated Signal System (Signal Optimization)			Adaptive Signal Control Technology (NYS DOT Operated)			Adaptive Signal Control Technology (Town Operated)					
	EB NY 254	WB NY 254	Total	EB NY 254	WB NY 254	Total	EB NY 254	WB NY 254	Total	EB NY 254	WB NY 254	Total			
Weekday AM															
Weekday PM	3.93	4.30	8.23	3.41	4.54	7.94	3.52	3.95	7.47	3.52	3.95	7.47			
Average Peak Hour Travel Time (PM Only) [1]			8.23			7.94			7.47			7.47			
Change in Average Travel Time - Each Alternative Against Existing Conditions (PM Only) [2]						-3.5%			-9.2%			-9.2%			
Saturday MD [3]	3.70	4.16	7.86	3.31	3.54	6.86	3.34	3.75	7.09	3.34	3.75	7.09			
Change in Average Travel Time - Each Alternative Against Existing Conditions (Saturday MD) [4]						-12.8%			-9.7%			-9.7%			
<b>Traffic Data</b>														<b>Notes and Sources</b>	
Percent Passenger Vehicles on Corridor														95.5%	NYS DOT Traffic Data Viewer, Station 170030 - JCT US 9 to CR7 BAY RD & Station 170458 - CR7 BAY RD to NY 9L/RIDGE RD. The truck percentage is based on 2017 traffic data (average of both stations).
Percent Commercial Vehicles on Corridor														4.5%	
Average Vehicle Occupancy Factor (Weekday Peak Hour) [5A]														1.67	Refer to the BCA Parameter Values table.
Average Vehicle Occupancy Factor (Weekend) [5B]														1.67	
Weekday AM Peak Hour Volume (two-way)														550	
Weekday PM Peak Hour Volume (two-way)														700	September 2022 Traffic Count Data. The volumes represent the highest two-way volumes within the cluster segment.
Average Weekday Peak Hour Volume (two-way) [6]														625	
Number of Peak Hours per Weekday (Duration of Peak Periods) [7]														4	September 2022 Traffic Count Data.
Number of Weekdays per Year [8]														220	AKRF Assumption (Maximum of 260 weekdays per year - 40 days for holidays and other atypical days)
Saturday MD Peak Hour Volume (two-way) [9]														510	September 2022 Traffic Count Data. The volumes represent the highest two-way volumes within the cluster segment.
Number of Peak Hours per Saturday (Duration of Peak Periods) [10]														2	September 2022 Traffic Count Data.
Number of Saturdays per Year [11]														52	AKRF Assumption (52 Saturdays per year)
<b>Estimated Annual Travel Time (Mobility) Savings</b>														<b>Notes and Sources</b>	
Annual Person-Hour Travel Time Savings - Coordinated Signal System (Signal Optimization)														5,504	This is estimated by calculating Person-Hour Travel Time Savings for the weekday and Saturday peak hours. Weekday travel time savings is the product of [1], [2], [5A], [6], [7], and [8] whereas Saturday travel time savings is the product of [3], [4], [5B], [9], [10], and [11].
Annual Person-Hour Travel Time Savings - Adaptive Signal Control Technology (NYS DOT Operated)														11,579	
Annual Person-Hour Travel Time Savings - Adaptive Signal Control Technology (Town Operated)														11,579	
<b>Monetized Value of Delay</b>														<b>Notes and Sources</b>	
Passenger Vehicles (All Trip Purposes)														\$ 18.80	Refer to the BCA Parameter Values table. Used the value of time rather than the USDOT suggested hourly values of delay time to be conservative.
Commercial Vehicles (Truck Drivers)														\$ 32.40	
<b>Estimation of Monetized Annual Mobility Benefits - Coordinated Signal System (Signal Optimization)</b>														<b>Notes and Sources</b>	
Passenger Vehicles														\$ 103,472	
Commercial Vehicles														\$ 178,325	Calculated by multiplying the estimated annual reduction of crashes and the monetized crash costs
<b>Monetized Annual Mobility Benefit (Undiscounted) - Coordinated Signal System (Signal Optimization)</b>														<b>\$ 281,797</b>	
<b>Estimation of Monetized Annual Mobility Benefits - Adaptive Signal Control Technology (NYS DOT Operated)</b>														<b>Notes and Sources</b>	
Passenger Vehicles														\$ 217,688	
Commercial Vehicles														\$ 375,165	Calculated by multiplying the estimated annual reduction of crashes and the monetized crash costs
<b>Monetized Annual Mobility Benefit (Undiscounted) - Adaptive Signal Control Technology (NYS DOT Operated)</b>														<b>\$ 592,853</b>	
<b>Estimation of Monetized Annual Mobility Benefits - Adaptive Signal Control Technology (Town Operated)</b>														<b>Notes and Sources</b>	
Passenger Vehicles														\$ 217,688	
Commercial Vehicles														\$ 375,165	Calculated by multiplying the estimated annual reduction of crashes and the monetized crash costs
<b>Monetized Annual Mobility Benefit (Undiscounted) - Adaptive Signal Control Technology (Town Operated)</b>														<b>\$ 592,853</b>	

