TRAFFIC IMPACT STUDY

for

Hudson Logistics Center
43 Steele Road
Hudson, New Hampshire

Prepared for:

Hillwood Enterprises, L.P.

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EXECUTIVE SUMMARY

Langan has prepared this traffic impact study to identify the potential impacts of the proposed Hudson Logistics Center (HLC) redevelopment at 43 Steele Road in Hudson, New Hampshire (See Figure 1 for the Location Map).

The project site is approximately 377 acres, which is currently the Green Meadows Golf Course.

The proposed development includes the subdivision of the property into three lots on a proposed public roadway. Three warehouse distribution use buildings along with associated parking, landscaping, utility improvements and stormwater systems are proposed to be constructed. The proposed subdivision roadway (Green Meadow Drive) will connect to Lowell Road at the current location of the Mercury Systems driveway, opposite the intersection of Rena Avenue. The Mercury Systems parking facilities will tie into the new subdivision road. The project also proposes to extend Wal-Mart Boulevard (a private way) into the proposed development. Wal-Mart Boulevard forms a four-way signalized intersection on Lowell Road, opposite the westbound approach of Wal-Mart Boulevard. (See Site Plan in Appendix A).

The proposed development includes three fulfillment center warehouses. The warehouses will be part of the e-commerce supply chain. The Institute of Transportation Engineers (ITE) classifies the function of these buildings as high-cube fulfillment center warehouses. These buildings are a specific sub-category of fulfillment center in the e-commerce supply chain: a non-sort fulfillment center warehouse.

The development's building construction schedule is anticipated to be phased based on individual tenant schedules; however, although not likely, for this study we will presume that the entire development will be open in 2022. This study includes a build year analysis for 2022 and a 10-year horizon build-out for 2032, in accordance with New Hampshire Department of Transportation guidelines.

Turning-movement and vehicle-classification counts were conducted in November 2019 at nine intersections and used as a basis for this evaluation. The proposed project's trip generation is based on ITE Land Use Code 155 High-Cube Fulfillment Center Warehouse (Non-Sort) and tenant specific data were used to evaluate the peak hour 2022 opening year and the 2032 horizon year traffic operating conditions. The tenant of the warehouses on Lot A and B is known, as is the specific trip generations volumes for the proposed facilities. For the purpose of this study, we are utilizing the larger of the two trip generation methods, resulting in an over estimation of the trip generation for the proposed project.

A review of the analysis shows that the majority of the development's traffic impacts are along the southern Lowell Road (Route 3A) corridor, generally at the intersections of Lowell Road south of the Sagamore Bridge Road. Overall, we anticipate that approximately 15% of the total site generated traffic will enter from and exit to the Lowell Road (Route 3A) corridor north of

Sagamore Bridge Road. Some of these intersections perform unsatisfactorily in the no-build scenarios and do not typically degrade further in the build scenarios (2022 and 2032).

The Town of Hudson has a pending roadway project to add a right turn lane on southbound Lowell Road, from Flagstone Drive onto the on-ramp to Sagamore Bridge Road, creating a two lane on-ramp, before tapering to one lane prior to merging with the main line.

Based on our capacity analyses, the following improvements are recommended at this time to mitigate the potential traffic impacts directly associated with the proposed development:

- Installation of new adaptive traffic signal controllers at the following intersections and incorporating them into the existing town signal system. Adaptive signal control will allow timing optimization on-the-fly, through video detection, that will allow for seasonal and time-of-day variations in traffic. The industry standard capacity analysis software is unable to calculate this adaptive signal control and capture the efficiency this system provides. We expect the intersections to operate better than indicated in the analysis.
    - Lowell Road (Route 3A) & Sagamore Bridge Road
    - Lowell Road (Route 3A) & Wal-Mart Boulevard
    - Lowell Road (Route 3A) & Green Meadow Drive/Rena Avenue
- Signal timing optimization at the following intersections
    - Lowell Road (Route 3A) & Dracut Road/Steele Road during the 2022 and 2032 weekday evening peak period
    - Lowell Road (Route 3A) & Flagstone Drive/Wason Road during the 2022 and 2032 weekday morning peak periods
    - Lowell Road (Route 3A) & Executive Drive during the 2032 weekday morning peak period
    - Lowell Road (Route 3A) & Fox Hollow Drive
- Reconstruction of the existing Mercury Systems driveway into a new public roadway (Green Meadow Drive) intersecting with Rena Avenue, to provide two left-turn lanes and a shared thru/right-turn lane on the eastbound approach and signal upgrades and timing optimization.
- Construction of the following geometric improvements at the intersection of Lowell Road and Sagamore Bridge Road
    - Addition of a third northbound left turn lane
    - Addition of a third eastbound left turn lane
    - Addition of a second eastbound right turn lane on the off-ramp
- Restriping at the intersection of Lowell Road and Fox Hollow Drive of the northbound right-turn-only lane to a shared thru/right-turn lane. Two northbound thru receiving lanes currently exist.

Our evaluation indicates that, with the recommended improvements, the intersections analyzed will maintain acceptable or improve on the no-build traffic operating conditions.

1.0 INTRODUCTION

Langan has prepared this traffic impact study to identify the potential impacts of the proposed Hudson Logistics Center (HLC) development at 43 Steele Road in Hudson, New Hampshire (See Figure 1 for the Location Map).

The site is bordered by residential properties to the south, the Merrimack River to the west, and Sagamore Bridge Road/Circumferential Highway to the north. Commercial and industrial uses, with frontage along Lowell Road (Route 3A), border the site to the east.

The project site is approximately 377 acres, which is currently the Green Meadows Golf Course. The proposed development includes the subdivision of the site into three lots on a proposed public roadway. Three e-commerce fulfillment warehouses along with associated parking, landscaping, utility improvements and stormwater systems are proposed to be constructed. The proposed subdivision roadway will connect to Lowell Road at the current location of the Mercury Systems driveway, opposite the intersection of Rena Avenue. The Mercury Systems parking facilities will tie into the new subdivision road called Green Meadow Drive. The project also proposes a roadway connection to Wal-Mart Boulevard (a private way). Wal-Mart Boulevard forms a four-way signalized intersection on Lowell Road, with the westbound approach of Wal-Mart Boulevard. (See Site Plan in Appendix A).

The development's building construction schedule is anticipated to be phased based on individual tenant schedules; however, although not likely, for this study we will presume that the entire development will be open in 2022. This study provides an analysis of the traffic conditions for the 2022 build-year and also a 10-year horizon build-out for 2032, in accordance with New Hampshire Department of Transportation guidelines.

2.0 SITE ACCESS AND STUDY LOCATIONS

Site Access

The project site is currently accessed by a driveway connecting to Steele Road, a residential public way. This connection is proposed to be disconnected and two new site access points are proposed. A proposed subdivision roadway (Green Meadow Drive) will connect to Lowell Road at the current location of the Mercury Systems driveway, opposite the signal at Rena Avenue. The Mercury Systems parking facilities will tie into the new subdivision road. The second site drive is proposed to connect to Wal-Mart Boulevard, a private road, and access Lowell Road (Route 3A) at its signalized intersection with the Wal-Mart Boulevard westbound approach.

Study Locations

Nine key intersections were evaluated in this study (See Figure 2 for the Study Intersections Map).

- Lowell Road (Route 3A) and Pelham Road
- Lowell Road (Route 3A) and Fox Hollow Drive/Nottingham Square Drive
- Lowell Road (Route 3A) and Executive Drive
- Lowell Road (Route 3A) and Hampshire Drive/Oblate Drive
- Lowell Road (Route 3A) and Flagstone Drive/Wason Road
- Lowell Road (Route 3A) and Sagamore Bridge Road (Circumferential Highway)
- Lowell Road (Route 3A) and Wal-Mart Boulevard
- Lowell Road (Route 3A) and Rena Avenue/Green Meadow Drive
- Lowell Road/River Road (Route 3A) and Dracut Road/Steele Road

This study will evaluate traffic impacts of the development's peak-hours on these intersections and the area roadway network.

3.0 EXISTING CONDITIONS

Area Roadway Network

Lowell Road (Route 3A) is a north-south principal arterial-other under state jurisdiction. Lowell Road (Route 3A) from the north of Executive Drive is a two lane road with a posted speed limit of 30 MPH. Lowell Road (Route 3A) has a lane width is 12 feet, a 4-foot shoulder, and has a two way left turn lane with an 11-foot width. South of Executive Drive, Lowell Road (Route 3A) is a four lane road with a speed limit of 30 MPH. The speed limit increases to 35 MPH south of the Wal-Mart Boulevard. The lane width is 12 feet with a shoulder of varying widths. A 5-foot median begins at the Flagstone Drive intersection and ends at the Dracut/Steele Road intersection

Pelham Road is a two lane east-west local road under local jurisdiction with a posted speed limit of 30 MPH. Pelham Road provides two 11-foot wide travel lanes in each direction and a 4-foot wide shoulder in each direction.

Fox Hollow Drive is a two lane east-west private road with a posted speed limit of 10 MPH. Fox Hollow Drive provides two 12-foot wide travel lanes in each direction with no shoulder. There is an 8-foot wide median separating the entry and exit lanes at the Lowell Road (Route 3A) intersection.

Nottingham Square Driveway is a two lane east-west private with no posted speed. Nottingham Square Driveway provides a 14-foot wide travel lane in the west direction and

a 17-foot wide travel lane in the east direction. There is a 6-foot wide concrete median that at the intersection with Lowell Road (Route 3A) and no shoulder.

Executive Drive is a two lane east-west local road under local jurisdiction with no posted speed limit. Executive Drive, east of Lowell Road (Route 3A), has an 11-foot wide travel lane with no shoulders. West of Lowell Road (Route 3A) the travel lane is 18 feet wide with no shoulder.

Hampshire Drive is a two lane east-west local road under local jurisdiction with a posted speed limit of 30 MPH. Both directions of Hampshire Drive has a travel lane width of 14-feet at the intersection with Lowell Road (Route 3A). The width expands to 18-feet travel lane about 400 feet west of the intersection. There is no should in either direction of Hampshire Drive.

Oblate Drive is a two lane east-west lane private road with a posted speed limit of 10 MPH. Oblate Drive has a 12-foot wide travel lane and 5-foot wide shoulder in both directions. There is a 5-foot wide median starting at the Lowell Road (Route 3A) intersection that continues for about 100 feet. After the 100 feet, a fence separating the lanes continues for the length of the roadway.

Flagstone Drive is a two lane east-west local road under local jurisdiction with a posted speed limit of 30 MPH. Flagstone Drive has a travel lane width of 18 feet no shoulder in both directions.

Wason Road is a two lane east-west major collector road under local jurisdiction with a posted speed limit of 30 MPH. Wason Road has a travel lane width of 11 feet with a 2 foot shoulder in both directions. There is a 4-foot wide median starting at the Lowell Road (Route 3A) intersection. The median continues for about 170 feet along Wason Road at a width of 4 feet and another 110 feet with a width of 2 feet.

Sagamore Bridge Road (Circumferential Highway) is a six lane east-west divided principal arterial – other road under state jurisdiction with a posted speed limit of 50 MPH. Circumferential Highway's has lane widths of 12 feet and shoulder widths of 11 feet. There is a median width of at least 40 feet and about 300 feet at the Lowell Road (Route 3A) intersection. The Circumferential Highway connects the FE Everett Turnpike (Route 3) and Daniel Webster Highway on the westerly side of the Merrimac River to the east side of the river and Lowell Road (Route 3A).

Wal-Mart Boulevard (East) is a two lane east-west private driveway with no posted speed limit, with an average travel lane width of 12 feet with no shoulder in both directions. The westbound lane, at the intersection of Lowell Road (Route 3A), has a travel lane width of 30 feet with no shoulder. There is an 8 foot wide median that extends 200 feet from the Lowell Road (Route 3A) intersection along Wal-Mart Boulevard.

Wal-Mart Boulevard (West) is a two lane east-west private roadway with no posted speed limit, with a travel lane width of 15 feet that that narrows to 12 feet in both directions. There is no shoulder for the driveway and there is a 7 foot wide median that extends 225 feet from the Lowell Road (Route 3A) intersection.

Rena Avenue is a two lane east-west local road under local jurisdiction with a posted speed limit of 25 MPH. Rena Avenue has a travel lane width of 12 feet with no shoulder in both directions.

Mercury System's Driveway (Green Meadow Drive) is a two lane east-west private driveway a posted speed limit of 15 MPH. Mercury System's Driveway has a travel lane width of 13 feet with no shoulder in both directions.

Steele Road is a two lane east-west local road under local jurisdiction with a posted speed limit of 30 MPH. Steele Road has a travel lane width of 11 feet with no shoulder in both directions.

Dracut Road is a two lane northwest-southeast major collector road under local jurisdiction with a posted speed limit of 35 MPH. Dracut Road has a travel lane width of 11 feet in both directions. The northwest travel lane has a shoulder width of 3 feet. The southeast travel lane has a shoulder width of 4 feet.

River Road (Route 3A) is a two lane north-south minor arterial road that is a continuation of Lowell Road (Route 3A).

Study Intersections

Lowell Road (Route 3A) and Pelham Road is a signalized "T" intersection with the following geometry:

- Lowell Road (Route 3A) Southbound – one thru lane with approximately 1,310 feet of storage and one left-turn lane with approximately 150 feet of storage.
- Pelham Road Westbound – one right-turn lane with approximately 75 feet of storage and one left-turn lane with approximately 510 feet of storage.
- Lowell Road (Route 3A) Northbound – one shared right-turn/thru lane with approximately 550 feet of storage.

Lowell Road (Route 3A) and Fox Hollow Drive/Nottingham Square Driveway is a signalized four way intersection with the following geometry:

- Lowell Road (Route 3A) Southbound – one shared right-turn/thru lane with approximately 550 feet of storage and one left-turn lane with approximately 125 feet of storage.

- Nottingham Square Driveway – one right-turn lane with approximately 100 feet of storage and one left-turn/thru lane with approximately 260 feet of storage.
- Lowell Road (Route 3A) Northbound – one right-turn lane with approximately 325 feet of storage, one thru lane with approximately 1,410 feet of storage, and one left-turn lane with approximately 210 feet of storage.
- Fox Hollow Drive – one right-turn lane with approximately 50 feet of storage and one left-turn/thru lane with approximately 600 feet of storage.

Lowell Road (Route 3A) and Executive Drive is a signalized four way intersection with the following geometry:

- Lowell Road (Route 3A) Southbound – one right-turn/thru lane with approximately 1,170 feet of storage, one thru lane with approximately 1,170 feet of storage, and one left-turn lane with approximately 150 feet of storage.
- Executive Drive Westbound – one right-turn lane with approximately 80 feet of storage and one left-turn/thru lane with approximately, 580 feet of storage.
- Lowell Road (Route 3A) Northbound – one right-turn/thru lane with approximately 1,790 feet of storage, one thru lane with approximately 1,790 feet of storage, and one left-turn lane with approximately 350 feet of storage.
- Executive Drive Eastbound – one right-turn lane with approximately 225 feet of storage and one left-turn/thru lane with approximately 490 feet of storage.

Lowell Road (Route 3A) and Hampshire Drive/Oblate Drive is a signalized four way intersection with the following geometry:

- Lowell Road (Route 3A) Southbound – right-turn/thru lane with approximately 1,790 feet of storage, one thru lane with approximately 1,790 feet of storage, and one left-turn lane with approximately 225 feet of storage.
- Oblate Drive – one right-turn lane with approximately 100 feet of storage and one left-turn/thru lane with approximately 380 feet of storage.
- Lowell Road (Route 3A) Northbound – one right-turn/thru lane with approximately 1,520 feet of storage, one thru lane with approximately 1,520 feet of storage, and one left-turn lane with approximately 225 feet of storage.
- Hampshire Drive – one right-turn lane with approximately 100 feet of storage and one left-turn/thru lane with approximately 500 feet of storage.

Lowell Road (Route 3A) and Flagstone Drive/Wason Road is a signalized four way intersection with the following geometry:

- Lowell Road (Route 3A) Southbound – one right-turn/thru lane with approximately 1,520 feet of storage, one thru lane with approximately 1,520 feet of storage, and one left-turn lane with approximately 175 feet of storage.

- Wason Road – one right-turn lane with approximately 75 feet of storage, one left-turn/thru lane with approximately 590 feet of storage, and one left-turn lane with approximately 200 feet of storage.
- Lowell Road (Route 3A) Northbound – one right-turn lane with approximately 275 feet of storage, two thru lanes with approximately 1,000 feet of storage, and one left-turn lane with approximately 575 feet of storage.
- Flagstone Drive – one right-turn lane with approximately 250 feet of storage and one left-turn/thru lane with approximately 810 feet of storage.

Lowell Road (Route 3A) and Sagamore Bridge Road (Circumferential Highway) is a signalized "T" intersection with the following geometry:

- Lowell Road (Route 3A) Southbound –two thru lanes with approximately 1,000 feet of storage and a channelized free-right-turn lane that diverges from the thru lanes approximately 330 feet from the intersection with minimal storage upstream prior to the exit ramp.
- Lowell Road (Route 3A) Northbound – two thru lanes with approximately 1,200 feet of storage and two left-turn lanes with approximately 525 feet of storage.
- Sagamore Bridge Road Eastbound – two left-turn lanes and a channelized free-right-turn lane.

Lowell Road (Route 3A) and Wal-Mart Boulevard is a signalized four way intersection with the following geometry:

- Lowell Road (Route 3A) Southbound – one right-turn lane with approximately 1,200 feet of storage that extends to the eastbound right-turn lane from Sagamore Bridge Road, two thru lanes with approximately 1,200 feet of storage, and two left-turn lanes with approximately 350 feet of storage.
- Wal-Mart Boulevard (East) – one right-turn lane with approximately 200 feet of storage, one thru lane with approximately 450 feet of storage, and two left-turn lanes with approximately 150 feet of storage.
- Lowell Road (Route 3A) Northbound – one right-turn lane with approximately 175 feet of storage, two thru lanes with approximately 980 feet of storage, and two left-turn lanes with approximately 350 feet of storage.
- Wal-Mart Boulevard (West) – one right-turn lane with approximately 175 feet of storage, one thru lane with approximately 400 feet of storage, and two left-turn lanes with approximately 175 feet of storage.

Lowell Road (Route 3A) and Rena Avenue/ Green Meadow Drive is a signalized four way intersection with the following geometry:

- Lowell Road (Route 3A) Southbound – one right-turn/thru lane with approximately 980 feet of storage, one thru lane with approximately 980 feet of storage, and one left-turn lane with approximately 350 feet of storage.
- Rena Avenue – one right-turn/thru/left-turn lane with approximately 560 feet of storage.
- Lowell Road (Route 3A) Northbound – one right-turn/thru lane with approximately 1,730 feet of storage, one thru lane with approximately 1,730 feet of storage, and one left-turn lane with approximately 300 feet of storage.
- Green Meadow Drive – one right-turn lane with approximately 50 feet of storage and one left-turn/thru lane with approximately 510 feet of storage.

Lowell Road/River Road (Route 3A) and Dracut Road is a signalized four way intersection with the following geometry:

- Lowell Road (Route 3A) Southbound – one right-turn/thru lane with approximately 1,730 feet of storage, one thru lane with approximately 1,730 feet of storage and one left-turn lane with approximately 775 feet of storage.
- Dracut Road – one right-turn lane to Lowell Road (Route 3A) with approximately 800 feet of storage and one left-turn lane to Steel Road and River Road with approximately 100 feet of storage.
- River Road (Route 3A) – one right-turn/thru lane with approximately 760 feet of storage, one thru lane with approximately 760 feet of storage, and one left-turn lane with approximately 200 feet of storage.
- Steele Road – one right-turn lane to Dracut Road and River Road with approximately 50 feet of storage and one left-turn lane with approximately 590 feet of storage.

4.0 INTERSECTION CAPACITY ANALYSIS MEASURES

Langan conducted capacity analyses for the existing, no-build and build traffic conditions to assess quality of traffic flow. No-build and build scenarios were evaluated for the "opening year (OY)" and "horizon year (OY+10)" time periods in accordance with New Hampshire Department of Transportation guidelines. Capacity analyses provide an indication of the adequacy of the road and intersections to serve traffic demands.

Level of Service Criteria

Level of Service (LOS) is the term used to denote the different operating conditions that occur at an intersection under various traffic volume demands. LOS is a qualitative

measure that considers a number of factors including road geometry, speed and travel delay. LOS provides an index to the operational qualities of an intersection. LOS designations range from A to F, with LOS A representing the best operating conditions and LOS F representing the worst operating conditions. The LOS designation is reported differently for signalized intersections and unsignalized intersections.

For signalized intersections, the analysis considers the operation of all traffic entering the intersection. For unsignalized intersections, however, the analysis considers the operation of all movements that are in conflict with other movements such as mainline left turns and traffic exiting the side street. An overall LOS is given for signalized intersections. For unsignalized intersections, LOS is given for each specific approach.

The evaluation criteria used to analyze the study area intersections are based on the Highway Capacity Manual (HCM) 6th Edition, published by the Transportation Research Board (TRB). SYNCHRO 10 capacity analysis software was used to facilitate computer calculation for the capacity analyses at each intersection. There are a number of signalized intersections within the study area that operate under Non-NEMA or atypical phasing. These intersections cannot be analyzed utilizing the HCM 6th Edition or HCM 2010 Edition methodologies; therefore the Synchro Percentile Delay methodology was utilized. For consistency throughout the capacity analysis, all of the signalized intersections were analyzed utilizing the Percentile Delay methodology.

The HCM 6th Edition defines level of service for signalized intersections as follows:

Level of Service	Control Delay per Vehicle (sec/veh)
A	≤10
B	>10 – 20
C	>20 – 35
D	>35 – 55
E	>55 – 80
F	>80

The HCM defines level of service for unsignalized intersections as follows:

Level of Service	Control Delay per Vehicle (sec/veh)
A	≤10
B	>10 – 15
C	>15 – 25
D	>25 – 35
E	>35 – 50
F	> 50

5.0 METHODOLOGY AND ANALYSIS

To assess the potential traffic impact of the proposed development, Langan employed a five-step methodology outlined in the following list and described in detail in subsequent sections 5.1 through 5.5:

Step One: Determine the existing peak-hour traffic volumes and evaluate traffic operating conditions for the study intersections.

Step Two: Project the existing peak-hour traffic volumes (Step One) to create 2022 and 2032 No-Build peak-hour traffic volumes (Including approved or pending developments in the area) and evaluate traffic operating conditions for the study intersections.

Step Three: Determine the traffic volumes to be generated by the proposed development. Distribute and assign these site traffic volumes throughout the study area roadway network.

Step Four: Combine the No-Build traffic volumes (Step Two) with the assigned proposed traffic (Step Three) to establish 2022 and 2032 Build traffic volumes. Determine traffic operating conditions and identify mitigation of potential impacts.

Step Five: Investigate the safety conditions within the area roadway network.

5.1 Step One: Determine the existing peak-hour traffic volumes and evaluate traffic operating conditions for the study intersections.

Existing Peak-Hour Traffic Volumes

Turning-movement counts (TMC's) and vehicle classification counts were conducted in October 2019 to determine the existing peak-hour traffic volumes. The TMC's and vehicle classification counts were conducted on a weekday during the morning (6:00 a.m. to 9:00 a.m.) and evening (4:00 p.m. to 7:00 p.m.) peak periods of the development. During these study periods, the peak-hours of the adjacent roadway network generally occurred from 7:15 to 8:15 a.m. and 4:30 to 5:30 p.m.

Seasonal Adjustments

To determine the potential need to adjust the count data based on seasonal traffic fluctuations, the 2015 peak-hour and average daily traffic volumes were reviewed at NHDOT count station 229022, located in Hudson on Sagamore Bridge Road (Circumferential Highway) east of the Nashua town line to establish peak-month

conditions. Based on a review of the NHDOT data, the October 2016 data was utilized and no adjustment factor was applied to the weekday morning peak hour; however, an adjustment factor of 1.007 was applied to the average weekday evening peak hour. Figure 3 illustrates these existing peak-hour traffic volumes for the area roadway network. Traffic volume and seasonal adjustment data is provided in Appendix B.

2019 Existing Traffic Operating Conditions

The traffic operating conditions for the study area intersections were analyzed during the roadway peak-hour periods using the 2019 existing traffic volumes. Figure 3 illustrate the 2019 existing peak-hour traffic volumes. A summary of the traffic operating conditions is provided in Tables 6 through 9. Detailed reports can be found in Appendix D.

5.2 Step Two: Project the existing peak-hour traffic volumes (Step One) to create 2022 and 2032 No-Build peak-hour traffic volumes (Including approved or pending developments in the area) and evaluate traffic operating conditions for the study intersections.

No-Build Peak-Hour Traffic Volumes

Background traffic growth was estimated based on historical data available from NHDOT in the vicinity of the project. A review of the NHDOT data indicates that traffic volumes in Hudson have fluctuated over the last several years, but generally remained constant or increased. A review of the Nashua Regional Planning Commission's (NRPC) Hudson Boulevard Traffic Analysis, dated June 22, 2018, indicates the 2040 No-Build assignment model forecasts a 15% increase in traffic volumes from 2017, or an increase of approximately 0.65% per year. In an effort to be conservative, a reasonable growth rate of 1% annually was applied to the existing traffic volumes to develop the 2022 and 2032 background ambient growth peak-hour traffic volumes shown in Figure 4A and Figure 5A. **This growth rate has been approved for use by the NHDOT Bureau of Traffic.**

In addition to applying this growth rate, we also considered approved or pending projects and developments in the area that may add substantial traffic volume to the study area intersections. Based on discussions with NHDOT and the town of Hudson, the following area projects were included in the 2022 and 2032 No-Build volumes:

- *Cumberland Farms Gas Station/Convenience Store (225 Lowell Road)* – The project includes the construction of a 12-pump fueling facility and a ±5,814 square-foot convenience store. This facility has been approved but has yet been not constructed. Site generated and re-routed traffic volumes associated with the Cumberland Farms project are included in Figure 4B.
- *Southbound Road Widening on Lowell Road @ Flagstone Road* – The Cumberland Farms project noted above also includes provisions to convey land to the town of

Hudson to allow for a road widening project on Lowell Road. The project has been approved but is not under construction at this time. The road widening is proposed at the intersections of Lowell Road and Flagstone Road/Wason Road and Sagamore Bridge Road for the southbound approaches. At the intersection of Lowell Road and Flagstone Road/Wason Road, an additional southbound through lane will be added. At the intersection of Lowell Road and Sagamore Bridge Road, an additional southbound right-turn lane will be added to access the freeway.

The above noted projects and developments have been included as part of the no-build analysis. No other substantial developments have been submitted or are under construction that need to be accounted for in the no-build conditions of the study area.

2022 and 2032 No-Build Traffic Operating Conditions

The traffic operating conditions for the study area intersections were analyzed during the peak-hour periods using the 2022 no-build traffic volumes illustrated in Figure 4 and the 2032 no-build traffic volumes illustrated in Figure 5. A summary of the traffic operating conditions is provided in Tables 6 through 9. Detailed reports can be found in Appendix E and Appendix F.

Based on discussions with NHDOT and town staff, and supported by the traffic volume data, the Lowell Road (Route 3A) corridor experiences daily peak-hour traffic congestion under existing conditions. In general, the Lowell Road corridor north of Sagamore Bridge Road experiences and will continue to experience heavy traffic volumes northbound in the morning peak-hour and southbound in the evening peak-hour. South of Sagamore Bridge Road, the Lowell Road corridor experiences and will continue to experience fairly balanced heavy traffic volumes during both peak periods. Langan evaluated the existing and no-build traffic operations to determine areas of capacity deficiencies without the proposed development.

A review of the existing and no-build capacity analyses indicate some intersections already experience unsatisfactory overall levels-of-service (LOS), individual movement LOS, and extended queue lengths. There are a number of overall intersections and lane groups that already experience extensive delays that equate to LOS E or F in both the existing and no-build conditions, before the Hudson Logistics Center is constructed. There are also a number of intersections that experience extensive queuing along the mainline approaches and several locations where the existing turn-lane storage appears inadequate to accommodate the existing queues. Later in this report, we have recommended some mitigation measures to address both the existing and full build-out traffic issues within the study area.

5.3 Step Three: Determine the traffic volumes to be generated by the proposed development. Distribute and assign these site traffic volumes throughout the study area roadway network.

Project Overview and Site Access Points

The Hudson Logistics Center includes the construction of the following facilities:

- Lot A – Distribution Warehouse - ±1.08M square-foot building footprint, ±100 loading docks, ±404 trailer parking stalls, ±1,008 car parking stalls, 683 employees
- Lot B – Distribution Warehouse - ±1.00M square-foot building footprint, ±135 loading docks, ±250 trailer parking stalls, ±417 car parking stalls, 346 employees
- Lot C – Cross Dock Warehouse - ±522,000 square-foot building footprint, ±130 loading docks, ±188 trailer parking stalls, ±420 car parking stalls.

Associated site improvements, including utilities, stormwater drainage upgrades, and landscaping are also proposed as part of the development. A proposed subdivision roadway, Green Meadow Drive, will connect to Lowell Road at the current location of the Mercury Systems driveway, opposite the intersection of Rena Avenue. The Mercury Systems parking facilities will tie into the new subdivision road. The project also proposes a driveway connection to Wal-Mart Boulevard. Wal-Mart Boulevard forms a four-way signalized intersection on Lowell Road. (See Site Plan in Appendix A).

Facilities Operations and Land-use Description

Both Lots A and B are proposed to be the same tenant, however, the two facilities have different functions in the e-commerce supply chain. The tenant develops specific programming for each of their facilities, including the anticipated number of employees, shift and delivery schedules for the facility.

Lot A – The e-commerce facility on Lot A will receive bulk products brought in by tractor trailer truck, from non-affiliated vendors; called the inbound side. This product is of a scale that can be handled by employees, but are larger than can be completely automated and packaged with additional items. Employees breakdown the bulk product and separate it for shipping, called the outbound side, by tenant tractor trailer trucks to the next facility in supply chain. The scale of the products requires more storage area, thus impacting the size of the facility. The inbound and outbound trucks are spread fairly evenly throughout the day.

This facility will have two main shifts: one day and one night. Each of these two shifts include staggered arrivals and departures. The first portion of the day shift are employees that handle the inbound product and the second portion overlap and handles the outbound product. The night shift repeats this process, with the first portion of the shift are

employees that handle the inbound product followed by the employees for the outbound product for shipping.

Lot B – This e-commerce facility receives tractor trailer deliveries of bulk product from manufacturers and vendors of extra-large products, such as appliances and furniture, which require mechanical means, such as forklifts, to maneuver the product for storage within the building and eventual delivery to customers, via box trucks. The outgoing box trucks operate during the day shift, departing the facility prior to both the morning generator and roadway peak hours and return prior to the evening peak hour. The size and type of product results in a larger facility to store and process the product and in less trips than that you will see with the smaller, multi-product e-commerce supply chain facility.

The employee shifts operate in the same manner as those of the Lot A facility, with staggered arrivals and departures of the day and night shifts. This facility has numerous onsite amenities for the employees.

The ITE land use that the known tenant facilities are most closely associated with is High-Cube Fulfillment Center Warehouse (155) Non-Sort. Both buildings on Lot A and B are part of the e-commerce supply chain as non-sort fulfillment centers, as they handle inbound bulk products from manufacturer or vendors and separated for the next step in the tenant's supply chain. These products are larger and not combined with other consumer products and transported to the next step in the supply chain.

Lot C – For developing impacts for the proposed development, the current assumption is that the Lot C facility land use would be a general warehouse (LUC 150) or non-sort fulfillment center (LUC 155).

Trip Generation

Lot A and Lot B – From the ITE 10th Edition Supplement, LUC 155 provides trip generation data for two independent variables: gross-floor-area (GFA) and employees (See Appendix C for excerpts of the relevant ITE Trip Generation Manual 10th Edition). Table 1 provides the trip generation for the facilities on Lot A and Lot B associated with both variables, various peak hour periods and the average daily trips (ADT). The table also indicates the number of studies used in the development of the data.

TABLE 1
ITE LUC 155 – FULFILLMENT CENTER (NON-SORT) – LOT A AND LOT B ANTICIPATED TRIP GENERATION BY BUILDING AREA

LOCATION	LAND USE CODE	PEAK HOUR SCENARIO	Independent Variable		AM Peak-Hour			PM Peak-Hour			ADT	No. of Studies
			Amount	Unit	IN	OUT	TOTAL	IN	OUT	TOTAL		
Lot A	Fulfillment Ctr N-S LUC 155	Adjacent Street Traffic	1,079,700	GFA	113	27	140	67	106	173	1986	22/22/22
Lot A	Fulfillment Ctr N-S LUC 155	Generator	1,079,700	GFA	119	119	238	146	146	292	1986	1/1/22
Lot A	Fulfillment Ctr N-S LUC 155	Adjacent Street Traffic	683	Employees	72	17	89	43	66	109	1892	7/7/7
Lot B	Fulfillment Ctr N-S LUC 155	Adjacent Street Traffic	1,001,700	GFA	122	28	150	62	98	160	1830	22/22/22
Lot B	Fulfillment Ctr N-S LUC 155	Generator	1,001,700	GFA	110	110	220	135	135	270	1830	1/1/22
Lot B	Fulfillment Ctr N-S LUC 155	Adjacent Street Traffic	346	Employees	36	9	45	21	34	55	1121	7/7/7

A review of this table indicates that the adjacent street peak hour data, with gross-floor-area (GFA) as the independent variable, is based on twenty-two studies and the data for employees as the independent variable, is based on seven studies; the generator peak hour data is based on only one study. The ITE Trip Generation Manual cautions against using data from limited studies. The adjacent street peak hour appears to the appropriate scenario to utilize, instead of the generator peak hour. The independent variable of gross-floor-area provides peak hour trip generation that is appropriate to utilize, versus the trip generation volumes based on employees are low and does not appear to represent appropriate volumes, as compared to the tenant's trip generation predictions. All the ITE LUC 155 scenarios overestimate the ADT volumes compared to the tenant anticipated volumes.

Although two of the known tenant buildings in the HLC fall within the LUC 155 Non-Sort definition, facilities within this category can vary as to specific operations. The trip generation for the specific facilities on Lot A and B were provided by the tenant, based on the number of employees and trucks anticipated for the facilities. Table 2 provides the anticipated trip generation for Lot A and B, based on the tenant provided data. These volumes represent the anticipated 100% trip generation with no credits taken for multi-occupancy vehicles (mass transit, carpooling and ridesharing).

TABLE 2
ITE LUC 155 – FULFILLMENT CENTER (NON-SORT) – LOT A AND LOT B ANTICIPATED TRIP GENERATION BY EMPLOYEES

LOCATION	LAND USE CODE	PEAK HOUR SCENARIO	Independent Variable		AM Peak-Hour			PM Peak-Hour			ADT	No. of Studies
			Amount	Unit	IN	OUT	TOTAL	IN	OUT	TOTAL		
Lot A	Fulfillment Ctr N-S LUC 155	Generator	683	Employees	184	54	238	187	197	384	1631	Tenant
Lot B	Fulfillment Ctr N-S LUC 155	Generator	346	Employees	90	24	104	94	99	193	821	Tenant

A comparison of the ITE trip generation data for the adjacent street peak hours, based on GFA, and the tenant proposed trip generation indicates that for the Lot A facility, the tenant volumes are higher than ITE. For the Lot B facility the ITE adjacent street peak-hour volumes, based on GFA, are higher in the morning peak-hour and lower in the

evening peak-hour, than the tenant provided volumes. For Lot A the ITE generator peak-hour volumes, based on GFA, are the same (with a different enter/exit distribution) during the morning peak-hour and lower in the evening peak-hour, than the tenant provided volumes. For Lot B, the ITE generator peak-hour volumes are higher than the tenant provided volumes for both peak periods. The tenant provided volumes for the facilities on Lot A & B, are both higher than the ITE adjacent street peak-hour volumes based on number of employees. A review of the ADT volumes indicate that the ITE volumes are greater than the tenant volumes and do not seem to reflect the actual programming of the facilities. These differences are not unusual as the ITE data is a collection of multiple facility types within the non-sort, fulfillment center warehouse land use and the tenant data is based on very specific facility programs.

A review of the ITE data and the tenant data for Lot A indicates that the tenant data estimates higher trip generation volumes for use in the analysis of the traffic related impacts of the Hudson Logistics Center. To provide a conservative, or overestimation, approach to the trip generation, we would propose to utilize the tenant provided volumes for Lot A and the ITE Generator volumes for Lot B. Although the ITE Generator volumes are based on only one study, they provide a higher volume than the tenant' anticipated volumes.

Lot C – Lot C is currently a spec building, as no tenant has been identified for the building. It is anticipated that the facility will be either a warehouse (LUC 150) or a non-sort fulfillment center (LUC 155). Table 3 below indicates the trip generation of Lot C for both LUCs 150 and 155. As the number of employees for that potential facility is not known, the employee independent variable is not applicable.

TABLE 3
ITE LUC 150 & 155 – WAREHOUSE & FULFILLMENT CENTER (NON-SORT) – LOT C ANTICIPATED TRIP GENERATION

LOCATION	LAND USE CODE	PEAK HOUR SCENARIO	Independent Variable		AM Peak-Hour			PM Peak-Hour			ADT	No. of Studies
			Amount	Unit	IN	OUT	TOTAL	IN	OUT	TOTAL		
Lot C	Warehouse LUC 150	Adjacent Street Traffic	522,000	GFA	68	20	88	24	66	90	870	37/47/29
Lot C	Warehouse LUC 150	Generator	522,000	GFA	57	30	87	24	77	101	870	23/25/29
Lot C	Fulfillment Ctr N-S LUC 155	Adjacent Street Traffic	522,000	GFA	63	15	78	33	51	84	870	22/22/22
Lot C	Fulfillment Ctr N-S LUC 155	Generator	522,000	GFA	58	57	115	71	70	141	870	1/1/22

Based on Table 3 above, it is recommended that for the Lot C facility, the land use and peak hour period, used to evaluate traffic impacts of the HLC development, should be a Non-Sort Fulfillment Center Warehouse (LUC 155) and the generator peak period. Even though the generator data is only based on one study, it will provide a conservative approach to the traffic volumes associated with Lot C.

The trip generation approach outlined above should provide an overestimation of the projected traffic from the Hudson Logistics Center, resulting in a conservative analysis of the project traffic impacts. Table 4 depicts the unadjusted trip generation volumes used in the analysis to determine the potential impact of the HLC.

TABLE 4
HUDSON LOGISTIC CENTER – UNADJUSTED ANTICIPATED TRIP GENERATION

LOCATION	LAND USE CODE	PEAK HOUR SCENARIO	Independent Variable		AM Peak-Hour			PM Peak-Hour			ADT	No. of Studies
			Amount	Unit	IN	OUT	TOTAL	IN	OUT	TOTAL		
Lot A	Fulfillment Ctr N-S LUC 155	Generator	Tenant		184	54	238	187	197	384	1631	Tenant
Lot B	Fulfillment Ctr N-S LUC 155	Generator	1,001,700	GFA	110	110	220	135	135	270	1830	1/1/22
Lot C	Fulfillment Ctr N-S LUC 155	Generator	522,000	GFA	58	57	115	71	70	141	870	1/1/22
UNADJUSTED TOTAL					**352**	**221**	**571**	**393**	**402**	**795**	**4331**	

It should be pointed out that the ADT for Lot B is significantly higher than the tenant specific trip generation; over 1000 vehicle-per-day greater. The ITE LUC overestimates the trip generation of this specific facility.

Peak-Hour Period

This traffic impact analysis will utilize the peak hour of the land-uses and the peak hour of the adjacent roadways, as determined during data collection. The peak hours of the roadway network were observed to be between 7:15 and 8:15 in the morning and between 4:30 and 5:30 in the evening. The anticipated generator peak-hours of the users on Lots A and B occur between 6:30 and 7:30 in the morning and between 5:30 and 6:30 in the evening. The peak-hours of these users and the area roadway network DO NOT occur simultaneously; however, this approach will utilize the peak hours of the generators combined with the peak hours of the roadway network, providing a conservative analysis of the potential impact of the development.

