

Traffic Signal Optimization Project Phase II

Coordinated Intersections

Onondaga County Department of Transportation

CHA Project Number: 22845



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July 2012

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CHAPTER I

OVERVIEW

Traffic signals affect the lives of Onondaga County citizens every day. Every signalized intersection in Onondaga County addresses a wide variety of needs. The signal must be effective and functional for a wide variety of users that include pedestrians, automobiles, bicyclists, transit, and large trucks. Signalized intersections provide for the organized control of conflicting traffic movements in a safe manner; however these intersections can be a source of frustration for motorists due to delays. As Onondaga County continues to develop, travel patterns have changed over the years, leading to outdated traffic signal timings that account for a significant amount of delay on roadways throughout the county. By updating signal timings and installing new technology, benefits can be achieved at a relatively low cost. Updated signal timings and equipment have the potential to reduce vehicular delay and thereby improve air quality through reduced emissions and less time spent idling at an intersection. The Onondaga County Department of Transportation desires to implement coordinated signal systems at two locations to move traffic more efficiently in areas where there are closely spaced intersections. Traffic signal coordination is a tool to provide the ability to synchronize multiple intersections to enhance the operation of one or more directional movements in a system.

This report summarizes the results of the studies conducted at various Onondaga County Department of Transportation (OCDOT) controlled intersections throughout Onondaga County.

A. Study Area

The Onondaga County Department of Transportation Traffic Signal Optimization Project – Phase II includes the following intersections that are within corridors that were evaluated for coordination:

- Buckley Road Corridor
 - Buckley Road at John Glenn Boulevard
 - Buckley Road at Morgan Road
- Jamesville Road Corridor
 - Jamesville Road at Nottingham Road
 - Jamesville Road at Interstate 481 Southbound Ramps
 - Jamesville Road at Interstate 481 Northbound Ramps
 - Jamesville Road at Woodchuck Hill Road

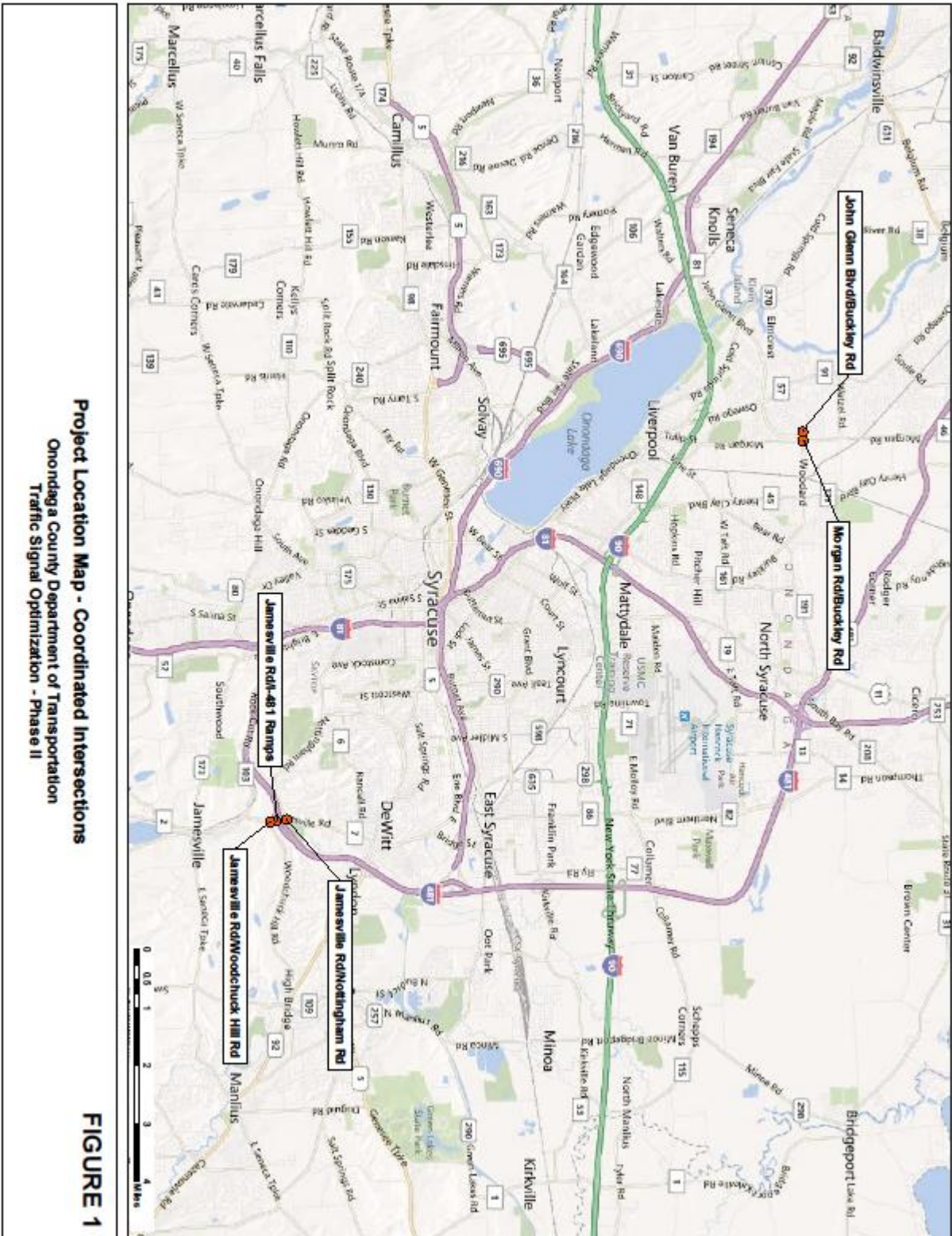
These intersections are illustrated in Figure 1.