USDOT Recommended Values  
 Other Researched Values (sources provided)  
 Input parameters specific to this BCA

Travel Time Data (minutes)														Totals	Notes and Sources
Peak Hour	Existing			Coordinated Signal System (Signal Optimization)			Adaptive Signal Control Technology (NYS DOT Operated)			Adaptive Signal Control Technology (Town Operated)					
	EB NY 254	WB NY 254	Total	EB NY 254	WB NY 254	Total	EB NY 254	WB NY 254	Total	EB NY 254	WB NY 254	Total			
Weekday AM															
Weekday PM	2.40	2.75	5.15	2.02	2.02	4.04	2.21	2.64	4.84	2.21	2.64	4.84			
Average Peak Hour Travel Time (PM Only) [1]			5.15			4.04			4.84			4.84			
Change in Average Travel Time - Each Alternative Against Existing Conditions (PM Only) [2]						-21.6%			-5.9%			-5.9%			
Saturday MD [3]															
Change in Average Travel Time - Each Alternative Against Existing Conditions (Saturday MD) [4]															
<b>Traffic Data</b>															<b>Notes and Sources</b>
Percent Passenger Vehicles on Corridor														96.0%	NYS DOT Traffic Data Viewer, Station 170002 - NY 9L/RIDGE RD to NY 32 JCT and Station 170031 - NY 32 JCT to LOWER WARREN-911E. The truck percentage is based on 2016 & 2018 data (average of both stations).
Percent Commercial Vehicles on Corridor														4.0%	
Average Vehicle Occupancy Factor (Weekday Peak Hour) [5A]														1.67	Refer to the BCA Parameter Values table.
Average Vehicle Occupancy Factor (Weekend) [5B]														1.67	
Weekday AM Peak Hour Volume (two-way)														550	
Weekday PM Peak Hour Volume (two-way)														700	September 2022 Traffic Count Data. The volumes represent the highest two-way volumes within the cluster segment.
Average Weekday Peak Hour Volume (two-way) [6]														625	
Number of Peak Hours per Weekday (Duration of Peak Periods) [7]														4	September 2022 Traffic Count Data.
Number of Weekdays per Year [8]														220	AKRF Assumption (Maximum of 260 weekdays per year - 40 days for holidays and other atypical days)
Saturday MD Peak Hour Volume (two-way) [9]															Saturday MD peak hour not evaluated for Cluster 3.
Number of Peak Hours per Saturday (Duration of Peak Periods) [10]															
Number of Saturdays per Year [11]														52	AKRF Assumption (52 Saturdays per year)
<b>Estimated Annual Travel Time (Mobility) Savings</b>															<b>Notes and Sources</b>
Annual Person-Hour Travel Time Savings - Coordinated Signal System (Signal Optimization)														13,342	This is estimated by calculating Person-Hour Travel Time Savings for the weekday and Saturday peak hours. Weekday travel time savings is the product of [1], [2], [5A], [6], [7], and [8] whereas Saturday travel time savings is the product of [3], [4], [5B], [9], [10], and [11].
Annual Person-Hour Travel Time Savings - Adaptive Signal Control Technology (NYS DOT Operated)														4,370	
Annual Person-Hour Travel Time Savings - Adaptive Signal Control Technology (Town Operated)														4,370	
<b>Monetized Value of Delay</b>															<b>Notes and Sources</b>
Passenger Vehicles (All Trip Purposes)														\$ 18.80	Refer to the BCA Parameter Values table. Used the value of time rather than the USDOT suggested hourly values of delay time to be conservative.
Commercial Vehicles (Truck Drivers)														\$ 32.40	
<b>Estimation of Monetized Annual Mobility Benefits - Coordinated Signal System (Signal Optimization)</b>															<b>Notes and Sources</b>
Passenger Vehicles														\$ 250,829	
Commercial Vehicles														\$ 432,280	Calculated by multiplying the estimated annual reduction of crashes and the monetized crash costs
<b>Monetized Annual Mobility Benefit (Undiscounted) - Coordinated Signal System (Signal Optimization)</b>														\$ 683,109	
<b>Estimation of Monetized Annual Mobility Benefits - Adaptive Signal Control Technology (NYS DOT Operated)</b>															<b>Notes and Sources</b>
Passenger Vehicles														\$ 82,153	
Commercial Vehicles														\$ 141,583	Calculated by multiplying the estimated annual reduction of crashes and the monetized crash costs
<b>Monetized Annual Mobility Benefit (Undiscounted) - Adaptive Signal Control Technology (NYS DOT Operated)</b>														\$ 223,736	
<b>Estimation of Monetized Annual Mobility Benefits - Adaptive Signal Control Technology (Town Operated)</b>															<b>Notes and Sources</b>
Passenger Vehicles														\$ 82,153	
Commercial Vehicles														\$ 141,583	Calculated by multiplying the estimated annual reduction of crashes and the monetized crash costs
<b>Monetized Annual Mobility Benefit (Undiscounted) - Adaptive Signal Control Technology (Town Operated)</b>														\$ 223,736	