Multi-Occupancy Vehicle Credit

The tenant of Lot A and Lot B has experience an increased trend of employees utilizing multi-occupancy vehicles. The tenant's employees have been utilizing self-created carpooling, ridesharing (Uber, Lyft) and mass transit. In the empirical data of the tenant's Massachusetts facility (See Appendix C), indicates as much as 25% of the employee vehicle trips are multi-occupancy. The developer has discussed with the Nashua Transit System about providing mass transit (bus or shuttle) service to HLC and the area businesses. They have indicated that they would be interested in providing this service and it has been planned for in the past, but there was no mechanism to do so. The developer and tenant will continue those discussion with the intent on provide mass

transit service to HLC. For these types of land uses, ITE estimates an average vehicle occupancy of 1.3 persons per vehicle, with a range of 1.2 – 1.8 person per vehicle. A 1.3 person per vehicle translates to a 23% reduction in trip generation. This information can be found in Table B.3 of the ITE Trip Generation Handbook, 3rd Edition (See Appendix C).

Utilizing ITE trip generation guidance and the empirical experience of the tenant it is suggested to utilize a credit to 5% of the trips, to the HLC, will be multi-occupancy vehicles.

Table 5 below represents the trip generation volumes recommended to be used in the traffic impact study. **These volumes have been approved for use by the NHDOT Bureau of Traffic.**

TABLE 5
HUDSON LOGISTIC CENTER –ADJUSTED ANTICIPATED TRIP GENERATION

LOCATION	LAND USE CODE	PEAK HOUR SCENARIO	Independent Variable		AM Peak-Hour			PM Peak-Hour			ADT	No. of Studies
			Amount	Unit	IN	OUT	TOTAL	IN	OUT	TOTAL		
Lot A	Fulfillment Ctr N-S	Generator	Tenant		184	54	238	187	197	384	1631	Tenant
Lot B	Fulfillment Ctr N-S LUC 155	Generator	1,001,700	GFA	110	110	220	135	135	270	1830	1/1/22
Lot C	Fulfillment Ctr N-S LUC 155	Generator	522,000	GFA	58	57	115	71	70	141	870	1/1/22
			UNADJUSTED TOTAL		**352**	**221**	**573**	**393**	**402**	**795**	**4331**	
			M-O Credit (5%)		-18	-11	-29	-20	-20	-40	-217	
			TOTAL		**334**	**210**	**544**	**373**	**382**	**755**	**4114**	

Peak-Hour Trip Distribution

The site-generated traffic peak-hour volumes were distributed to and from the site onto the roadway network as a percent distribution and is illustrated on Figure 6. The distribution is based on a number of factors, including existing traffic, anticipated travel patterns of employees, truck routes, and journey to work data obtained for the town of Hudson. Journey to work data was primarily utilized to determine the distributions and was conducted by searching for the zip codes of people that work in Hudson. The tenant expects the workforce to be similar in composition to that of people that currently work in Hudson, meaning that the mixture of people that live in Hudson and the surrounding areas that currently work in Hudson will be similar to the workforce for the tenant. Once a list of weighted list of the zip codes of people that work in Hudson was generated, those zip codes were used to estimate the best route to and from the study area. The results were tabulated in the Journey to Work worksheet provided in Appendix B. Once within the roadway network, the trips were routed to the site based on existing traffic patterns by combining and separating the distribution percentages from each approach.

Peak-Hour Trip Assignment

Figure 7 illustrates the assignment of the peak-hour site-generated trips, indicated in Table 5, into the area roadway network.

Saturday Peak Period

Both the Lot A and Lot B facilities will have similar operations on weekdays and Saturdays. The spreadsheets in Appendix C indicate that both facilities do not have a significant midday peak hour. ITE data indicates that the Saturday peak-hour for a 522,000 square-foot warehousing use is expected to only generate 25 total vehicle trips. The impacts on a Saturday would be less than the weekday peak hours, therefore, we suggest that a separate analysis period on Saturday is not necessary.

5.4 Step Four: Combine the No-Build traffic volumes (Step Two) with the assigned proposed traffic (Step Three) to establish 2022 and 2032 Build traffic volumes. Determine traffic operating conditions and identify mitigation of potential impacts.

Build Traffic Volumes

To evaluate the impacts of the development, the proposed trip assignment volumes (Figure 7), as distributed on the roadway network, are combined with the 2022 no-build traffic volumes (Figure 4) and the 2032 no-build traffic volumes (Figure 5). Figure 8 and Figure 9 illustrate the 2022 build traffic volumes and the 2032 build traffic volumes in the roadway network during the peak-hour periods.

Build Traffic Operating Conditions

The resulting traffic volumes illustrated in Figure 8 and Figure 9 were evaluated to determine the effective operating conditions of the study area intersections without any proposed improvements. Tables 6 through 9 compare the traffic operating conditions for the study area intersections during the peak-hour periods. Appendix G and Appendix H provide detailed reports for the 2022 and 2032 build conditions.

Queuing Evaluation

As part of the traffic operating conditions, we evaluated the resulting vehicular queuing for all conditions to assess the impacts at study intersections. In evaluating queuing length, the industry standard is to utilize the 50th and the 95th percentile queue lengths developed by the analysis. The 50th percentile queue represents the average or typical vehicular queue that can be expected during the peak-hour. The 95th percentile queue length represents the queuing experience during the highest peak periods, which accounts for 5% of the analysis period. Queues are calculated in feet, and approximately 25 feet of queue is equal to a single vehicle. Tables 6 through 9 provide the expected 50th and 95th percentile queue lengths for the analyzed periods.

TABLE 6
OPENING YEAR CAPACITY ANALYSIS SUMMARY – WEEKDAY A.M. PEAK-HOUR

INTERSECTION	CONTROL TYPE	LANE USE	STORAGE LENGTH (ft)	2019 EXISTING CONDITIONS					2022 NO-BUILD CONDITIONS					2022 BUILD CONDITIONS					2022 BUILD WITH IMPROVEMENTS CONDITIONS				
				LOS	DELAY (sec)	V/C RATIO	QUEUES (ft) 50th%	QUEUES (ft) 95th%	LOS	DELAY (sec)	V/C RATIO	QUEUES (ft) 50th%	QUEUES (ft) 95th%	LOS	DELAY (sec)	V/C RATIO	QUEUES (ft) 50th%	QUEUES (ft) 95th%	LOS	DELAY (sec)	V/C RATIO	QUEUES (ft) 50th%	QUEUES (ft) 95th%
River Road (Route 3A)/ Lowell Road (Route 3A) & Dracut Road & Steele Road	ACTUATED-COORDINATED	**Overall**		**B**	**20**	**0.83**			**B**	**19.6**	**0.84**			**B**	**16.4**	**0.83**			**B**	**16.7**	**0.83**		
		EB-L	±590'	D	40	0.03	2'	9'	D	40	0.03	2'	9'	D	40	0.03	2'	9'	D	40	0.03	2'	9'
		EB-RR	50'	A	0	0.01	0'	0'	A	0	0.01	0'	0'	A	0	0.01	0'	0'	A	0	0.01	0'	0'
		NB-L	200'	A	0	0	0'	0'	A	0	0	0'	0'	A	0	0	0'	0'	A	0	0	0'	0'
		NB-TTR	±760'	C	30.6	0.34	71'	113'	C	32.8	0.39	84'	119'	D	37.6	0.53	96'	123'	D	37.6	0.53	96'	123'
		SB-L	775'	D	40.9	0.76	302'	364'	D	37.3	0.74	293'	#382'	C	23.6	0.68	149'	#427'	C	23.4	0.68	149'	#416'
		SB-TTR	±1730'	A	3.6	0.21	110'	2'	A	3.4	0.22	114'	2'	A	0.7	0.22	2'	5'	A	2.2	0.22	2'	5'
		NWB-LL	100'	D	36	0	1'	5'	D	36	0	1'	5'	D	36	0	1'	5'	D	36	0	1'	5'
		NWB-R	>1000'	B	14.8	0.83	184'	#227'	B	15.2	0.84	168'	#319'	B	14.2	0.83	138'	#455'	B	14.2	0.83	138'	#455'
Lowell Road (Route 3A) & Green Meadow Drive/ Rena Avenue	ACTUATED-COORDINATED	**Overall**		**A**	**7.7**	**0.43**			**A**	**7.6**	**0.44**			**B**	**18.5**	**0.83**			**B**	**14**	**0.62**		
		EB-LT	±510'	D	38	0.03	2'	11'	D	38	0.03	2'	11'	E	66.1	0.83	112'	#208'	D	43.2	0.59	53'	76'
		EB-R	50'	A	0	0.02	0'	0'	A	0	0.02	0'	0'	A	0.6	0.1	0'	0'	A	0.3	0.07	0'	0'
		WB-LTR	±560'	B	17.2	0.24	1'	28'	B	17.1	0.24	1'	28'	B	13.2	0.17	1'	26'	B	13.3	0.17	1'	26'
		NB-L	300'	D	40.9	0.13	9'	m16'	D	40.5	0.13	9'	m15'	D	42.1	0.3	29'	m37'	D	41.7	0.3	29'	m37'
		NB-TTR	±1730'	A	3.8	0.43	98'	185'	A	3.8	0.44	106'	193'	B	10.1	0.59	140'	250'	A	8	0.54	134'	250'
		SB-L	350'	C	25	0.06	4'	m10'	C	24.4	0.06	4'	m10'	C	29.9	0.06	4'	m7'	C	32.4	0.06	4'	m7'
		SB-TTR	±980'	B	11.3	0.37	237'	169'	B	11	0.39	230'	182'	B	19.6	0.67	147'	261'	B	15	0.62	120'	222'
Lowell Road (Route 3A) & Wal-Mart Boulevard	ACTUATED-COORDINATED	**Overall**		**B**	**16.4**	**0.6**			**B**	**16.5**	**0.62**			**B**	**19.6**	**0.79**			**B**	**18.5**	**0.75**		
		EB-LL	175'	D	39.5	0.31	29'	54'	D	39.5	0.31	29'	54'	D	40.6	0.4	39'	67'	D	45.6	0.5	40'	70'
		EB-T	±400'	C	34.2	0.01	2'	12'	C	34.2	0.01	2'	12'	C	34	0.01	2'	12'	D	36.5	0.02	2'	12'
		EB-R	175'	A	0.8	0.15	0'	0'	A	0.8	0.15	0'	0'	A	0.8	0.15	0'	0'	A	0.9	0.17	0'	0'
		WB-LL	150'	D	38.7	0.06	4'	14'	D	38.7	0.06	4'	14'	D	38.7	0.06	4'	14'	D	38.7	0.06	4'	14'
		WB-T	±450'	D	38.8	0.04	3'	15'	D	38.8	0.04	3'	15'	D	38.8	0.04	3'	15'	D	38.8	0.04	3'	15'
		WB-R	200'	A	2.4	0.28	0'	0'	A	2.4	0.28	0'	0'	A	2.4	0.28	0'	0'	A	2.4	0.28	0'	0'
		NB-LL	350'	D	42.8	0.23	18'	44'	D	42.5	0.23	17'	44'	D	48.1	0.27	26'	m45'	D	44	0.27	26'	50'
		NB-TT	±980'	B	13.7	0.6	244'	83'	B	13.8	0.62	250'	85'	B	18.2	0.79	323'	#509'	B	16.8	0.75	312'	194'
		NB-R	175'	A	0.1	0.03	0'	m0'	A	0.1	0.03	0'	m0'	A	0.1	0.03	0'	m0'	A	0.1	0.03	0'	m0'
		SB-LL	350'	D	48.8	0.27	25'	46'	D	48.9	0.27	25'	m46'	D	48.3	0.27	25'	m38'	D	48.9	0.27	25'	m48'
		SB-TT	>1000'	B	15.3	0.48	243'	325'	B	15.5	0.5	255'	339'	B	19.4	0.67	326'	424'	B	17.6	0.64	317'	407'
		SB-R	725'	A	0.3	0.07	1'	m1'	A	0.3	0.07	1'	m1'	A	1.3	0.2	0'	m6'	A	1	0.2	0'	7'
Lowell Road (Route 3A) & Sagamore Bridge Road	ACTUATED-COORDINATED	**Overall**		**C**	**26.7**	**1.01**			**C**	**21.7**	**1.02**			**D**	**39.5**	**1.25**			**B**	**14.5**	**0.79**		
		EB-LL	>1000'	D	37	0.84	246'	#376'	D	38.4	0.86	266'	#416'	D	41.3	0.89	277'	#416'	C	34.5	0.74	182'	230'
		EB-R	>1000'	A	1.2	0.52	0'	0'	A	1.2	0.54	0'	0'	A	2.5	0.7	0'	0'	A	0.4	0.4	0'	0'
		NB-LL	525'	D	43.1	0.95	~214'	#407'	E	60.2	1.02	~313'	#425'	F	146.2	1.25	~414'	#538'	C	28	0.79	100'	173'
		NB-TT	±1190'	A	2.8	0.18	8'	4'	A	2.9	0.19	7'	4'	A	2.2	0.21	3'	m4'	A	2.2	0.19	3'	m9'
		SB-TT	±1000'	D	37.9	0.58	97'	133'	D	37.8	0.59	102'	138'	D	37.8	0.63	115'	158'	C	34.8	0.54	115'	164'
		SB-R	200'	C	27.8	1.01	~11'	#267'	A	1	0.6	0'	0'	A	1	0.6	0'	0'	A	1	0.6	0'	0'

TABLE 6
OPENING YEAR CAPACITY ANALYSIS SUMMARY – WEEKDAY A.M. PEAK-HOUR

INTERSECTION	CONTROL TYPE	LANE USE	STORAGE LENGTH (ft)	2019 EXISTING CONDITIONS					2022 NO-BUILD CONDITIONS					2022 BUILD CONDITIONS					2022 BUILD WITH IMPROVEMENTS CONDITIONS				
				LOS	DELAY (sec)	V/C RATIO	QUEUES (ft) 50th%	QUEUES (ft) 95th%	LOS	DELAY (sec)	V/C RATIO	QUEUES (ft) 50th%	QUEUES (ft) 95th%	LOS	DELAY (sec)	V/C RATIO	QUEUES (ft) 50th%	QUEUES (ft) 95th%	LOS	DELAY (sec)	V/C RATIO	QUEUES (ft) 50th%	QUEUES (ft) 95th%
Lowell Road (Route 3A) & Flagstone Drive/ Wason Road	ACTUATED-UNCOORDINATED	**Overall**		**D**	**47.4**	**0.86**			**D**	**54.4**	**1.04**			**E**	**55.7**	**1.07**			**D**	**54.3**	**1.04**		
		EB-LT	±810'	F	85	0.33	32'	67'	F	87.4	0.66	111'	184'	F	89.9	0.66	114'	187'	F	88.3	0.67	115'	177'
		EB-R	250'	D	45.8	0.55	168'	247'	D	48	0.66	257'	386'	D	50.2	0.68	268'	394'	D	47.6	0.67	267'	362'
		WB-L	200'	E	69.9	0.81	342'	490'	E	71.2	0.83	336'	540'	E	73.5	0.83	347'	550'	E	73.7	0.84	347'	#601'
		WB-LT	±590'	E	69.3	0.8	342'	490'	E	71.5	0.83	342'	546'	E	73.7	0.84	353'	556'	E	73.9	0.84	352'	#609'
		WB-R	75'	A	0.2	0.06	0'	0'	A	0.2	0.06	0'	0'	A	0.2	0.06	0'	0'	A	2.3	0.07	0'	8'
		NB-L	575'	F	80.7	0.78	249'	#463'	F	121.9	1.04	~349'	#691'	F	130.4	1.07	~368'	#707'	F	121.3	1.04	~356'	#644'
		NB-TT	±1000'	C	25.7	0.44	282'	408'	C	32.3	0.5	308'	445'	C	32.6	0.52	330'	467'	C	31.1	0.51	329'	426'
		NB-R	275'	A	0.7	0.15	0'	17'	A	1	0.16	0'	22'	A	1	0.16	0'	22'	A	1	0.16	0'	22'
		SB-L	175'	F	83.7	0.22	17'	48'	F	84.4	0.22	16'	48'	F	86.6	0.22	17'	49'	F	83	0.23	17'	47'
		SB-TTR	±1520'	D	51.2	0.86	559'	705'	D	50.3	0.76	390'	485'	D	50.6	0.76	420'	512'	D	50.2	0.77	424'	479'
Lowell Road (Route 3A) & Hampshire Drive/ Oblate Drive	ACTUATED-UNCOORDINATED	**Overall**		**B**	**12.6**	**0.64**			**B**	**12.8**	**0.66**			**B**	**13**	**0.67**							
		EB-LT	±500'	D	42.4	0.05	3'	22'	D	43.4	0.06	3'	22'	D	44.1	0.06	4'	22'					
		EB-R	100'	A	0.3	0.05	0'	0'	A	0.4	0.05	0'	0'	A	0.4	0.05	0'	0'					
		WB-LT	±380'	D	44.6	0.03	2'	16'	D	45.6	0.04	2'	16'	D	46.4	0.04	2'	16'					
		WB-R	100'	A	0	0.02	0'	0'	A	0	0.02	0'	0'	A	0.2	0.02	0'	0'					
		NB-L	225'	D	44.7	0.51	39'	#168'	D	46.1	0.53	43'	#174'	D	47.4	0.54	46'	#174'					
		NB-TTR	±1520'	A	5	0.26	0'	180'	A	5	0.28	0'	193'	A	5	0.29	0'	203'					
		SB-L	225'	D	47	0.02	1'	8'	D	47.5	0.02	1'	8'	D	48.5	0.02	1'	8'					
		SB-TTR	±1790'	B	13.8	0.64	114'	378'	B	14.2	0.66	128'	405'	B	14.4	0.67	141'	433'					
Lowell Road (Route 3A) & Executive Drive	ACTUATED-UNCOORDINATED	**Overall**		**C**	**28.3**	**0.85**			**C**	**29.6**	**0.91**			**C**	**30.3**	**0.93**							
		EB-LT	±490'	D	44.5	0.4	22'	56'	D	49	0.44	23'	59'	D	52.3	0.47	24'	59'					
		EB-R	225'	A	3.3	0.03	0'	4'	A	3.3	0.03	0'	4'	A	3.3	0.03	0'	4'					
		WB-LT	±580'	E	63.5	0.84	109'	#227'	E	68.4	0.86	115'	#238'	E	72.7	0.88	120'	#239'					
		WB-R	80'	B	13.4	0.33	11'	51'	B	14	0.34	12'	52'	B	14.3	0.34	12'	52'					
		NB-L	350'	E	75	0.85	94'	#254'	F	87	0.91	101'	#277'	F	94.3	0.93	105'	#278'					
		NB-TTR	±1790'	B	12.6	0.3	78'	108'	B	12.5	0.31	85'	117'	B	12.5	0.32	92'	126'					
		SB-L	150'	E	55.7	0.64	61'	#157'	E	59.3	0.66	64'	#167'	E	61.9	0.67	66'	#167'					
		SB-TTR	±1170'	C	20.7	0.76	275'	347'	C	20.8	0.77	296'	375'	C	21	0.78	318'	402'					
Lowell Road (Route 3A) & Fox Hollow Drive/ Nottingham Square Driveway	ACTUATED-COORDINATED	**Overall**		**C**	**26.6**	**0.81**			**C**	**30.5**	**0.84**			**C**	**34.4**	**0.88**			**C**	**33.6**	**0.88**		
		EB-LT	±600'	F	100.2	0.3	17'	40'	F	100.2	0.3	17'	40'	F	100.2	0.3	17'	40'	F	100.2	0.3	17'	40'
		EB-R	50'	B	12.4	0.42	0'	3'	B	12.4	0.42	0'	3'	B	12.4	0.42	0'	3'	B	12.4	0.42	0'	3'
		WB-LT	±260'	F	90.2	0.16	9'	27'	F	90.2	0.16	9'	27'	F	90.2	0.16	9'	27'	F	90.2	0.16	9'	27'
		WB-R	100'	A	0.5	0.06	0'	0'	A	0.5	0.06	0'	0'	A	0.5	0.06	0'	0'	A	0.5	0.06	0'	0'
		NB-L	210'	F	89	0.08	5'	20'	F	89	0.08	5'	20'	F	89	0.08	5'	20'	F	89	0.08	5'	20'
		NB-T	±1410'	A	7.7	0.38	129'	431'	A	8	0.41	143'	475'	A	8.4	0.43	156'	517'	A	5.8	0.23	65'	517'
		NB-R	325'	A	0	0	0'	0'	A	0	0	0'	0'	A	0	0	0'	0'	A	0	0	0'	0'
		SB-L	125'	F	95.9	0.28	20'	50'	F	95.9	0.28	20'	50'	F	95.9	0.28	20'	50'	F	95.9	0.28	20'	50'
		SB-TR	±550'	C	33.3	0.81	334'	#1917'	D	39.4	0.84	390'	#2059'	D	45.4	0.88	449'	#2186'	D	45.4	0.88	449'	#2186'

TABLE 6
OPENING YEAR CAPACITY ANALYSIS SUMMARY – WEEKDAY A.M. PEAK-HOUR

INTERSECTION	CONTROL TYPE	LANE USE	STORAGE LENGTH (ft)	2019 EXISTING CONDITIONS					2022 NO-BUILD CONDITIONS					2022 BUILD CONDITIONS					2022 BUILD WITH IMPROVEMENTS CONDITIONS				
				LOS	DELAY (sec)	V/C RATIO	QUEUES (ft)	QUEUES (ft)	LOS	DELAY (sec)	V/C RATIO	QUEUES (ft)	QUEUES (ft)	LOS	DELAY (sec)	V/C RATIO	QUEUES (ft)	QUEUES (ft)	LOS	DELAY (sec)	V/C RATIO	QUEUES (ft)	QUEUES (ft)
							50th%	95th%				50th%	95th%				50th%	95th%				50th%	95th%
Lowell Road (Route 3A) & Pelham Road	**ACTUATED-COORDINATED**	**Overall**		**D**	**53.2**	**1.36**			**E**	**55.5**	**1.4**			**D**	**55**	**1.4**							
		WB-L	±510'	F	250.3	1.36	~419'	#599'	F	265.8	1.4	~439'	#620'	F	265.8	1.4	~439'	#620'					
		WB-R	75'	E	56.6	0.5	59'	122'	E	57.8	0.51	62'	125'	E	57.8	0.51	62'	125'					
		NB-TR	±550'	B	16	0.42	217'	523'	B	17	0.45	238'	572'	B	18.1	0.47	258'	619'					
		SB-L	150'	F	204.4	1.03	~86'	#205'	F	211	1.06	~91'	#210'	F	211	1.06	~91'	#210'					
		SB-T	±1310'	B	15.5	0.71	436'	1285'	B	16.5	0.74	488'	1449'	B	17.8	0.78	548'	#1690'					

TABLE 7
OPENING YEAR CAPACITY ANALYSIS SUMMARY – WEEKDAY P.M. PEAK-HOUR

INTERSECTION	CONTROL TYPE	LANE USE	STORAGE LENGTH (ft)	2019 EXISTING CONDITIONS					2022 NO-BUILD CONDITIONS					2022 BUILD CONDITIONS					2022 BUILD WITH IMPROVEMENTS CONDITIONS				
				LOS	DELAY (sec)	V/C RATIO	QUEUES (ft) 50th%	QUEUES (ft) 95th%	LOS	DELAY (sec)	V/C RATIO	QUEUES (ft) 50th%	QUEUES (ft) 95th%	LOS	DELAY (sec)	V/C RATIO	QUEUES (ft) 50th%	QUEUES (ft) 95th%	LOS	DELAY (sec)	V/C RATIO	QUEUES (ft) 50th%	QUEUES (ft) 95th%
River Road (Route 3A)/ Lowell Road (Route 3A) & Dracut Road & Steele Road	ACTUATED-COORDINATED	**Overall**		**E**	**63.2**	**1.22**			**E**	**70.2**	**1.26**			**E**	**77.5**	**1.32**			**E**	**67.9**	**1.25**		
		EB-L	±590'	E	61	0.37	33'	62'	E	61.1	0.38	34'	63'	E	61.1	0.38	34'	63'	E	61.1	0.38	34'	63'
		EB-RR	50'	A	0.2	0.02	0'	0'	A	0.2	0.02	0'	0'	A	0.2	0.02	0'	0'	A	0.2	0.02	0'	0'
		NB-L	200'	D	55	0.01	1'	7'	D	55	0.01	1'	7'	D	55	0.01	1'	7'	D	55	0.01	1'	7'
		NB-TTR	±760'	E	55.4	0.82	238'	307'	E	56.5	0.84	250'	321'	E	57.5	0.85	256'	#334'	E	64.4	0.91	262'	#368'
		SB-L	775'	F	132.6	1.22	~920'	#1166'	F	151.5	1.26	~961'	#1216'	F	171.7	1.32	~997'	#1296'	F	141.4	1.25	~962'	#1259'
		SB-TTR	±1730'	A	4.1	0.17	10'	58'	A	4.1	0.18	18'	65'	A	1.2	0.19	2'	m44'	A	1.4	0.18	2'	40'
		NWB-LL	100'	D	51	0.02	3'	15'	D	51	0.03	3'	15'	D	51	0.03	3'	15'	D	52	0.03	3'	15'
		NWB-R	>1000'	B	12.9	0.66	131'	283'	B	14.3	0.68	144'	316'	B	16.4	0.72	175'	377'	B	13.6	0.7	141'	329'
Lowell Road (Route 3A) & Green Meadow Drive/ Rena Avenue	ACTUATED-COORDINATED	**Overall**		**A**	**6.7**	**0.48**			**A**	**7**	**0.5**			**C**	**29**	**1.19**			**B**	**16.6**	**0.74**		
		EB-LT	±510'	E	61.9	0.47	45'	80'	E	61.9	0.47	45'	80'	F	155.9	1.19	~302'	#438'	D	54.8	0.72	122'	154'
		EB-R	50'	A	0.8	0.09	0'	0'	A	0.8	0.09	0'	0'	A	5.2	0.16	0'	18'	A	0.4	0.11	0'	0'
		WB-LTR	±560'	A	0.9	0.09	0'	0'	A	0.9	0.1	0'	0'	A	0.5	0.08	0'	0'	A	0.5	0.08	0'	0'
		NB-L	300'	E	59.5	0.02	0'	m2'	E	63	0.02	0'	m1'	E	66	0.3	30'	m38'	E	65.6	0.3	30'	m38'
		NB-TTR	±1730'	A	6.6	0.48	148'	226'	A	7	0.5	160'	236'	B	15.7	0.62	498'	600'	B	13.7	0.59	196'	m596'
		SB-L	350'	D	47	0.21	20'	m36'	D	47	0.22	20'	m36'	E	57.3	0.22	22'	m30'	E	58	0.22	22'	m30'
		SB-TTR	±980'	A	3.6	0.45	80'	150'	A	3.9	0.47	76'	168'	B	14.8	0.78	137'	280'	B	10.4	0.74	102'	214'
Lowell Road (Route 3A) & Wal-Mart Boulevard	ACTUATED-COORDINATED	**Overall**		**C**	**28.1**	**0.79**			**C**	**28.5**	**0.82**			**D**	**43.5**	**1.06**			**D**	**39**	**1**		
		EB-LL	175'	D	54.8	0.61	107'	144'	D	54.8	0.61	107'	144'	E	58.2	0.76	155'	205'	D	54.7	0.72	154'	198'
		EB-T	±400'	D	43	0.06	10'	29'	D	42.9	0.06	10'	29'	D	40.9	0.05	10'	29'	D	44.5	0.05	10'	30'
		EB-R	175'	A	9.6	0.38	0'	44'	A	9.6	0.38	0'	44'	A	9.7	0.38	0'	53'	B	10.5	0.39	0'	55'
		WB-LL	150'	E	55.1	0.36	39'	63'	E	55.1	0.36	39'	63'	E	55.1	0.36	39'	63'	E	55.1	0.36	39'	63'
		WB-T	±450'	D	51	0.14	17'	41'	D	50.9	0.14	17'	41'	D	50.4	0.14	17'	41'	E	56.6	0.16	17'	44'
		WB-R	200'	C	24.8	0.77	28'	101'	C	25	0.78	28'	102'	C	30.7	0.8	44'	123'	D	40.3	0.87	50'	#200'
		NB-LL	350'	E	70.5	0.37	44'	75'	E	70.5	0.37	45'	76'	E	58.8	0.41	47'	m72'	E	56.6	0.41	49'	78'
		NB-TT	±980'	C	22.4	0.79	278'	#643'	C	23.7	0.82	289'	#670'	E	63.5	1.06	~708'	m#836'	D	44.5	1	~404'	#765'
		NB-R	175'	A	0.6	0.11	4'	0'	A	0.5	0.11	3'	0'	A	1	0.11	0'	m5'	A	0.5	0.1	0'	m4'
		SB-LL	350'	E	61.9	0.67	135'	156'	E	61.9	0.67	135'	157'	E	58.3	0.67	124'	m134'	E	75.7	0.79	137'	m#194'
		SB-TT	>1000'	C	20.6	0.63	382'	511'	C	21.1	0.66	401'	532'	C	29.4	0.86	557'	m#727'	C	30.2	0.85	544'	652'
		SB-R	725'	A	1.3	0.24	0'	m22'	A	1.5	0.24	0'	m21'	A	3.2	0.38	0'	m37'	A	2.5	0.38	0'	m31'
Lowell Road (Route 3A) & Sagamore Bridge Road	ACTUATED-COORDINATED	**Overall**		**D**	**44.8**	**1.17**			**D**	**50.3**	**1.2**			**F**	**82.4**	**1.53**			**C**	**21.5**	**0.91**		
		EB-LL	>1000'	E	76	1.05	~665'	#804'	F	92.6	1.1	~717'	#854'	F	101.6	1.12	~717'	#854'	D	47.5	0.9	404'	#469'
		EB-R	>1000'	A	2.5	0.71	0'	0'	A	2.8	0.73	0'	0'	A	9.3	0.9	0'	#5'	A	0.6	0.51	0'	0'
		NB-LL	525'	F	114.5	1.17	~531'	#644'	F	128.6	1.2	~560'	#673'	F	268.1	1.53	~792'	m#785'	C	31.5	0.91	326'	m350'
		NB-TT	±1190'	A	9	0.35	146'	113'	A	9.1	0.36	147'	120'	A	7.7	0.39	110'	m95'	A	5.6	0.35	94'	m106'
		SB-TT	±1000'	D	54.6	0.75	184'	240'	E	55.4	0.77	192'	250'	E	58.6	0.83	221'	284'	D	54.3	0.78	218'	281'
		SB-R	200'	A	5.2	0.83	0'	0'	A	0.6	0.49	0'	0'	A	0.6	0.49	0'	0'	A	0.6	0.49	0'	0'

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TABLE 7
OPENING YEAR CAPACITY ANALYSIS SUMMARY – WEEKDAY P.M. PEAK-HOUR

INTERSECTION	CONTROL TYPE	LANE USE	STORAGE LENGTH (ft)	2019 EXISTING CONDITIONS					2022 NO-BUILD CONDITIONS					2022 BUILD CONDITIONS					2022 BUILD WITH IMPROVEMENTS CONDITIONS				
				LOS	DELAY (sec)	V/C RATIO	QUEUES (ft) 50th%	QUEUES (ft) 95th%	LOS	DELAY (sec)	V/C RATIO	QUEUES (ft) 50th%	QUEUES (ft) 95th%	LOS	DELAY (sec)	V/C RATIO	QUEUES (ft) 50th%	QUEUES (ft) 95th%	LOS	DELAY (sec)	V/C RATIO	QUEUES (ft) 50th%	QUEUES (ft) 95th%
Lowell Road (Route 3A) & Flagstone Drive/ Wason Road	**ACTUATED-UNCOORDINATED**	**Overall**		**D**	**42.6**	**0.85**			**D**	**50.6**	**0.94**			**D**	**52.1**	**0.96**							
		EB-LT	±810'	F	81.7	0.59	90'	165'	F	90.4	0.78	187'	#276'	F	92.7	0.8	190'	#276'					
		EB-R	250'	E	57.2	0.85	351'	#556'	E	70.5	0.94	521'	#696'	E	74.4	0.96	~540'	#703'					
		WB-L	200'	E	57.2	0.61	207'	368'	D	53.6	0.56	227'	358'	D	53.8	0.56	231'	358'					
		WB-LT	±590'	E	56.9	0.6	206'	366'	D	53.4	0.56	227'	358'	D	53.7	0.55	231'	358'					
		WB-R	75'	A	0.2	0.05	0'	0'	A	0.2	0.05	0'	0'	A	0.2	0.05	0'	0'					
		NB-L	575'	E	61.1	0.26	66'	153'	E	68.4	0.48	144'	239'	E	69.2	0.49	146'	239'					
		NB-TT	±1000'	D	39.3	0.71	416'	648'	D	51	0.82	557'	663'	D	53.7	0.86	603'	715'					
		NB-R	275'	B	17.2	0.84	423'	809'	C	26.4	0.89	643'	992'	C	26	0.88	641'	992'					
		SB-L	175'	F	85.7	0.57	72'	156'	F	90.4	0.59	85'	151'	F	91.8	0.6	87'	151'					
		SB-TTR	±1520'	D	51.8	0.81	406'	576'	D	52.3	0.69	339'	379'	D	53.5	0.72	368'	408'					
Lowell Road (Route 3A) & Hampshire Drive/ Oblate Drive	**ACTUATED-UNCOORDINATED**	**Overall**		**B**	**13.6**	**0.58**			**B**	**13.7**	**0.59**			**B**	**13.7**	**0.61**							
		EB-LT	±500'	D	37.4	0.3	9'	43'	D	39.3	0.32	10'	46'	D	41.6	0.33	10'	48'					
		EB-R	100'	A	5.2	0.25	0'	24'	A	5.4	0.26	0'	25'	A	5.6	0.26	0'	26'					
		WB-LT	±380'	C	33	0.07	4'	22'	C	34.2	0.07	4'	23'	D	35.6	0.07	4'	24'					
		WB-R	100'	A	0	0.02	0'	0'	A	0	0.02	0'	0'	A	0	0.02	0'	0'					
		NB-L	225'	C	35	0.11	5'	30'	D	36.1	0.11	5'	30'	D	37.7	0.12	5'	31'					
		NB-TTR	±1520'	B	11.4	0.53	83'	293'	B	11.4	0.55	90'	310'	B	11.3	0.56	99'	332'					
		SB-L	225'	D	35.2	0.04	2'	15'	D	36.6	0.04	2'	15'	D	38	0.05	2'	16'					
		SB-TTR	±1790'	B	15.9	0.58	104'	226'	B	15.9	0.59	112'	238'	B	15.8	0.61	124'	258'					
Lowell Road (Route 3A) & Executive Drive	**ACTUATED-UNCOORDINATED**	**Overall**		**B**	**19**	**0.68**			**B**	**19.4**	**0.71**			**B**	**19.6**	**0.73**							
		EB-LT	±490'	C	33.9	0.68	94'	#226'	D	36.5	0.71	99'	#246'	D	39.1	0.73	106'	#258'					
		EB-R	225'	A	3.4	0.1	0'	19'	A	3.5	0.11	0'	20'	A	3.8	0.11	0'	21'					
		WB-LT	±580'	C	21.9	0.12	9'	31'	C	22.8	0.12	9'	32'	C	24.3	0.13	10'	33'					
		WB-R	80'	A	0.3	0.07	0'	0'	A	0.3	0.07	0'	0'	A	0.4	0.07	0'	0'					
		NB-L	350'	C	34.8	0.3	19'	58'	D	35.6	0.32	20'	61'	D	37.2	0.32	21'	63'					
		NB-TTR	±1790'	B	14.7	0.59	126'	249'	B	14.7	0.6	133'	262'	B	14.6	0.62	145'	282'					
		SB-L	150'	C	34	0.12	6'	28'	C	34.8	0.13	6'	28'	D	36.3	0.13	7'	29'					
		SB-TTR	±1170'	C	20.4	0.61	126'	186'	C	20.4	0.61	134'	196'	C	20.3	0.63	148'	215'					
Lowell Road (Route 3A) & Fox Hollow Drive/ Nottingham Square Driveway	**ACTUATED-COORDINATED**	**Overall**		**C**	**22.8**	**0.79**			**C**	**23.6**	**0.82**			**C**	**25**	**0.86**			**B**	**17.4**	**0.68**		
		EB-LT	±600'	F	90.1	0.22	16'	40'	F	90.1	0.22	16'	40'	F	90.1	0.22	16'	40'	F	90.1	0.22	16'	40'
		EB-R	50'	A	2.8	0.2	0'	0'	A	2.8	0.2	0'	0'	A	2.8	0.2	0'	0'	A	2.8	0.2	0'	0'
		WB-LT	±260'	F	117.7	0.59	46'	81'	F	117.7	0.59	46'	81'	F	117.7	0.59	46'	81'	F	117.7	0.59	46'	81'
		WB-R	100'	B	16.3	0.25	0'	36'	B	16.3	0.25	0'	36'	B	16.3	0.25	0'	36'	B	16.3	0.25	0'	36'
		NB-L	210'	F	103.9	0.42	32'	70'	F	103.9	0.42	32'	70'	F	103.9	0.42	32'	70'	F	103.9	0.42	32'	70'
		NB-T	±1410'	B	19.7	0.79	627'	#1657'	C	21.3	0.82	701'	#1772'	C	23.8	0.86	806'	#1911'	A	9.6	0.46	217'	519'
		NB-R	325'	A	0	0.01	0'	0'	A	0	0.01	0'	0'	A	0	0.01	0'	0'	A	0	0	0'	0'
		SB-L	125'	F	119.5	0.68	71'	#134'	F	119.5	0.68	71'	#134'	F	119.5	0.68	71'	#134'	F	119.5	0.68	71'	#134'
		SB-TR	±550'	B	11.5	0.45	204'	606'	B	12.1	0.47	219'	652'	B	13.2	0.51	250'	741'	B	13.2	0.51	250'	741'

TABLE 7
OPENING YEAR CAPACITY ANALYSIS SUMMARY – WEEKDAY P.M. PEAK-HOUR

INTERSECTION	CONTROL TYPE	LANE USE	STORAGE LENGTH (ft)	2019 EXISTING CONDITIONS					2022 NO-BUILD CONDITIONS					2022 BUILD CONDITIONS					2022 BUILD WITH IMPROVEMENTS CONDITIONS				
				LOS	DELAY (sec)	V/C RATIO	QUEUES (ft)	QUEUES (ft)	LOS	DELAY (sec)	V/C RATIO	QUEUES (ft)	QUEUES (ft)	LOS	DELAY (sec)	V/C RATIO	QUEUES (ft)	QUEUES (ft)	LOS	DELAY (sec)	V/C RATIO	QUEUES (ft)	QUEUES (ft)
							50th%	95th%				50th%	95th%				50th%	95th%				50th%	95th%
Lowell Road (Route 3A) & Pelham Road	**ACTUATED-COORDINATED**	**Overall**		**E**	**69.5**	**1.82**			**E**	**72.7**	**1.88**			**E**	**72.4**	**1.88**							
		WB-L	±510'	F	113.5	0.72	118'	178'	F	114.7	0.73	123'	184'	F	114.7	0.73	123'	184'					
		WB-R	75'	C	21.8	0.63	6'	80'	C	24.5	0.65	13'	91'	C	24.5	0.65	13'	91'					
		NB-TR	±550'	E	69	0.81	701'	#1887'	E	72.4	0.85	790'	#2011'	E	74.5	0.89	904'	#2163'					
		SB-L	150'	F	463.5	1.82	~224'	#369'	F	487.8	1.88	~235'	#384'	F	487.8	1.88	~235'	#384'					
		SB-T	±1310'	A	8.2	0.45	156'	585'	A	8.6	0.48	172'	631'	A	9.2	0.5	197′	722'					