B. Project Purpose

Traffic signal optimization and coordination is a cost effective way to improve the flow of traffic along a corridor. At signalized intersections it is important for the signal timing plans to match existing traffic patterns within the corridor. The coordination and optimizing of traffic signals is a way to maximize the capacity of the intersections within the corridor without having to perform costly infrastructure improvements. Benefits from signal coordination and optimization include:

- Reduction in travel time and delays
- Reduction in stops and traffic slow downs could reduce accident potential
- Reduction in fuel consumption (i.e., less idling time) and vehicle emissions
- Potential to delay/eliminate the need for intersection widening
- Reduced driver frustration by having to stop at numerous closely spaced signalized intersection

This project is part of an overall goal of the Onondaga County Department of Transportation to evaluate the operation of all of its traffic signals. This project is the second phase of a multi-phase project.



Project Location Map - Coordinated Intersections
 Onondaga County Department of Transportation
 Traffic Signal Optimization - Phase II

FIGURE 1

Chapter II

COORDINATED INTERSECTION ANALYSIS

To meet the project purpose, an evaluation of existing conditions was completed and new signal timing and coordination plans were developed. In order to develop new timing plans for each intersection with the two corridors under study, traffic count data, existing signal timing data, and intersection geometry were provided by the Syracuse Metropolitan Transportation Council (SMTC) and OCDOT. The intersections were analyzed using the traffic analysis software SYNCHRO 7 using the information provided by the SMTC and OCDOT. The existing operations were documented so that a comparison could be made to future proposed changes. The study area intersections within each corridor were then evaluated using different signal timing and coordination parameters, signal phasing sequences and detection types to improve the overall performance of the individual intersections.

A. Methodology

Traffic data, including peak hour turning movement volumes, traffic signal timing and phasing data, intersection geometric data and photographs were provided to CHA in order to develop SYNCHRO models for the existing conditions at the two corridors that are included within the study area. These models were used to determine existing weekday AM and PM peak hour levels of service (LOS) for all the study area intersections. The intersections within each corridor were then optimized using different cycle lengths, offsets and signal timing parameters. The existing levels of service were used for comparison purposes to establish the benefits of coordinating and optimizing the operation of the intersection.