Town of Queensbury  
 Adaptive Signal Control Technologies Feasibility Study (NY 254 (Aviation/Quaker Road) Corridor)  
 Benefit Cost Analysis  
 Estimation & Monetization of Pedestrian Facility Benefits - Cluster 1 (I-87 Exit 19 to Glen St)  
 Prepared by AKRF, Inc.  
 January 27, 2023

USDOT Recommended Values  
 Other Researched Values (sources provided)  
 Input parameters specific to this BCA

Pedestrian Count Data						Notes and Sources
Intersection	Weekday AM Peak Hour	Weekday PM Peak Hour	Highest Peak Hour	Daily Conversion Factor	Estimated Weekday Pedestrian Trips	
Aviation Road and Aviation Mall Road (west)	6	7	7	10	70	September 2022 Traffic Count Data. The highest peak hour pedestrian volumes were used in the BCA. The daily conversion factor is an AKRF assumption (the peak hour represents 10 percent of daily trips). Weekday peak hour pedestrian trips were higher than the Saturday MD peak hour.
Aviation Road and Aviation Mall Road (east)	7	19	19		190	
Aviation Road/Quaker Road and Glen Street/US Route 9	7	19	19		190	
Estimation of Monetized Daily Pedestrian Facility Benefits						Notes and Sources
Recommended Value per Use to Install a Marked Crosswalk on a Roadway with Volumes ≥ 10,000 Vehicles per Day					\$ 0.18	Refer to the BCA Parameter Values table for weekday peak hour travel. The ADT on NY 254 is greater than 10,000 vehicles per day.
Aviation Road and Aviation Mall Road (west)					\$ 13	Calculated by multiplying the estimated daily pedestrian trips and the monetized value per use to install a marked crosswalk on a roadway at each intersection.
Aviation Road and Aviation Mall Road (east)					\$ 34	
Aviation Road/Quaker Road and Glen Street/US Route 9					\$ 34	
Estimation of Monetized Annual Pedestrian Facility Benefits						Notes and Sources
Number of Weekdays per Year					220	AKRF Assumption (Maximum of 260 weekdays per year - 40 days for holidays and other atypical days)
Aviation Road and Aviation Mall Road (west)					\$ 2,772	Calculated by multiplying the estimated monetized daily pedestrian benefit and the conversion factor.
Aviation Road and Aviation Mall Road (east)					\$ 7,524	
Aviation Road/Quaker Road and Glen Street/US Route 9					\$ 7,524	
<b>Monetized Annual Pedestrian Facility Benefit (Undiscounted) - Coordinated Signal System (Signal Optimization)</b>					<b>\$ 17,820</b>	Sum of the estimated monetized annual pedestrian facility benefits at all intersections within the signal cluster. The proposed pedestrian facility improvements are the same under each of the proposed alternatives.
<b>Monetized Annual Pedestrian Facility Benefit (Undiscounted) - Adaptive Signal Control Technology (NYS DOT Operated)</b>					<b>\$ 17,820</b>	
<b>Monetized Annual Pedestrian Facility Benefit (Undiscounted) - Adaptive Signal Control Technology (Town Operated)</b>					<b>\$ 17,820</b>	

Town of Queensbury  
 Adaptive Signal Control Technologies Feasibility Study (NY 254 (Aviation/Quaker Road) Corridor)  
 Benefit Cost Analysis  
 Estimation & Monetization of Pedestrian Facility Benefits - Cluster 2 (Lafayette St to Ridge Rd)  
 Prepared by AKRF, Inc.  
 January 27, 2023

USDOT Recommended Values  
 Other Researched Values (sources provided)  
 Input parameters specific to this BCA

Pedestrian Count Data						Notes and Sources	
Intersection	Weekday AM Peak Hour	Weekday PM Peak Hour	Highest Peak Hour	Daily Conversion Factor	Estimated Weekday Pedestrian Trips		
Quaker Road and Meadowbrook Road	4	2	4	10	40	September 2022 Traffic Count Data. The highest peak hour pedestrian volumes were used in the BCA. The daily conversion factor is an AKRF assumption (the peak hour represents 10 percent of daily trips). Weekday peak hour pedestrian trips were higher than the Saturday MD peak hour.	
Estimation of Monetized Daily Pedestrian Facility Benefits						Notes and Sources	
Recommended Value per Use to Install a Marked Crosswalk on a Roadway with Volumes ≥ 10,000 Vehicles per Day					\$	0.18	Refer to the BCA Parameter Values table for weekday peak hour travel. The ADT on NY 254 is greater than 10,000 vehicles per day.
Quaker Road and Meadowbrook Road					\$	7	Calculated by multiplying the estimated daily pedestrian trips and the monetized value per use to install a marked crosswalk on a roadway at each intersection.
Estimation of Monetized Annual Pedestrian Facility Benefits						Notes and Sources	
Number of Weekdays per Year						220	AKRF Assumption (Maximum of 260 weekdays per year - 40 days for holidays and other atypical days)
Aviation Road and Aviation Mall Road (west)					\$	1,584	Calculated by multiplying the estimated monetized daily pedestrian benefit and the conversion factor.
<b>Monetized Annual Pedestrian Facility Benefit (Undiscounted) - Coordinated Signal System (Signal Optimization)</b>					\$	<b>1,584</b>	Sum of the estimated monetized annual pedestrian facility benefits at all intersections within the signal cluster. The proposed pedestrian facility improvements are the same under each of the proposed alternatives.
<b>Monetized Annual Pedestrian Facility Benefit (Undiscounted) - Adaptive Signal Control Technology (NYSOT Operated)</b>					\$	<b>1,584</b>	
<b>Monetized Annual Pedestrian Facility Benefit (Undiscounted) - Adaptive Signal Control Technology (Town Operated)</b>					\$	<b>1,584</b>	