TABLE 8
HORIZON YEAR CAPACITY ANALYSIS SUMMARY – WEEKDAY A.M. PEAK-HOUR

INTERSECTION	CONTROL TYPE	LANE USE	STORAGE LENGTH (ft)	2019 EXISTING CONDITIONS					2032 NO-BUILD CONDITIONS					2032 BUILD CONDITIONS					2032 BUILD WITH IMPROVEMENTS CONDITIONS				
				LOS	DELAY (sec)	V/C RATIO	QUEUES (ft) 50th%	QUEUES (ft) 95th%	LOS	DELAY (sec)	V/C RATIO	QUEUES (ft) 50th%	QUEUES (ft) 95th%	LOS	DELAY (sec)	V/C RATIO	QUEUES (ft) 50th%	QUEUES (ft) 95th%	LOS	DELAY (sec)	V/C RATIO	QUEUES (ft) 50th%	QUEUES (ft) 95th%
River Road (Route 3A)/ Lowell Road (Route 3A) & Dracut Road & Steele Road	ACTUATED-COORDINATED	**Overall**		**B**	**20**	**0.83**			**B**	**18.9**	**0.86**			**B**	**18.3**	**0.89**			**B**	**18.9**	**0.89**		
		EB-L	±590'	D	40	0.03	2'	9'	D	40	0.03	2'	9'	D	40	0.03	2'	9'	D	40	0.03	2'	9'
		EB-RR	50'	A	0	0.01	0'	0'	A	0	0.01	0'	0'	A	0	0.01	0'	0'	A	0	0.01	0'	0'
		NB-L	200'	A	0	0	0'	0'	A	0	0	0'	0'	A	0	0	0'	0'	A	0	0	0'	0'
		NB-TTR	±760'	C	30.6	0.34	71'	113'	D	43.2	0.68	102'	131'	D	43.8	0.7	106'	135'	D	43.8	0.7	106'	135'
		SB-L	775'	D	40.9	0.76	302'	364'	C	26.8	0.67	251'	#455'	C	20.1	0.7	152'	#495'	C	21.3	0.7	152'	#488'
		SB-TTR	±1730'	A	3.6	0.21	110'	2'	A	2.5	0.24	104'	2'	A	0.6	0.24	2'	5'	A	1.7	0.24	2'	5'
		NWB-LL	100'	D	36	0	1'	5'	D	36	0	1'	5'	D	36	0	1'	5'	D	36	0	1'	5'
		NWB-R	>1000'	B	14.8	0.83	184'	#227'	B	16	0.86	182'	#726'	B	18.8	0.89	215'	#774'	B	18.8	0.89	215'	#774'
Lowell Road (Route 3A) & Green Meadow Drive/ Rena Avenue	ACTUATED-COORDINATED	**Overall**		**A**	**7.7**	**0.43**			**A**	**7.2**	**0.49**			**B**	**19**	**0.86**			**B**	**14.7**	**0.67**		
		EB-LT	±510'	D	38	0.03	2'	11'	D	38	0.03	2'	10'	E	70.4	0.86	112'	#208'	D	43.2	0.59	53'	76'
		EB-R	50'	A	0	0.02	0'	0'	A	0	0.02	0'	0'	A	0.6	0.1	0'	0'	A	0.3	0.07	0'	0'
		WB-LTR	±560'	B	17.2	0.24	1'	28'	B	17	0.26	1'	29'	B	13	0.18	1'	27'	B	13.1	0.18	1'	27'
		NB-L	300'	D	40.9	0.13	9'	m16'	D	40.7	0.13	10'	m12'	D	41	0.3	29'	m32'	D	40.6	0.3	29'	m32'
		NB-TTR	±1730'	A	3.8	0.43	98'	185'	A	4.2	0.49	137'	234'	B	10.4	0.65	177'	278'	A	8.5	0.6	170'	278'
		SB-L	350'	C	25	0.06	4'	m10'	C	25.9	0.06	4'	m10'	C	30.5	0.06	5'	m7'	C	31.8	0.06	5'	m8'
		SB-TTR	±980'	B	11.3	0.37	237'	169'	A	9.6	0.42	196'	220'	C	20.5	0.72	183'	298'	B	16.5	0.67	155'	261'
Lowell Road (Route 3A) & Wal-Mart Boulevard	ACTUATED-COORDINATED	**Overall**		**B**	**16.4**	**0.6**			**B**	**17.4**	**0.68**			**C**	**21.4**	**0.86**			**B**	**19.5**	**0.81**		
		EB-LL	175'	D	39.5	0.31	29'	54'	D	39.5	0.31	29'	54'	D	40.6	0.4	39'	67'	D	45.6	0.5	40'	70'
		EB-T	±400'	C	34.2	0.01	2'	12'	C	34.2	0.01	2'	12'	C	34	0.01	2'	12'	D	36.5	0.02	2'	12'
		EB-R	175'	A	0.8	0.15	0'	0'	A	0.8	0.15	0'	0'	A	0.8	0.15	0'	0'	A	0.9	0.17	0'	0'
		WB-LL	150'	D	38.7	0.06	4'	14'	D	38.7	0.06	4'	14'	D	38.7	0.06	4'	14'	D	38.7	0.06	4'	14'
		WB-T	±450'	D	38.8	0.04	3'	15'	D	38.8	0.04	3'	15'	D	38.8	0.04	3'	15'	D	38.8	0.04	3'	15'
		WB-R	200'	A	2.4	0.28	0'	0'	A	2.4	0.28	0'	0'	A	2.4	0.28	0'	0'	A	2.4	0.28	0'	0'
		NB-LL	350'	D	42.8	0.23	18'	44'	D	44.6	0.23	14'	44'	D	47.3	0.27	26'	m41'	D	44.6	0.27	27'	m46'
		NB-TT	±980'	B	13.7	0.6	244'	83'	B	15.4	0.68	277'	#312'	C	21.4	0.86	365'	#591'	B	18.2	0.81	354'	#338'
		NB-R	175'	A	0.1	0.03	0'	m0'	A	0	0.03	0'	m0'	A	0	0.03	0'	m0'	A	0	0.03	0'	m0'
		SB-LL	350'	D	48.8	0.27	25'	46'	D	48.9	0.27	25'	m43'	D	48.1	0.27	25'	m35'	D	49.5	0.29	25'	m46'
		SB-TT	>1000'	B	15.3	0.48	243'	325'	B	16.4	0.55	290'	381'	C	20.8	0.73	366'	#503'	B	18.7	0.7	355'	454'
		SB-R	725'	A	0.3	0.07	1'	m1'	A	0.3	0.07	0'	m0'	A	1.2	0.2	0'	m4'	A	0.9	0.2	0'	m6'
Lowell Road (Route 3A) & Sagamore Bridge Road	ACTUATED-COORDINATED	**Overall**		**C**	**26.7**	**1.01**			**D**	**35.9**	**1.2**			**E**	**55.5**	**1.42**			**B**	**15.2**	**0.81**		
		EB-LL	>1000'	D	37	0.84	246'	#376'	D	45.1	0.93	315'	#482'	D	50.9	0.96	323'	#482'	D	35.6	0.79	207'	257'
		EB-R	>1000'	A	1.2	0.52	0'	0'	A	1.5	0.59	0'	0'	A	3.4	0.76	0'	0'	A	0.5	0.43	0'	0'
		NB-LL	525'	D	43.1	0.95	~214'	#407'	F	129.6	1.2	~378'	#491'	F	218.8	1.42	~476'	#601'	C	28.1	0.81	125'	199'
		NB-TT	±1190'	A	2.8	0.18	8'	4'	A	2.8	0.22	3'	4'	A	2.3	0.23	3'	m4'	A	2.5	0.21	5'	m11'
		SB-TT	±1000'	D	37.9	0.58	97'	133'	D	37.7	0.62	110'	152'	D	38.2	0.66	125'	173'	D	38.8	0.66	128'	181'
		SB-R	200'	C	27.8	1.01	~11'	#267'	A	1.2	0.66	0'	0'	A	1.2	0.66	0'	0'	A	1.2	0.66	0'	0'

TABLE 8
HORIZON YEAR CAPACITY ANALYSIS SUMMARY – WEEKDAY A.M. PEAK-HOUR

INTERSECTION	CONTROL TYPE	LANE USE	STORAGE LENGTH (ft)	2019 EXISTING CONDITIONS					2032 NO-BUILD CONDITIONS					2032 BUILD CONDITIONS					2032 BUILD WITH IMPROVEMENTS CONDITIONS				
				LOS	DELAY (sec)	V/C RATIO	QUEUES (ft) 50th%	QUEUES (ft) 95th%	LOS	DELAY (sec)	V/C RATIO	QUEUES (ft) 50th%	QUEUES (ft) 95th%	LOS	DELAY (sec)	V/C RATIO	QUEUES (ft) 50th%	QUEUES (ft) 95th%	LOS	DELAY (sec)	V/C RATIO	QUEUES (ft) 50th%	QUEUES (ft) 95th%
Lowell Road (Route 3A) & Flagstone Drive/ Wason Road	ACTUATED-UNCOORDINATED	**Overall**		**D**	**47.4**	**0.86**			**E**	**63.7**	**1.23**			**E**	**64.9**	**1.25**			**E**	**64.7**	**1.25**		
		EB-LT	±810'	F	85	0.33	32'	67'	F	95.6	0.7	130'	192'	F	97.4	0.7	134'	192'	F	101	0.73	133'	195'
		EB-R	250'	D	45.8	0.55	168'	247'	E	58.1	0.76	336'	433'	E	59.9	0.77	349'	433'	E	60.7	0.77	347'	440'
		WB-L	200'	E	69.9	0.81	342'	490'	E	79.4	0.88	418'	#655'	F	81.4	0.88	432'	#655'	E	79.9	0.88	433'	#632'
		WB-LT	±590'	E	69.3	0.8	342'	490'	E	79.4	0.88	424'	#660'	F	81.3	0.88	437'	#660'	E	79.8	0.88	437'	#636'
		WB-R	75'	A	0.2	0.06	0'	0'	A	0.2	0.07	0'	0'	A	0.2	0.07	0'	0'	A	0.2	0.07	0'	0'
		NB-L	575'	F	80.7	0.78	249'	#463'	F	184.1	1.23	~488'	#777'	F	193.7	1.25	~510'	#777'	F	192.6	1.25	~508'	#777'
		NB-TT	±1000'	C	25.7	0.44	282'	408'	D	35.1	0.55	396'	507'	D	35.4	0.57	422'	532'	D	35.4	0.57	420'	532'
		NB-R	275'	A	0.7	0.15	0'	17'	A	1	0.17	0'	23'	A	1	0.17	0'	23'	A	0.9	0.17	0'	22'
		SB-L	175'	F	83.7	0.22	17'	48'	F	90.4	0.27	22'	55'	F	91.8	0.27	23'	55'	F	91.7	0.27	23'	55'
		SB-TTR	±1520'	D	51.2	0.86	559'	705'	D	53.1	0.79	488'	547'	D	53.8	0.8	523'	578'	D	53.7	0.8	520'	578'
Lowell Road (Route 3A) & Hampshire Drive/ Oblate Drive	ACTUATED-UNCOORDINATED	**Overall**		**B**	**12.6**	**0.64**			**B**	**13.8**	**0.71**			**B**	**14.1**	**0.73**							
		EB-LT	±500'	D	42.4	0.05	3'	22'	D	44.6	0.07	4'	23'	D	45	0.07	5'	23'					
		EB-R	100'	A	0.3	0.05	0'	0'	A	0.4	0.06	0'	0'	A	0.4	0.06	0'	0'					
		WB-LT	±380'	D	44.6	0.03	2'	16'	D	46.8	0.04	2'	16'	D	47	0.04	3'	16'					
		WB-R	100'	A	0	0.02	0'	0'	A	0.2	0.02	0'	0'	A	0.2	0.02	0'	0'					
		NB-L	225'	D	44.7	0.51	39'	#168'	D	49.1	0.58	56'	#201'	D	50.7	0.6	61'	#201'					
		NB-TTR	±1520'	A	5	0.26	0'	180'	A	5.1	0.3	0'	217'	A	5.2	0.32	0'	228'					
		SB-L	225'	D	47	0.02	1'	8'	D	49	0.02	1'	8'	D	49	0.02	1'	8'					
		SB-TTR	±1790'	B	13.8	0.64	114'	378'	B	15.5	0.71	160'	475'	B	15.9	0.73	172'	506'					
Lowell Road (Route 3A) & Executive Drive	ACTUATED-UNCOORDINATED	**Overall**		**C**	**28.3**	**0.85**			**C**	**34.2**	**1.08**			**D**	**35**	**1.11**			**C**	**33.3**	**0.96**		
		EB-LT	±490'	D	44.5	0.4	22'	56'	D	52.8	0.48	29'	65'	E	55.3	0.5	30'	65'	E	61.9	0.54	32'	67'
		EB-R	225'	A	3.3	0.03	0'	4'	A	3.6	0.03	0'	5'	A	3.5	0.03	0'	5'	A	3.7	0.03	0'	5'
		WB-LT	±580'	E	63.5	0.84	109'	#227'	E	76.5	0.89	127'	#226'	F	80.4	0.91	133'	#226'	F	83.6	0.91	140'	#252'
		WB-R	80'	B	13.4	0.33	11'	51'	B	14.4	0.34	13'	51'	B	14.6	0.35	13'	51'	B	15.8	0.35	16'	55'
		NB-L	350'	E	75	0.85	94'	#254'	F	132.9	1.08	~139'	#318'	F	141.1	1.11	~148'	#318'	F	100.4	0.96	132'	#296'
		NB-TTR	±1790'	B	12.6	0.3	78'	108'	B	12.4	0.32	94'	135'	B	12.5	0.33	102'	145'	B	12	0.32	102'	135'
		SB-L	150'	E	55.7	0.64	61'	#157'	E	66.2	0.7	70'	#171'	E	68.3	0.71	73'	#171'	E	72.7	0.74	76'	#172'
		SB-TTR	±1170'	C	20.7	0.76	275'	347'	C	21.9	0.8	350'	464'	C	22.4	0.82	375'	497'	C	23.7	0.83	394'	488'
Lowell Road (Route 3A) & Fox Hollow Drive/ Nottingham Square Driveway	ACTUATED-COORDINATED	**Overall**		**C**	**26.6**	**0.81**			**D**	**42**	**0.93**			**D**	**46.4**	**0.96**			**D**	**45.5**	**0.96**		
		EB-LT	±600'	F	100.2	0.3	17'	40'	F	100.2	0.3	17'	40'	F	100.2	0.3	17'	40'	F	100.2	0.3	17'	40'
		EB-R	50'	B	12.4	0.42	0'	3'	B	12.4	0.42	0'	3'	B	12.4	0.42	0'	3'	B	12.4	0.42	0'	3'
		WB-LT	±260'	F	90.2	0.16	9'	27'	F	90.2	0.16	9'	27'	F	90.2	0.16	9'	27'	F	90.2	0.16	9'	27'
		WB-R	100'	A	0.5	0.06	0'	0'	A	0.5	0.06	0'	0'	A	0.5	0.06	0'	0'	A	0.5	0.06	0'	0'
		NB-L	210'	F	89	0.08	5'	20'	F	89	0.08	5'	20'	F	89	0.08	5'	20'	F	89	0.08	5'	20'
		NB-T	±1410'	A	7.7	0.38	129'	431'	A	8.6	0.45	166'	548'	A	9	0.47	180'	595'	A	5.9	0.25	73'	227'
		NB-R	325'	A	0	0	0'	0'	A	0	0	0'	0'	A	0	0	0'	0'	A	0	0	0'	0'
		SB-L	125'	F	95.9	0.28	20'	50'	F	95.9	0.28	20'	50'	F	95.9	0.28	20'	50'	F	95.9	0.28	20'	50'
		SB-TR	±550'	C	33.3	0.81	334'	#1917'	E	56.6	0.93	582'	#2389'	E	63.5	0.96	695'	#2516'	E	63.5	0.96	695'	#2516

LANGAN

TABLE 8
HORIZON YEAR CAPACITY ANALYSIS SUMMARY – WEEKDAY A.M. PEAK-HOUR

INTERSECTION	CONTROL TYPE	LANE USE	STORAGE LENGTH (ft)	2019 EXISTING CONDITIONS					2032 NO-BUILD CONDITIONS					2032 BUILD CONDITIONS					2032 BUILD WITH IMPROVEMENTS CONDITIONS				
				LOS	DELAY (sec)	V/C RATIO	QUEUES (ft)	QUEUES (ft)	LOS	DELAY (sec)	V/C RATIO	QUEUES (ft)	QUEUES (ft)	LOS	DELAY (sec)	V/C RATIO	QUEUES (ft)	QUEUES (ft)	LOS	DELAY (sec)	V/C RATIO	QUEUES (ft)	QUEUES (ft)
							50th%	95th%				50th%	95th%				50th%	95th%				50th%	95th%
Lowell Road (Route 3A) & Pelham Road	**ACTUATED-COORDINATED**	**Overall**		**D**	**53.2**	**1.36**			**E**	**65.7**	**1.55**			**E**	**65.5**	**1.55**							
		WB-L	±510'	F	250.3	1.36	~419'	#599'	F	320.3	1.55	~509'	#695'	F	320.3	1.55	~509'	#695'					
		WB-R	75'	E	56.6	0.5	59'	122'	E	63.3	0.56	73'	143'	E	63.3	0.56	73'	143'					
		NB-TR	±550'	B	16	0.42	217'	523'	B	19.1	0.49	276'	661'	C	20.7	0.52	300'	715'					
		SB-L	150'	F	204.4	1.03	~86'	#205'	F	238.7	1.17	~109'	#233'	F	238.7	1.17	~109'	#233'					
		SB-T	±1310'	B	15.5	0.71	436'	1285'	B	19.6	0.82	632'	#1850'	C	21.6	0.86	716'	#1982'					

TABLE 9
HORIZON YEAR CAPACITY ANALYSIS SUMMARY – WEEKDAY P.M. PEAK-HOUR

INTERSECTION	CONTROL TYPE	LANE USE	STORAGE LENGTH (ft)	2019 EXISTING CONDITIONS					2032 NO-BUILD CONDITIONS					2032 BUILD CONDITIONS					2032 BUILD WITH IMPROVEMENTS CONDITIONS				
				LOS	DELAY (sec)	V/C RATIO	QUEUES (ft) 50th%	QUEUES (ft) 95th%	LOS	DELAY (sec)	V/C RATIO	QUEUES (ft) 50th%	QUEUES (ft) 95th%	LOS	DELAY (sec)	V/C RATIO	QUEUES (ft) 50th%	QUEUES (ft) 95th%	LOS	DELAY (sec)	V/C RATIO	QUEUES (ft) 50th%	QUEUES (ft) 95th%
River Road (Route 3A)/ Lowell Road (Route 3A) & Dracut Road & Steele Road	ACTUATED-COORDINATED	**Overall**		**E**	**63.2**	**1.22**			**F**	**93.6**	**1.41**			**F**	**101.9**	**1.46**			**F**	**81**	**1.31**		
		EB-L	±590'	E	61	0.37	33'	62'	E	61.5	0.4	38'	68'	E	61.5	0.4	38'	68'	E	76.2	0.54	38'	72'
		EB-RR	50'	A	0.2	0.02	0'	0'	A	0.2	0.02	0'	0'	A	0.2	0.02	0'	0'	A	0.2	0.02	0'	0'
		NB-L	200'	D	55	0.01	1'	7'	D	55	0.01	1'	7'	D	55	0.01	1'	7'	D	55	0.01	1'	7'
		NB-TTR	±760'	E	55.4	0.82	238'	307'	E	62.6	0.91	282'	#390'	E	64.1	0.92	288'	#402'	E	70.9	0.96	292'	#414'
		SB-L	775'	F	132.6	1.22	~920'	#1166'	F	211.8	1.41	~1088'	#1394'	F	234	1.46	~1169'	#1470'	F	163.6	1.31	~1099'	#1360'
		SB-TTR	±1730'	A	4.1	0.17	10'	58'	A	4.3	0.2	36'	86'	A	1.3	0.21	2'	m48'	A	0.9	0.19	2'	m12'
		NWB-LL	100'	D	51	0.02	3'	15'	D	51.2	0.03	4'	17'	D	51.2	0.03	4'	17'	D	54.6	0.05	4'	17'
		NWB-R	>1000'	B	12.9	0.66	131'	283'	B	19.5	0.77	222'	#315'	C	22.4	0.81	270'	#446'	C	28.7	0.84	297'	#535'
Lowell Road (Route 3A) & Green Meadow Drive/ Rena Avenue	ACTUATED-COORDINATED	**Overall**		**A**	**6.7**	**0.48**			**A**	**7.9**	**0.55**			**C**	**30.1**	**1.19**			**B**	**17.2**	**0.8**		
		EB-LT	±510'	E	61.9	0.47	45'	80'	E	61.9	0.47	45'	80'	F	155.9	1.19	~303'	#438'	E	57.4	0.74	122'	158'
		EB-R	50'	A	0.8	0.09	0'	0'	A	0.8	0.09	0'	0'	A	5.2	0.16	0'	18'	A	0.5	0.12	0'	0'
		WB-LTR	±560'	A	0.9	0.09	0'	0'	A	0.8	0.1	0'	0'	A	0.4	0.07	0'	0'	A	0.4	0.07	0'	0'
		NB-L	300'	E	59.5	0.02	0'	m2'	E	63.5	0.02	1'	m1'	E	64.5	0.3	30'	m34'	E	61.1	0.3	29'	m32'
		NB-TTR	±1730'	A	6.6	0.48	148'	226'	A	8.1	0.55	197'	m628'	B	17.5	0.69	565'	m688'	B	16.7	0.65	575'	m666'
		SB-L	350'	D	47	0.21	20'	m36'	D	48.7	0.23	22'	m38'	E	56.8	0.23	23'	m29'	E	63	0.23	23'	m34'
		SB-TTR	±980'	A	3.6	0.45	80'	150'	A	4.8	0.52	97'	204'	B	17.9	0.85	201'	m#356'	A	9.4	0.8	109'	#181'
Lowell Road (Route 3A) & Wal-Mart Boulevard	ACTUATED-COORDINATED	**Overall**		**C**	**28.1**	**0.79**			**C**	**30.6**	**0.91**			**E**	**56.8**	**1.15**			**D**	**36.1**	**0.99**		
		EB-LL	175'	D	54.8	0.61	107'	144'	D	54.8	0.61	107'	144'	E	58.2	0.76	155'	205'	E	73.3	0.89	161'	#239'
		EB-T	±400'	D	43	0.06	10'	29'	D	42.9	0.06	10'	29'	D	40.9	0.05	10'	29'	D	45.4	0.06	10'	30'
		EB-R	175'	A	9.6	0.38	0'	44'	A	9.6	0.38	0'	44'	A	9.7	0.38	0'	53'	A	5.4	0.38	0'	23'
		WB-LL	150'	E	55.1	0.36	39'	63'	E	55.1	0.36	39'	63'	E	55.1	0.36	39'	63'	E	58.1	0.4	39'	65'
		WB-T	±450'	D	51	0.14	17'	41'	D	50.9	0.14	17'	41'	D	50.4	0.14	17'	41'	D	54.2	0.16	17'	42'
		WB-R	200'	C	24.8	0.77	28'	101'	C	25.3	0.78	29'	103'	C	30.7	0.8	44'	123'	C	29.1	0.81	29'	#125'
		NB-LL	350'	E	70.5	0.37	44'	75'	E	67.7	0.37	45'	75'	E	57.9	0.41	48'	m67'	E	64.7	0.62	48'	m#86'
		NB-TT	±980'	C	22.4	0.79	278'	#643'	C	29.7	0.91	325'	#787'	F	100.7	1.15	~821'	m#954'	D	39.6	0.99	240'	#817'
		NB-R	175'	A	0.6	0.11	4'	0'	A	0.7	0.11	0'	5'	A	1.8	0.11	0'	m6'	A	0.2	0.09	0'	m0'
		SB-LL	350'	E	61.9	0.67	135'	156'	E	61.3	0.67	135'	m145'	E	57.6	0.67	125'	m122'	E	78.4	0.84	139'	m#203'
		SB-TT	>1000'	C	20.6	0.63	382'	511'	C	22.6	0.72	461'	602'	C	32.2	0.93	627'	m#756'	C	22.5	0.81	566'	m652'
		SB-R	725'	A	1.3	0.24	0'	m22'	A	2	0.24	0'	m17'	A	3.9	0.39	8'	m32'	A	1.1	0.34	0'	m6'
Lowell Road (Route 3A) & Sagamore Bridge Road	ACTUATED-COORDINATED	**Overall**		**D**	**44.8**	**1.17**			**E**	**72.6**	**1.33**			**F**	**106.8**	**1.66**			**C**	**25.6**	**0.99**		
		EB-LL	>1000'	E	76	1.05	~665'	#804'	F	145.4	1.23	~850'	#987'	F	153.4	1.25	~850'	#987'	D	51.5	0.95	453'	#554'
		EB-R	>1000'	A	2.5	0.71	0'	0'	A	4.2	0.81	0'	0'	C	20.6	0.98	0'	#216'	A	0.8	0.56	0'	0'
		NB-LL	525'	F	114.5	1.17	~531'	#644'	F	180.9	1.33	~660'	m#753'	F	322.5	1.66	~890'	m#807'	D	40.6	0.99	392'	m#465'
		NB-TT	±1190'	A	9	0.35	146'	113'	A	9.4	0.39	155'	m126'	A	7.7	0.42	128'	m100'	A	7.2	0.4	124'	m143'
		SB-TT	±1000'	D	54.6	0.75	184'	240'	E	58.3	0.82	216'	277'	E	63.9	0.89	245'	#337'	E	69.6	0.93	248'	#350'
		SB-R	200'	A	5.2	0.83	0'	0'	A	0.8	0.54	0'	0'	A	0.8	0.54	0'	0'	A	0.8	0.54	0'	0'

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TABLE 9
HORIZON YEAR CAPACITY ANALYSIS SUMMARY – WEEKDAY P.M. PEAK-HOUR

INTERSECTION	CONTROL TYPE	LANE USE	STORAGE LENGTH (ft)	2019 EXISTING CONDITIONS					2032 NO-BUILD CONDITIONS					2032 BUILD CONDITIONS					2032 BUILD WITH IMPROVEMENTS CONDITIONS				
				LOS	DELAY (sec)	V/C RATIO	QUEUES (ft) 50th%	QUEUES (ft) 95th%	LOS	DELAY (sec)	V/C RATIO	QUEUES (ft) 50th%	QUEUES (ft) 95th%	LOS	DELAY (sec)	V/C RATIO	QUEUES (ft) 50th%	QUEUES (ft) 95th%	LOS	DELAY (sec)	V/C RATIO	QUEUES (ft) 50th%	QUEUES (ft) 95th%
Lowell Road (Route 3A) & Flagstone Drive/ Wason Road	ACTUATED-UNCOORDINATED	**Overall**		**D**	**42.6**	**0.85**			**E**	**67.9**	**1.13**			**E**	**68.7**	**1.13**							
		EB-LT	±810'	F	81.7	0.59	90'	165'	F	105.9	0.86	216'	#302'	F	107.3	0.87	216'	#306'					
		EB-R	250'	E	57.2	0.85	351'	#556'	F	125.3	1.13	~749'	#825'	F	128.6	1.13	~749'	#835'					
		WB-L	200'	E	57.2	0.61	207'	368'	E	56.3	0.57	283'	400'	E	57.4	0.58	283'	402'					
		WB-LT	±590'	E	56.9	0.6	206'	366'	E	56.1	0.56	281'	395'	E	57.1	0.57	281'	400'					
		WB-R	75'	A	0.2	0.05	0'	0'	A	0.2	0.05	0'	0'	A	0.2	0.05	0'	0'					
		NB-L	575'	E	61.1	0.26	66'	153'	E	76.7	0.57	167'	253'	E	77.6	0.58	167'	255'					
		NB-TT	±1000'	D	39.3	0.71	416'	648'	E	60.1	0.9	654'	763'	E	63.0	0.93	705'	#823'					
		NB-R	275'	B	17.2	0.84	423'	809'	E	55.5	0.97	993'	#1506'	D	53.8	0.97	993'	#1512'					
		SB-L	175'	F	85.7	0.57	72'	156'	F	100.1	0.67	102'	165'	F	101.3	0.68	102'	166'					
		SB-TTR	±1520'	D	51.8	0.81	406'	576'	E	55.3	0.71	384'	425'	E	55.8	0.73	414'	455'					
Lowell Road (Route 3A) & Hampshire Drive/ Oblate Drive	ACTUATED-UNCOORDINATED	**Overall**		**B**	**13.6**	**0.58**			**B**	**14.5**	**0.61**			**B**	**14.5**	**0.62**							
		EB-LT	±500'	D	37.4	0.3	9'	43'	D	46.2	0.37	11'	51'	D	49	0.38	12'	#55'					
		EB-R	100'	A	5.2	0.25	0'	24'	A	5.9	0.29	0'	28'	A	6.2	0.3	0'	29'					
		WB-LT	±380'	C	33	0.07	4'	22'	D	38.3	0.08	5'	26'	D	40.3	0.08	5'	27'					
		WB-R	100'	A	0	0.02	0'	0'	A	0.2	0.02	0'	0'	A	0.2	0.02	0'	0'					
		NB-L	225'	C	35	0.11	5'	30'	D	40.6	0.13	6'	35'	D	42.6	0.14	6'	36'					
		NB-TTR	±1520'	B	11.4	0.53	83'	293'	B	12.9	0.6	108'	358'	B	12.8	0.61	118'	381'					
		SB-L	225'	D	35.2	0.04	2'	15'	D	40.8	0.05	2'	18'	D	42.8	0.06	2'	18'					
		SB-TTR	±1790'	B	15.9	0.58	104'	226'	B	15.5	0.61	131'	272'	B	15.4	0.62	145'	293'					
Lowell Road (Route 3A) & Executive Drive	ACTUATED-UNCOORDINATED	**Overall**		**B**	**19**	**0.68**			**C**	**20.8**	**0.82**			**C**	**21.2**	**0.85**							
		EB-LT	±490'	C	33.9	0.68	94'	#226'	D	46.9	0.82	122'	#301'	D	51.9	0.85	129'	#322'					
		EB-R	225'	A	3.4	0.1	0'	19'	A	3.8	0.12	0'	22'	A	4.1	0.13	0'	24'					
		WB-LT	±580'	C	21.9	0.12	9'	31'	C	25	0.13	10'	34'	C	26.8	0.14	10'	36'					
		WB-R	80'	A	0.3	0.07	0'	0'	A	0.4	0.07	0'	0'	A	0.4	0.07	0'	0'					
		NB-L	350'	C	34.8	0.3	19'	58'	D	38.4	0.35	24'	68'	D	40.3	0.36	25'	71'					
		NB-TTR	±1790'	B	14.7	0.59	126'	249'	B	14.8	0.63	153'	296'	B	14.6	0.64	165'	318'					
		SB-L	150'	C	34	0.12	6'	28'	D	37	0.13	7'	29'	D	38.7	0.13	7'	31'					
		SB-TTR	±1170'	C	20.4	0.61	126'	186'	C	20.3	0.63	154'	220'	C	20.1	0.64	170'	238'					
Lowell Road (Route 3A) & Fox Hollow Drive/ Nottingham Square Driveway	ACTUATED-COORDINATED	**Overall**		**C**	**22.8**	**0.79**			**C**	**27.2**	**0.91**			**C**	**30.4**	**0.95**			**B**	**17.8**	**0.68**		
		EB-LT	±600'	F	90.1	0.22	16'	40'	F	90	0.22	16'	40'	F	90.1	0.22	16'	40'	F	90.1	0.22	16'	40'
		EB-R	50'	A	2.8	0.2	0'	0'	A	2.8	0.2	0'	0'	A	2.8	0.2	0'	0'	A	2.8	0.2	0'	0'
		WB-LT	±260'	F	117.7	0.59	46'	81'	F	118.9	0.6	46'	81'	F	117.7	0.59	46'	81'	F	117.7	0.59	46'	81'
		WB-R	100'	B	16.3	0.25	0'	36'	B	16.3	0.24	0'	36'	B	16.3	0.25	0'	36'	B	16.3	0.25	0'	36'
		NB-L	210'	F	103.9	0.42	32'	70'	F	103.9	0.42	32'	70'	F	103.9	0.42	32'	70'	F	103.9	0.42	32'	70'
		NB-T	±1410'	B	19.7	0.79	627'	#1657'	C	27.8	0.91	954'	#2065'	C	33.1	0.95	1114'	#2202'	B	10.3	0.5	252'	600'
		NB-R	325'	A	0	0.01	0'	0'	A	0	0.01	0'	0'	A	0	0.01	0'	0'	A	0	0	0'	0'
		SB-L	125'	F	119.5	0.68	71'	#134'	F	119.5	0.68	71'	#134'	F	119.5	0.68	71'	#134'	F	119.5	0.68	71'	#134'
		SB-TR	±550'	B	11.5	0.45	204'	606'	B	13.5	0.52	259'	766'	B	14.9	0.56	294'	870'	B	14.9	0.56	294'	870'

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HORIZON YEAR CAPACITY ANALYSIS SUMMARY – WEEKDAY P.M. PEAK-HOUR

INTERSECTION	CONTROL TYPE	LANE USE	STORAGE LENGTH (ft)	2019 EXISTING CONDITIONS					2032 NO-BUILD CONDITIONS					2032 BUILD CONDITIONS					2032 BUILD WITH IMPROVEMENTS CONDITIONS				
				LOS	DELAY (sec)	V/C RATIO	QUEUES (ft)	QUEUES (ft)	LOS	DELAY (sec)	V/C RATIO	QUEUES (ft)	QUEUES (ft)	LOS	DELAY (sec)	V/C RATIO	QUEUES (ft)	QUEUES (ft)	LOS	DELAY (sec)	V/C RATIO	QUEUES (ft)	QUEUES (ft)
							50th%	95th%				50th%	95th%				50th%	95th%				50th%	95th%
Lowell Road (Route 3A) & Pelham Road	**ACTUATED-COORDINATED**	**Overall**		**E**	**69.5**	**1.82**			**F**	**81.1**	**2.08**			**F**	**81.3**	**2.08**							
		WB-L	±510'	F	113.5	0.72	118'	178'	F	115.2	0.76	135'	197'	F	115.2	0.76	135'	197'					
		WB-R	75'	C	21.8	0.63	6'	80'	C	30.4	0.7	30'	118'	C	30.4	0.7	30'	118'					
		NB-TR	±550'	E	69	0.81	701'	#1887'	E	78.8	0.94	1104'	#2345'	F	82	0.98	1286'	#2494'					
		SB-L	150'	F	463.5	1.82	~224'	#369'	F	568.2	2.08	~268'	#423'	F	568.2	2.08	~268'	#423'					
		SB-T	±1310'	A	8.2	0.45	156'	585'	A	9.6	0.53	213'	745'	B	10.5	0.57	244'	851'					

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Analysis Results

The analysis of the study intersections reveals that most of the signalized intersections analyzed on Lowell Road north of Sagamore Bridge Road will generally maintain overall acceptable or no-build operating conditions for the 2022 and 2032 build scenario. Individual movements and lane groups may change slightly in level of service, delay, and queue length; however, overall levels of service at these signalized intersections analyzed remain unchanged or acceptable, with nominal impacts to intersection delays.

As the project impacts are generally limited to the southern Lowell Road corridor, the results of the capacity analysis have been explored in detail for this area. Below, the operating condition analysis results for the intersections on Lowell Road south of and including the intersection with Sagamore Bridge Road are described:

Lowell Road & Steele Road/Dracut Road – Overall the intersection operates acceptably in the morning peak period and unsatisfactorily in the evening peak period under no-build and build conditions. For the *2022* analysis, overall the intersection maintains LOS B in the morning peak period and maintains LOS E in the evening peak period. With the recommended improvements listed below, the morning peak period also maintains overall LOS B and maintains overall LOS E in the evening peak period. In the morning peak period, the northwestbound traffic from Dracut Road to Lowell Road maintains LOS B and exiting traffic from Steele Road maintains LOS D from no-build to build. 95th percentile queues from Dracut Road increase approximately 5.5 car lengths and Steele Road queues do not increase. The southbound left turning traffic from Lowell Road onto Dracut Road improves from LOS D to LOS C and northbound through traffic degrades from LOS C to LOS D. 95th percentile queues on the southbound left turn movement increase by less than two car lengths and northbound through queues increase less than a car length. With the recommended improvements, the northwestbound movement also maintains LOS B and Steele Road also maintains LOS D. 95th percentile queues from Dracut Road also increase approximately 5.5 car lengths and Steele Road queues similarly do not increase from no-build to build with improvements. The southbound left turn movement also improves from LOS D to LOS C and the northbound through traffic also degrades from LOS C to LOS D. 95th percentile queues on the southbound left turn movement increase by approximately one car and northbound through queues also increase less than one car length from no-build to build with improvements conditions.

In the evening peak period, the northwestbound traffic from Dracut Road to Lowell Road maintains LOS B and exiting traffic from Steele Road maintains LOS E from no-build to build. 95th percentile queues on the northwestbound approach increase less than two car lengths and at the eastbound Steele Road approach queues remain the same. The southbound left turn movement maintains LOS F and the northbound through movement

maintains LOS E from no-build to build. 95th percentile queues at the southbound left turn movement increase approximately three car lengths and the northbound through movement queues increase less than a car length. With the recommended improvements, the northwest right-turn movement from Dracut also maintains LOS B and the eastbound movement from Steele Road also maintains LOS E. 95th percentile queues on the northwestbound approach increase by less than one car length and Steele Road queues also remain the same in the no-build to build with improvements conditions. The southbound left turn movement maintains LOS F and the northbound through movement also maintains LOS E. 95th percentile queues at the southbound left turn movement increase by approximately two car lengths and the northbound through queues increase by less than two car lengths from no-build to build with improvements conditions.

For the *2032* analysis, overall the intersection overall the intersection maintains LOS B in the morning peak period and maintains LOS F in the evening peak period. With the recommended improvements, in the morning peak period the overall intersection maintains LOS B and maintains LOS F in the evening peak period. In the morning peak period, the northwestbound traffic from Dracut Road to Lowell Road maintains LOS B and exiting traffic from Steele Road maintains LOS D from no-build to build. 95th percentile queues from Dracut Road increase less than two car lengths and Steele Road queues do not increase. The southbound left turning traffic from Lowell Road onto Dracut Road maintains LOS C and northbound through traffic operates maintains LOS D. 95th percentile queues on the southbound left turn movement increase less than two car lengths and northbound through queues increase less than a car length. With the recommended improvements, the northwest right turn movement from Dracut Road maintains LOS B and Steele Road maintains LOS B. 95th percentile queues increase by approximately two car lengths for the northwest right movement and remain the same for Steele Road from no-build to build with improvements conditions. The southbound left movement maintains LOS B and the northbound through movement also maintains LOS D from no-build to build with improvements. 95th percentile queues increase by approximately one car length for the southbound left turn movement and the northbound through movement increases negligibly from no-build to build with improvements.

In the evening peak period, the northwestbound traffic from Dracut Road to Lowell Road degrades from LOS B to LOS C and exiting traffic from Steele Road maintains LOS E from no-build to build. 95th percentile queues on the northwestbound approach increase approximately five car lengths and at the eastbound Steele Road approach queues remain the same. The southbound left turn movement maintains LOS F and the northbound through movement maintains LOS E from no-build to build. 95th percentile queues at the southbound left turn movement increase approximately three car lengths and the northbound through movement queues increase less than a car length. With the recommended improvements, the northwest right turn movement from Dracut Road

degrades from LOS B to LOS C and Steele Road maintains LOS E. 95th percentile queues for the northwest right movement increase by less than nine car lengths and Steele Road queues increase slightly from no-build to build with improvements. The southbound left turn movement maintains LOS F from no-build to build with improvements, but decreases the average delay for the movement from 211.8 seconds to 163.6 seconds. The northbound through movement maintains LOS E from no-build to build with improvements. 95th percentile queues decrease by approximately one car length for the southbound left turn movement and increase by one car length for the northbound through movement from no-build to build with improvements conditions.

Lowell Road & Green Meadow Drive/Rena Avenue – Overall, the intersection operates acceptably in the morning and afternoon peak periods. For the *2022* analysis, overall the intersection degrades from LOS A to LOS B in the morning peak period and degrades from LOS A to LOS C in the evening peak period. With the recommended improvements, the morning peak period and evening peak period both degrade the overall intersection from LOS A to LOS B. In the morning peak period, Green Meadow Drive/Hudson Logistics Center Driveway degrades from LOS D to LOS E and Rena Avenue maintains LOS B from no-build to build. 95th percentile queues for the Green Meadow Drive approach increase seven car lengths and Rena Avenue queues decrease slightly. The northbound left turn movement maintains LOS D and 95th percentile queues increase less than a car length. The northbound through movement degrades from LOS A to LOS B and the southbound through movement maintains LOS B. 95th percentile queues for the northbound through movement increase approximately two car lengths and the southbound queues increase approximately three car lengths. With the recommended improvements, Green Meadow Drive maintains LOS D and Rena Avenue maintains LOS B. 95th percentile queues at Green Meadow Drive increase by less than three car lengths and Rena Avenue queues decrease negligibly from no-build to build with improvements conditions. The northbound left turn movement also maintains LOS D and 95th percentile queues increase by approximately one car length from no-build to build with improvements conditions. The northbound through movement maintains LOS A and the southbound through movement maintains LOS B. 95th percentile queues for the northbound through movement increase by approximately two car lengths and southbound through queues increase by approximately two car lengths from no-build to build with improvements conditions.