Prior to developing the new signal timing plans, it was important to understand and validate the existing conditions at each intersection. By using the data that was provided and knowledge of the existing conditions observed in the field, a model of each corridor was built for each peak period using SYNCHRO.

The existing conditions of the signals along each corridor were analyzed in a manner consistent with the Highway Capacity Manual 2000 methodologies. CHA performed an operational analysis for each isolated intersections within the corridor to establish baseline operations. The capacity analyses were consistent with the Highway Capacity Manual 2000 methodology when comparing improvement options. Existing and proposed signal phasing and sequencing were analyzed as well as identifying other possible operational improvements, such as pavement marking changes, signal control equipment additions and/or upgrades, etc. Consideration was given to compliance issues with the FHWA Manual on Uniform Traffic Control Devices (MUTCD). In discussions with OCDOT staff, it was determined that the development of optimized signal plans should be accomplished with a minimal amount of infrastructure investment (new signal heads, controllers, detection, etc). Consequently, where possible, all existing signal equipment was maintained and only as a last resort was new signal equipment proposed.

Minimum green times and yellow and all red clearance intervals were reviewed for each intersection to determine if these intervals are within industry standards. Onondaga County Department of Transportation signal timing standards were utilized to evaluate minimum green times and clearance intervals. Minimum green times are based upon the FHWA classification of the roadways at each intersection. The yellow and all red clearance times are based on the approach speeds of the intersecting roadways and the widths of the intersections.

Passage times were determined by using the existing speed limits on the intersecting roadways and estimating the length of the detection zones shown in the intersection plans that were provided to CHA. Where plans were not available, OCDOT provided additional information, or detection zones were assumed based on detector layouts at similar intersections.

New timing and coordination plans were then developed for each intersection within the corridor using the data previously collected and the results of the existing conditions analysis. Two timing plans were developed for each corridor — an AM and PM peak hour plan. The development of these timing and coordination plans began with an evaluation of each intersection. A review of yellow and all red clearances was performed to determine if existing clearance intervals were within the industry standards and initial green times and vehicle extension intervals were also reviewed. Finally, the most efficient cycle lengths and offsets were determined for each intersection with the corridor under study. This was accomplished by the use of SYNCHRO network cycle length and network offset evaluations, knowledge gained from field observations, and professional judgment. After the cycle lengths were determined, the optimal phase split times were established. This data was entered into the SYNCHRO models and then the phase sequences were evaluated to determine the optimal level of service, thus reducing vehicle stops and delay.

The final component to the timing plans was to prepare coding sheets for each intersection. CHA transferred the proposed timing plans from the SYNCHRO model into a format compatible with OCDOT's traffic signal timing program (Microsoft Excel spreadsheets).

B. Buckley Road Corridor

This corridor includes two signalized intersections:

- Buckley Road at John Glenn Boulevard
- Buckley Road at Morgan Road

1. Buckley Road At John Glenn Boulevard

This is a three-legged intersection which operates as a fully actuated, three-phase signal with presence detection on all approaches. There are no pedestrian accommodations at the intersection. The signal currently operates on a maximum 108 second cycle during the AM peak hour and 120 second cycle during the PM peak hour. The geometry of the intersection is as follows:

- Buckley Road Westbound – double left turn lanes, exclusive through lane
- Blueberry Road Eastbound – exclusive through lane, exclusive right turn lane
- John Glenn Boulevard Northbound – double right turn lanes, exclusive left turn lane

The posted speed limit on Blueberry Road is 30 mph, 40 mph on Buckley Road, and 45 mph on John Glenn Boulevard. Table II.B.1 presents the results of the level of service for the existing and proposed conditions.