Town of Queensbury  
 Adaptive Signal Control Technologies Feasibility Study (NY 254 (Aviation/Quaker Road) Corridor)  
 Benefit Cost Analysis  
 Estimation & Monetization of Pedestrian Facility Benefits - Cluster 3 (Quaker Ridge Rd to River Rd)  
 Prepared by AKRF, Inc.  
 January 27, 2023

USDOT Recommended Values  
 Other Researched Values (sources provided)  
 Input parameters specific to this BCA

Pedestrian Count Data						Notes and Sources	
Intersection	Weekday AM Peak Hour	Weekday PM Peak Hour	Highest Peak Hour	Daily Conversion Factor	Estimated Weekday Pedestrian Trips		
Quaker Road and Dix Avenue	0	0	4	10	40	September 2022 Traffic Count Data indicated no pedestrian activity at this intersection. Assumed minimal activity for BCA purposes, similar to activity seen at the Quaker Road and Meadowbrook Road intersection. The daily conversion factor is an AKRF assumption (the peak hour represents 10 percent of daily trips).	
Estimation of Monetized Daily Pedestrian Facility Benefits						Notes and Sources	
Recommended Value per Use to Install a Marked Crosswalk on a Roadway with Volumes ≥ 10,000 Vehicles per Day					\$	0.18	Refer to the BCA Parameter Values table for weekday peak hour travel. The ADT on NY 254 is greater than 10,000 vehicles per day.
Quaker Road and Meadowbrook Road					\$	7	Calculated by multiplying the estimated daily pedestrian trips and the monetized value per use to install a marked crosswalk on a roadway at each intersection.
Estimation of Monetized Annual Pedestrian Facility Benefits						Notes and Sources	
Number of Weekdays per Year						220	AKRF Assumption (Maximum of 260 weekdays per year - 40 days for holidays and other atypical days)
Aviation Road and Aviation Mall Road (west)					\$	1,584	Calculated by multiplying the estimated monetized daily pedestrian benefit and the conversion factor.
<b>Monetized Annual Pedestrian Facility Benefit (Undiscounted) - Coordinated Signal System (Signal Optimization)</b>					\$	<b>1,584</b>	Sum of the estimated monetized annual pedestrian facility benefits at all intersections within the signal cluster. The proposed pedestrian facility improvements are the same under each of the proposed alternatives.
<b>Monetized Annual Pedestrian Facility Benefit (Undiscounted) - Adaptive Signal Control Technology (NYSOT Operated)</b>					\$	<b>1,584</b>	
<b>Monetized Annual Pedestrian Facility Benefit (Undiscounted) - Adaptive Signal Control Technology (Town Operated)</b>					\$	<b>1,584</b>	

Town of Queensbury  
 Adaptive Signal Control Technologies Feasibility Study (NY 254 (Aviation/Quaker Road) Corridor)  
 Benefit Cost Analysis  
 Estimation & Monetization of Energy & Environment (Emissions) Benefits - Cluster 1 (I-87 Exit 19 to Glen St)  
 Prepared by AKRF, Inc.  
 January 27, 2023

USDOT Recommended Values  
 Other Researched Values (sources provided)  
 Input parameters specific to this BCA