In the evening peak period, the Green Meadow Drive/Hudson Logistics Center Driveway approach degrades from LOS E to LOS F and Rena Avenue maintains LOS A from no-build to build. 95th percentile queues for the Green Meadow Drive approach increase approximately 14 car lengths, due to the connection to the development, and Rena Avenue queues remain at zero. The northbound left turn movement maintains LOS E and 95th percentile queues increase by one car length. The northbound and southbound through movements each degrade from LOS A to LOS B. 95th percentile queues for the northbound through movement increase by approximately 14.5 car lengths and the

southbound queues increase less than five car lengths. The southbound left turn movement degrades from LOS D to LOS E and 95th percentile queues decrease slightly. With the recommended improvements, the Green Meadow Drive approach improves from LOS E to LOS D and Rena Avenue maintains LOS A. 95th percentile queues increase by approximately three car lengths from the Green Meadow Drive approach and Rena Avenue queues remain at zero. The northbound left turn movement maintains LOS E and 95th percentile queues increase by one car length from no-build to build with improvements. The northbound and southbound through movements also each degrade from LOS A to LOS B. 95th percentile queues for the northbound through movement increase by approximately 14.5 car lengths and the southbound queues increase by approximately two car lengths from no-build to build with improvements conditions.

For the *2032* analysis, overall the intersection degrades from LOS A to LOS B in the morning peak period and degrades from LOS A to LOS C in the evening peak period. With the recommended improvements, both the morning and evening peak periods each degrade from LOS A to LOS B from no-build to build improvements. In the morning peak period, Green Meadow Drive degrades from LOS D to LOS E and Rena Avenue maintains LOS B from no-build to build. 95th percentile queues for the Green Meadow Drive approach increase by eight cars and Rena Avenue queues remain the same. The northbound left turn movement maintains LOS D and 95th percentile queues increase by one car. The northbound through movement degrades from LOS A to LOS B and the southbound through movement degrades from LOS A to LOS C. 95th percentile queues for the northbound through movement increase less than two cars and the southbound queues increase approximately three cars. With the recommended improvements, Green Meadow Drive maintains LOS D and Rena Avenue maintains LOS B. 95th percentile queues at Green Meadow Drive increase by less than three car lengths and Rena Avenue queues decrease negligibly from no-build to build with improvements. The northbound left turn movement maintains LOS D and 95th percentile queues increase by less than one car length. The northbound through movement maintains LOS A and the southbound through movement degrades from LOS A to LOS B. 95th percentile queues for the northbound through movement increase by less than two car lengths and the southbound through queues increase by less than two car lengths from no-build to build with improvements.

In the evening peak period, the Green Meadow Drive approach degrades from LOS E to LOS F and Rena Avenue maintains LOS A from no-build to build. 95th percentile queues for the Green Meadow Drive approach increase approximately 14 car lengths and Rena Avenue queues remain the same. The northbound left turn movement maintains LOS E and 95th percentile queues increase approximately one car length. The northbound and southbound through movements each degrade from LOS A to LOS B. 95th percentile queues for the northbound through movement increase by less than three car lengths and the southbound queues increase approximately six car lengths. The southbound left

turn movement degrades from LOS D to LOS E and 95th percentile queues decrease slightly. With the recommended improvements, Green Meadow Drive maintains LOS E and Rena Avenue maintains LOS A. 95th percentile queues at Green Meadow Drive increase by approximately three car lengths and remain at zero for Rena Avenue. The northbound left turn movement maintains LOS E and 95th percentile queues increase by approximately one car length. The northbound through movement degrades from LOS A to LOS B and southbound through movement maintains LOS A from no-build to build with improvements. 95th percentile queues for the northbound through increase by less than two car lengths and the southbound through queues decrease by less than one car length.

Lowell Road & Wal-Mart Boulevard – Overall, the intersection operates acceptably in the morning and afternoon peak periods for the *2022* analysis year. For the *2022* analysis, overall the intersection maintains LOS B in the morning peak period and degrades from LOS C to LOS D in the evening peak period. With the recommended improvements, the overall intersection maintains LOS B in the morning peak period and degrades from LOS C to LOS D in the evening peak period. In the morning peak period, the eastbound left turn movement maintains LOS D from no-build to build and the 95th percentile queues increase less than one car. The northbound through movement maintains LOS B and the southbound through movement maintains LOS B. The northbound through queues increase by approximately 17 cars and the southbound through queues increase approximately three cars. With the recommended improvements, the eastbound left turn movement maintains LOS D and the 95th percentile queues increase by less than one car length. The northbound through and southbound through movements each maintain LOS B from no-build to build with improvements. 95th percentile queues for the northbound through movement increase by approximately four car lengths and the southbound through queues increase by approximately three car lengths from no-build to build with improvements.

In the evening peak period, the eastbound left turn movement degrades from LOS D to LOS E from no-build to build and the 95th percentile queues increase approximately two cars. The northbound through movement degrades from LOS C to LOS E and the southbound through movement maintains LOS C. The northbound through queues increase approximately seven cars and the southbound through queues increase approximately eight cars. With the recommended improvements, the eastbound left turn maintains LOS D and 95th percentile queues increase by approximately two car lengths. The northbound through movement degrades from LOS C to LOS D and the southbound through movement maintains LOS C. 95th percentile queues for the northbound through movement increase by approximately four car lengths and southbound through queues increase by approximately five car lengths from no-build to build with improvements.

For the *2032* analysis, overall the intersection degrades from LOS B to LOS C in the morning peak period and degrades from LOS C to LOS E in the evening peak period. With

the recommended improvements, the overall intersection maintains LOS B in the morning peak period and degrades from LOS C to LOS D in the evening peak period. In the morning peak period, the eastbound left turn movement maintains LOS D from no-build to build and the 95th percentile queues increase less than one car. The northbound through and southbound through movements each degrades from LOS B to LOS C from no-build to build. The northbound through queues increase approximately 11 cars and the southbound through queues approximately five cars. With the recommended improvements, the eastbound left turn maintains LOS D and 95th percentile queues increase by approximately one car length. The northbound through movement maintains LOS B and the southbound through movement maintains LOS B. 95th percentile queues for the northbound through movement increase by less than one car length and southbound through queues increase by approximately three car lengths from no-build to build with improvements.

In the evening peak period, the eastbound left turn movement degrades from LOS D to LOS E from no-build to build and the 95th percentile queues increase approximately 2 cars. The northbound through movement degrades from LOS C to LOS F and the southbound through movement maintains LOS C. The northbound through queues increase approximately seven cars and the southbound through queues increase approximately six cars. With the recommended improvements, the eastbound left turn degrades from LOS D to LOS E and 95th percentile queues increase by approximately four car lengths. The northbound through movement degrades from LOS C to LOS D and the southbound through movement maintains LOS C. 95th percentile queues for the northbound through movement increase by approximately one car length and southbound through queues increase by approximately two car lengths from no-build to build with improvements.

Lowell Road & Sagamore Bridge Road – Overall, the intersection operates at or over capacity under existing, no-build, and build conditions. For the *2022* analysis, overall the intersection degrades from LOS C to LOS D in the morning peak period and degrades from LOS D to LOS F in the evening peak period. With the recommended improvements, overall the intersection improves from LOS C to LOS B in the morning peak period and in the evening peak period improves from LOS D to LOS C. In the morning peak period, the eastbound left turn movement maintains LOS D from no-build to build and the 95th percentile queues remain the same. The northbound left turn movement degrades from LOS E to LOS F and the 95th percentile queues increase approximately four cars. The southbound through movement maintains LOS D and the 95th percentile queues increase less than one car. With the recommended improvements, the eastbound left turn movement improves from LOS D to LOS C and the 95th percentile queues decrease by approximately seven car lengths. The northbound left turn movement improves from LOS E to LOS C and 95th percentile queues decrease by approximately 10 car lengths from no-build to build with improvements conditions. The southbound through movement also

improves from LOS D to LOS C and 95th percentile queues increase by approximately one car length.

In the evening peak period, the eastbound left turn movement maintains LOS F from no-build to build and the 95th percentile queues remain the same. The northbound left turn movement maintains LOS F and the 95th percentile queues increase approximately four cars. The southbound through movement maintains LOS E and the 95th percentile queues increase by approximately one car. With the recommended improvements, the eastbound left turn movement improves from LOS F to LOS D and the 95th percentile queues decrease by approximately 15 car lengths. The northbound left turn movement improves from LOS F to LOS C and 95th percentile queues decrease by approximately 13 car lengths from no-build to build with improvements conditions. The southbound through movement also improves from LOS E to LOS D and 95th percentile queues increase by approximately one car length.

For the *2032* analysis, overall the intersection degrades from LOS D to LOS E in the morning peak period and degrades from LOS E to LOS F in the evening peak period. With the recommended improvements, overall the intersection improves from LOS D to LOS B in the morning peak period and in the evening peak period improves from LOS E to LOS C. In the morning peak period, the eastbound left turn movement maintains LOS D from no-build to build and the 95th percentile queues remain the same. The northbound left turn movement maintains LOS F and the 95th percentile queues increase by approximately four cars. The southbound through movement maintains LOS D and the 95th percentile queues increase by approximately one car. With the recommended improvements, the eastbound left turn movement maintains LOS D and the 95th percentile queues decrease by nine car lengths. The northbound left turn movement improves from LOS F to LOS C and 95th percentile queues decrease by approximately 12 car lengths from no-build to build with improvements conditions. The southbound through movement also maintains from LOS D and 95th percentile queues increase by approximately one car length.

In the evening peak period, the eastbound left turn movement maintains LOS F from no-build to build and the 95th percentile queues remain the same. The northbound left turn movement maintains LOS F and the 95th percentile queues increase approximately two cars. The southbound through movement maintains LOS E and the 95th percentile queues increase by approximately two cars. With the recommended improvements, the eastbound left turn movement improves from LOS F to LOS D and the 95th percentile queues decrease by approximately 17 car lengths. The northbound left turn movement improves from LOS F to LOS D and 95th percentile queues decrease by approximately 11.5 car lengths from no-build to build with improvements conditions. The southbound through movement also maintains LOS E and 95th percentile queues increase by approximately three car lengths.

Recommended Improvements

A review of the analysis shows that the majority of the development traffic impacts are in the vicinity of the southern Lowell Road (Route 3A) corridor, generally at the intersections of Lowell Road south of the Sagamore Bridge Road. Overall, we anticipate that approximately 15% of the total site generated traffic will enter from and exit to the Lowell Road (Route 3A) corridor north of Sagamore Bridge Road. These intersections perform unsatisfactorily in the no-build scenarios and do not typically degrade further in the build scenarios (2022 and 2032). The improvements listed below north of Sagamore Bridge Road are limited to signal timing optimization and minor re-striping within existing pavement widths where feasible. However, the town of Hudson and NHDOT should continue to explore further options to further mitigate existing and no-build traffic operations.

Based on our capacity analyses, the following improvements are recommended at this time to mitigate the potential traffic impacts directly associated with the proposed development:

- Installation of new adaptive traffic signal controllers at the following intersections under the existing town control system. Adaptive signal control will allow timing optimization on-the-fly, through video detection, that will allow for seasonal and time-of-day variations in traffic. The industry standard capacity analysis software is unable to calculate this adaptive signal control and capture the efficiency this system provides. We expect the intersections to operate better than indicated in the analysis.
    - Lowell Road (Route 3A) & Sagamore Bridge Road
    - Lowell Road (Route 3A) & Wal-Mart Boulevard
    - Lowell Road (Route 3A) & Green Meadow Drive/Rena Avenue
- Signal timing optimization at the following intersections
    - Lowell Road (Route 3A) & Dracut Road/Steele Road during the 2022 and 2032 weekday evening peak period
    - Lowell Road (Route 3A) & Flagstone Drive/Wason Road during the 2022 and 2032 weekday morning peak periods
    - Lowell Road (Route 3A) & Executive Drive during the 2032 weekday morning peak period
    - Lowell Road (Route 3A) & Fox Hollow Drive
- Reconstruction of the existing Mercury Systems driveway into a new public roadway, Green Meadow Drive, intersecting with Rena Avenue, to provide two left-turn lanes and a shared thru/right-turn lane on the eastbound approach and signal upgrades and timing optimization.
- Construction of the following geometric improvements at the intersection of Lowell Road and Sagamore Bridge Road

  - Addition of a third northbound left turn lane
  - Addition of a third eastbound left turn lane
  - Addition of a second eastbound right turn lane
- Restriping at the intersection of Lowell Road and Fox Hollow Drive of the northbound right-turn-only lane to a shared thru/right-turn lane. Two northbound thru receiving lanes currently exist.

Tables 6 through 9 compare the capacity analysis for the 2022 and 2032 build with improvements conditions based on the recommended improvements associated with the traffic impacts directly associated with the proposed development. Appendix I and Appendix J provide detailed reports for the 2022 Build with Improvements and 2032 Build with Improvements conditions. Appendix A provides the conceptual improvement plans for the items listed above.

5.5 Step Five: Investigate the safety conditions within the area roadway network.

Accidents

The most recent five years of accident data were requested via the Town of Hudson Police Department in order to conduct an accident analysis for the study area intersections. Table 10 though Table 12 provide details of the accident history.

Accidents included rear-ends, sideswipe (same direction), head-on collisions, angle collisions, pedestrian collisions, and single vehicle crashes, which are behaviors typical at signalized intersections. One fatality was reported at the Lowell Road at Wason Road/Flagstone Drive intersection in a head-on collision. Only 31 (19%) of the reported accidents resulted in injuries. The majority of accidents occurred during dry weather conditions (86%) and during daylight hours (93%).

TABLE 10
CRASH DATA – CRASH SEVERITY (2014 – 2018)

INTERSECTION	NUMBER OF ACCIDENTS		SEVERITY		
	Total	Average Per Year	Property Damage Only	Personal Injury	Fatality
Lowell Road @Pelham Road	13	2.6	12 (92%)	1 (8%)	0 (0%)
Lowell Road @ Fox Hollow Drive	11	2.2	7 (64%)	4 (36%)	0 (0%)
Lowell Road @ Executive Drive	7	1.4	5 (71%)	2 (29%)	0 (0%)
Lowell Road @ Hampshire Drive/Oblate Drive	4	0.8	3 (75%)	1 (25%)	0 (0%)
Lowell Road @ Wason Road/Flagstone Drive	38	7.6	29 (76%)	8 (21%)	1 (3%)
Lowell Road @ Sagamore Bridge	46	9.2	39 (85%)	7 (15%)	0 (0%)
Lowell Road @ Wal-Mart Boulevard	30	6.0	25 (83%)	5 (17%)	0 (0%)
Lowell Road @ Rena Street	2	0.4	2 (100%)	0 (0%)	0 (0%)
Lowell Road @ River Road	1	0.2	1 (100%)	0 (0%)	0 (0%)
Lowell Road @ Dracut Road	12	2.4	9 (75%)	3 (25%)	0 (0%)

Source: Hudson New Hampshire Police Department (2014 – 2018)

TABLE 11
CRASH DATA – MANNER OF CRASH (2014 – 2018)

INTERSECTION	MANNER OF CRASH						
	Angle	Rear End	Head On	Sideswipe	Fixed Object	Pedestrian	Not Reported
Lowell Road @ Pelham Road	5 (38%)	4 (31%)	2 (15%)	0 (0%)	0 (0%)	1 (8%)	1 (8%)
Lowell Road @ Fox Hollow Drive	3 (27%)	6 (55%)	1 (9%)	0 (0%)	0 (0%)	1 (9%)	0 (0%)
Lowell Road @ Executive Drive	2 (29%)	5 (71%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Lowell Road @ Hampshire Drive/Oblate Drive	0 (0%)	3 (75%)	0 (0%)	1 (25%)	0 (0%)	0 (0%)	0 (0%)
Lowell Road @ Wason Road/Flagstone Drive	8 (21%)	24 (63%)	2 (5%)	4 (11%)	0 (0%)	0 (0%)	0 (0%)
Lowell Road @ Sagamore Bridge	3 (7%)	34 (74%)	3 (7%)	6 (13%)	0 (0%)	0 (0%)	0 (0%)
Lowell Road @ Wal-Mart Boulevard	13 (43%)	10 (33%)	6 (20%)	1 (3%)	0 (0%)	0 (0%)	0 (0%)
Lowell Road @ Rena Street	0 (0%)	2 (100%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Lowell Road @ River Road	0 (0%)	1 (100%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Lowell Road @ Dracut Road	0 (0%)	9 (75%)	2 (17%)	1 (8%)	0 (0%)	0 (0%)	0 (0%)

Source: Hudson New Hampshire Police Department (2014 – 2018)

TABLE 12
CRASH DATA – CONDITIONS (2014 – 2018)

INTERSECTION	CONDITIONS			
	Clear (Dry)	Rain/ Snow	Day	Night
Lowell Road @Pelham Road	12 (92%)	1 (8%)	12 (92%)	1 (8%)
Lowell Road @ Fox Hollow Drive	11 (100%)	0 (0%)	11 (100%)	0 (0%)
Lowell Road @ Executive Drive	4 (57%)	3 (43%)	5 (71%)	2 (29%)
Lowell Road @ Hampshire Drive/Oblate Drive	4 (100%)	0 (0%)	4 (100%)	0 (0%)
Lowell Road @ Wason Road/Flagstone Drive	34 (89%)	4 (11%)	37 (97%)	1 (3%)
Lowell Road @ Sagamore Bridge	39 (85%)	7 (15%)	44 (96%)	2 (4%)
Lowell Road @ Wal-Mart Boulevard	27 (90%)	3 (10%)	26 (87%)	4 (13%)
Lowell Road @ Rena Street	2 (100%)	0 (0%)	2 (100%)	0 (0%)
Lowell Road @ River Road	1 (100%)	0 (0%)	1 (100%)	0 (0%)
Lowell Road @ Dracut Road	7 (58%)	5 (42%)	10 (83%)	2 (17%)

Source: Hudson New Hampshire Police Department (2014 – 2018)

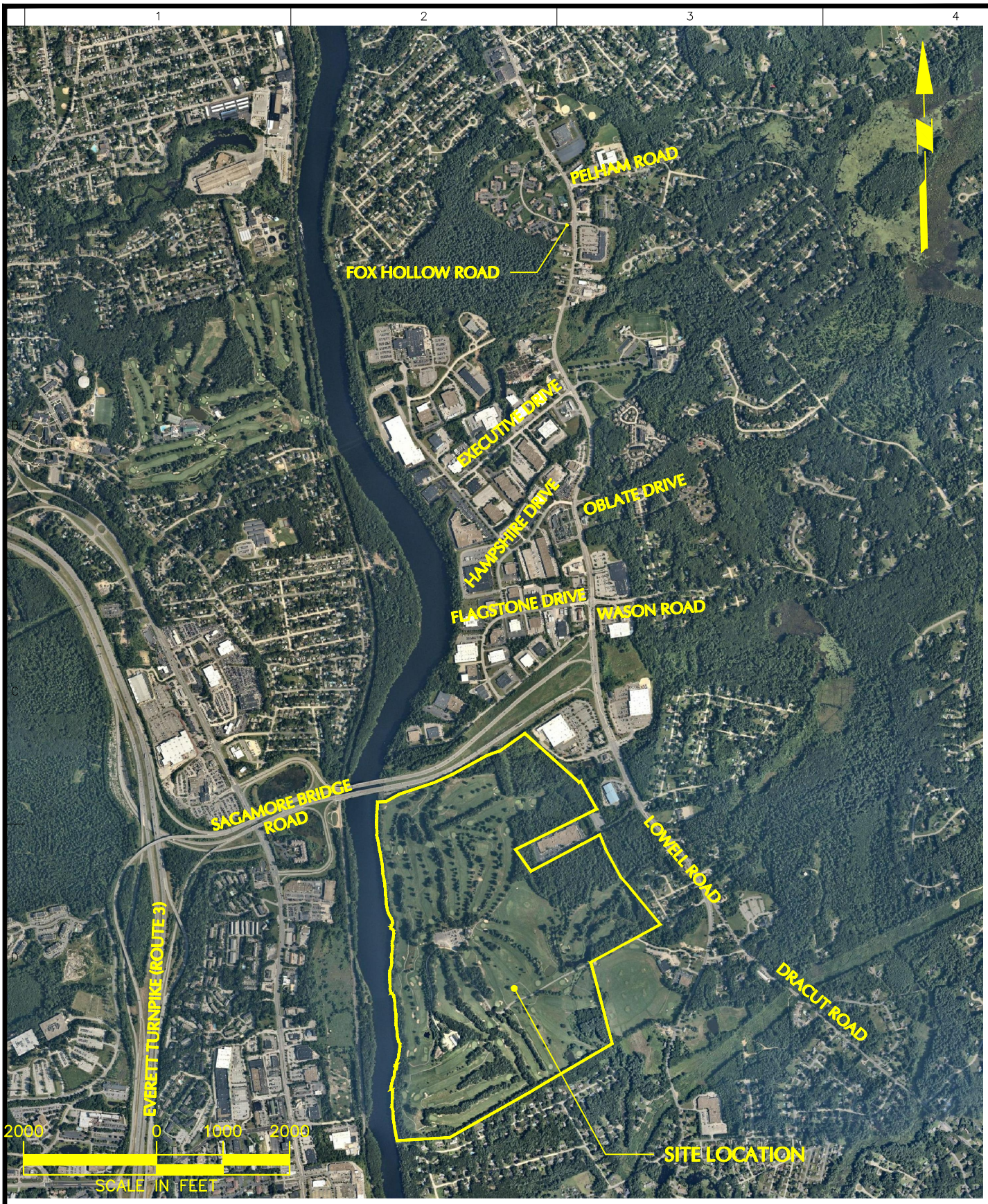
7.0 SUMMARY AND CONCLUSIONS

This evaluation identifies the potential traffic impacts generated by the proposed Hudson Logistics Center project on the surrounding area road network. We performed a capacity analysis for the 2019 existing; 2022 and 2032 no-build; and 2022 and 2032 build scenarios for nine intersections. Our evaluation indicates that, with the following recommended improvements, the intersections analyzed will maintain acceptable or improve on the no-build traffic operating conditions. However, the town of Hudson and NHDOT should continue to explore further options to further mitigate existing and no-build traffic operations.

- Installation of new adaptive traffic signal controllers at the following intersections under the existing town control system. Adaptive signal control will allow timing optimization on-the-fly and allow for seasonal and time-of-day variations in traffic. Although the capacity analysis provided is unable to calculate this adaptive signal control, we expect the intersections to operate better than shown:
    - Lowell Road (Route 3A) & Sagamore Bridge Road
    - Lowell Road (Route 3A) & Wal-Mart Boulevard
    - Lowell Road (Route 3A) & Green Meadow Drive/Rena Avenue
- Signal timing optimization at the following intersections
    - Lowell Road (Route 3A) & Dracut Road/Steele Road during the 2022 and 2032 weekday evening peak period
    - Lowell Road (Route 3A) & Green Meadow Drive/Rena Avenue during the 2022 weekday morning and 2032 weekday evening peak period
    - Lowell Road (Route 3A) & Wal-Mart Boulevard during all peak periods analyzed

  - Lowell Road (Route 3A) & Sagamore Bridge Road during all peak periods analyzed
  - Lowell Road (Route 3A) & Flagstone Drive/Wason Road during the 2022 and 2032 weekday morning peak periods
  - Lowell Road (Route 3A) & Executive Drive during the 2032 weekday morning peak period
  - Lowell Road (Route 3A) & Fox Hollow Drive
- Reconstruction of the existing Mercury Systems driveway into a new public roadway intersecting with Rena Avenue, to provide two left-turn lanes and a shared thru/right-turn lane on the eastbound approach and signal upgrades and timing optimization.
- Construction of the following geometric improvements at the intersection of Lowell Road and Sagamore Bridge Road
  - Addition of a third northbound left turn lane
  - Addition of a third eastbound left turn lane
  - Addition of a second eastbound right turn lane
- Restriping at the intersection of Lowell Road and Fox Hollow Drive of the northbound right-turn-only lane to a shared thru/right-turn lane. Two northbound thru receiving lanes currently exist.

Figures



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Project
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HUDSON
HILLSBOROUGH COUNTY NEW HAMPSHIRE

Drawing Title
LOCATION MAP

Project No.	151010101
Date	03/04/2020
Drawn By	CJM
Checked By	LAM

Drawing No.
FIG. 1
Sheet 1 of 15

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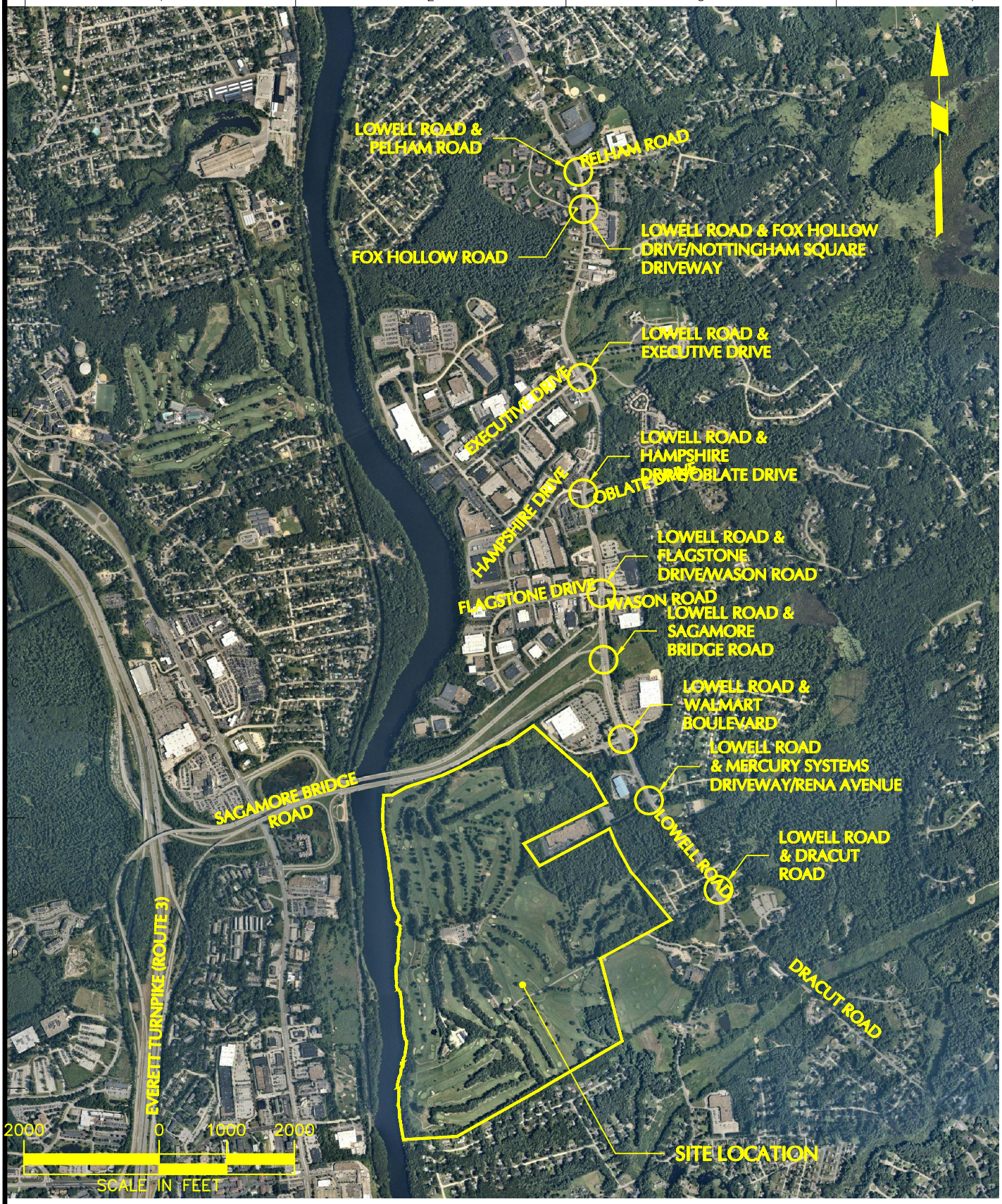

LANGAN Langan Engineering and Environmental Services, Inc. www.langan.com	Project HUDSON LOGISTICS CENTER HUDSON HILLSBOROUGH COUNTY NEW HAMPSHIRE	Drawing Title STUDY INTERSECTIONS MAP	Project No. 151010101 Date 03/04/2020 Drawn By CJM Checked By LAM	Drawing No. FIG. 2 Sheet 2 of 15

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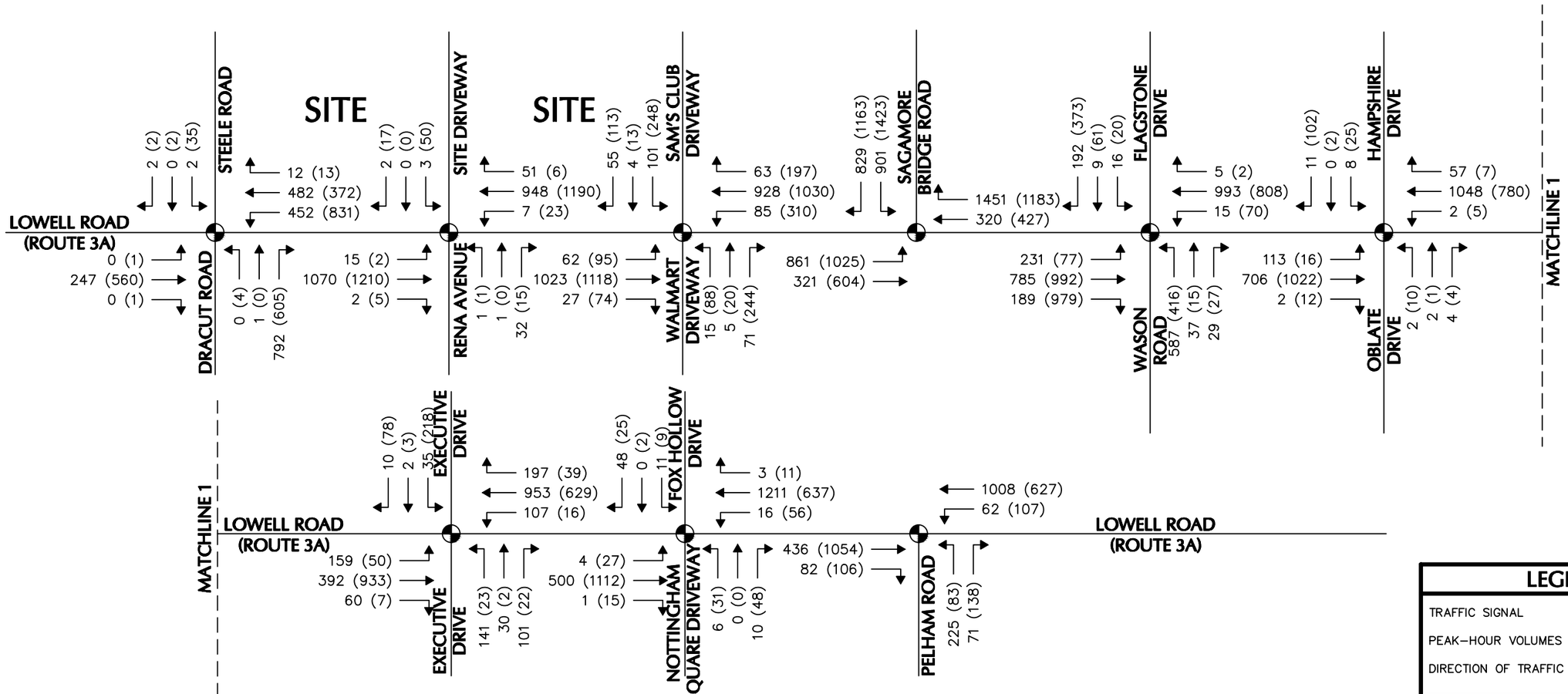

NOTES:

1. WEEKDAY MORNING AND EVENING PEAK–HOUR TRAFFIC VOLUMES ARE BASED ON TRAFFIC VOLUMES OBSERVED ON 10/08/2019 BY ACCURATE COUNTS.
2. MORNING PEAK–HOUR: 7:15 A.M. – 8:15 A.M.
3. EVENING PEAK–HOUR: 4:30 P.M. – 5:30 P.M.

LEGEND

TRAFFIC SIGNAL	
PEAK–HOUR VOLUMES	AM (PM)
DIRECTION OF TRAFFIC	

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Drawing Title: 2019 EXISTING PEAK-HOUR TRAFFIC VOLUMES

Project No. 151010101
Date 03/04/2020
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Checked By LAM

Drawing No. FIG. 3
Sheet 3 of 17

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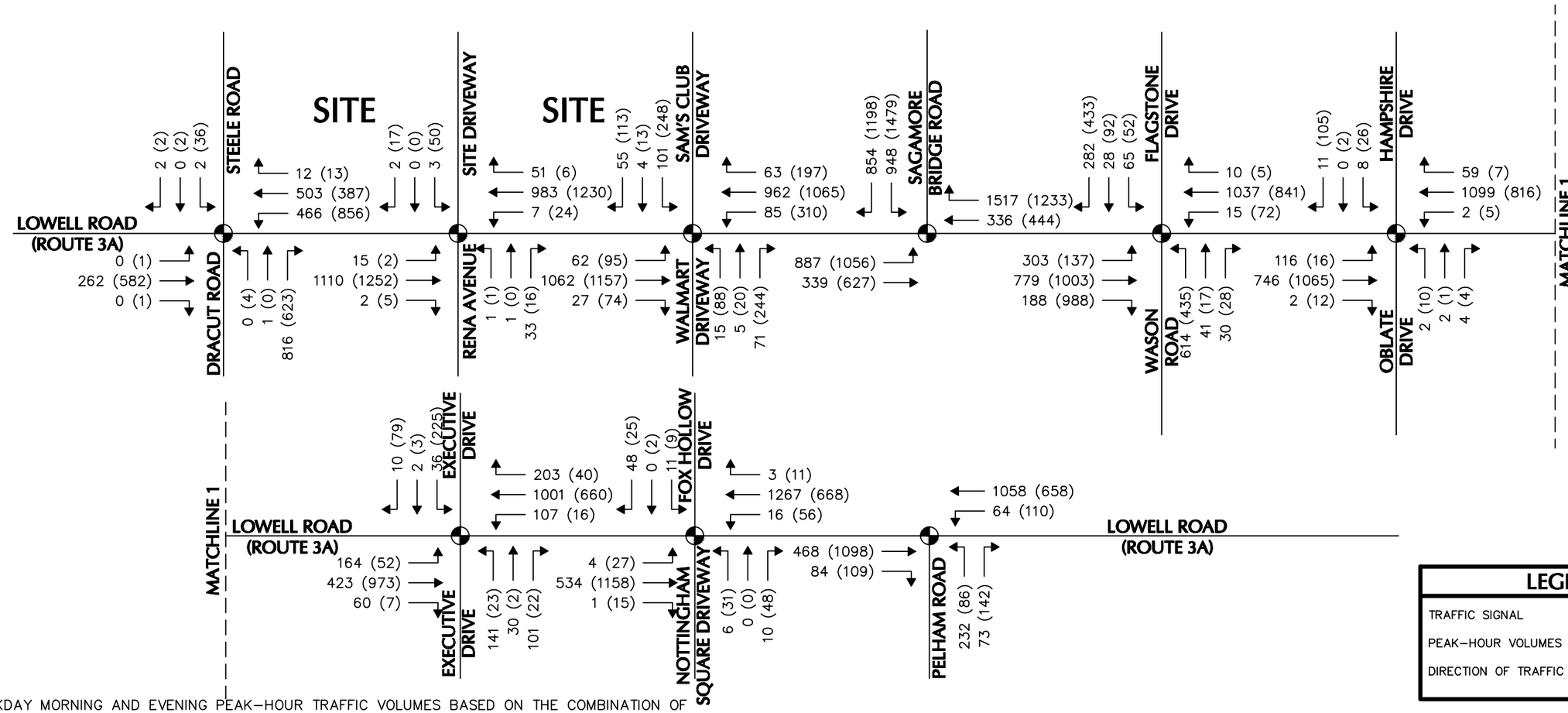
Date: 6/19/2020 Time: 16:04 User: cmclean Style Table: Langan.stb Layout: FIG. 3 Document Code: 151010101-0202-KT101-0103



LEGEND

TRAFFIC SIGNAL	
PEAK–HOUR VOLUMES	AM (PM)
DIRECTION OF TRAFFIC	

NOTES:

1. WEEKDAY MORNING AND EVENING PEAK–HOUR TRAFFIC VOLUMES BASED ON THE COMBINATION OF VOLUMES FROM FIGURE 4A AND FIGURE 4B OF THIS REPORT.
2. MORNING PEAK–HOUR: 7:15 A.M. – 8:15 A.M.
3. EVENING PEAK–HOUR: 4:30 P.M. – 5:30 P.M.

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Drawing Title: 2022 COMBINED NO-BUILD PEAK-HOUR TRAFFIC VOLUMES

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Checked By: LAM

Drawing No.: FIG. 4
Sheet 4 of 17

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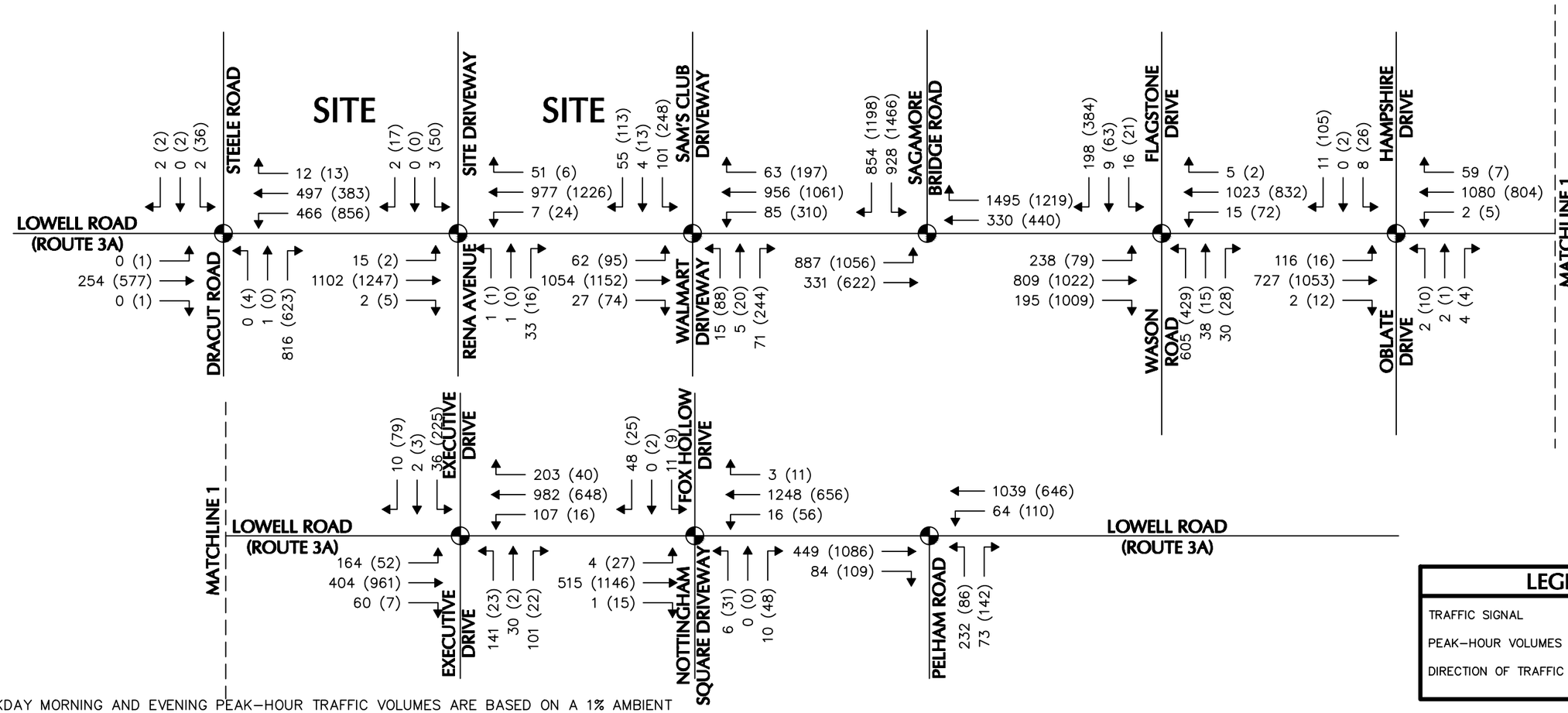

NOTES:

1. WEEKDAY MORNING AND EVENING PEAK–HOUR TRAFFIC VOLUMES ARE BASED ON A 1% AMBIENT GROWTH RATE APPLIED TO THE TRAFFIC VOLUMES SHOWN IN FIGURE 3 OF THIS REPORT.
2. MORNING PEAK–HOUR: 7:15 A.M. – 8:15 A.M.
3. EVENING PEAK–HOUR: 4:30 P.M. – 5:30 P.M.