**Table II.B.1
Buckley Road at John Glenn Boulevard**

Intersection	AM		PM	
	Existing	Proposed	Existing	Proposed
Buckley Rd/John Glenn Blvd				
EB T	C(24.9)	C(32.3)	C(27.1)	D(49.0)
EB R	A(9.1)	A(8.0)	B(12.1)	B(19.8)
WB L	B(17.1)	B(12.7)	B(15.6)	A(4.9)
WB T	A(1.9)	A(0.5)	A(3.6)	A(0.7)
NB L	C(33.3)	C(29.0)	C(30.8)	D(46.3)
NB R	B(13.9)	B(11.5)	A(7.2)	A(5.1)
Overall	B(16.4)	B(16.2)	B(12.4)	B(10.4)

XX(XX) – LOS(delay)

Recommended improvements to the signal timing include the following:

- Change yellow clearance interval to 3.0 seconds for all phases.
- Set the all red clearance interval to 1.5 seconds for the Buckley Road and John Glenn Boulevard left turn phases and 2.5 seconds for the Blueberry Road phase.
- Set the minimum green time for the Buckley Road left turn phase to 15 seconds and 10 seconds for the Blueberry Road phase.
- Set the passage time on the Buckley Road and John Glenn Boulevard left turn phases to 1.5 seconds and 1.0 seconds for the Blueberry Road phase. This passage time is based on the prevailing speed limits and the length of the detection zones.
- The coordinated movements are the Buckley Road westbound left/through and John Glenn Boulevard northbound left turn.
- Set the cycle length to 65 seconds for the AM peak hour with an offset of 0 seconds. Change the cycle length to 90 seconds for the PM peak hour with an offset of 0 seconds.

2. Buckley Road at Morgan Road

This is a four-legged intersection which operates as a fully actuated signal, eight phase signal with full presence detection on all movements. Extended recall is set for the Morgan Road northbound and southbound through movements. There are no pedestrian accommodations at the intersection. The signal currently operates on a maximum 124 second cycle during the AM peak hour and 138 seconds during the PM peak hour with different timings for each of the peak hours. The geometry of the intersection is as follows:

- Buckley Road Eastbound – exclusive left turn lane, exclusive through lane, shared through/right turn lane
- Buckley Road Westbound – exclusive left turn lane, exclusive through lane, shared through/right turn lane
- Morgan Road Northbound – exclusive left turn lane, exclusive through lane, shared through/right turn lane
- Morgan Road Southbound – exclusive left turn, two exclusive through lanes, exclusive right turn lane

The posted speed limit on both roadways is 45 mph. Table II.B.2 presents the results of the level of service for the existing and proposed conditions.

**Table II.B.2
Buckley Road at Morgan Road**

Intersection	AM		PM	
	Existing	Proposed	Existing	Proposed
Buckley Rd/Morgan Rd				
EB L	D(54.1)	C(31.4)	E(63.5)	E(77.2)
EB T/R	C(34.3)	B(10.9)	D(41.4)	C(26.9)
WB L	E(55.8)	E(66.3)	E(65.9)	E(67.6)
WB T/R	C(29.0)	C(20.3)	D(49.0)	D(42.2)
NB L	E(56.8)	D(54.6)	F(240.5)	E(59.6)
NB T/R	C(31.7)	C(20.4)	D(48.3)	C(30.5)
SB L	E(57.9)	D(45.8)	E(64.7)	E(65.7)
SB T	D(42.7)	D(36.2)	D(42.0)	D(44.7)
SB R	A(4.7)	A(3.6)	C(23.0)	B(16.5)
Overall	D(37.7)	C(25.8)	E(73.4)	D(41.1)

XX(XX) – LOS(delay)

Recommended improvements to the signal timing include the following:

- Change yellow clearance interval to 3.0 seconds for all phases.
- Set the all read clearance time to 2.5 seconds for all through movement phases.
- Set the minimum green on the all left turn phases to 5 seconds and 10 seconds for all through movement phases
- Set the passage time on all phases to 1.5 seconds. This passage time is based on the prevailing speed limits and the length of the detection zones.
- The coordinated movements are the Buckley Road eastbound and westbound through movements as these are the movements with the highest volumes.
- Change the cycle length to 65 seconds for AM peak hour with an offset of 61 seconds. Set the cycle length to 90 seconds for the PM peak hour with an offset of 69 seconds.