Estimated Annual Travel Time (Mobility) Savings		Notes and Sources
Annual Person-Hour Travel Time Savings - Coordinated Signal System (Signal Optimization)	13,445	Refer to the estimation & monetization of mobility benefits for detailed calculations of these values.
Annual Person-Hour Travel Time Savings - Adaptive Signal Control Technology (NYS DOT Operated)	21,554	
Annual Person-Hour Travel Time Savings - Adaptive Signal Control Technology (Town Operated)	21,554	
Average Vehicle Occupancy Factor	1.67	Refer to the BCA Parameter Values table.
Annual Vehicle-Hour Travel Time Savings - Coordinated Signal System (Signal Optimization)	8,051	Conversion to vehicle-hours by removing the vehicle occupancy factor.
Annual Vehicle-Hour Travel Time Savings - Adaptive Signal Control Technology (NYS DOT Operated)	12,906	
Annual Vehicle-Hour Travel Time Savings - Adaptive Signal Control Technology (Town Operated)	12,906	
Estimated Annual Reduction in Average Fuel Consumption		Notes and Sources
Percent Passenger Vehicles on Corridor	97.0%	Refer to the estimation & monetization of mobility benefits for sources supporting these values.
Percent Commercial Vehicles on Corridor	3.0%	
Average fuel consumption per hour of idle time (Passenger Vehicles; Gallons per hour)	0.17	
Average diesel fuel consumption per hour of idle time (Commercial Vehicles; Gallons per hour)	0.64	U.S. Office of Energy Efficiency & Renewable Energy. "IDLE Fuel Consumption for Selected Gasoline and Diesel Vehicles" Table 1. 2015.
Estimated Annual Reduction in Average Fuel Consumption (Gallons) - Coordinated Signal System (Signal Optimization)	1,482	Calculated by multiplying the Annual Vehicle-Hour Travel Time Savings and average consumption per hour of idle time (regular fuel for passenger vehicles and diesel fuel for commercial vehicles).
Estimated Annual Reduction in Average Fuel Consumption (Gallons) - Adaptive Signal Control Technology (NYS DOT Operated)	2,376	
Estimated Annual Reduction in Average Fuel Consumption (Gallons) - Adaptive Signal Control Technology (Town Operated)	2,376	
Monetized Fuel Costs		Notes and Sources
Average Cost of Regular Fuel (2022 \$)	\$ 3.334	U.S. EIA. "Weekly Retail Gasoline and Diesel Prices" December 26, 2022 for New England Petroleum Administration for Defense District 1B (Regular (All Types) & Diesel (All Types)).
Average Cost of Diesel Fuel (2022 \$)	\$ 5.286	
Inflation Adjustment Factor (Converting 2022 \$ to 2021 \$)	0.940	U.S. Bureau of Labor Statistics. "CPI Inflation Calculator" December 2022 to December 2021
Average Cost of Regular Fuel (2021 \$)	\$ 3.134	Calculated by multiplying the average cost of fuel (2022 \$) and the inflation adjustment factor.
Average Cost of Diesel Fuel (2021 \$)	\$ 4.969	
Estimation of Monetized Annual Energy & Environment (Emissions) Benefits		Notes and Sources
Monetized Annual Emissions Benefit (Undiscounted) - Coordinated Signal System (Signal Optimization)	\$ 4,726	Calculated by multiplying the estimated annual reduction of in fuel consumption and the monetized cost of fuel (regular fuel for passenger vehicles and diesel fuel for commercial vehicles).
Monetized Annual Emissions Benefit (Undiscounted) - Adaptive Signal Control Technology (NYS DOT Operated)	\$ 7,577	
Monetized Annual Emissions Benefit (Undiscounted) - Adaptive Signal Control Technology (Town Operated)	\$ 7,577	



Town of Queensbury  
 Adaptive Signal Control Technologies Feasibility Study (NY 254 (Aviation/Quaker Road) Corridor)  
 Benefit Cost Analysis  
 Estimation & Monetization of Energy & Environment (Emissions) Benefits - Cluster 2 (Lafayette St to Ridge Rd)  
 Prepared by AKRF, Inc.  
 January 27, 2023

USDOT Recommended Values  
 Other Researched Values (sources provided)  
 Input parameters specific to this BCA