LEGEND

- TRAFFIC SIGNAL
- PEAK–HOUR VOLUMES — AM (PM)
- DIRECTION OF TRAFFIC

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Drawing Title: 2022 AMBIENT GROWTH PEAK-HOUR TRAFFIC VOLUMES

Project No. 151010101
Date 06/08/2020
Drawn By BTW
Checked By CJM

Drawing No. FIG. 4A
Sheet 5 of 17

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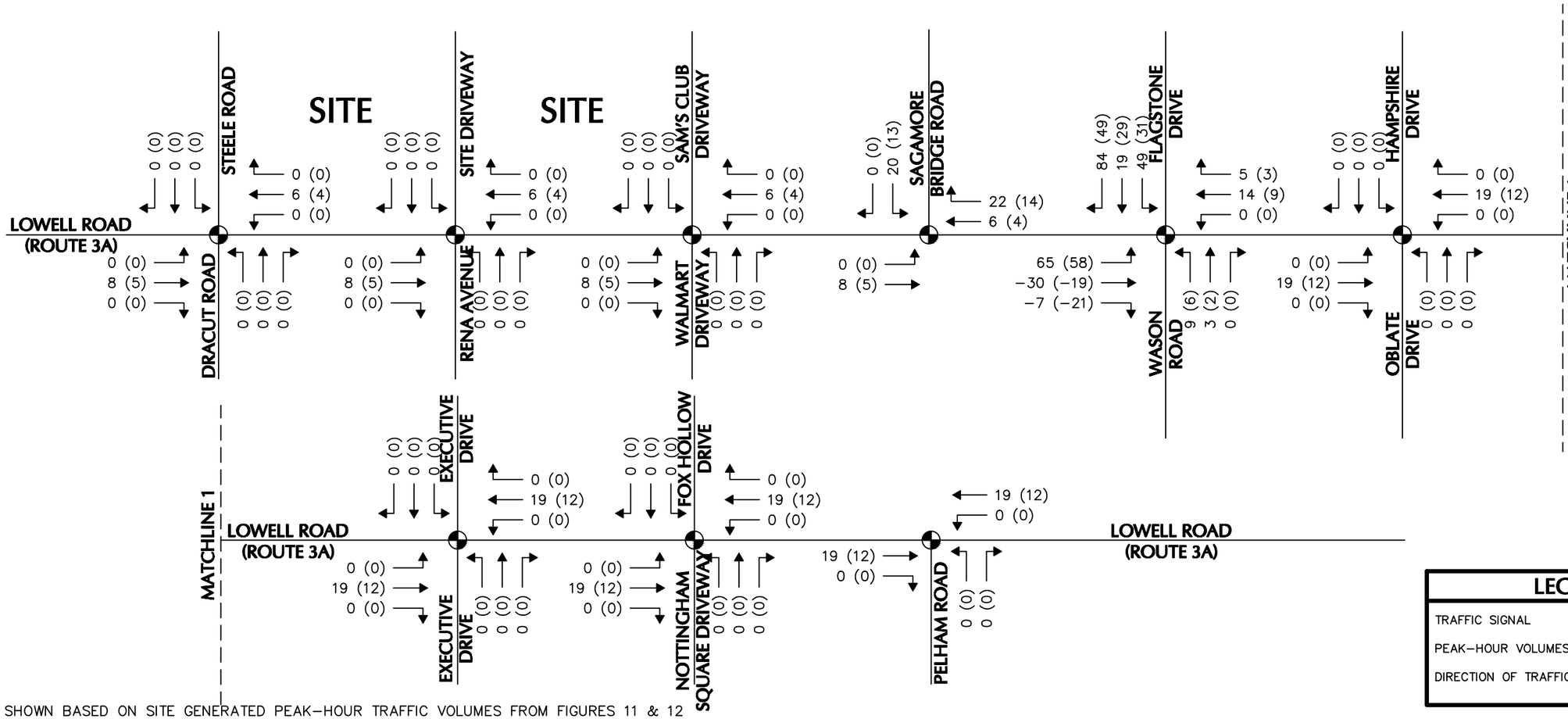

NOTES:

VOLUMES SHOWN BASED ON SITE GENERATED PEAK–HOUR TRAFFIC VOLUMES FROM FIGURES 11 & 12 IN REPORT TITLED "TRAFFIC IMPACT AND ACCESS STUDY: CUMBERLAND FARMS – HUDSON, NEW HAMPSHIRE" BY GPI DATED OCTOBER 2018.

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Drawing Title: CUMBERLAND FARMS PEAK-HOUR TRAFFIC VOLUMES

Project No. 151010101
Date 06/08/2020
Drawn By BTW
Checked By CJM

Drawing No. FIG. 4B
Sheet 6 of 17

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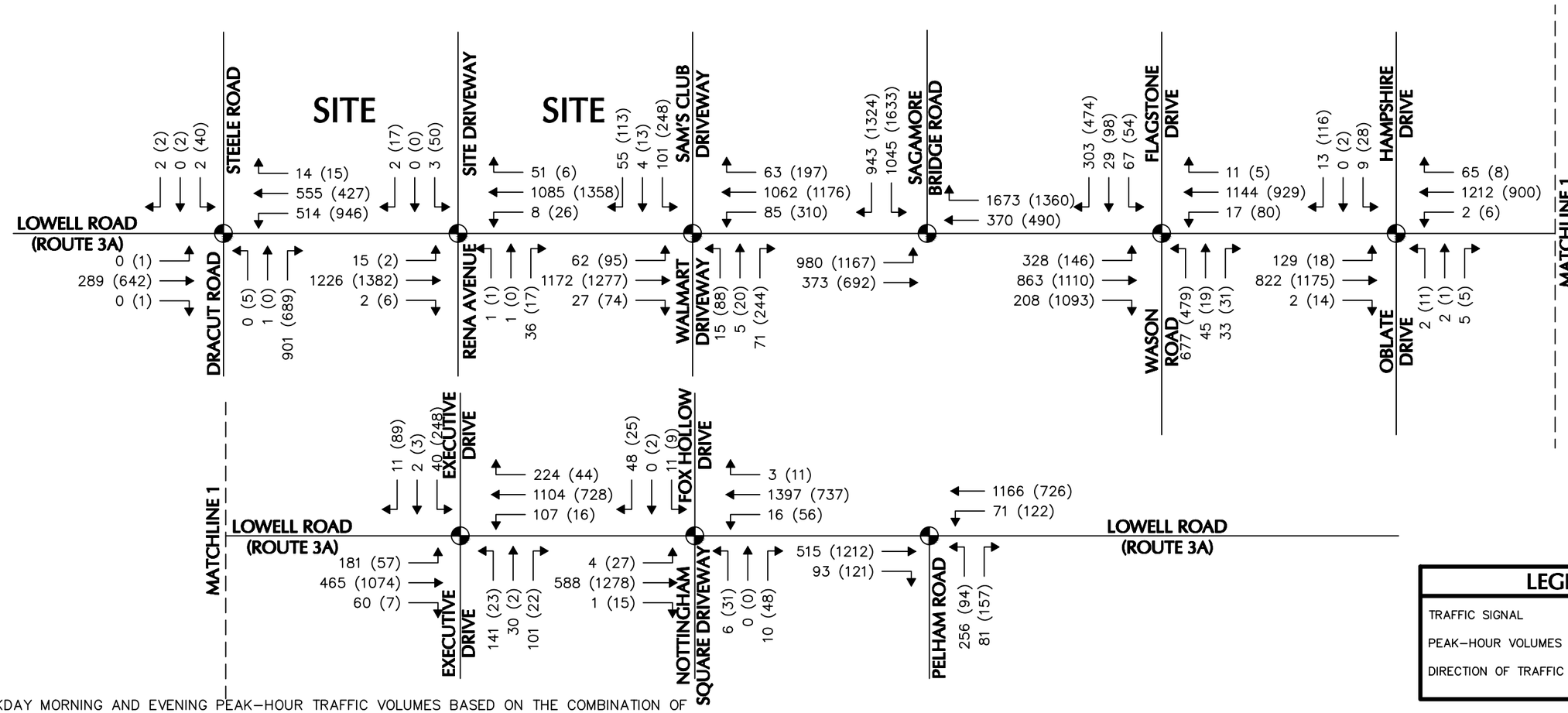
Date: 6/19/2020 Time: 16:04 User: cmclean Style Table: Langan.stb Layout: FIG. 4B Document Code: 151010101-0202-KT101-0111



NOTES:

1. WEEKDAY MORNING AND EVENING PEAK–HOUR TRAFFIC VOLUMES BASED ON THE COMBINATION OF VOLUMES FROM FIGURE 5A AND FIGURE 4B OF THIS REPORT.
2. MORNING PEAK–HOUR: 7:15 A.M. – 8:15 A.M.
3. EVENING PEAK–HOUR: 4:30 P.M. – 5:30 P.M.

LEGEND

TRAFFIC SIGNAL	
PEAK–HOUR VOLUMES	AM (PM)
DIRECTION OF TRAFFIC	

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Drawing Title: 2032 NO-BUILD PEAK-HOUR TRAFFIC VOLUMES

Project No. 151010101
Date 03/04/2020
Drawn By CJM
Checked By LAM

Drawing No. FIG. 5
Sheet 7 of 17

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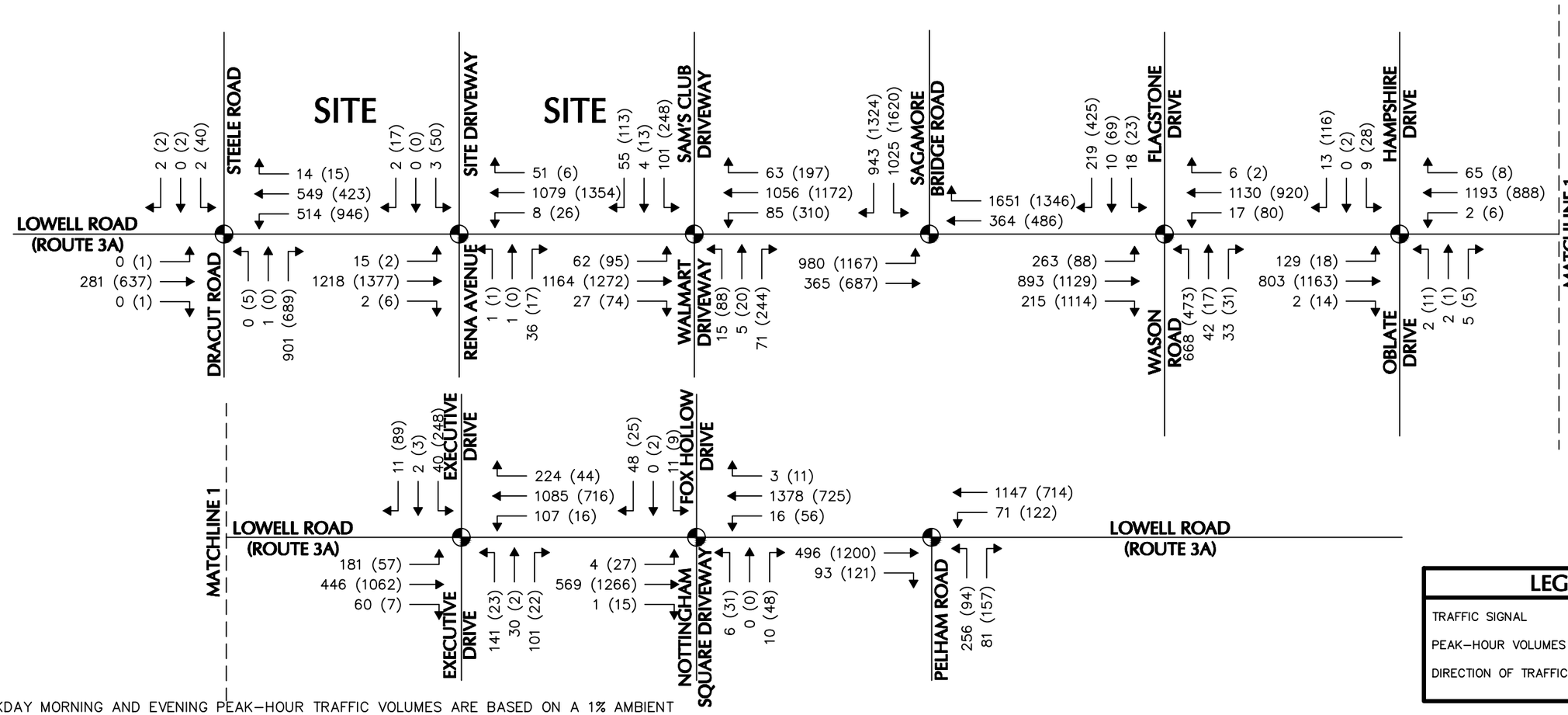
Date: 6/19/2020 Time: 16:05 User: cmclean Style Table: Langan.stb Layout: FIG. 5 Document Code: 151010101-0202-KT101-0105



NOTES:

1. WEEKDAY MORNING AND EVENING PEAK–HOUR TRAFFIC VOLUMES ARE BASED ON A 1% AMBIENT GROWTH RATE APPLIED TO THE TRAFFIC VOLUMES SHOWN IN FIGURE 3 OF THIS REPORT.
2. MORNING PEAK–HOUR: 7:15 A.M. – 8:15 A.M.
3. EVENING PEAK–HOUR: 4:30 P.M. – 5:30 P.M.

LEGEND

- TRAFFIC SIGNAL
- PEAK–HOUR VOLUMES — AM (PM)
- DIRECTION OF TRAFFIC

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Drawing Title: 2032 AMBIENT GROWTH PEAK-HOUR TRAFFIC VOLUMES

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Date: 03/04/2020
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Drawing No.: FIG. 5A
Sheet 8 of 17

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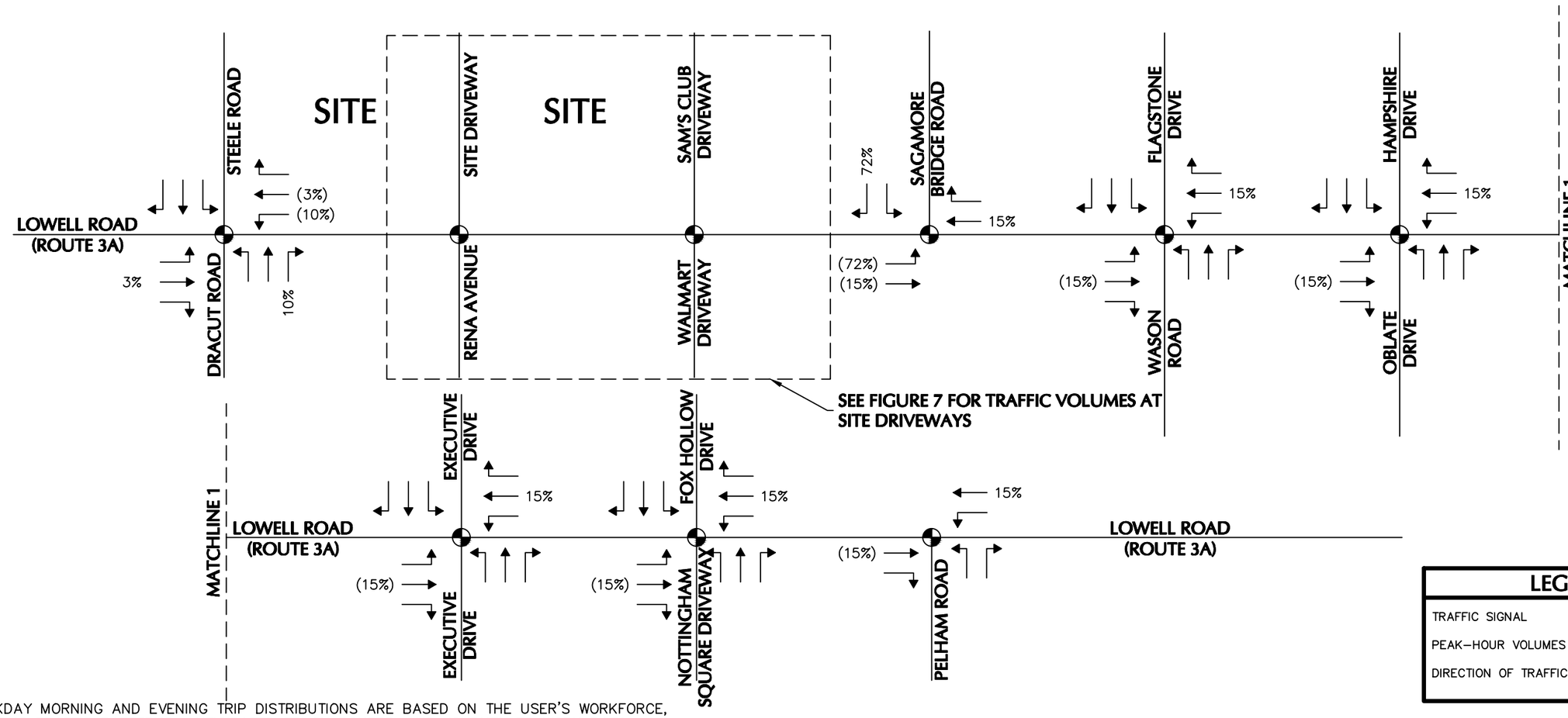
Date: 6/19/2020 Time: 16:05 User: cmclean Style Table: Langan.stb Layout: FIG. 5A Document Code: 151010101-0202-KT101-0112



LEGEND	
TRAFFIC SIGNAL	
PEAK–HOUR VOLUMES	ENTER (EXIT)
DIRECTION OF TRAFFIC	

NOTES:

1. WEEKDAY MORNING AND EVENING TRIP DISTRIBUTIONS ARE BASED ON THE USER'S WORKFORCE, EXISTING TRAFFIC PATTERNS, ANTICIPATED TRUCK ROUTES, AND JOURNEY TO WORK DATA.

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Drawing Title: TRIP DISTRIBUTION

Project No. 151010101
Date 03/04/2020
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Drawing No. FIG. 6
Sheet 9 of 17

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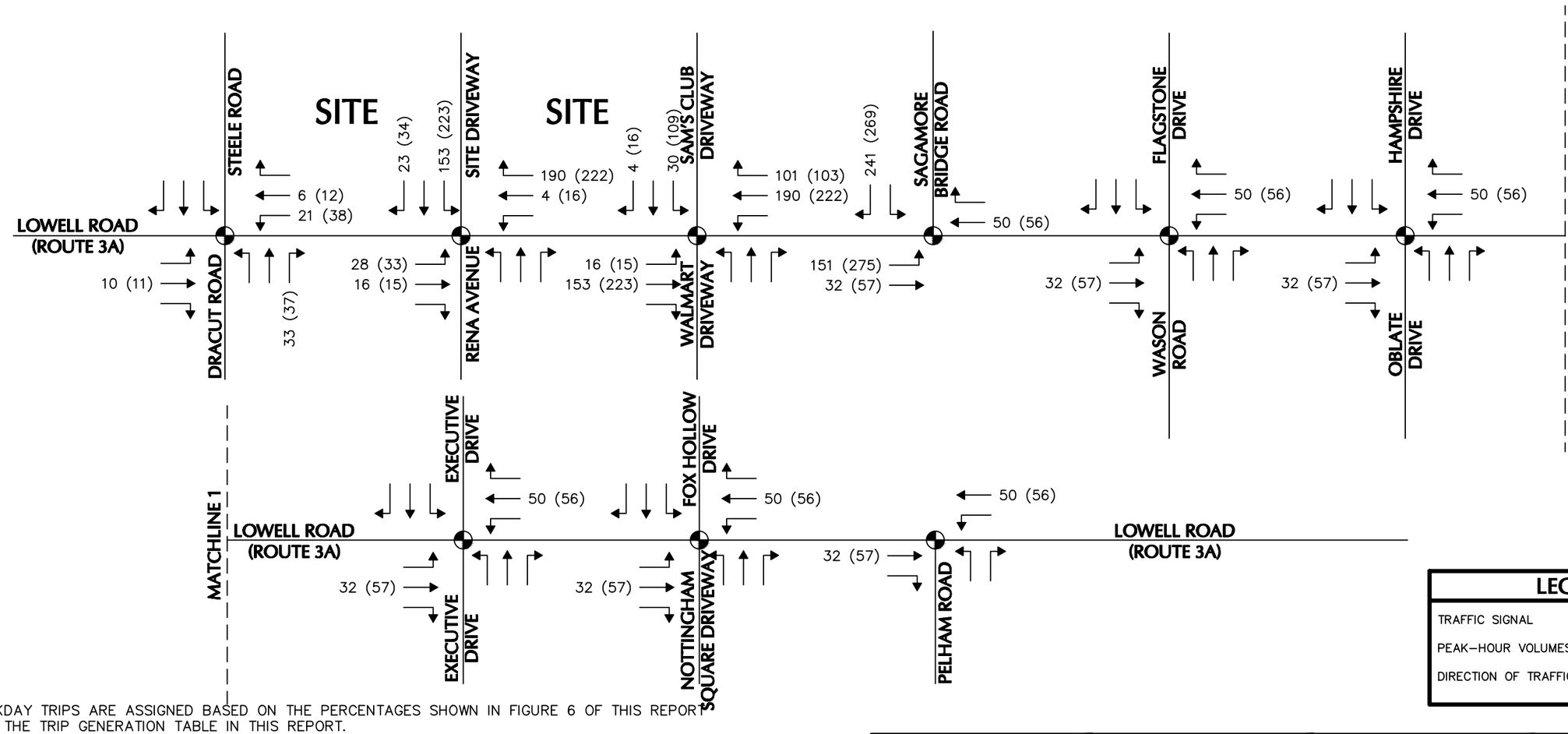
Date: 6/19/2020 Time: 16:05 User: cmclean Style Table: Langan.stb Layout: FIG. 6 Document Code: 151010101-0202-KT101-0106



LEGEND

TRAFFIC SIGNAL	
PEAK–HOUR VOLUMES	AM (PM)
DIRECTION OF TRAFFIC	

NOTES:

1. WEEKDAY TRIPS ARE ASSIGNED BASED ON THE PERCENTAGES SHOWN IN FIGURE 6 OF THIS REPORT AND THE TRIP GENERATION TABLE IN THIS REPORT.
2. MORNING PEAK–HOUR: 7:15 A.M. – 8:15 A.M.
3. EVENING PEAK–HOUR: 4:30 P.M. – 5:30 P.M.

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HILLSBOROUGH COUNTY NEW HAMPSHIRE

Drawing Title: TRIP ASSIGNMENT

Project No.: 151010101
Date: 03/04/2020
Drawn By: CJM
Checked By: LAM

Drawing No.: FIG. 7

Sheet 10 of 17

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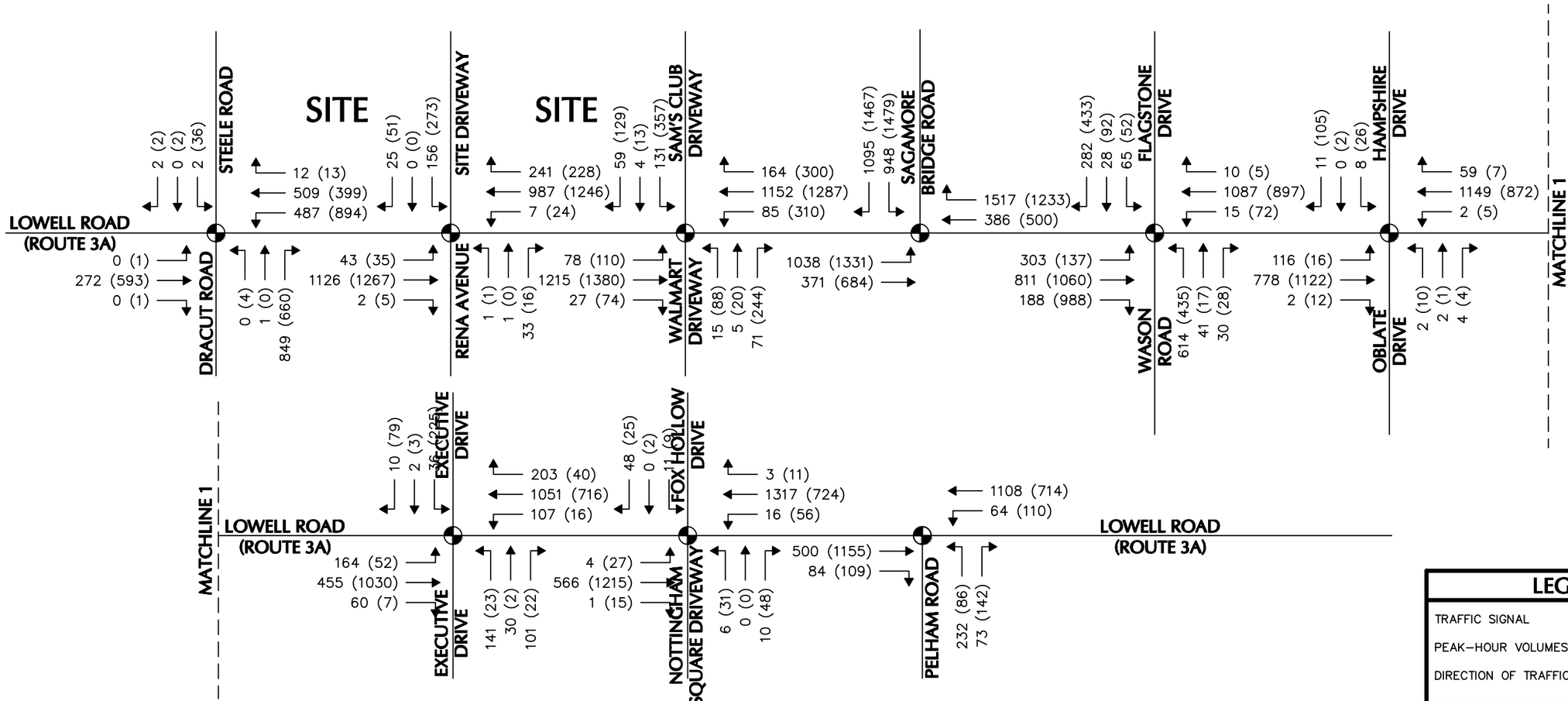
Date: 6/19/2020 Time: 16:05 User: cmclean Style Table: Langan.stb Layout: FIG. 7 Document Code: 151010101-0202-KT101-0107



LEGEND

TRAFFIC SIGNAL	
PEAK–HOUR VOLUMES	AM (PM)
DIRECTION OF TRAFFIC	

NOTES:

1. WEEKDAY MORNING AND EVENING PEAK–HOUR TRAFFIC VOLUMES ARE BASED ON THE COMBINATION OF TRAFFIC VOLUMES FROM FIGURE 4 AND FIGURE 7 OF THIS REPORT.
2. MORNING PEAK–HOUR: 7:15 A.M. – 8:15 A.M.
3. EVENING PEAK–HOUR: 4:30 P.M. – 5:30 P.M.

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Drawing Title: 2022 BUILD PEAK-HOUR TRAFFIC VOLUMES

Project No.: 151010101
Date: 03/04/2020
Drawn By: CJM
Checked By: LAM

Drawing No.: FIG. 8
Sheet 11 of 17

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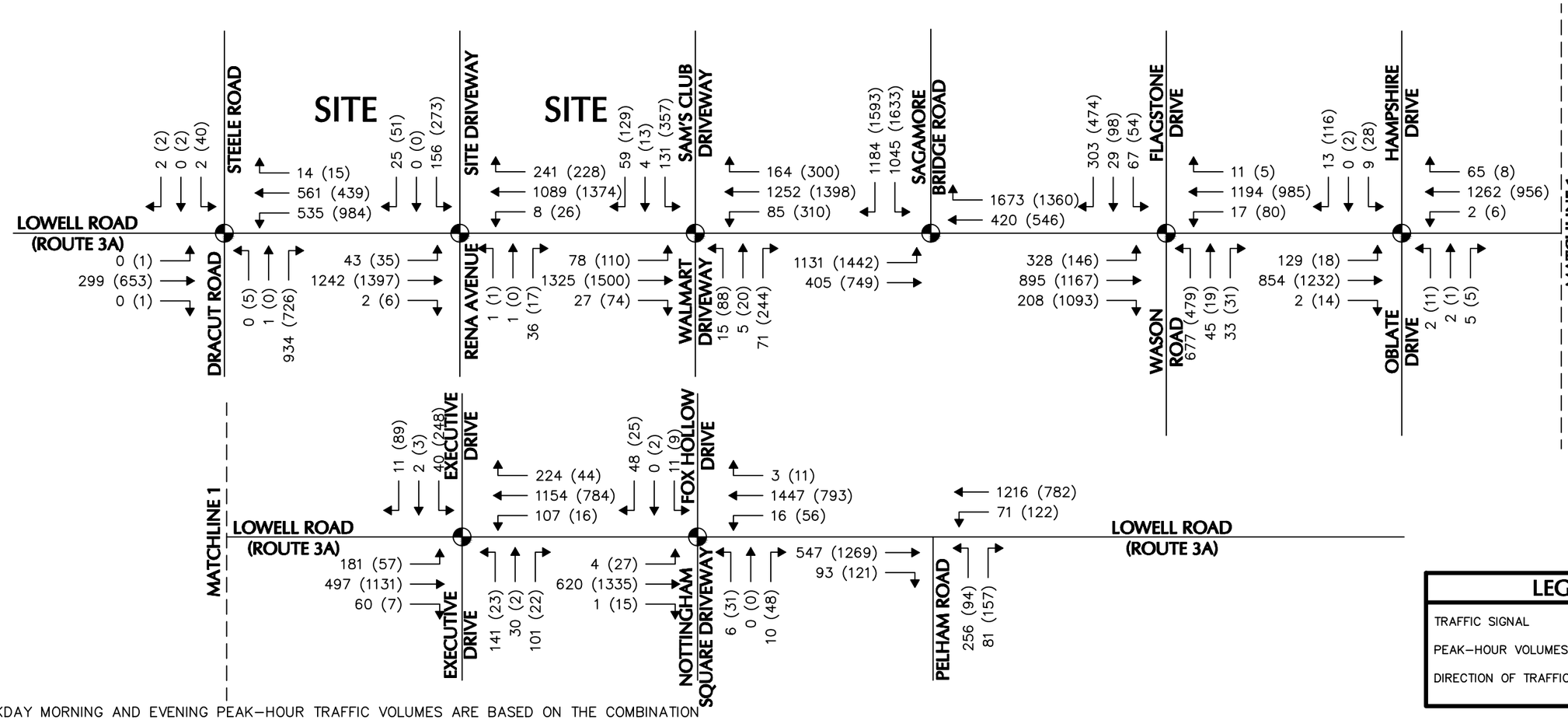
Date: 6/19/2020 Time: 16:05 User: cmclean Style Table: Langan.stb Layout: FIG. 8 Document Code: 151010101-0202-KT101-0108



LEGEND

TRAFFIC SIGNAL	
PEAK–HOUR VOLUMES	AM (PM)
DIRECTION OF TRAFFIC	

NOTES:

1. WEEKDAY MORNING AND EVENING PEAK–HOUR TRAFFIC VOLUMES ARE BASED ON THE COMBINATION OF TRAFFIC VOLUMES FROM FIGURE 5 AND FIGURE 7 OF THIS REPORT.
2. MORNING PEAK–HOUR: 7:15 A.M. – 8:15 A.M.
3. EVENING PEAK–HOUR: 4:30 P.M. – 5:30 P.M.

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Drawing Title: 2032 BUILD PEAK-HOUR TRAFFIC VOLUMES

Project No.: 151010101
Date: 03/04/2020
Drawn By: CJM
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Drawing No.: FIG. 9
Sheet 12 of 17

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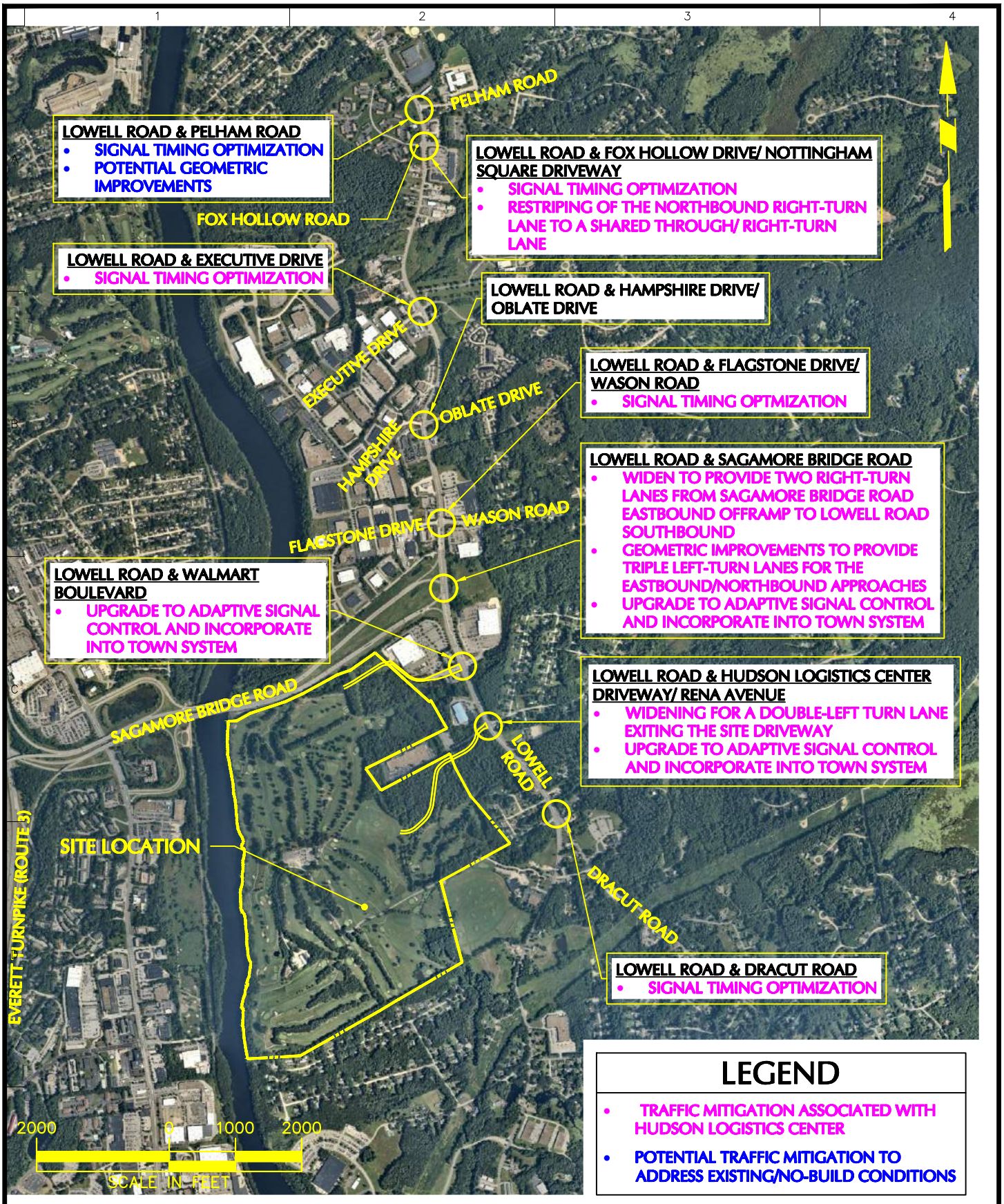
Appendix A

Overall Site Plan & Conceptual Improvements Plans



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Project
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HUDSON
HILLSBOROUGH COUNTY NEW HAMPSHIRE

Drawing Title
TRAFFIC MITIGATION MEASURES

Project No.	151010101
Date	03/04/2020
Drawn By	CJM
Checked By	LAM

Figure
IMP-1
Sheet 1 of 15

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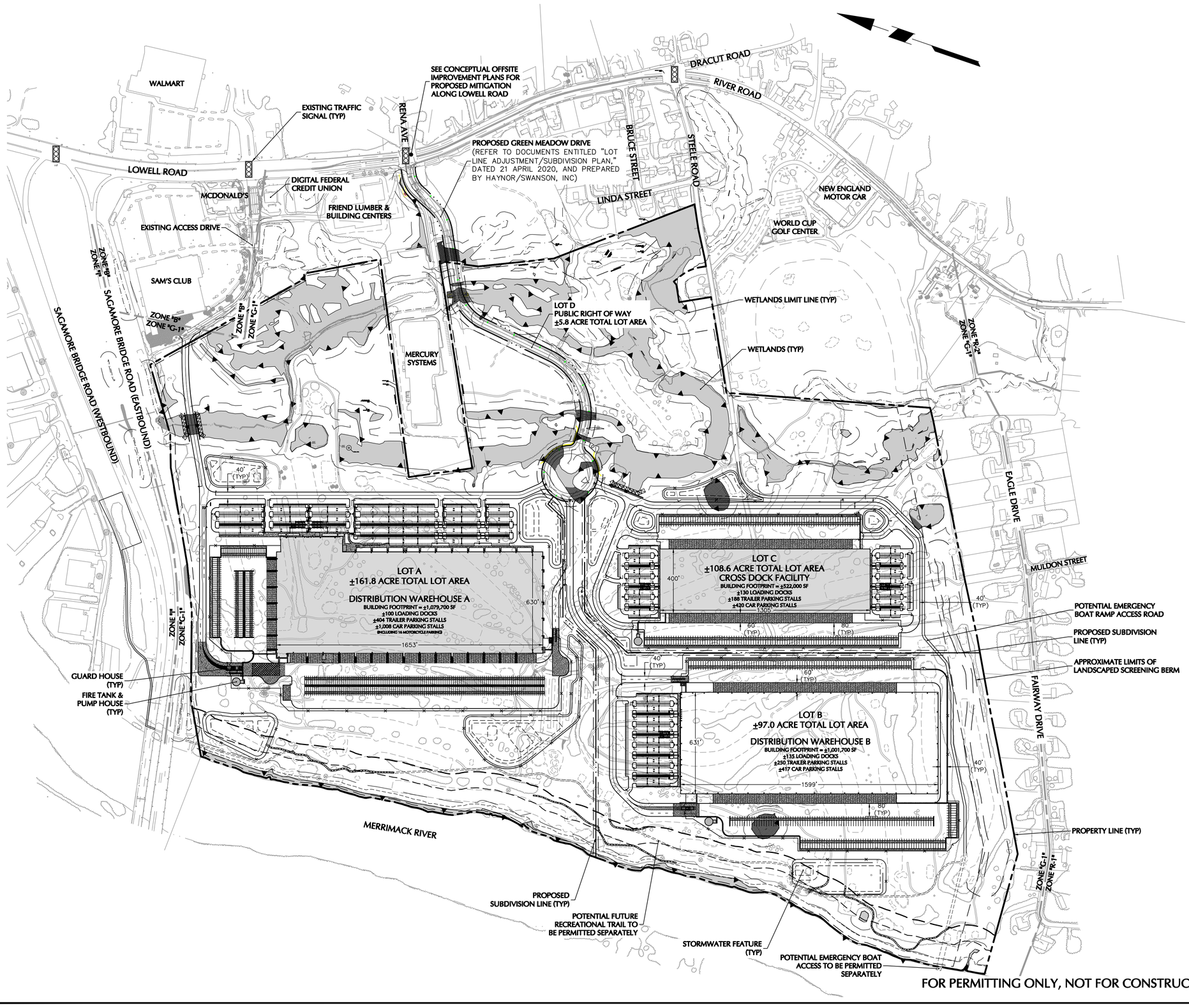
Date: 6/26/2020 Time: 13:07 User: bwillsey Style Table: Langan.stb Layout: IMP-1 Document Code: FG01-151010101-0102-KT001-0101