C. Jamesville Road Corridor

This corridor includes four signalized intersections:

- Jamesville Road at Nottingham Road
- Jamesville Road at Interstate 481 Southbound Ramps
- Jamesville Road at Interstate 481 Northbound Ramps
- Jamesville Road at Woodchuck Hill Road

1. Jamesville Road At Nottingham Road

This is a three-legged intersection which operates as a fully actuated, three-phase signal with presence detection on the Nottingham Road and Jamesville Road northbound left turn approaches and point detection on the Jamesville Road through movement approaches. There are no pedestrian accommodations at the intersection. Maximum recall is set for the Jamesville Road northbound and

southbound through movement phase. The signal currently operates on a maximum 87 second cycle for the entire day. The geometry of the intersection is as follows:

- Nottingham Road Eastbound – exclusive left and right turn lanes
- Jamesville Road Northbound – exclusive left turn lane, two exclusive through lanes
- Jamesville Road Southbound – exclusive through lane, shared through/right turn lane

The posted speed limit on Jamesville Road is 30 mph and 45 mph on Nottingham Road. Table II.C.1 presents the results of the level of service for the existing and proposed conditions.

**Table II.C.1
Jamesville Road at Nottingham Road**

Intersection	AM		PM	
	Existing	Proposed	Existing	Proposed
Jamesville Rd/Nottingham Rd				
EB L	C(28.5)	C(24.1)	C(28.9)	C(24.8)
EB R	A(3.7)	A(2.9)	A(3.8)	A(6.1)
NB L	A(7.6)	A(6.5)	A(4.5)	A(2.4)
NB T	A(3.1)	A(1.3)	A(3.1)	A(1.1)
SB T/R	B(12.1)	B(11.6)	B(11.8)	A(9.7)
Overall	A(7.1)	A(6.0)	A(6.3)	A(5.5)

XX(XX) – LOS(delay)

Recommended improvements to the signal timing include the following:

- Change yellow clearance interval to 2.5 seconds for the Jamesville Road phases and 3.0 seconds for the Nottingham Road phase.
- Set the all red clearance interval to 1.5 seconds for Nottingham Road phase, 2.0 seconds for the Jamesville Road northbound left turn phase and 3.0 seconds for the Jamesville Road through phases.
- Change the minimum green time to 5 seconds for the Jamesville Road northbound left turn phases and 10 seconds for the Jamesville Road through and Nottingham Road phases.
- Set the passage time on the Jamesville Road phases to 1 second and 1.5 seconds for the Nottingham Road phase. This passage time is based on the prevailing speed limits and the length of the detection zones.
- The coordinated movements are the Jamesville Road northbound and southbound through movements.
- Set the cycle length to 65 seconds for AM peak hour with an offset of 0 seconds. Set the cycle length to 65 seconds for the PM peak hour with an offset of 0 seconds.

2. Jamesville Road at Interstate 481 Southbound Ramps

This is a four-legged intersection which operates as a fully actuated signal, three phase signal with presence detection on the Interstate 481 Southbound Ramps and the exclusive left and right turn lanes on Jamesville Road and point detection on the Jamesville Road through movements. There are no pedestrian accommodations at the intersection. The signal currently operates on a maximum 91 second cycle with different timings for each of the peak hours. The geometry of the intersection is as follows:

- Interstate 481 Southbound Ramps Westbound – exclusive left and right turn lanes
- Jamesville Road Northbound – exclusive double left turn lanes, two exclusive through lanes
- Jamesville Road Southbound – two exclusive through lanes, exclusive right turn lane

The posted speed limit on both roadways is 30 mph. Table II.C.2 presents the results of the level of service for the existing and proposed conditions.