Estimated Annual Travel Time (Mobility) Savings		Notes and Sources
Annual Person-Hour Travel Time Savings - Coordinated Signal System (Signal Optimization)	5,504	Refer to the estimation & monetization of mobility benefits for detailed calculations of these values.
Annual Person-Hour Travel Time Savings - Adaptive Signal Control Technology (NYS DOT Operated)	11,579	
Annual Person-Hour Travel Time Savings - Adaptive Signal Control Technology (Town Operated)	11,579	
Average Vehicle Occupancy Factor	1.67	Refer to the BCA Parameter Values table.
Annual Vehicle-Hour Travel Time Savings - Coordinated Signal System (Signal Optimization)	3,296	Conversion to vehicle-hours by removing the vehicle occupancy factor.
Annual Vehicle-Hour Travel Time Savings - Adaptive Signal Control Technology (NYS DOT Operated)	6,934	
Annual Vehicle-Hour Travel Time Savings - Adaptive Signal Control Technology (Town Operated)	6,934	
Estimated Annual Reduction in Average Fuel Consumption		Notes and Sources
Percent Passenger Vehicles on Corridor	95.5%	Refer to the estimation & monetization of mobility benefits for sources supporting these values.
Percent Commercial Vehicles on Corridor	4.5%	
Average fuel consumption per hour of idle time (Passenger Vehicles; Gallons per hour)	0.17	U.S. Office of Energy Efficiency & Renewable Energy. "IDLE Fuel Consumption for Selected Gasoline and Diesel Vehicles" Table 1. 2015.
Average diesel fuel consumption per hour of idle time (Commercial Vehicles; Gallons per hour)	0.64	
Estimated Annual Reduction in Average Fuel Consumption (Gallons) - Coordinated Signal System (Signal Optimization)	630	Calculated by multiplying the Annual Vehicle-Hour Travel Time Savings and average consumption per hour of idle time (regular fuel for passenger vehicles and diesel fuel for commercial vehicles).
Estimated Annual Reduction in Average Fuel Consumption (Gallons) - Adaptive Signal Control Technology (NYS DOT Operated)	1,325	
Estimated Annual Reduction in Average Fuel Consumption (Gallons) - Adaptive Signal Control Technology (Town Operated)	1,325	
Monetized Fuel Costs		Notes and Sources
Average Cost of Regular Fuel (2022 \$)	\$ 3.334	U.S. EIA. "Weekly Retail Gasoline and Diesel Prices" December 26, 2022 for New England Petroleum Administration for Defense District 1B (Regular (All Types) & Diesel (All Types)).
Average Cost of Diesel Fuel (2022 \$)	\$ 5.286	
Inflation Adjustment Factor (Converting 2022 \$ to 2021 \$)	0.940	U.S. Bureau of Labor Statistics. "CPI Inflation Calculator" December 2022 to December 2021
Average Cost of Regular Fuel (2021 \$)	\$ 3.134	
Average Cost of Diesel Fuel (2021 \$)	\$ 4.969	
Estimation of Monetized Annual Energy & Environment (Emissions) Benefits		Notes and Sources
Monetized Annual Emissions Benefit (Undiscounted) - Coordinated Signal System (Signal Optimization)	\$ 2,026	Calculated by multiplying the estimated annual reduction of in fuel consumption and the monetized cost of fuel (regular fuel for passenger vehicles and diesel fuel for commercial vehicles).
Monetized Annual Emissions Benefit (Undiscounted) - Adaptive Signal Control Technology (NYS DOT Operated)	\$ 4,263	
Monetized Annual Emissions Benefit (Undiscounted) - Adaptive Signal Control Technology (Town Operated)	\$ 4,263	

Town of Queensbury  
 Adaptive Signal Control Technologies Feasibility Study (NY 254 (Aviation/Quaker Road) Corridor)  
 Benefit Cost Analysis  
 Estimation & Monetization of Energy & Environment (Emissions) Benefits - Cluster 3 (Quaker Ridge Rd to River Rd)  
 Prepared by AKRF, Inc.  
 January 27, 2023

USDOT Recommended Values  
 Other Researched Values (sources provided)  
 Input parameters specific to this BCA

Estimated Annual Travel Time (Mobility) Savings		Notes and Sources
Annual Person-Hour Travel Time Savings - Coordinated Signal System (Signal Optimization)	13,342	Refer to the estimation & monetization of mobility benefits for detailed calculations of these values.
Annual Person-Hour Travel Time Savings - Adaptive Signal Control Technology (NYS DOT Operated)	4,370	
Annual Person-Hour Travel Time Savings - Adaptive Signal Control Technology (Town Operated)	4,370	
Average Vehicle Occupancy Factor	1.67	Refer to the BCA Parameter Values table.
Annual Vehicle-Hour Travel Time Savings - Coordinated Signal System (Signal Optimization)	7,989	Conversion to vehicle-hours by removing the vehicle occupancy factor.
Annual Vehicle-Hour Travel Time Savings - Adaptive Signal Control Technology (NYS DOT Operated)	2,617	
Annual Vehicle-Hour Travel Time Savings - Adaptive Signal Control Technology (Town Operated)	2,617	
Estimated Annual Reduction in Average Fuel Consumption		Notes and Sources
Percent Passenger Vehicles on Corridor	96.0%	Refer to the estimation & monetization of mobility benefits for sources supporting these values.
Percent Commercial Vehicles on Corridor	4.0%	
Average fuel consumption per hour of idle time (Passenger Vehicles; Gallons per hour)	0.17	
Average diesel fuel consumption per hour of idle time (Commercial Vehicles; Gallons per hour)	0.64	U.S. Office of Energy Efficiency & Renewable Energy. "IDLE Fuel Consumption for Selected Gasoline and Diesel Vehicles" Table 1. 2015.
Estimated Annual Reduction in Average Fuel Consumption (Gallons) - Coordinated Signal System (Signal Optimization)	1,508	Calculated by multiplying the Annual Vehicle-Hour Travel Time Savings and average consumption per hour of idle time (regular fuel for passenger vehicles and diesel fuel for commercial vehicles).
Estimated Annual Reduction in Average Fuel Consumption (Gallons) - Adaptive Signal Control Technology (NYS DOT Operated)	494	
Estimated Annual Reduction in Average Fuel Consumption (Gallons) - Adaptive Signal Control Technology (Town Operated)	494	
Monetized Fuel Costs		Notes and Sources
Average Cost of Regular Fuel (2022 \$)	\$ 3.334	U.S. EIA. "Weekly Retail Gasoline and Diesel Prices" December 26, 2022 for New England Petroleum Administration for Defense District 1B (Regular (All Types) & Diesel (All Types)).
Average Cost of Diesel Fuel (2022 \$)	\$ 5.286	
Inflation Adjustment Factor (Converting 2022 \$ to 2021 \$)	0.940	U.S. Bureau of Labor Statistics. "CPI Inflation Calculator" December 2022 to December 2021
Average Cost of Regular Fuel (2021 \$)	\$ 3.134	Calculated by multiplying the average cost of fuel (2022 \$) and the inflation adjustment factor.
Average Cost of Diesel Fuel (2021 \$)	\$ 4.969	
Estimation of Monetized Annual Energy & Environment (Emissions) Benefits		Notes and Sources
Monetized Annual Emissions Benefit (Undiscounted) - Coordinated Signal System (Signal Optimization)	\$ 4,838	Calculated by multiplying the estimated annual reduction of in fuel consumption and the monetized cost of fuel (regular fuel for passenger vehicles and diesel fuel for commercial vehicles).
Monetized Annual Emissions Benefit (Undiscounted) - Adaptive Signal Control Technology (NYS DOT Operated)	\$ 1,585	
Monetized Annual Emissions Benefit (Undiscounted) - Adaptive Signal Control Technology (Town Operated)	\$ 1,585	