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Project No. 151010101

Date	Description	No.
Revisions		

Signature Date

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Project

HUDSON LOGISTICS CENTER

MAP No. 239, LOT No. 1

HUDSON NEW HAMPSHIRE

Drawing Title

OVERALL TRAFFIC SITE PLAN

Project No.	Drawing No.
151010101	KS101
Date: 06-26-2020	
Drawn By: CLR	
Checked By: NLK	Sheet 1 of 157

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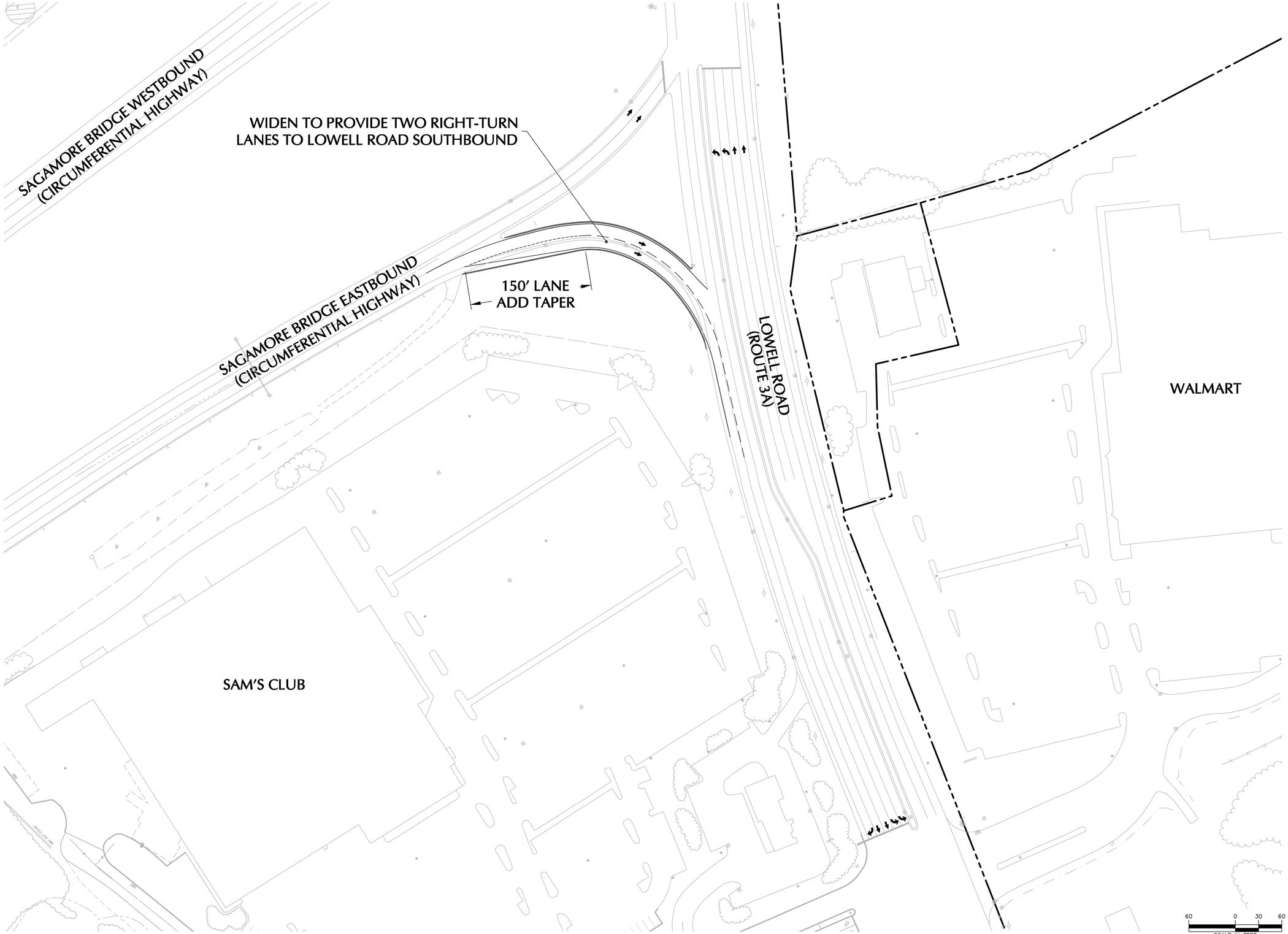
Date: 6/26/2020 Time: 12:42 User: lmauro Style Table: Langan.stb Layout: CS100 Document Code: 151010101-0501-KS101-0101



Date	Description	No.
Revisions		

Signature Date

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Project

HUDSON LOGISTICS CENTER

HUDSON NEW HAMPSHIRE

Drawing Title

CONCEPTUAL SAGAMORE BRIDGE RIGHT TURN IMPROVEMENTS

Project No.	Drawing No.
151010101	KO102
Date: 06/23/2020	
Drawn By: BTW	
Checked By: CJM	Sheet 1 of 10

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Project No. 151010101

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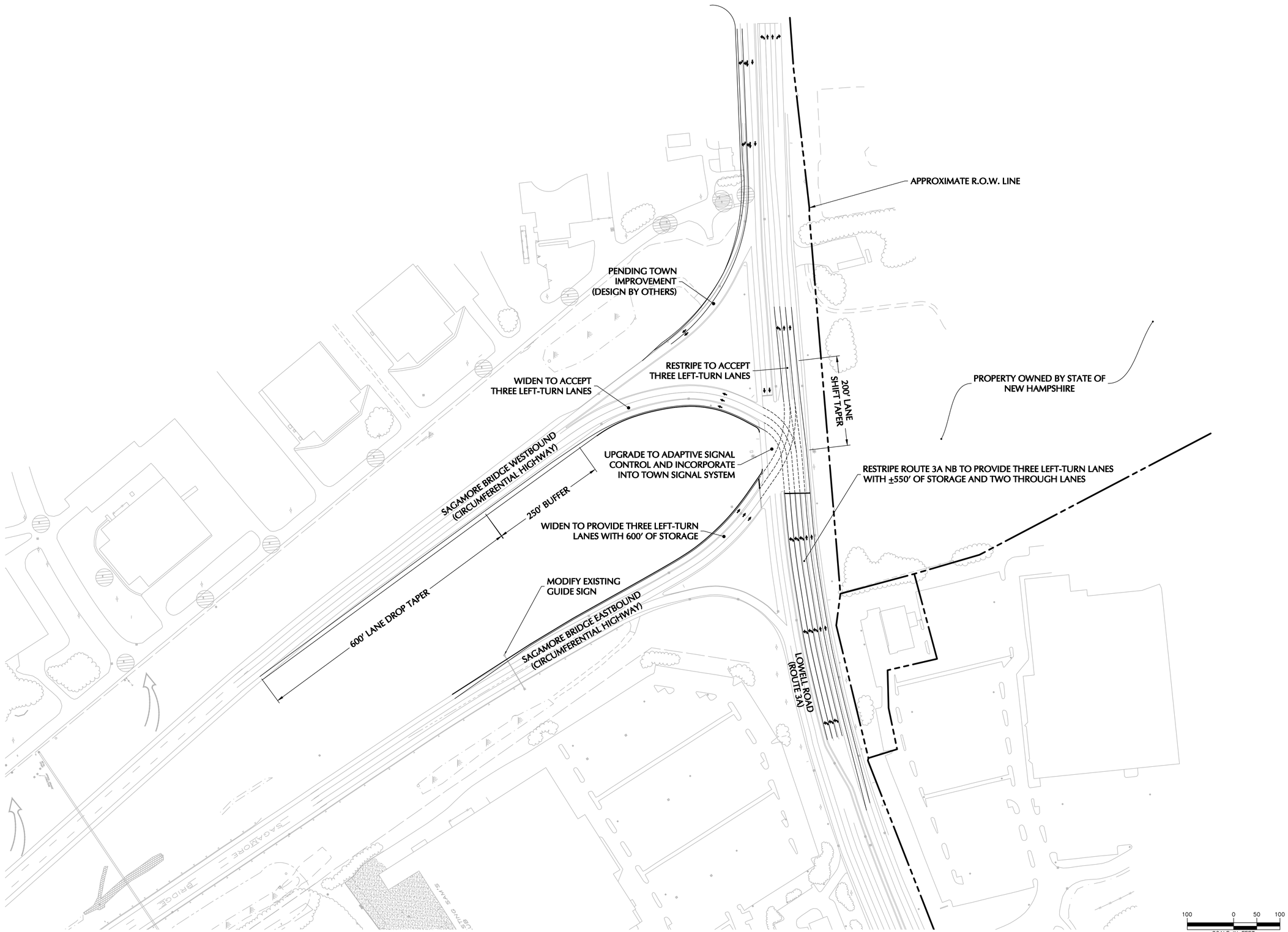
Date: 6/24/2020 Time: 10:35 User: bwillsey Style Table: Langan.stb Layout: FIG. 01 Document Code: 151010101-0501-KO101-0101



Date	Description	No.
Revisions		

Signature Date

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Project

HUDSON LOGISTICS CENTER

HUDSON NEW HAMPSHIRE

Drawing Title

CONCEPTUAL TRIPLE LEFT LANE IMPROVEMENT PLAN

Project No.	Drawing No.
151010101	KO103
Date: 06/23/2020	
Drawn By: BTW	
Checked By: CJM	Sheet 2 of 10

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Project No. 151010101

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CUT BACK EXISTING BITUMINOUS CONCRETE ISLAND ACCOMMODATE TRUCK MOVEMENTS

RENA AVENUE

RELOCATE PAINTED WHITE STOP BAR

WIDEN EXISTING DRIVEWAY TO PROVIDE TWO LEFT TURN LANES

UPGRADE TO ADAPTIVE SIGNAL CONTROL AND INCORPORATE INTO TOWN SIGNAL SYSTEM

LOWELL ROAD (ROUTE 3A)

PROPOSED TOWN ROAD

BENCHMARK
PK NAIL SET
ELEV = 145.77
(DATUM)

EXISTING BUILDING

BITUMINOUS PAVEMENT

50 0 25 50
SCALE IN FEET

Date	Description	No.
Revisions		

Signature Date

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Drawing Title

CONCEPTUAL SITE ENTRANCE IMPROVEMENT PLAN

Project No.	Drawing No.
151010101	KO104
Date: 06/23/2020	
Drawn By: BTW	
Checked By: CJM	Sheet 3 of 10

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Project No. 151010101

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Appendix B

Traffic Count Data, Journey to Work Worksheet & Seasonal Adjustment Worksheet

Home Destination Report - Where Workers Live Who are Employed in the Selection Area
By ZIP Codes (ZCTA)

Total Primary Jobs

	2017 Count	2017 Share
Total Primary Jobs	9,972	100.0%

Jobs Counts by ZIP Codes (ZCTA) Where Workers Live - Primary Jobs		2017 Count	2017 Share	Route 3A North	Route 3A South	U.S. Route 3 North	U.S. Route 3 South	Daniel Webster Highway North	Daniel Webster Highway South	Dracut Road South	Total
03051	Hudson, NH	1,568	15.7%	9.2%	3.0%					3.5%	15.7%
03060	Nashua, NH	651	6.5%			3.5%		3.0%			6.5%
03054	Merrimack, NH	447	4.5%			3.5%		1.0%			4.5%
03062	Nashua, NH	446	4.5%			4.5%					4.5%
03053	Londonderry, NH	341	3.4%	3.4%							3.4%
03038	Londonderry, NH	319	3.2%	2.7%						0.5%	3.2%
03063	Nashua, NH	294	2.9%			2.9%					2.9%
03064	Nashua, NH	279	2.8%			1.8%		1.0%			2.8%
03052	Litchfield, NH	258	2.6%	1.6%		1.0%					2.6%
03103	Manchester, NH	202	2.0%			2.0%					2.0%
03055	Milford, NH	196	2.0%			2.0%					2.0%
03104	Manchester, NH	192	1.9%			1.9%					1.9%
03079	Salem, NH	183	1.8%				0.8%			1.0%	1.8%
03102	Manchester, NH	179	1.8%			1.8%					1.8%
03076	Pelham, NH	175	1.8%							1.8%	1.8%
01851	Lowell, NH	144	1.4%				1.4%				1.4%
03110	Bedford, NH	140	1.4%			1.4%					1.4%
03087	Windham, NH	132	1.3%							1.3%	1.3%
01826	Dracut, MA	126	1.3%							1.3%	1.3%
03031	Amherst, NH	101	1.0%			1.0%					1.0%
01852	Lowell, MA	94	0.9%				0.9%				0.9%
01844	Methuen, NH	91	0.9%				0.5%			0.4%	0.9%
01879	Tyngsborough, MA	89	0.9%						0.9%		0.9%
03301	Concord, NH	88	0.9%			0.9%					0.9%
03049	Hollis, NH	84	0.8%			0.8%					0.8%
03045	Goffstown, NH	79	0.8%			0.8%					0.8%
01854	Lowell, MA	67	0.7%				0.7%				0.7%
03109	Manchester, NH	65	0.7%			0.7%					0.7%
03077	Raymond, NH	64	0.6%			0.6%					0.6%
01886	Westford, MA	61	0.6%				0.6%				0.6%
01841	Lawrence, MA	58	0.6%				0.6%				0.6%
03036	Chester, NH	51	0.5%			0.5%					0.5%
01824	South Chelmsford, MA	46	0.5%				0.5%				0.5%
03033	Brookline, NH	45	0.5%			0.5%					0.5%
03275	Allenstown, NH	45	0.5%			0.5%					0.5%
03820	Dover, NH	45	0.5%			0.5%					0.5%
03106	Hooksett, NH	42	0.4%			0.4%					0.4%
03281	Weare, NH	42	0.4%			0.4%					0.4%
01850	Lowell, MA	41	0.4%							0.4%	0.4%
03873	Sandown, NH	40	0.4%							0.4%	0.4%
01463	Pepperell, MA	39	0.4%			0.4%					0.4%
03841	Hampstead, NH	38	0.4%	0.2%						0.2%	0.4%
03032	Auburn, NH	37	0.4%			0.4%					0.4%
03070	New Boston, NH	34	0.3%			0.3%					0.3%
03811	Atkinson, NH	34	0.3%							0.3%	0.3%
01845	North Andover, MA	33	0.3%				0.3%				0.3%
03819	Danville, NH	33	0.3%							0.3%	0.3%
03071	New Ipswich, NH	32	0.3%			0.3%					0.3%
01830	Haverhill, MA	31	0.3%				0.3%				0.3%
03244	Hillsboro, NH	31	0.3%			0.3%					0.3%
Subtotal		7,952	79.7%	17.1%	3.0%	35.6%	6.7%	5.0%	0.9%	11.5%	79.7%
All Other Locations		2,020	20.3%			12.3%	7.0%	0.5%	0.5%		20.3%
TOTALS				**17.1%**	**3.0%**	**47.8%**	**13.7%**	**5.5%**	**1.4%**	**11.5%**	**100.0%**
USE				**15.0%**	**3.0%**	**50.0%**	**15.0%**	**5.0%**	**2.0%**	**10.0%**	**100.0%**

2015 Monthly Count Data - Station 229022 (Hudson - Sagamore Bridge Road east of Nashua Town Line)

Weekday Peak Hour Data				
Month	**Volume**		**Peak Month Seas. Adj. Factors**	
	Weekday AM	**Weekday PM**	**Weekday AM**	**Weekday PM**
January	2,985	3,763	1.221	1.174
February	2,918	3,743	1.249	1.180
March	3,556	4,188	1.025	1.055
April	3,512	4,260	1.038	1.037
May	3,551	4,322	1.027	1.022
June	3,472	4,417	1.050	1.000
July	3,138	4,180	1.162	1.057
August	3,192	4,241	1.142	1.041
September	3,617	4,241	1.008	1.041
October	3,646	4,385	1.000	1.007
November	3,433	4,203	1.062	1.051
December	3,194	4,164	1.142	1.061
Average	**3,351**	**4,176**		

Oct. Weekday A.M. Peak-Hour Seasonal Adjustment Factor = 3,646/3,646 = 1.000
Oct. Weekday P.M. Peak-Hour Seasonal Adjustment Factor = 4,417/4,385 = 1.007

Average Daily Data		
Month	**Volume**	**Avg Month Seas. Adj. Factors**
	Weekday	**Weekday**
January	40,218	1.154
February	40,879	1.135
March	45,240	1.026
April	46,980	0.988
May	48,764	0.952
June	49,349	0.940
July	47,654	0.974
August	47,968	0.968
September	47,379	0.980
October	48,228	0.962
November	46,780	0.992
December	47,509	0.977
Average	**46,412**	

Oct. Weekday Daily Seasonal Adjustment Factor = 46,412/48,228 = 0.962

Appendix C

Tenant Provided Trip Generation Information & ITE 10th Edition Supplement Information

Hudson Logistics Center - Lot A Trip Generation Spreadsheet

Headcount

Warehouse Employee Count	
Headcount - Day Shift	370
Headcount - Night Shift	313

Shift Structure

	Start	End
Day Shift Inbound	7:00:00 AM	5:30:00 PM
Day Shift Outbound	7:30:00 AM	6:00:00 PM
Night Shift Inbound	6:00:00 PM	4:30:00 AM
Night Shift Outbound	6:30:00 PM	5:00:00 AM

Inbound Are Employees Working Receiving Side of Operation

Outbound Are Employees Working Shipping Side of Operation

Adjustment below accounts for mass transit and carpool users.

Net Cars Factor 100%

Traffic Schedule

Unadjusted Cars

	In	Out	Total
00:00	2	4	6
01:00	1	6	7
02:00	1	6	7
03:00	4	7	11
04:00	21	42	63
05:00	23	84	107
06:00	19	20	39
06:15	30	10	40
06:30	**32**	**6**	**38**
06:45	**43**	**6**	**49**
07:00	**47**	**20**	**67**
07:15	**55**	**15**	**70**
07:30	11	6	17
07:45	5	2	7
08:00	15	9	24
09:00	29	18	47
10:00	13	13	26
11:00	9	14	23
12:00	15	22	37
13:00	9	16	25
14:00	4	11	15
15:00	7	23	30
16:00	12	21	33
17:00	8	6	14
17:15	16	8	24
17:30	**29**	**44**	**73**
17:45	**45**	**19**	**64**
18:00	**54**	**98**	**152**
18:15	**56**	**33**	**89**
18:30	12	14	26
18:45	3	6	9
19:00	13	15	28
20:00	12	16	28
21:00	12	16	28
22:00	8	14	22
23:00	12	12	24
	687	682	1,369

Trucks

	In	Out	Total
00:00	8	8	16
01:00	7	7	14
02:00	7	7	14
03:00	9	9	18
04:00	8	8	16
05:00	10	10	20
06:00	2	2	4
06:15	2	2	4
06:30	**2**	**2**	**4**
06:45	**2**	**2**	**4**
07:00	**2**	**2**	**4**
07:15	**1**	**1**	**2**
07:30	1	1	2
07:45	1	1	2
08:00	5	5	10
09:00	6	6	12
10:00	5	5	10
11:00	5	5	10
12:00	6	6	12
13:00	5	5	10
14:00	4	4	8
15:00	4	4	8
16:00	3	3	6
17:00	1	1	2
17:15	1	1	2
17:30	**1**	**1**	**2**
17:45	**0**	**0**	**0**
18:00	**1**	**1**	**2**
18:15	**1**	**1**	**2**
18:30	1	1	2
18:45	0	0	0
19:00	4	4	8
20:00	2	2	4
21:00	3	3	6
22:00	4	4	8
23:00	7	7	14
	131	131	262

Unadjusted Total Vehicles

	In	Out	Total
00:00	10	12	22
01:00	8	13	21
02:00	8	13	21
03:00	13	16	29
04:00	29	50	79
05:00	33	94	127
06:00	21	22	43
06:15	32	12	44
06:30	**34**	**8**	**42**
06:45	**45**	**8**	**53**
07:00	**49**	**22**	**71**
07:15	**56**	**16**	**72**
07:30	12	7	19
07:45	6	3	9
08:00	20	14	34
09:00	35	24	59
10:00	18	18	36
11:00	14	19	33
12:00	21	28	49
13:00	14	21	35
14:00	8	15	23
15:00	11	27	38
16:00	15	24	39
17:00	9	7	16
17:15	17	9	26
17:30	**30**	**45**	**75**
17:45	**45**	**19**	**64**
18:00	**55**	**99**	**154**
18:15	**57**	**34**	**91**
18:30	13	15	28
18:45	3	6	9
19:00	17	19	36
20:00	14	18	32
21:00	15	19	34
22:00	12	18	30
23:00	19	19	38
	818	813	1,631

Morning Peak Hour Of Generator
6:30 AM -7:30 AM

Enter	Exit	Total
184	54	238

Evening Peak Hour Of Generator
5:30 PM -6:30 PM

Enter	Exit	Total
187	197	384

Hudson Logistics Center - Lot B Trip Generation Spreadsheet

Headcount

Warehouse Employee Count		Box Truck Delivery Drivers	
Headcount - Day Shift	172	Headcount - Day Shift	40
Headcount Night Shift	172	Headcount - Night Shift	None

Shift Structure

Warehouse Employees

	Start	End
Day Shift Inbound	7:00:00 AM	5:30:00 PM
Day Shift Outbound	7:30:00 AM	6:00:00 PM
Night Shift Inbound	6:00:00 PM	4:30:00 AM
Night Shift Outbound	6:30:00 PM	5:00:00 AM

Inbound Are Employees Working Receiving Side of Operation

Outbound Are Employees Working Shipping Side of Operation

Box Truck Drivers

	Start	End
Day Shift	5:30:00 AM	2:30:00 PM
Night Shift	None	

Traffic Schedule

Unadjusted Car Trips				Tractor-Trailers				Box Trucks				Unadjusted Total Vehicles			
	In	Out	Total		In	Out	Total		In	Out	Total		In	Out	Total
00:00	1	2	3	00:00	1	1	2	00:00	0	0	0	00:00	2	3	5
01:00	1	3	4	01:00	1	1	2	01:00	0	0	0	01:00	2	4	6
02:00	1	3	4	02:00	1	1	2	02:00	0	0	0	02:00	2	4	6
03:00	2	4	6	03:00	1	1	2	03:00	0	0	0	03:00	3	5	8
04:00	10	21	31	04:00	1	1	2	04:00	0	0	0	04:00	11	22	33
05:00	52	42	94	05:00	1	1	2	05:00	0	40	40	05:00	53	43	96
06:00	10	10	20	06:00	1	1	2	06:00	0	0	0	06:00	11	11	22
06:15	15	5	20	06:15	0	0	0	06:15	0	0	0	06:15	15	5	20
06:30	16	3	19	06:30	0	0	0	06:30	0	0	0	06:30	16	3	19
06:45	22	3	25	06:45	0	0	0	06:45	0	0	0	06:45	22	3	25
07:00	23	10	33	07:00	1	1	2	07:00	0	0	0	07:00	24	11	35
07:15	28	7	35	07:15	0	0	0	07:15	0	0	0	07:15	28	7	35
07:30	5	3	8	07:30	0	0	0	07:30	0	0	0	07:30	5	3	8
07:45	3	1	4	07:45	0	0	0	07:45	0	0	0	07:45	3	1	4
08:00	8	4	12	08:00	1	1	2	08:00	0	0	0	08:00	9	5	14
09:00	15	9	24	09:00	1	1	2	09:00	0	0	0	09:00	16	10	26
10:00	7	7	14	10:00	1	1	2	10:00	0	0	0	10:00	8	8	16
11:00	4	7	11	11:00	1	1	2	11:00	0	0	0	11:00	5	8	13
12:00	8	11	19	12:00	1	1	2	12:00	0	0	0	12:00	9	12	21
13:00	4	8	12	13:00	1	1	2	13:00	0	0	0	13:00	5	9	14
14:00	2	45	47	14:00	1	1	2	14:00	40	0	40	14:00	3	46	49
15:00	3	12	15	15:00	1	1	2	15:00	0	0	0	15:00	4	13	17
16:00	6	11	17	16:00	1	1	2	16:00	0	0	0	16:00	7	12	19
17:00	4	3	7	17:00	1	1	2	17:00	0	0	0	17:00	5	4	9
17:15	8	4	12	17:15	1	1	2	17:15	0	0	0	17:15	9	5	14
17:30	15	22	37	17:30	0	0	0	17:30	0	0	0	17:30	15	22	37
17:45	23	10	33	17:45	0	0	0	17:45	0	0	0	17:45	23	10	33
18:00	27	49	76	18:00	1	1	2	18:00	0	0	0	18:00	28	50	78
18:15	28	17	45	18:15	0	0	0	18:15	0	0	0	18:15	28	17	45
18:30	6	7	13	18:30	0	0	0	18:30	0	0	0	18:30	6	7	13
18:45	2	3	5	18:45	0	0	0	18:45	0	0	0	18:45	2	3	5
19:00	7	8	15	19:00	1	1	2	19:00	0	0	0	19:00	8	9	17
20:00	6	8	14	20:00	1	1	2	20:00	0	0	0	20:00	7	9	16
21:00	6	8	14	21:00	1	1	2	21:00	0	0	0	21:00	7	9	16
22:00	4	7	11	22:00	1	1	2	22:00	0	0	0	22:00	5	8	13
23:00	6	6	12	23:00	1	1	2	23:00	0	0	0	23:00	7	7	14
	388	383	771		25	25	50		40	40	80		413	408	821

Morning Peak Hour Of Generator
6:30 AM -7:30 AM

Enter	Exit	Total
90	24	114

Evening Peak Hour Of Generator
5:30 PM -6:30 PM

Enter	Exit	Total
94	99	193

Table B.3 Baseline Vehicle Occupancy in *Trip Generation Manual* Data Volumes

Land Use Classification		Time Period	Vehicle Occupancy		
Code	Description		Average	Range	Comment
021	Commercial Airport	Weekday		1.79–2.42	
022	General Aviation Airport	Weekday		1.20–1.70	
030	Intermodal Truck Terminal	Weekday	1.16		avg. of 2 studies
110	General Light Industrial	Not Available	1.3		for all industrial sites
120	General Heavy Industrial	Not Available			
150	Warehousing	Not Available			
130	Industrial Park	Weekday	1.37	1.20–1.80	
140	Manufacturing	Weekday		1.20–1.30	
151	Mini-Warehouse	Weekday		1.20–1.90	
714	Corporate Headquarters Building	Weekday	1.2	1.03–1.74	avg. of 10 studies
715	Single Tenant Office Building	Not Available	1.1	1.03–1.14	avg. of 10 studies
720	Medical Dental Office Building	Not Available	1.37	1.32–1.44	avg. of 6 studies
731	State Motor Vehicles Department	Weekday	1.38	1.30–1.48	
732	United States Post Office	Weekday	1.14		avg. of 4 studies
760	Research and Development Center	Weekday	1.19	1.10–1.33	avg. of 13 studies
812	Building Materials and Lumber Store	Weekday	1.17	1.10–1.21	
815	Free-Standing Discount Store	Weekday	1.32	1.19–1.46	avg. of 2 sites
816	Hardware/Paint Store	Weekday	1.31	1.15–1.39	avg. of all sites
857	Discount Club	Not Available	1.45		limited sample
860	Wholesale Market	Weekday	1.21		avg. for site
890	Furniture Store	Weekday	1.42	1.12–2.00	
920	Copy, Print, and Express Ship Store	AM street pk	1.12		
		PM street pk	1.21		
		Pk. Hour	1.16		
931	Quality Restaurant	Weekday	1.78	1.59–1.98	
932	High-Turnover (Sit-Down) Restaurant	Weekday	1.52	1.39–1.69	

Source: *Trip Generation Manual*, 9th Edition, Institute of Transportation Engineers, Washington, DC, 2012.

Land Use: 150
Warehousing

Description

A warehouse is primarily devoted to the storage of materials, but it may also include office and maintenance areas. High-cube transload and short-term storage warehouse (Land Use 154), high-cube fulfillment center warehouse (Land Use 155), high-cube parcel hub warehouse (Land Use 156), and high-cube cold storage warehouse (Land Use 157) are related uses.

Additional Data

Time-of-day distribution data for this land use are presented in Appendix A. For the 13 general urban/suburban sites with data, the overall highest vehicle volumes during the AM and PM on a weekday were counted between 11:30 a.m. and 12:30 p.m. and 3:00 and 4:00 p.m., respectively.

The sites were surveyed in the 1980s, the 1990s, the 2000s, and the 2010s in California, Connecticut, Minnesota, New Jersey, New York, Ohio, Oregon, Pennsylvania, and Texas.

Source Numbers

184, 331, 406, 411, 443, 579, 583, 596, 598, 611, 619, 642, 752, 869, 875, 876, 914, 940

Warehousing
(150)

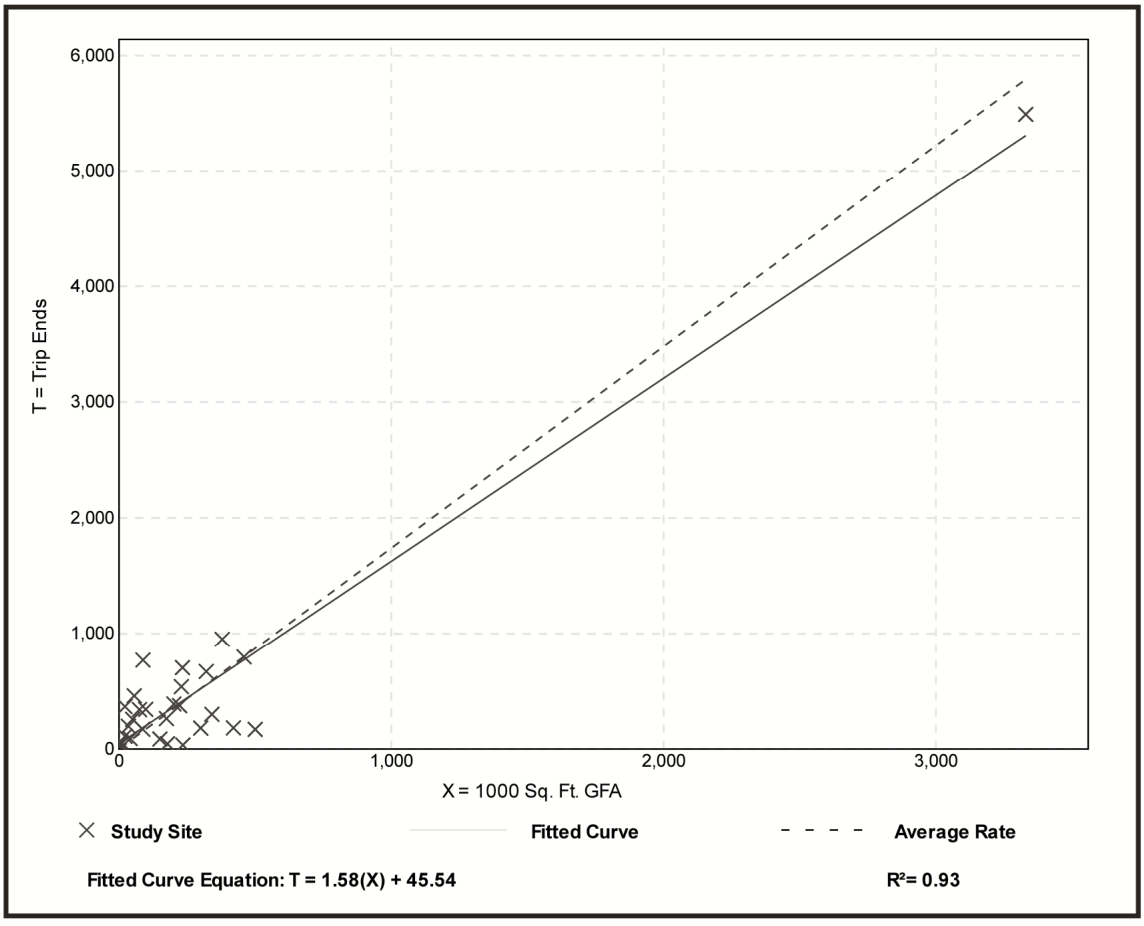
Vehicle Trip Ends vs: **1000 Sq. Ft. GFA**
On a: **Weekday**

Setting/Location: **General Urban/Suburban**
Number of Studies: 29
1000 Sq. Ft. GFA: 285
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
1.74	0.15 - 16.93	1.55

Data Plot and Equation



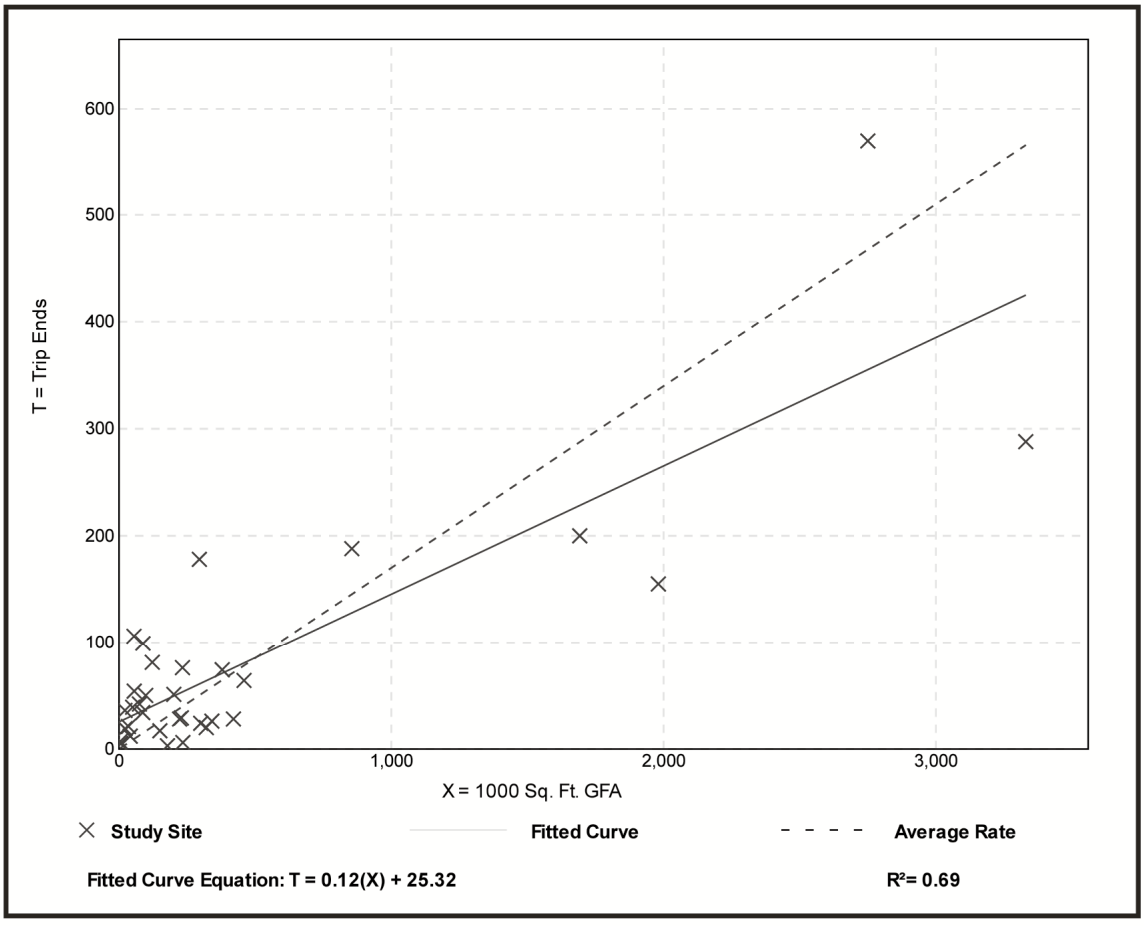
Warehousing
(150)

Vehicle Trip Ends vs: **1000 Sq. Ft. GFA**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.
Setting/Location: **General Urban/Suburban**
Number of Studies: 34
1000 Sq. Ft. GFA: 451
Directional Distribution: 77% entering, 23% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
0.17	0.02 - 1.93	0.20

Data Plot and Equation



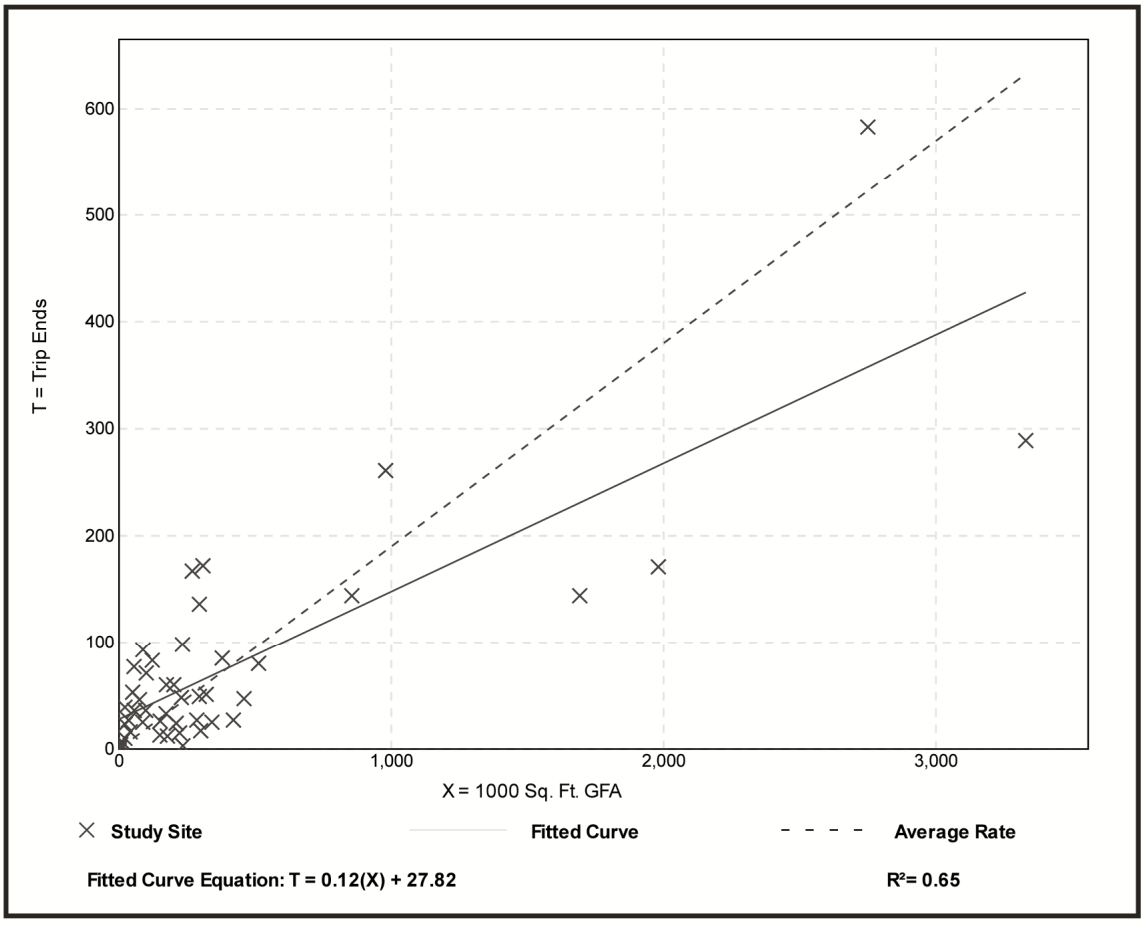
Warehousing
(150)