**Table II.C.2
Jamesville Road at Interstate 481 Southbound Ramps**

Intersection	AM		PM	
	Existing	Proposed	Existing	Proposed
Jamesville Rd/I481 SB Ramps				
WB L	D(42.1)	D(35.9)	D(48.7)	C(33.2)
WB R	A(4.9)	B(10.5)	A(4.4)	A(2.9)
NB L	D(35.3)	C(27.2)	C(32.6)	C(27.2)
NB T	B(10.8)	A(7.4)	B(10.5)	A(8.7)
SB T	C(20.7)	B(14.5)	B(19.7)	B(17.6)
SB R	A(5.1)	A(2.2)	A(4.8)	A(3.7)
Overall	B(19.8)	B(15.9)	C(25.7)	B(19.2)

XX(XX) – LOS(delay)

Recommended improvements to the signal timing include the following:

- Set the yellow clearance interval to 2.5 seconds for all phases.
- Set the all red phase to 2.5 seconds for the Jamesville Road northbound left turn phase and 3.0 seconds for all phases.
- Set the the minimum green on the Jamesville Road northbound left turn phase to 5 seconds and 10 seconds for all other phases.
- Set the passage time on all phases to 1.0 seconds. This passage time is based on the prevailing speed limits and the length of the detection zones.
- The coordinated movements are the Jamesville Road northbound and southbound through movements.
- Change the cycle length to 65 seconds for AM peak hour with an offset of 3 seconds. Set the cycle length to 65 seconds for the PM peak hour with an offset of 57 seconds.

3. Jamesville Road at Interstate 481 Northbound Ramps

This is a four-legged intersection which operates as a fully actuated signal, three phase signal with presence detection on the Interstate 481 Northbound Ramps and the exclusive left turn lane on Jamesville Road and point detection on the Jamesville Road through movements. There are no pedestrian accommodations at the intersection. The signal currently operates on a maximum 91 second cycle with different timings for each of the peak hours. The geometry of the intersection is as follows:

- Interstate 481 Northbound Ramps Eastbound – exclusive left and right turn lanes
- Jamesville Road Northbound – two exclusive through lanes, channelized right turn lane
- Jamesville Road Southbound – double exclusive left turn lanes, two exclusive through lanes

The posted speed limit on both roadways is 30 mph. Table II.C.3 presents the results of the level of service for the existing and proposed conditions.

**Table II.C.3
Jamesville Road at Interstate 481 Northbound Ramps**

Intersection	AM		PM	
	Existing	Proposed	Existing	Proposed
Jamesville Rd/I481 NB Ramps				
EB L	C(28.9)	C(32.2)	C(27.2)	C(28.2)
EB R	A(7.7)	A(8.0)	C(20.9)	C(21.7)
NB T	B(14.2)	A(6.7)	B(11.5)	A(5.5)
SB L	C(26.5)	C(26.7)	C(26.3)	C(28.0)
SB T	A(5.7)	A(1.9)	A(6.4)	A(4.0)
Overall	B(10.6)	A(7.4)	B(10.8)	A(9.2)

XX(XX) – LOS(delay)

Recommended improvements to the signal timing include the following:

- Set the yellow clearance interval to 2.5 seconds for all phases.
- Set the all red phase to 2.5 seconds for the Jamesville Road southbound left turn phase and 3.0 seconds for all phases.
- Set the minimum green on the Jamesville Road southbound left turn phase to 5 seconds and 10 seconds for all other phases.
- Set the passage time on all phases to 1.0 seconds. This passage time is based on the prevailing speed limits and the length of the detection zones.
- The coordinated movements are the Jamesville Road northbound and southbound through movements.
- Change the cycle length to 65 seconds for AM peak hour with an offset of 29 seconds. Set the cycle length to 65 seconds for the PM peak hour with an offset of 24 seconds.