Town of Queensbury  
 Adaptive Signal Control Technologies Feasibility Study (NY 254 (Aviation/Quaker Road) Corridor)  
 Benefit Cost Analysis  
 Estimation & Monetization of Project Costs - Cluster 1 (I-87 Exit 19 to Glen St)  
 Prepared by AKRF, Inc.  
 January 27, 2023

USDOT Recommended Values  
 Other Researched Values (sources provided)  
 Input parameters specific to this BCA

Estimated Total Capital Costs				Notes and Sources
Proposed Strategy	Equipment	Pedestrian Facilities	Total Capital Cost	
Coordinated Signal System (Signal Optimization)	\$ 257,250	\$ 10,500	\$ 267,750	Refer to O&M Technical Memorandum for supporting equipment cost estimates. Pedestrian facility costs were derived assuming \$1,500 for each proposed crosswalk within the signal cluster and are the same for each strategy.
Adaptive Signal Control Technology (NYSDOT Operated)	\$ 406,062	\$ 10,500	\$ 416,562	
Adaptive Signal Control Technology (Town Operated)	\$ 465,962	\$ 10,500	\$ 476,462	
Estimated Annual Capital Costs				Notes and Sources
Construction Start Year			2024	Refer to the BCA Parameter Values table (general assumptions).
Year 1 of Benefits			2027	
Estimated Annual Capital Cost - Coordinated Signal System (Signal Optimization)			\$ 89,250	
Estimated Annual Capital Cost - Adaptive Signal Control Technology (NYSDOT Operated)			\$ 138,854	Total capital cost spread evenly over the duration of construction.
Estimated Annual Capital Cost - Adaptive Signal Control Technology (Town Operated)			\$ 158,821	
Estimated Total Operation & Maintenance (O&M) Costs				Notes and Sources
Proposed Strategy	General O&M	Communication	Total O&M Cost	
Coordinated Signal System (Signal Optimization)	\$ 9,720	\$ -	\$ 9,720	Refer to O&M Technical Memorandum for supporting O&M and communication cost estimates.
Adaptive Signal Control Technology (NYSDOT Operated)	\$ 7,290	\$ 2,160	\$ 9,450	
Adaptive Signal Control Technology (Town Operated)	\$ 7,290	\$ 106,560	\$ 113,850	
Estimated Annual Operation & Maintenance (O&M) Costs				Notes and Sources
Construction Start Year			2024	Refer to the BCA Parameter Values table (general assumptions).
Final Year of Benefits (Horizon Year)			2036	
Estimated Annual O&M Cost - Coordinated Signal System (Signal Optimization)			\$ 810	
Estimated Annual O&M Cost - Adaptive Signal Control Technology (NYSDOT Operated)			\$ 788	Total O&M cost spread evenly over the duration of the analysis period (start of construction to horizon year).
Estimated Annual O&M Cost - Adaptive Signal Control Technology (Town Operated)			\$ 9,488	

Town of Queensbury  
 Adaptive Signal Control Technologies Feasibility Study (NY 254 (Aviation/Quaker Road) Corridor)  
 Benefit Cost Analysis  
 Estimation & Monetization of Project Costs - Cluster 2 (Lafayette St to Ridge Rd)  
 Prepared by AKRF, Inc.  
 January 27, 2023

USDOT Recommended Values  
 Other Researched Values (sources provided)  
 Input parameters specific to this BCA