Vehicle Trip Ends vs: **1000 Sq. Ft. GFA**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.
Setting/Location: **General Urban/Suburban**
Number of Studies: 47
1000 Sq. Ft. GFA: 400
Directional Distribution: 27% entering, 73% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
0.19	0.01 - 1.80	0.18

Data Plot and Equation



Warehousing
(150)

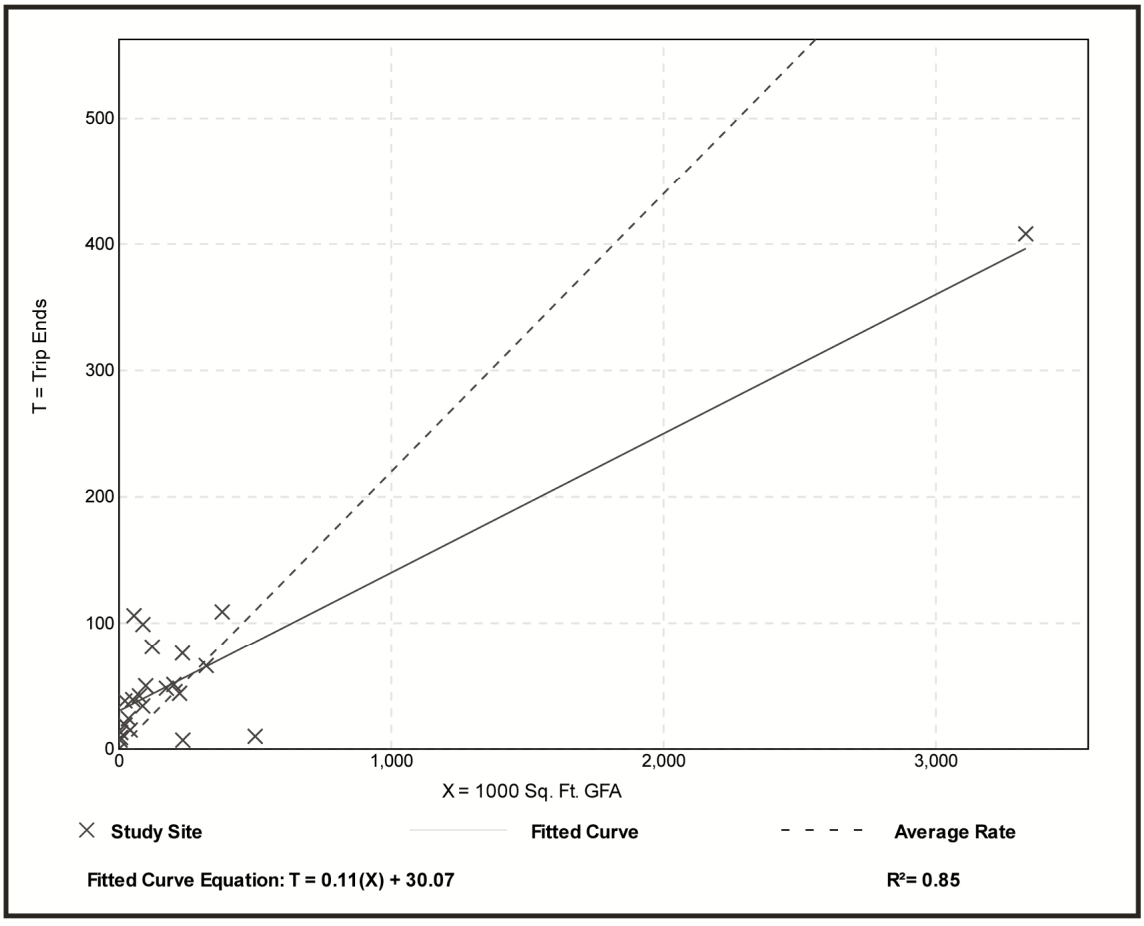
Vehicle Trip Ends vs: **1000 Sq. Ft. GFA**
On a: **Weekday,**
AM Peak Hour of Generator

Setting/Location: **General Urban/Suburban**
Number of Studies: 23
1000 Sq. Ft. GFA: 274
Directional Distribution: 65% entering, 35% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
0.22	0.02 - 2.08	0.28

Data Plot and Equation



Warehousing
(150)

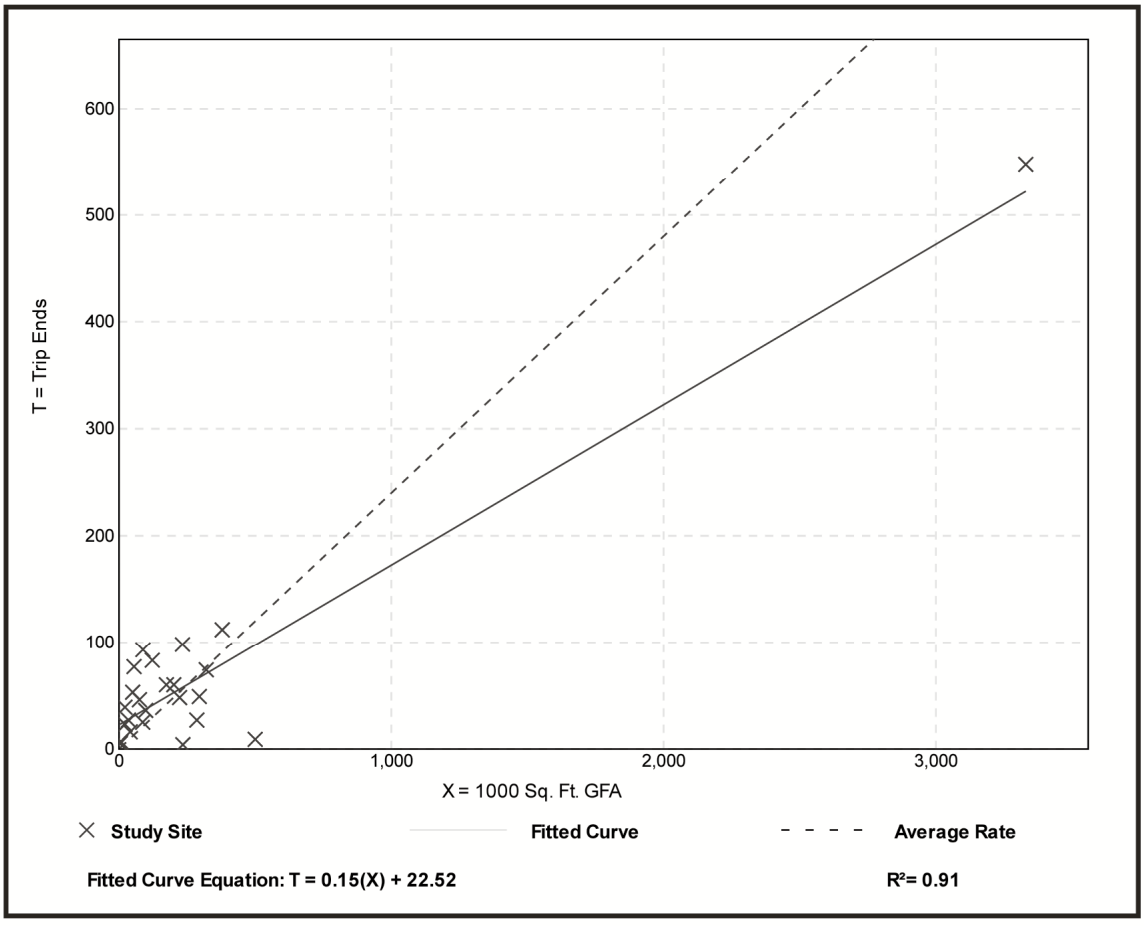
Vehicle Trip Ends vs: **1000 Sq. Ft. GFA**
On a: **Weekday,**
PM Peak Hour of Generator

Setting/Location: **General Urban/Suburban**
Number of Studies: 25
1000 Sq. Ft. GFA: 275
Directional Distribution: 24% entering, 76% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
0.24	0.02 - 1.80	0.24

Data Plot and Equation



Warehousing
(150)

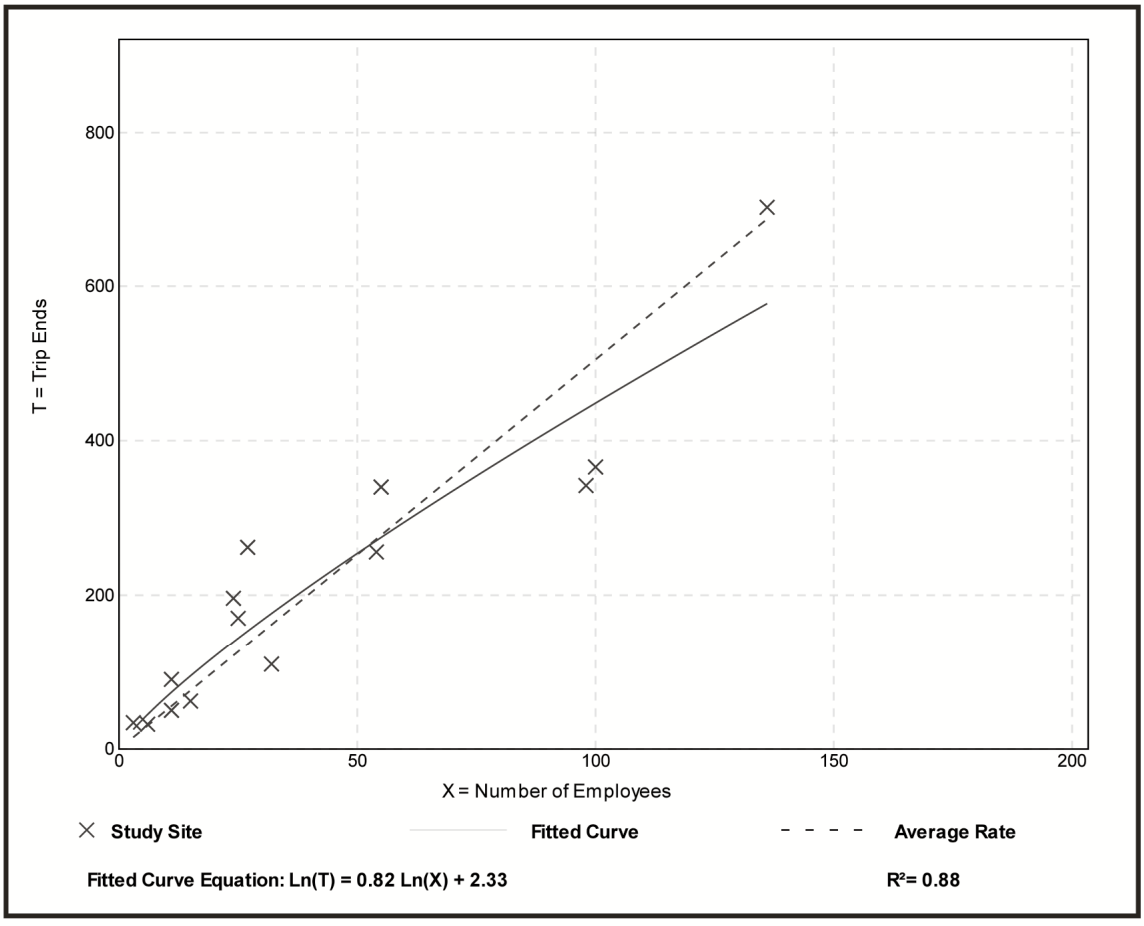
Vehicle Trip Ends vs: **Employees**
On a: **Weekday**

Setting/Location: **General Urban/Suburban**
Number of Studies: 14
Avg. Num. of Employees: 43
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Employee

Average Rate	Range of Rates	Standard Deviation
5.05	3.44 - 11.33	1.77

Data Plot and Equation



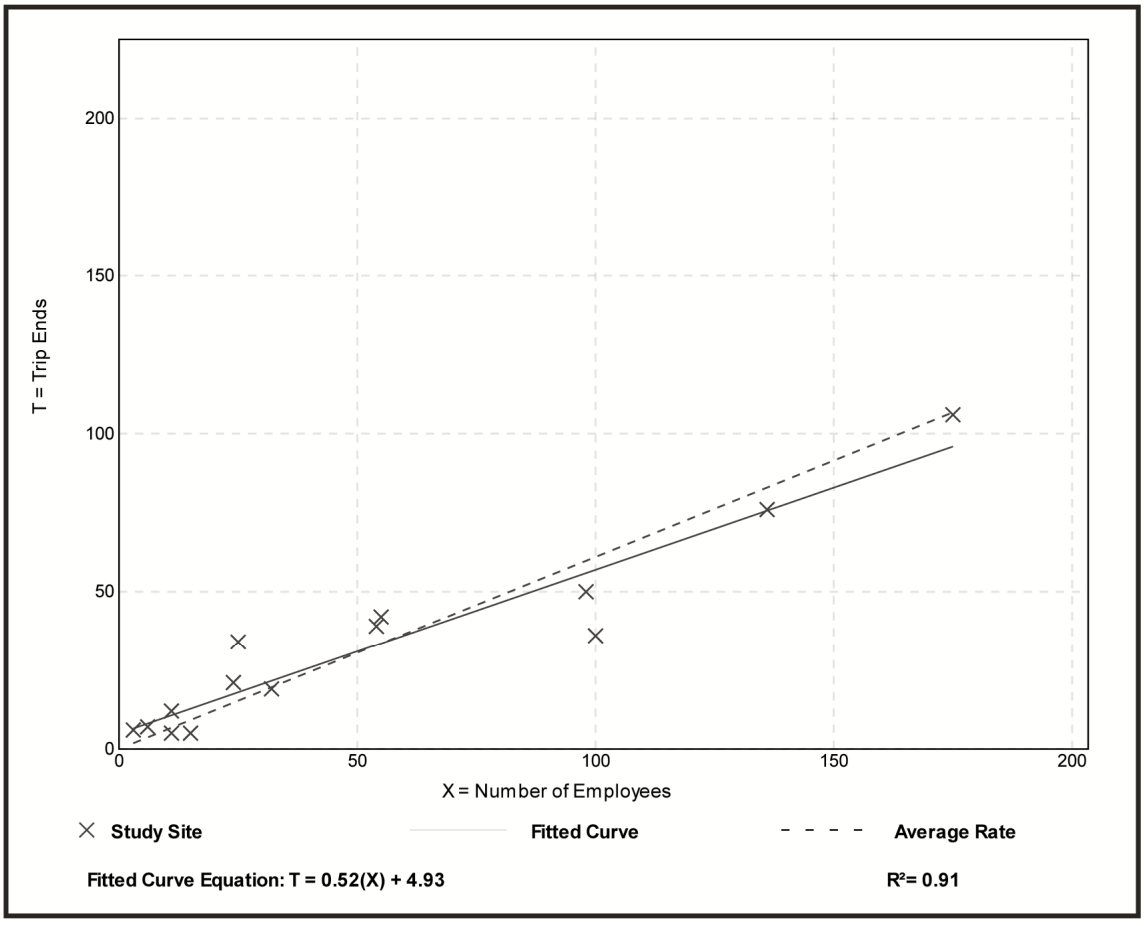
Warehousing
(150)

Vehicle Trip Ends vs: **Employees**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.
Setting/Location: **General Urban/Suburban**
Number of Studies: 14
Avg. Num. of Employees: 53
Directional Distribution: 72% entering, 28% exiting

Vehicle Trip Generation per Employee

Average Rate	Range of Rates	Standard Deviation
0.61	0.33 - 2.00	0.23

Data Plot and Equation



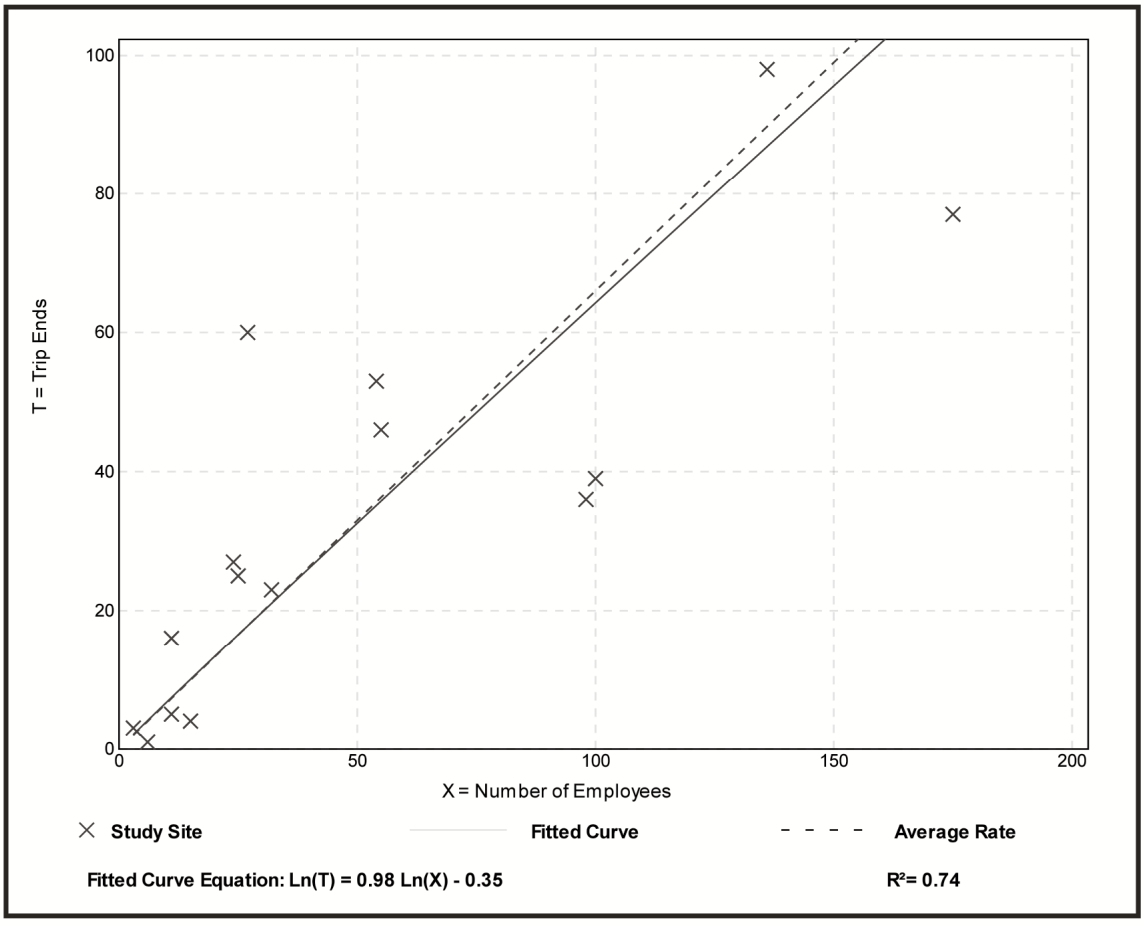
Warehousing
(150)

Vehicle Trip Ends vs:	**Employees**
On a:	**Weekday,**
	Peak Hour of Adjacent Street Traffic,
	One Hour Between 4 and 6 p.m.
Setting/Location:	**General Urban/Suburban**
Number of Studies:	15
Avg. Num. of Employees:	51
Directional Distribution:	36% entering, 65% exiting

Vehicle Trip Generation per Employee

Average Rate	Range of Rates	Standard Deviation
0.66	0.17 - 2.22	0.40

Data Plot and Equation



Warehousing
(150)

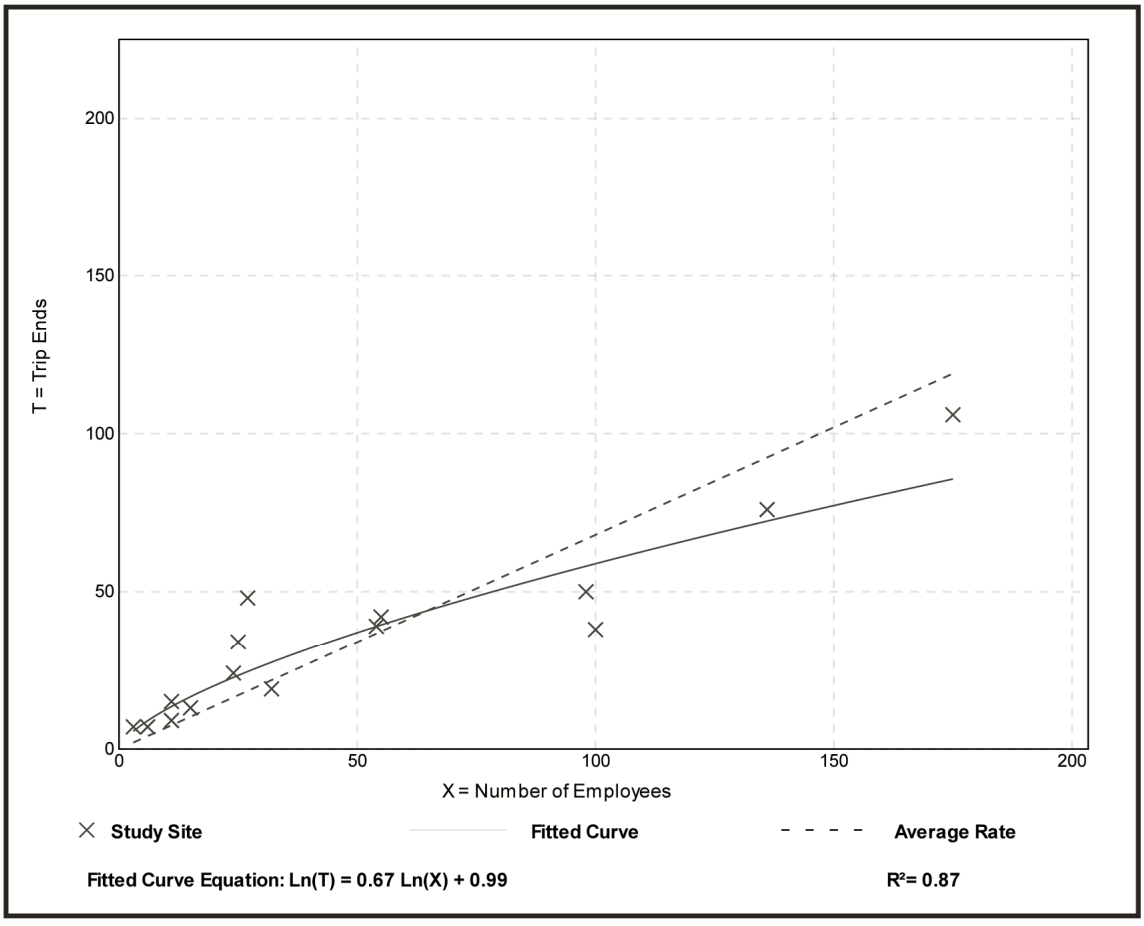
Vehicle Trip Ends vs: **Employees**
On a: **Weekday,**
AM Peak Hour of Generator

Setting/Location: **General Urban/Suburban**
Number of Studies: 15
Avg. Num. of Employees: 51
Directional Distribution: 53% entering, 47% exiting

Vehicle Trip Generation per Employee

Average Rate	Range of Rates	Standard Deviation
0.68	0.38 - 2.33	0.33

Data Plot and Equation



Warehousing
(150)

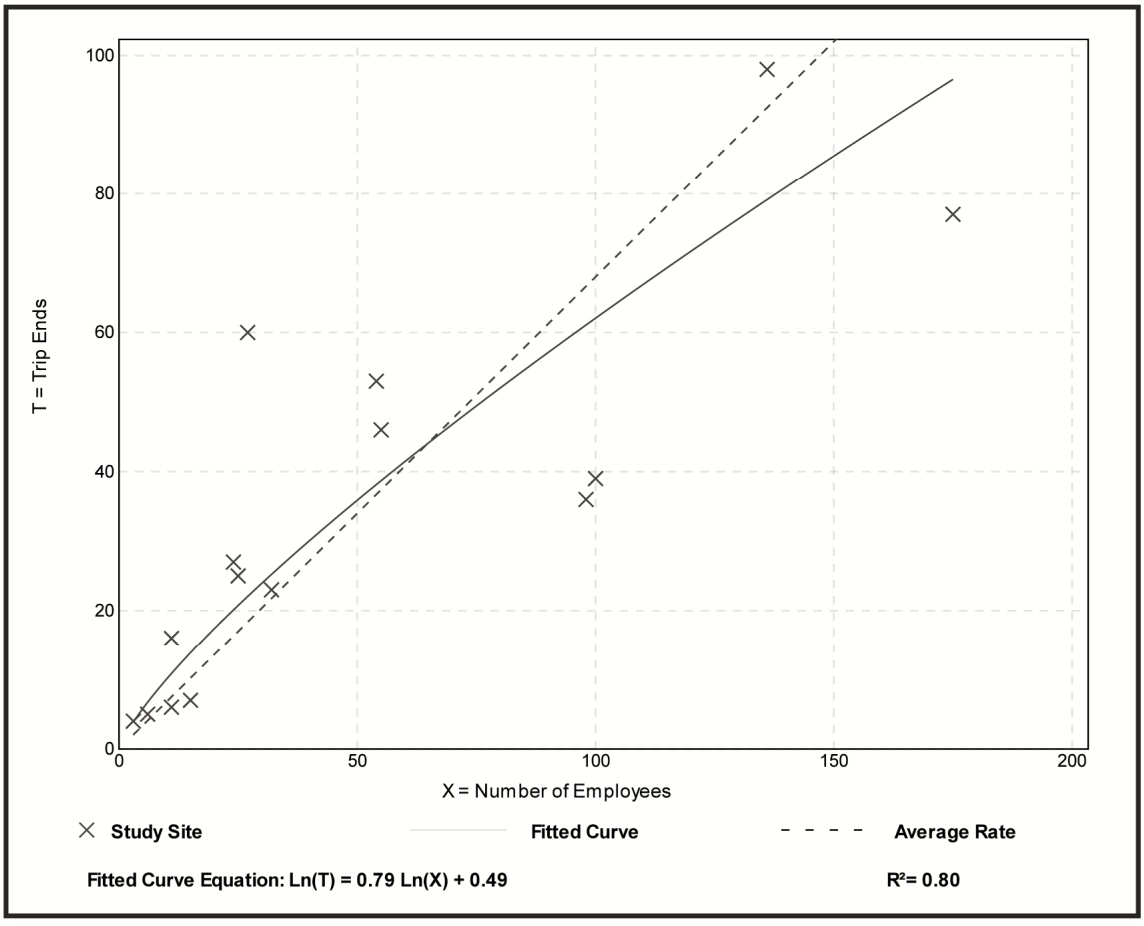
Vehicle Trip Ends vs: **Employees**
On a: **Weekday,**
PM Peak Hour of Generator

Setting/Location: **General Urban/Suburban**
Number of Studies: 15
Avg. Num. of Employees: 51
Directional Distribution: 28% entering, 72% exiting

Vehicle Trip Generation per Employee

Average Rate	Range of Rates	Standard Deviation
0.68	0.37 - 2.22	0.40

Data Plot and Equation



Land Use: 155
High-Cube Fulfillment Center Warehouse

Description

A high-cube warehouse (HCW) is a building that typically has at least 200,000 gross square feet of floor area, has a ceiling height of 24 feet or more, and is used primarily for the storage and/or consolidation of manufactured goods (and to a lesser extent, raw materials) prior to their distribution to retail locations or other warehouses. A typical HCW has a high level of on-site automation and logistics management. The automation and logistics enable highly-efficient processing of goods through the HCW. High-cube fulfillment center warehouses include warehouses characterized by a significant storage function and direct distribution of ecommerce product to end users. These facilities typically handle smaller packages and quantities than other types of HCWs and often contain multiple mezzanine levels. Warehousing (Land Use 150), high-cube transload and short-term storage warehouse (Land Use 154), high-cube parcel hub warehouse (Land Use 156), and high-cube cold storage warehouse (Land Use 157) are related land uses.

Each fulfillment center in the ITE database has been categorized as either a sort or non-sort facility. A sort facility is a fulfillment center that ships out smaller items, requiring extensive sorting, typically by manual means. A non-sort facility is a fulfillment center that ships large box items that are processed primarily with automation rather than through manual means. Separate sets of data plots are presented for the sort and non-sort fulfillment centers.

Additional Data

The High-Cube Warehouse/Distribution Center-related land uses underwent specialized consideration through a commissioned study titled “High-Cube Warehouse Vehicle Trip Generation Analysis,” published in October 2016. The results of this study have been incorporated into the 10th Edition *Trip Generation Manual* and are posted on the ITE website at http://library.ite.org/pub/a3e6679a-e3a8-bf38-7f29-2961becdd498.

The sites were surveyed in the 2000s and the 2010s in California, New Jersey, and Texas.

Source Numbers

752, 941, 1001, 1002, 1011

High-Cube Fulfillment Center Warehouse - Non-Sort (155)

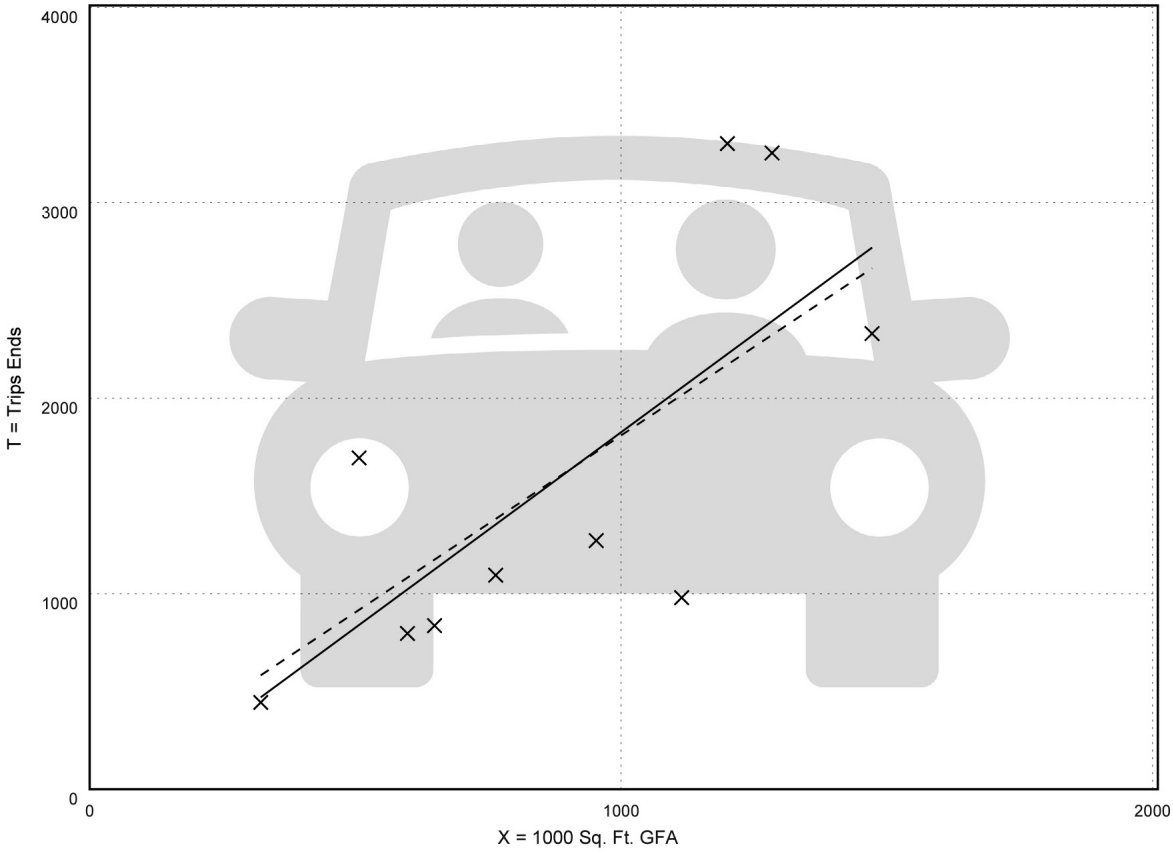
Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
On a: Weekday

Setting/Location: General Urban/Suburban
Number of Studies: 10
Avg. 1000 Sq. Ft. GFA: 886
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
1.81	0.88 - 3.34	0.76

Data Plot and Equation



Fitted Curve Equation: T = 2.00(X) - 173.61

R^2= 0.54

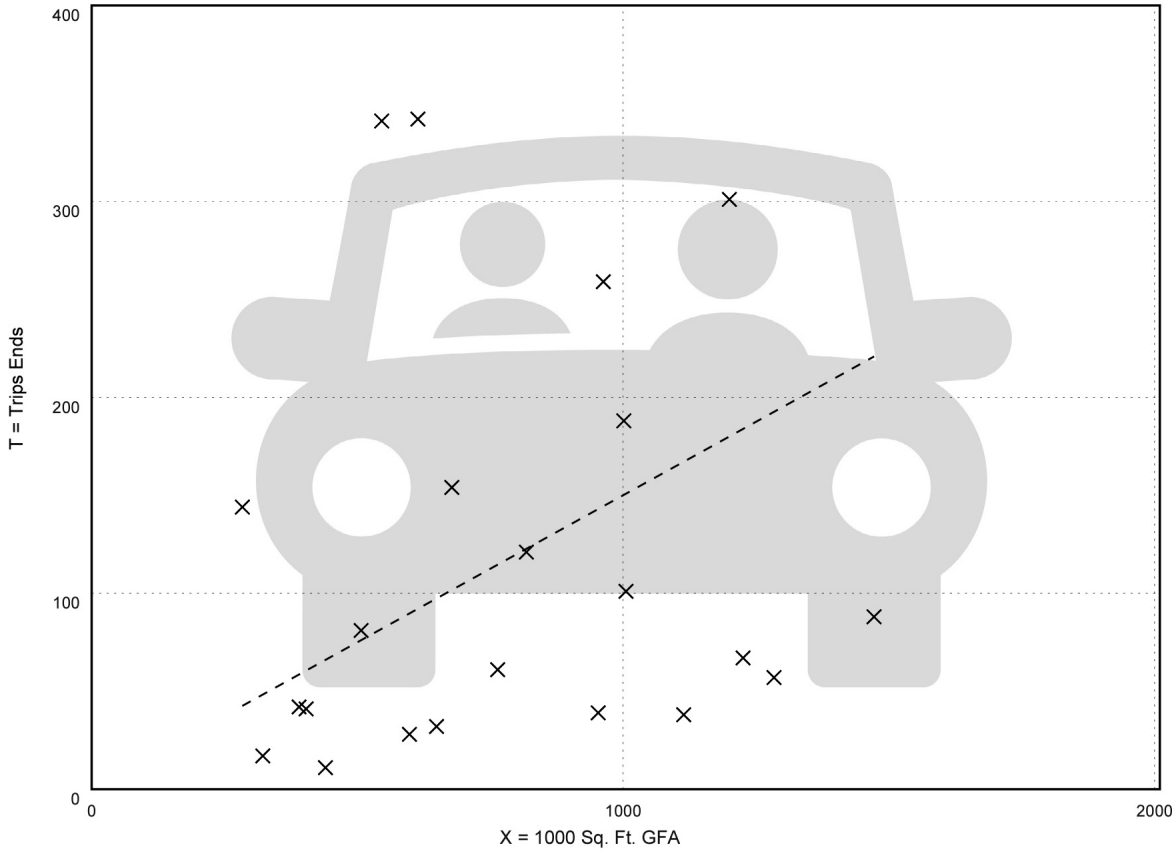
High-Cube Fulfillment Center Warehouse - Non-Sort (155)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.
Setting/Location: General Urban/Suburban
Number of Studies: 22
Avg. 1000 Sq. Ft. GFA: 783
Directional Distribution: 81% entering, 19% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
0.15	0.03 - 0.62	0.15

Data Plot and Equation



Fitted Curve Equation: Not Given

R^2= ***

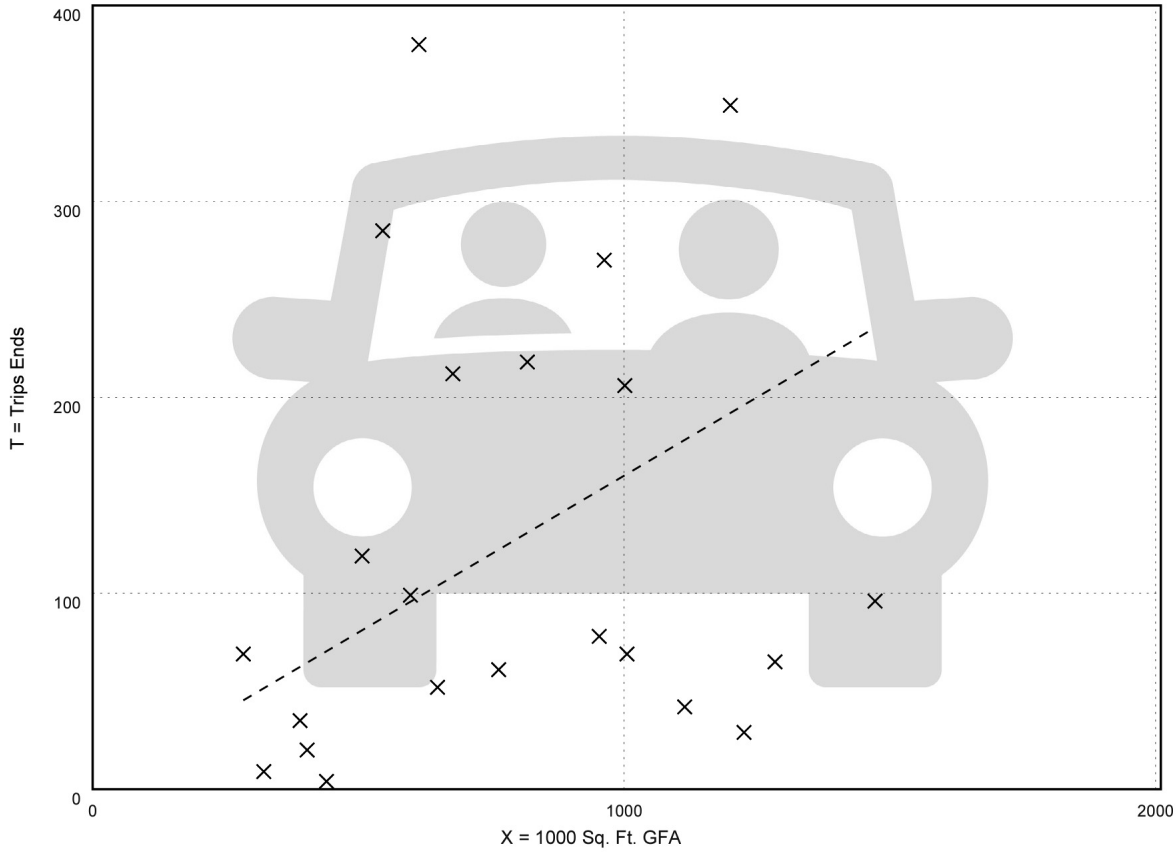
High-Cube Fulfillment Center Warehouse - Non-Sort (155)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.
Setting/Location: General Urban/Suburban
Number of Studies: 22
Avg. 1000 Sq. Ft. GFA: 783
Directional Distribution: 39% entering, 61% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
0.16	0.01 - 0.62	0.15

Data Plot and Equation



Fitted Curve Equation: Not Given

R^2= *

High-Cube Fulfillment Center Warehouse - Non-Sort (155)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
On a: Weekday,
AM Peak Hour of Generator