4. Jamesville Road At Woodchuck Hill Road

This is a three-legged intersection which operates as a fully actuated, three-phase signal with presence detection on the Woodchuck Hill Road and Jamesville Road southbound left turn approaches and point detection on the Jamesville Road through movement approaches. There are no pedestrian accommodations at the intersection. Maximum recall is set for the Jamesville Road northbound and southbound through movement phase. The signal currently operates on a maximum 87 second cycle for the entire day. The geometry of the intersection is as follows:

- Woodchuck Hill Road Westbound – exclusive left and right turn lanes
- Jamesville Road Southbound – exclusive left turn lane, two exclusive through lanes
- Jamesville Road Northbound – exclusive through lane, shared through/right turn lane

The posted speed limit on Jamesville Road is 30 mph and 35 mph on Woodchuck Hill Road. Table II.C.4 presents the results of the level of service for the existing and proposed conditions.

**Table II.C.4
Jamesville Road at Woodchuck Hill Road**

Intersection	AM		PM	
	Existing	Proposed	Existing	Proposed
Jamesville Rd/Woodchuck Hill Rd				
WB L	C(28.1)	C(22.9)	C(32.2)	C(28.1)
WB R	B(18.6)	B(19.9)	A(3.2)	A(3.1)
NB T/R	C(26.8)	B(14.9)	B(14.1)	A(9.9)
SB L	B(15.4)	B(10.7)	A(7.5)	A(3.8)
SB T	A(4.6)	A(1.9)	A(4.6)	A(1.7)
Overall	B(20.0)	B(13.0)	A(8.5)	A(5.3)

XX(XX) – LOS(delay)

Recommended improvements to the signal timing include the following:

- Set the yellow clearance interval to 2.5 seconds for all phases.
- Set the all red clearance interval to 1.5 seconds for the Jamesville Road southbound left turn phase and 2.5 seconds for the Jamesville Road through phases.
- Change the minimum green time to 5 seconds for the Jamesville Road southbound left turn phase and 10 seconds for the Jamesville Road through and Woodchuck Hill Road phases.
- Set the passage time on the Jamesville Road phases to 1 second and 1.5 seconds for the Woodchuck Hill Road phase. This passage time is based on the prevailing speed limits and the length of the detection zones.
- The coordinated movements are the Jamesville Road northbound and southbound through movements.
- Set the cycle length to 65 seconds for the AM peak hour with an offset of 18 seconds. Set the cycle length for the PM peak hour to 65 seconds with an offset of 23 seconds.

CHAPTER III

SUMMARY OF RECOMMENDATIONS

Based on the results of the signal timing analysis of the two coordinated study area corridors, the following is a summary of the recommendations.

❖ **Buckley Road Corridor**

• **Buckley Road at John Glenn Boulevard**

- Change yellow clearance interval to 3.0 seconds for all phases.
- Set the all red clearance interval to 1.5 seconds for the Buckley Road and John Glenn Boulevard left turn phases and 2.5 seconds for the Blueberry Road phase.
- Set the minimum green time for the Buckley Road left turn phase to 15 seconds and 10 seconds for the Blueberry Road phase.
- Set the passage time on the Buckley Road and John Glenn Boulevard left turn phases to 1.5 seconds and 1.0 seconds for the Blueberry Road phase. This passage time is based on the prevailing speed limits and the length of the detection zones.
- The coordinated movements are the Buckley Road westbound left/through and John Glenn Boulevard northbound left turn.
- Set the cycle length to 65 seconds for the AM peak hour with an offset of 0 seconds. Change the cycle length to 90 seconds for the PM peak hour with an offset of 0 seconds.