Estimated Total Capital Costs				Notes and Sources
Proposed Strategy	Equipment	Pedestrian Facilities	Total Capital Cost	
Coordinated Signal System (Signal Optimization)	\$ 280,901	\$ 6,000	\$ 286,901	Refer to O&M Technical Memorandum for supporting equipment cost estimates. Pedestrian facility costs were derived assuming \$1,500 for each proposed crosswalk within the signal cluster and are the same for each strategy.
Adaptive Signal Control Technology (NYSDOT Operated)	\$ 439,750	\$ 6,000	\$ 445,750	
Adaptive Signal Control Technology (Town Operated)	\$ 499,650	\$ 6,000	\$ 505,650	
Estimated Annual Capital Costs				Notes and Sources
Construction Start Year			2024	Refer to the BCA Parameter Values table (general assumptions).
Year 1 of Benefits			2027	
Estimated Annual Capital Cost - Coordinated Signal System (Signal Optimization)			\$ 95,634	
Estimated Annual Capital Cost - Adaptive Signal Control Technology (NYSDOT Operated)			\$ 148,583	Total capital cost spread evenly over the duration of construction.
Estimated Annual Capital Cost - Adaptive Signal Control Technology (Town Operated)			\$ 168,550	
Estimated Total Operation & Maintenance (O&M) Costs				Notes and Sources
Proposed Strategy	General O&M	Communication	Total O&M Cost	
Coordinated Signal System (Signal Optimization)	\$ 9,720	\$ -	\$ 9,720	Refer to O&M Technical Memorandum for supporting O&M and communication cost estimates.
Adaptive Signal Control Technology (NYSDOT Operated)	\$ 7,290	\$ 2,160	\$ 9,450	
Adaptive Signal Control Technology (Town Operated)	\$ 7,290	\$ 106,560	\$ 113,850	
Estimated Annual Operation & Maintenance (O&M) Costs				Notes and Sources
Construction Start Year			2024	Refer to the BCA Parameter Values table (general assumptions).
Final Year of Benefits (Horizon Year)			2036	
Estimated Annual O&M Cost - Coordinated Signal System (Signal Optimization)			\$ 810	
Estimated Annual O&M Cost - Adaptive Signal Control Technology (NYSDOT Operated)			\$ 788	Total O&M cost spread evenly over the duration of the analysis period (start of construction to horizon year).
Estimated Annual O&M Cost - Adaptive Signal Control Technology (Town Operated)			\$ 9,488	

Town of Queensbury  
 Adaptive Signal Control Technologies Feasibility Study (NY 254 (Aviation/Quaker Road) Corridor)  
 Benefit Cost Analysis  
 Estimation & Monetization of Project Costs - Cluster 3 (Quaker Ridge Rd to River Rd)  
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 January 27, 2023

USDOT Recommended Values  
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 Input parameters specific to this BCA

Estimated Total Capital Costs				Notes and Sources
Proposed Strategy	Equipment	Pedestrian Facilities	Total Capital Cost	
Coordinated Signal System (Signal Optimization)	\$ 216,143	\$ 6,000	\$ 222,143	Refer to O&M Technical Memorandum for supporting equipment cost estimates. Pedestrian facility costs were derived assuming \$1,500 for each proposed crosswalk within the signal cluster and are the same for each strategy.
Adaptive Signal Control Technology (NYS DOT Operated)	\$ 344,078	\$ 6,000	\$ 350,078	
Adaptive Signal Control Technology (Town Operated)	\$ 403,978	\$ 6,000	\$ 409,978	
Estimated Annual Capital Costs				Notes and Sources
Construction Start Year			2024	Refer to the BCA Parameter Values table (general assumptions).
Year 1 of Benefits			2027	
Estimated Annual Capital Cost - Coordinated Signal System (Signal Optimization)			\$ 74,048	
Estimated Annual Capital Cost - Adaptive Signal Control Technology (NYS DOT Operated)			\$ 116,693	Total capital cost spread evenly over the duration of construction.
Estimated Annual Capital Cost - Adaptive Signal Control Technology (Town Operated)			\$ 136,659	
Estimated Total Operation & Maintenance (O&M) Costs				Notes and Sources
Proposed Strategy	General O&M	Communication	Total O&M Cost	
Coordinated Signal System (Signal Optimization)	\$ 9,720	\$ -	\$ 9,720	Refer to O&M Technical Memorandum for supporting O&M and communication cost estimates.
Adaptive Signal Control Technology (NYS DOT Operated)	\$ 7,290	\$ 2,160	\$ 9,450	
Adaptive Signal Control Technology (Town Operated)	\$ 7,290	\$ 106,560	\$ 113,850	
Estimated Annual Operation & Maintenance (O&M) Costs				Notes and Sources
Construction Start Year			2024	Refer to the BCA Parameter Values table (general assumptions).
Final Year of Benefits (Horizon Year)			2036	
Estimated Annual O&M Cost - Coordinated Signal System (Signal Optimization)			\$ 810	
Estimated Annual O&M Cost - Adaptive Signal Control Technology (NYS DOT Operated)			\$ 788	Total O&M cost spread evenly over the duration of the analysis period (start of construction to horizon year).
Estimated Annual O&M Cost - Adaptive Signal Control Technology (Town Operated)			\$ 9,488	



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