• **Buckley Road at Morgan Road**

- Change yellow clearance interval to 3.0 seconds for all phases.
- Set the all red clearance time to 2.5 seconds for all through movement phases.
- Set the minimum green on the all left turn phases to 5 seconds and 10 seconds for all through movement phases
- Set the passage time on all phases to 1.5 seconds. This passage time is based on the prevailing speed limits and the length of the detection zones.
- The coordinated movements are the Buckley Road eastbound and westbound through movements as these are the movements with the highest volumes.
- Change the cycle length to 65 seconds for AM peak hour with an offset of 61 seconds. Set the cycle length to 90 seconds for the PM peak hour with an offset of 69 seconds.

❖ **Jamesville Road Corridor**

• **Jamesville Road at Nottingham Road**

- Change yellow clearance interval to 2.5 seconds for the Jamesville Road phases and 3.0 seconds for the Nottingham Road phase.
- Set the all red clearance interval to 1.5 seconds for Nottingham Road phase, 2.0 seconds for the Jamesville Road northbound left turn phase and 3.0 seconds for the Jamesville Road through phases.
- Change the minimum green time to 5 seconds for the Jamesville Road northbound left turn phases and 10 seconds for the Jamesville Road through and Nottingham Road phases.
- Set the passage time on the Jamesville Road phases to 1 second and 1.5 seconds for the

Nottingham Road phase. This passage time is based on the prevailing speed limits and the length of the detection zones.

- The coordinated movements are the Jamesville Road northbound and southbound through movements.
- Set the cycle length to 65 seconds for AM peak hour with an offset of 0 seconds. Set the cycle length to 65 seconds for the PM peak hour with an offset of 0 seconds.

- **Jamesville Road at Interstate 481 Southbound Ramps**

- Set the yellow clearance interval to 2.5 seconds for all phases.
- Set the all red phase to 2.5 seconds for the Jamesville Road northbound left turn phase and 3.0 seconds for all phases.
- Set the the minimum green on the Jamesville Road northbound left turn phase to 5 seconds and 10 seconds for all other phases.
- Set the passage time on all phases to 1.0 seconds. This passage time is based on the prevailing speed limits and the length of the detection zones.
- The coordinated movements are the Jamesville Road northbound and southbound through movements.
- Change the cycle length to 65 seconds for AM peak hour with an offset of 3 seconds. Set the cycle length to 65 seconds for the PM peak hour with an offset of 57 seconds.

- **Jamesville Road at Interstate 481 Northbound Ramps**

- Set the yellow clearance interval to 2.5 seconds for all phases.
- Set the all red phase to 2.5 seconds for the Jamesville Road southbound left turn phase and 3.0 seconds for all phases.
- Set the the minimum green on the Jamesville Road southbound left turn phase to 5 seconds and 10 seconds for all other phases.
- Set the passage time on all phases to 1.0 seconds. This passage time is based on the prevailing speed limits and the length of the detection zones.
- The coordinated movements are the Jamesville Road northbound and southbound through movements.
- Change the cycle length to 65 seconds for AM peak hour with an offset of 29 seconds. Set the cycle length to 65 seconds for the PM peak hour with an offset of 24 seconds.

- **Jamesville Road at Woodchuck Hill Road**

- Set the yellow clearance interval to 2.5 seconds for all phases.
- Set the all red clearance interval to 1.5 seconds for the Jamesville Road southbound left turn phase and 2.5 seconds for the Jamesville Road through phases.
- Change the minimum green time to 5 seconds for the Jamesville Road southbound left turn phase and 10 seconds for the Jamesville Road through and Woodchuck Hill Road phases.
- Set the passage time on the Jamesville Road phases to 1 second and 1.5 seconds for the Woodchuck Hill Road phase. This passage time is based on the prevailing speed limits and the length of the detection zones.
- The coordinated movements are the Jamesville Road northbound and southbound through movements.
- Set the cycle length to 65 seconds for the AM peak hour with an offset of 18 seconds. Set the cycle length for the PM peak hour to 65 seconds with an offset of 23 seconds.