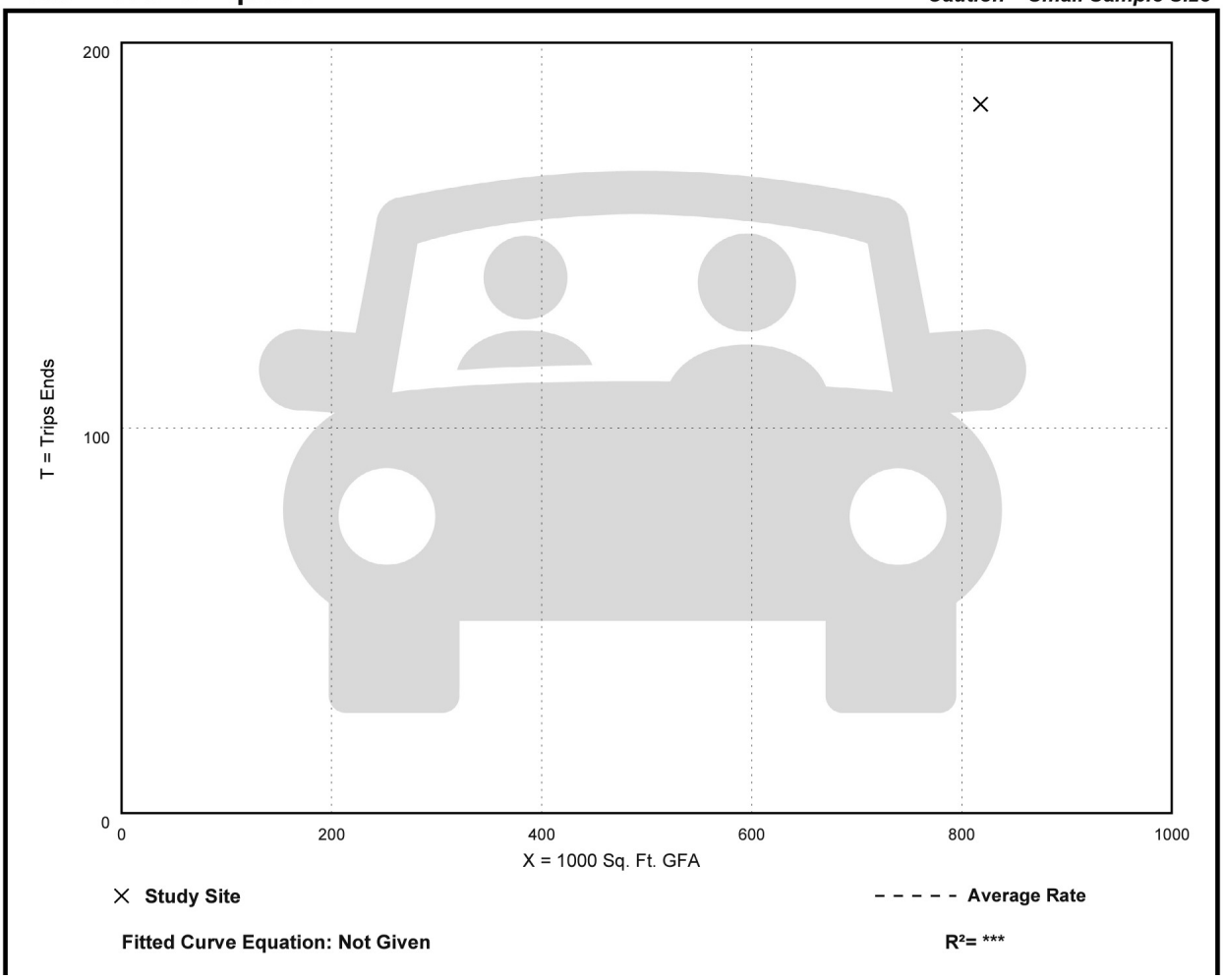
Setting/Location: General Urban/Suburban
Number of Studies: 1
Avg. 1000 Sq. Ft. GFA: 818
Directional Distribution: Not Available

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
0.22	0.22 - 0.22	***

Data Plot and Equation

Caution – Small Sample Size



High-Cube Fulfillment Center Warehouse - Non-Sort (155)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
On a: Weekday,
PM Peak Hour of Generator

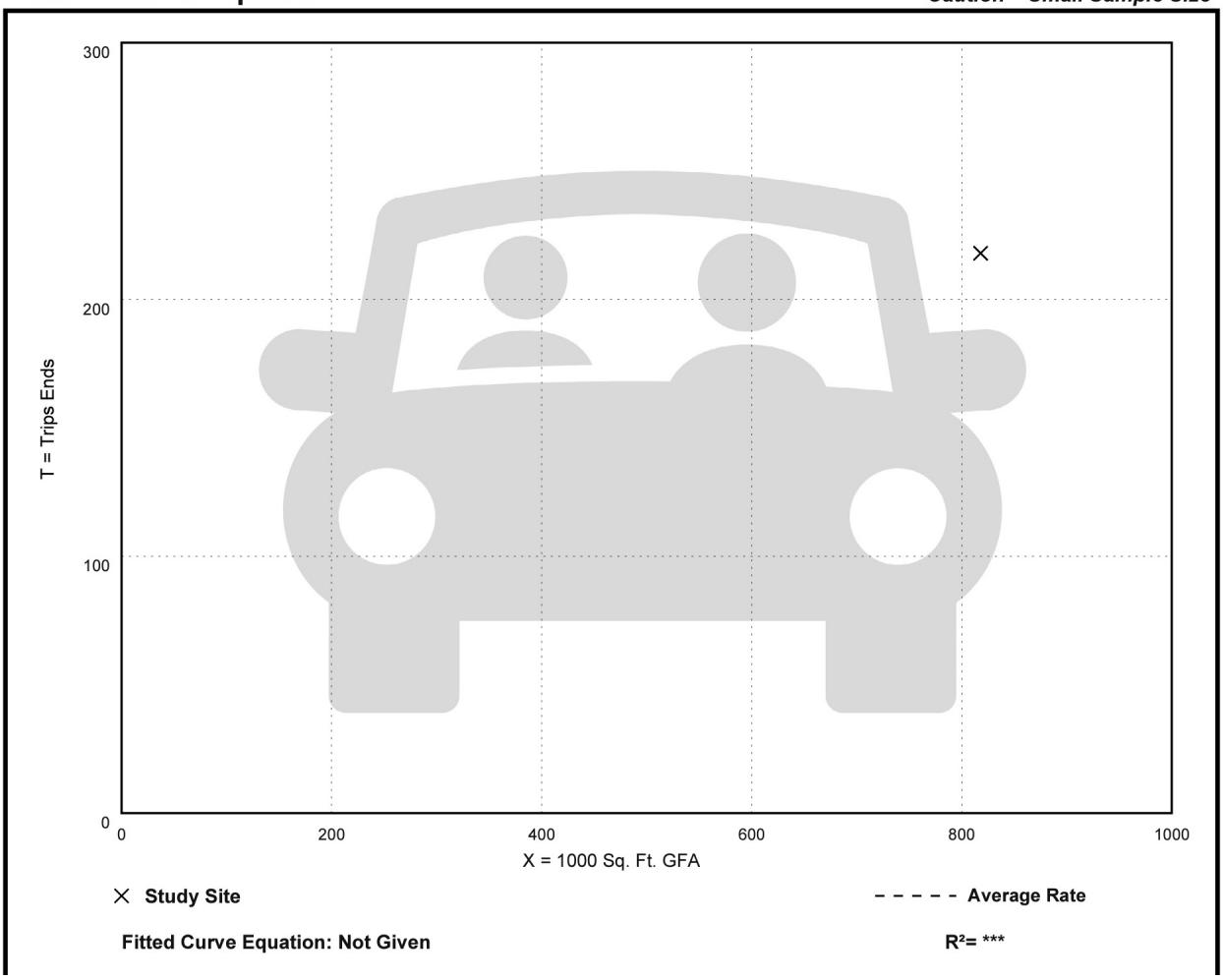
Setting/Location: General Urban/Suburban
Number of Studies: 1
Avg. 1000 Sq. Ft. GFA: 818
Directional Distribution: Not Available

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
0.27	0.27 - 0.27	***

Data Plot and Equation

Caution – Small Sample Size



Fitted Curve Equation: Not Given

R^2= *

High-Cube Fulfillment Center Warehouse - Non-Sort (155)

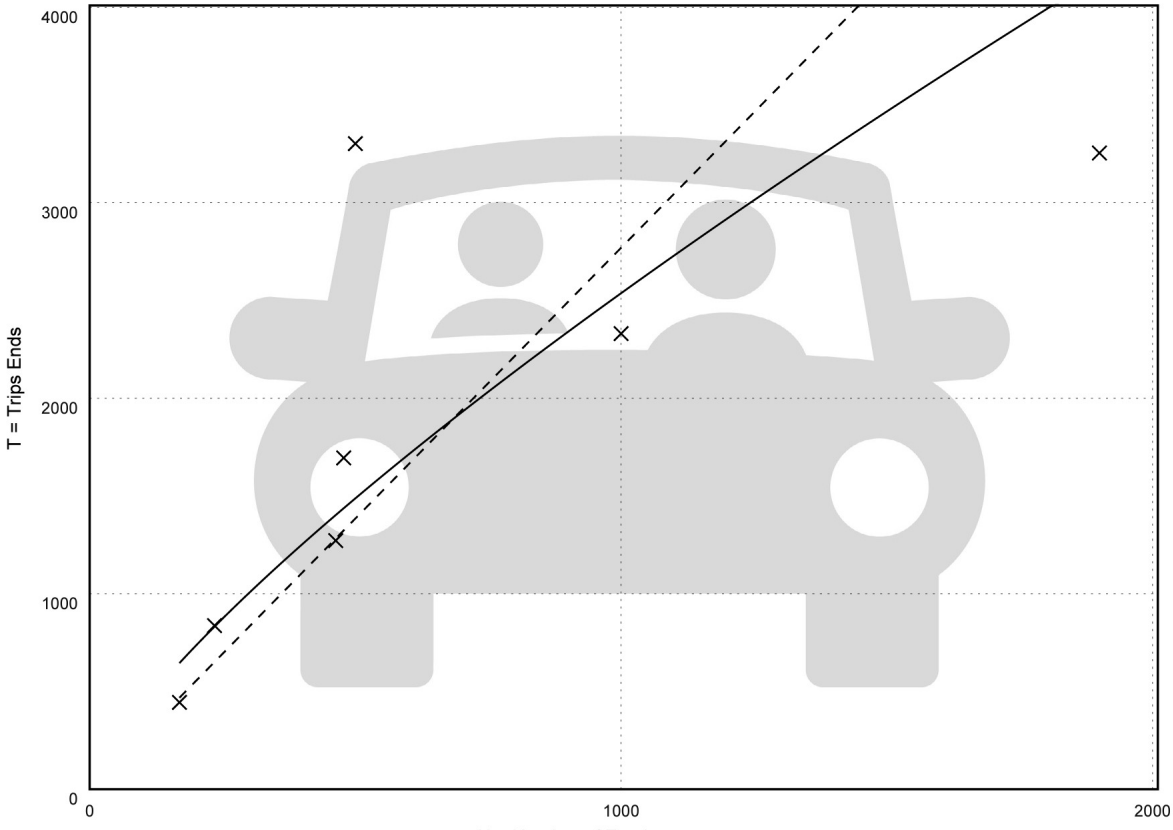
Vehicle Trip Ends vs: Employees
On a: Weekday

Setting/Location: General Urban/Suburban
Number of Studies: 7
Avg. Num. of Employees: 678
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Employee

Average Rate	Range of Rates	Standard Deviation
2.77	1.71 - 6.61	1.58

Data Plot and Equation



Fitted Curve Equation: Ln(T) = 0.77 Ln(X) + 2.52

R^2= 0.73

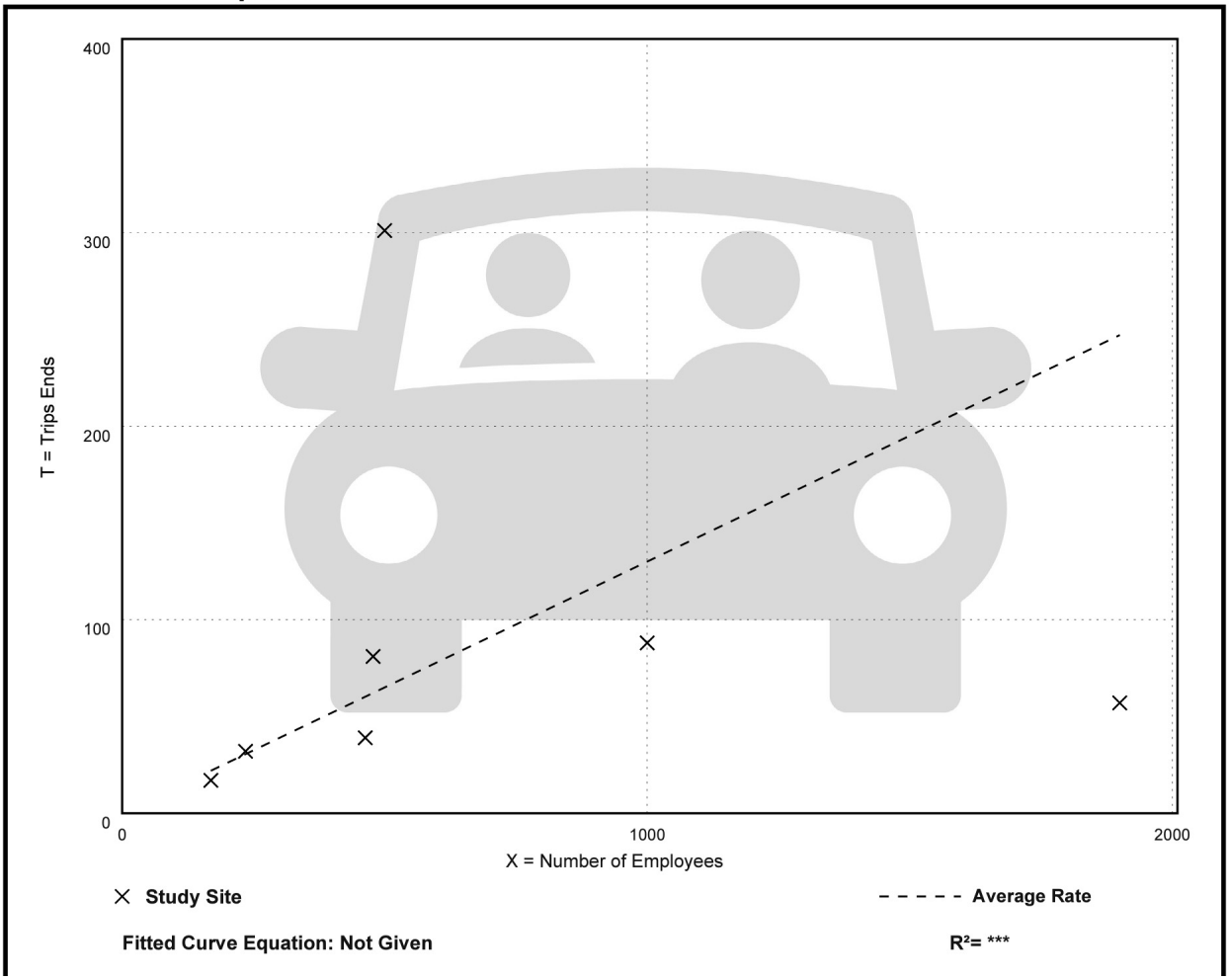
High-Cube Fulfillment Center Warehouse - Non-Sort (155)

Vehicle Trip Ends vs: Employees
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.
Setting/Location: General Urban/Suburban
Number of Studies: 7
Avg. Num. of Employees: 678
Directional Distribution: 81% entering, 19% exiting

Vehicle Trip Generation per Employee

Average Rate	Range of Rates	Standard Deviation
0.13	0.03 - 0.60	0.18

Data Plot and Equation



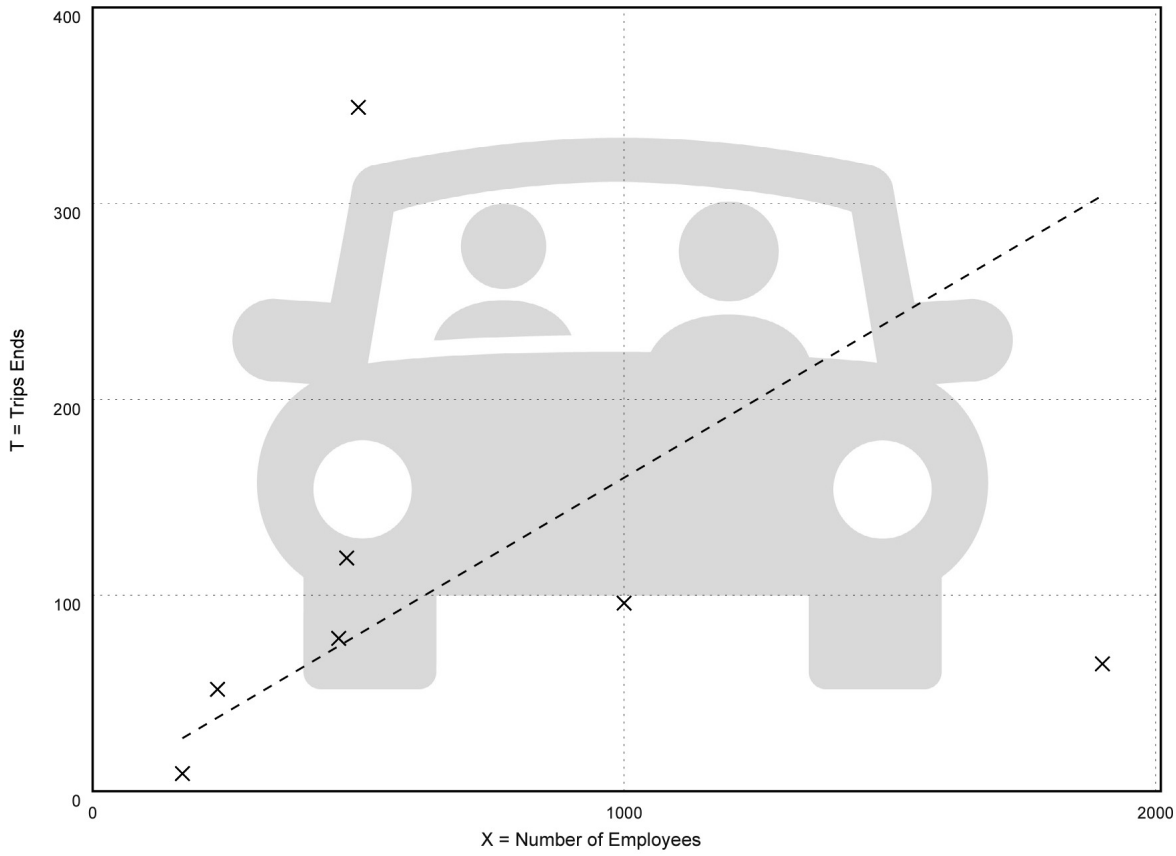
High-Cube Fulfillment Center Warehouse - Non-Sort (155)

Vehicle Trip Ends vs: Employees
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.
Setting/Location: General Urban/Suburban
Number of Studies: 7
Avg. Num. of Employees: 678
Directional Distribution: 39% entering, 61% exiting

Vehicle Trip Generation per Employee

Average Rate	Range of Rates	Standard Deviation
0.16	0.03 - 0.70	0.21

Data Plot and Equation



Fitted Curve Equation: Not Given

R^2= ***

Appendix D

Capacity Analysis – 2019 Existing Traffic Conditions

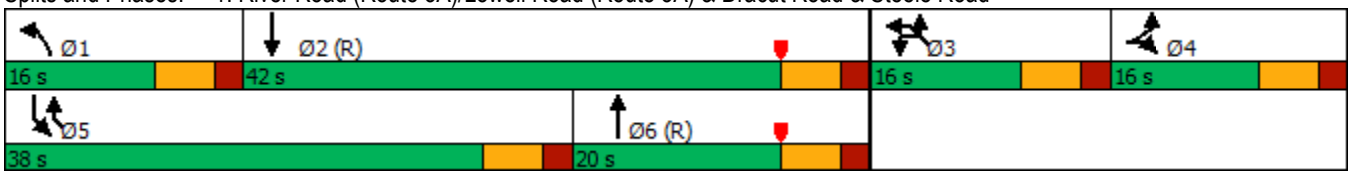
2019 Existing Weekday A.M.

Lane Group	EBL	EBR	EBR2	NBL	NBT	NBR	SBL	SBT	SBR	NWL	NWR
Lane Configurations											
Traffic Volume (vph)	2	0	2	0	247	0	452	482	12	1	792
Future Volume (vph)	2	0	2	0	247	0	452	482	12	1	792
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	12	12	10	12	12	12	12
Storage Length (ft)	0	50		200		300	775		0	100	0
Storage Lanes	1	1		1		1	1		0	1	1
Taper Length (ft)	25			100			75			25	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00
Frt		0.850						0.996			0.850
Flt Protected	0.950						0.950			0.950	
Satd. Flow (prot)	1685	1133	0	1773	3574	0	1652	3561	0	1805	1583
Flt Permitted	0.950						0.950			0.950	
Satd. Flow (perm)	1685	1133	0	1773	3574	0	1652	3561	0	1805	1583
Right Turn on Red			Yes			Yes			Yes		Yes
Satd. Flow (RTOR)		554						3			484
Link Speed (mph)	30				35			35		35	
Link Distance (ft)	591				758			1733		622	
Travel Time (s)	13.4				14.8			33.8		12.1	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.92	0.92	0.92	0.86	0.86
Heavy Vehicles (%)	0%	0%	33%	0%	1%	0%	2%	1%	0%	0%	2%
Adj. Flow (vph)	3	0	3	0	309	0	491	524	13	1	921
Shared Lane Traffic (%)											
Lane Group Flow (vph)	3	3	0	0	309	0	491	537	0	1	921
Turn Type	Prot	Prot		Prot	NA		Prot	NA		Prot	pt+ov
Protected Phases	4	4		1	6		5	2		3	3 5
Permitted Phases											
Detector Phase	4	4		1	6		5	2		3	3 5
Switch Phase											
Minimum Initial (s)	5.0	5.0		5.0	8.0		8.0	8.0		5.0	
Minimum Split (s)	11.0	11.0		11.0	14.0		14.0	14.0		11.0	
Total Split (s)	16.0	16.0		16.0	20.0		38.0	42.0		16.0	
Total Split (%)	17.8%	17.8%		17.8%	22.2%		42.2%	46.7%		17.8%	
Maximum Green (s)	10.0	10.0		10.0	14.0		32.0	36.0		10.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	
Lead/Lag	Lag	Lag		Lead	Lag		Lead	Lag		Lead	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	
Vehicle Extension (s)	3.0	3.0		3.0	4.0		4.0	4.0		4.0	
Recall Mode	None	None		None	C-Min		None	C-Min		None	
Act Effct Green (s)	5.8	5.8			23.0		35.0	64.0		11.5	51.4
Actuated g/C Ratio	0.06	0.06			0.26		0.39	0.71		0.13	0.57
v/c Ratio	0.03	0.01			0.34		0.76	0.21		0.00	0.83
Control Delay	40.0	0.0			30.6		40.9	3.6		36.0	14.8
Queue Delay	0.0	0.0			0.0		0.0	0.0		0.0	0.0
Total Delay	40.0	0.0			30.6		40.9	3.6		36.0	14.8
LOS	D	A			C		D	A		D	B

Lane Group	EBL	EBR	EBR2	NBL	NBT	NBR	SBL	SBT	SBR	NWL	NWR
Approach Delay	20.0				30.6			21.4		14.8	
Approach LOS	B				C			C		B	
Queue Length 50th (ft)	2	0			71		302	110		1	184
Queue Length 95th (ft)	9	0			113		364	2		5	#227
Internal Link Dist (ft)	511				678			1653		542	
Turn Bay Length (ft)		50					775			100	
Base Capacity (vph)	187	618			911		663	2533		231	1124
Starvation Cap Reductn	0	0			0		0	0		0	0
Spillback Cap Reductn	0	0			0		0	0		0	0
Storage Cap Reductn	0	0			0		0	0		0	0
Reduced v/c Ratio	0.02	0.00			0.34		0.74	0.21		0.00	0.82

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 0 (0%), Referenced to phase 2:SBT and 6:NBT, Start of Yellow			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.83			
Intersection Signal Delay: 20.0		Intersection LOS: B	
Intersection Capacity Utilization 65.9%		ICU Level of Service C	
Analysis Period (min) 15			
Description: NHDOT Int. No.: S-229-04			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 1: River Road (Route 3A)/Lowell Road (Route 3A) & Dracut Road & Steele Road



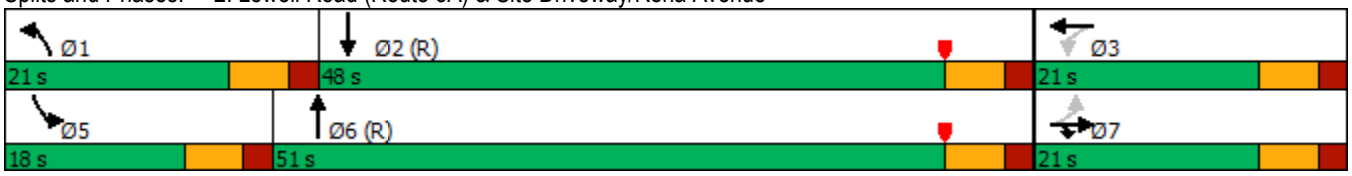
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	0	2	1	1	32	15	1070	2	7	948	51
Future Volume (vph)	3	0	2	1	1	32	15	1070	2	7	948	51
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	13	13	13	10	12	12	12	12	12
Storage Length (ft)	0		50	0		0	300		0	350		0
Storage Lanes	0		1	0		0	1		0	1		0
Taper Length (ft)	25			25			75			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850		0.872						0.992	
Flt Protected		0.950			0.999		0.950			0.950		
Satd. Flow (prot)	0	1685	1133	0	1659	0	1685	3538	0	1570	3514	0
Flt Permitted		0.851			0.991		0.950			0.950		
Satd. Flow (perm)	0	1509	1133	0	1646	0	1685	3538	0	1570	3514	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			109		38						8	
Link Speed (mph)		15			30			35			35	
Link Distance (ft)		510			557			1733			980	
Travel Time (s)		23.2			12.7			33.8			19.1	
Peak Hour Factor	0.80	0.80	0.80	0.85	0.85	0.85	0.85	0.85	0.85	0.95	0.95	0.95
Heavy Vehicles (%)	0%	0%	33%	9%	0%	3%	0%	2%	20%	15%	2%	0%
Adj. Flow (vph)	4	0	3	1	1	38	18	1259	2	7	998	54
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	4	3	0	40	0	18	1261	0	7	1052	0
Turn Type	Perm	NA	Prot	Perm	NA		Prot	NA		Prot	NA	
Protected Phases		7	7		3		1	6		5	2	
Permitted Phases	7			3								
Detector Phase	7	7	7	3	3		1	6		5	2	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0		11.0	16.0		11.0	16.0	
Total Split (s)	21.0	21.0	21.0	21.0	21.0		21.0	51.0		18.0	48.0	
Total Split (%)	23.3%	23.3%	23.3%	23.3%	23.3%		23.3%	56.7%		20.0%	53.3%	
Maximum Green (s)	15.0	15.0	15.0	15.0	15.0		15.0	45.0		12.0	42.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.0	6.0		6.0		6.0	6.0		6.0	6.0	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Recall Mode	None	None	None	None	None		None	C-Min		None	C-Min	
Act Effct Green (s)		7.2	7.2		7.3		7.6	75.3		7.0	72.2	
Actuated g/C Ratio		0.08	0.08		0.08		0.08	0.84		0.08	0.80	
v/c Ratio		0.03	0.02		0.24		0.13	0.43		0.06	0.37	
Control Delay		38.0	0.0		17.2		40.9	3.8		25.0	11.3	
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Delay		38.0	0.0		17.2		40.9	3.8		25.0	11.3	
LOS		D	A		B		D	A		C	B	

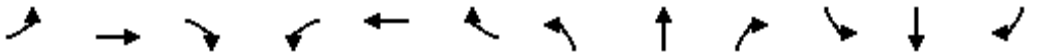
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		21.7			17.2			4.3			11.4	
Approach LOS		C			B			A			B	
Queue Length 50th (ft)		2	0		1		9	98		4	237	
Queue Length 95th (ft)		11	0		28		m16	185		m10	169	
Internal Link Dist (ft)		430			477			1653			900	
Turn Bay Length (ft)			50				300			350		
Base Capacity (vph)		251	279		306		280	2959		209	2822	
Starvation Cap Reductn		0	0		0		0	0		0	0	
Spillback Cap Reductn		0	0		0		0	0		0	0	
Storage Cap Reductn		0	0		0		0	0		0	0	
Reduced v/c Ratio		0.02	0.01		0.13		0.06	0.43		0.03	0.37	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 51 (57%), Referenced to phase 2:SBT and 6:NBT, Start of Yellow			
Natural Cycle: 50			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.43			
Intersection Signal Delay: 7.7		Intersection LOS: A	
Intersection Capacity Utilization 51.2%		ICU Level of Service A	
Analysis Period (min) 15			
Description: NHDOT Int. No.: S-229-03			

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

Splits and Phases: 2: Lowell Road (Route 3A) & Site Driveway/Rena Avenue





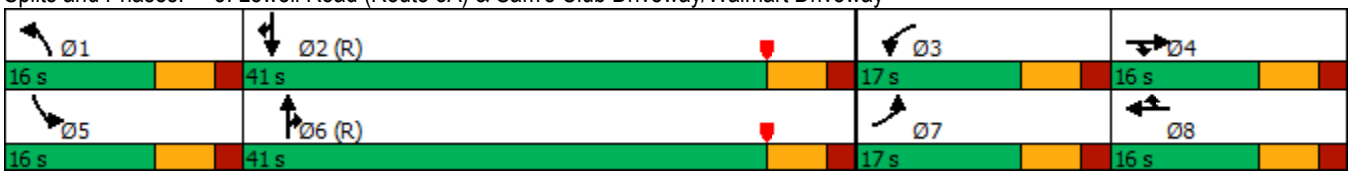
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	101	4	55	15	5	71	62	1023	27	85	928	63
Future Volume (vph)	101	4	55	15	5	71	62	1023	27	85	928	63
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	13	12	12	12	13	12	12	12	12	12	12
Storage Length (ft)	175		175	150		200	350		175	350		0
Storage Lanes	2		1	2		1	2		1	2		1
Taper Length (ft)	25			75			125			100		
Lane Util. Factor	0.97	1.00	1.00	0.97	1.00	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3467	1852	1568	3502	1900	1589	3467	3539	1583	3433	3574	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3467	1852	1568	3502	1900	1589	3467	3539	1583	3433	3574	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			182			182			182			182
Link Speed (mph)		30			30			35			30	
Link Distance (ft)		401			449			980			1189	
Travel Time (s)		9.1			10.2			19.1			27.0	
Peak Hour Factor	0.93	0.93	0.93	0.88	0.88	0.88	0.87	0.87	0.87	0.96	0.96	0.96
Heavy Vehicles (%)	1%	6%	3%	0%	0%	5%	1%	2%	2%	2%	1%	2%
Adj. Flow (vph)	109	4	59	17	6	81	71	1176	31	89	967	66
Shared Lane Traffic (%)												
Lane Group Flow (vph)	109	4	59	17	6	81	71	1176	31	89	967	66
Turn Type	Prot	NA	Prot	Prot	NA	Prot	Prot	NA	Prot	Prot	NA	Prot
Protected Phases	7	4	4	3	8	8	1	6	6	5	2	2
Permitted Phases												
Detector Phase	7	4	4	3	8	8	1	6	6	5	2	2
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0	11.0	11.0	16.0	16.0	11.0	16.0	16.0
Total Split (s)	17.0	16.0	16.0	17.0	16.0	16.0	16.0	41.0	41.0	16.0	41.0	41.0
Total Split (%)	18.9%	17.8%	17.8%	18.9%	17.8%	17.8%	17.8%	45.6%	45.6%	17.8%	45.6%	45.6%
Maximum Green (s)	11.0	10.0	10.0	11.0	10.0	10.0	10.0	35.0	35.0	10.0	35.0	35.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	6.0	6.0	4.0	6.0	6.0
Recall Mode	None	None	None	None	None	None	None	C-Min	C-Min	None	C-Min	C-Min
Act Effct Green (s)	9.1	14.0	14.0	7.0	6.9	6.9	8.2	50.2	50.2	8.7	50.6	50.6
Actuated g/C Ratio	0.10	0.16	0.16	0.08	0.08	0.08	0.09	0.56	0.56	0.10	0.56	0.56
v/c Ratio	0.31	0.01	0.15	0.06	0.04	0.28	0.23	0.60	0.03	0.27	0.48	0.07
Control Delay	39.5	34.2	0.8	38.7	38.8	2.4	42.8	13.7	0.1	48.8	15.3	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.5	34.2	0.8	38.7	38.8	2.4	42.8	13.7	0.1	48.8	15.3	0.3
LOS	D	C	A	D	D	A	D	B	A	D	B	A

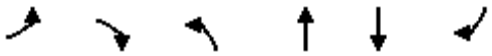
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		26.1			10.4			15.0			17.1	
Approach LOS		C			B			B			B	
Queue Length 50th (ft)	29	2	0	4	3	0	18	244	0	25	243	1
Queue Length 95th (ft)	54	12	0	14	15	0	44	83	m0	46	325	m1
Internal Link Dist (ft)		321			369			900			1109	
Turn Bay Length (ft)	175		175	150		200	350		175	350		
Base Capacity (vph)	423	302	408	428	211	338	385	1973	963	386	2010	970
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.26	0.01	0.14	0.04	0.03	0.24	0.18	0.60	0.03	0.23	0.48	0.07

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 51 (57%), Referenced to phase 2:SBT and 6:NBT, Start of Yellow			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.60			
Intersection Signal Delay: 16.4		Intersection LOS: B	
Intersection Capacity Utilization 55.9%		ICU Level of Service B	
Analysis Period (min) 15			
Description: NHDOT Int. No.: S-229-06			

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

Splits and Phases: 3: Lowell Road (Route 3A) & Sam's Club Driveway/Walmart Driveway





Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	901	829	861	321	320	1451
Future Volume (vph)	901	829	861	321	320	1451
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	14	14	12	12	12	12
Storage Length (ft)	0	0	525			200
Storage Lanes	2	1	2			1
Taper Length (ft)	25		100			
Lane Util. Factor	0.97	1.00	0.97	0.95	0.95	1.00
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	3662	1689	3467	3539	3539	1568
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	3662	1689	3467	3539	3539	1568
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		786				730
Link Speed (mph)	35			30	30	
Link Distance (ft)	929			1189	999	
Travel Time (s)	18.1			27.0	22.7	
Peak Hour Factor	0.94	0.94	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	1%	2%	2%	3%
Adj. Flow (vph)	959	882	936	349	348	1577
Shared Lane Traffic (%)						
Lane Group Flow (vph)	959	882	936	349	348	1577
Turn Type	Prot	Free	Prot	NA	NA	Free
Protected Phases	3		1	6	2	
Permitted Phases		Free				Free
Detector Phase	3		1	6	2	
Switch Phase						
Minimum Initial (s)	10.0		7.0	10.0	10.0	
Minimum Split (s)	16.0		15.0	17.0	17.0	
Total Split (s)	32.0		31.0	58.0	27.0	
Total Split (%)	35.6%		34.4%	64.4%	30.0%	
Maximum Green (s)	26.0		23.0	51.0	20.0	
Yellow Time (s)	4.0		4.0	4.0	4.0	
All-Red Time (s)	2.0		4.0	3.0	3.0	
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	
Total Lost Time (s)	6.0		8.0	7.0	7.0	
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	4.0		4.0	4.0	4.0	
Recall Mode	None		None	C-Min	C-Min	
Act Effct Green (s)	28.1	90.0	25.6	48.9	15.3	90.0
Actuated g/C Ratio	0.31	1.00	0.28	0.54	0.17	1.00
v/c Ratio	0.84	0.52	0.95	0.18	0.58	1.01
Control Delay	37.0	1.2	43.1	2.8	37.9	27.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	37.0	1.2	43.1	2.8	37.9	27.8
LOS	D	A	D	A	D	C

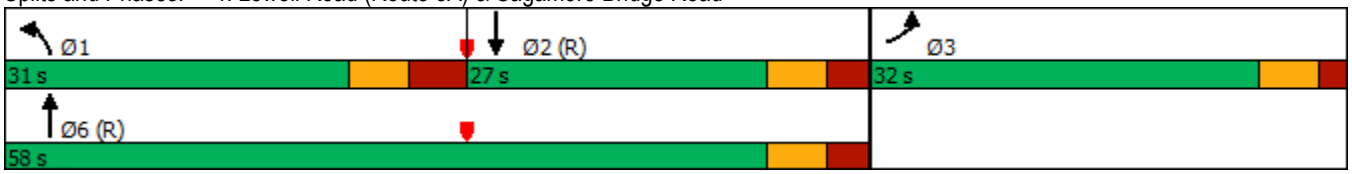
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Approach Delay	19.8			32.1	29.6	
Approach LOS	B			C	C	
Queue Length 50th (ft)	246	0	~214	8	97	~11
Queue Length 95th (ft)	#376	0	#407	4	133	#267
Internal Link Dist (ft)	849			1109	919	
Turn Bay Length (ft)			525			200
Base Capacity (vph)	1149	1689	985	2011	786	1568
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.83	0.52	0.95	0.17	0.44	1.01

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 70 (78%), Referenced to phase 2:SBT and 6:NBT, Start of Green			
Natural Cycle: 75			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.01			
Intersection Signal Delay: 26.7		Intersection LOS: C	
Intersection Capacity Utilization 75.8%		ICU Level of Service D	
Analysis Period (min) 15			
Description: NHDOT Int. No.: S-229-02			

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

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

Splits and Phases: 4: Lowell Road (Route 3A) & Sagamore Bridge Road



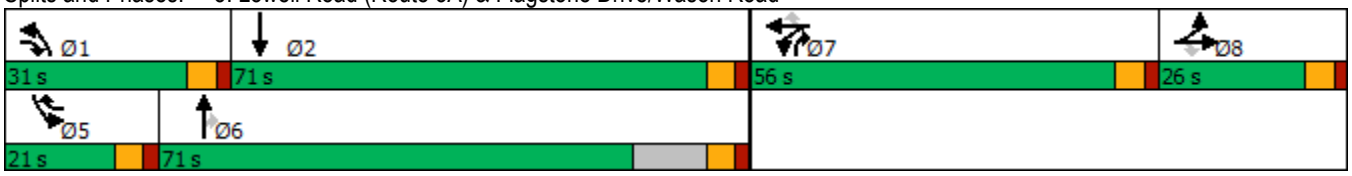
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	9	192	587	37	29	231	785	189	15	993	5
Future Volume (vph)	16	9	192	587	37	29	231	785	189	15	993	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	11	11	11	12	12	12	12	12	12
Storage Length (ft)	0		250	200		75	575		275	175		0
Storage Lanes	0		1	1		1	1		1	1		0
Taper Length (ft)	25			50			175			75		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Frt			0.850			0.850			0.850		0.999	
Flt Protected		0.969		0.950	0.958		0.950			0.950		
Satd. Flow (prot)	0	1841	1583	1641	1657	1501	1787	3539	1583	1752	3535	0
Flt Permitted		0.969		0.950	0.958		0.950			0.950		
Satd. Flow (perm)	0	1841	1583	1641	1657	1501	1787	3539	1583	1752	3535	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			53			89			199			
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		805			586			999			1515	
Travel Time (s)		18.3			13.3			22.7			34.4	
Peak Hour Factor	0.81	0.81	0.81	0.94	0.94	0.94	0.95	0.95	0.95	0.87	0.87	0.87
Heavy Vehicles (%)	0%	0%	2%	1%	0%	4%	1%	2%	2%	3%	2%	6%
Adj. Flow (vph)	20	11	237	624	39	31	243	826	199	17	1141	6
Shared Lane Traffic (%)				47%								
Lane Group Flow (vph)	0	31	237	331	332	31	243	826	199	17	1147	0
Turn Type	Split	NA	pm+ov	Split	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	
Protected Phases	8	8	1	7	7	5	1	6	7	5	2	
Permitted Phases			8			7			6			
Detector Phase	8	8	1	7	7	5	1	6	7	5	2	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	10.0	5.0	5.0	10.0	
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0	11.0	11.0	16.0	11.0	11.0	16.0	
Total Split (s)	26.0	26.0	31.0	56.0	56.0	21.0	31.0	71.0	56.0	21.0	71.0	
Total Split (%)	14.1%	14.1%	16.8%	30.4%	30.4%	11.4%	16.8%	38.6%	30.4%	11.4%	38.6%	
Maximum Green (s)	20.0	20.0	25.0	50.0	50.0	15.0	25.0	65.0	50.0	15.0	65.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)		6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Lead/Lag	Lag	Lag	Lead	Lead	Lead	Lead	Lead	Lag	Lead	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	3.0	2.5	2.5	3.0	
Recall Mode	None	None	None	None	None	None	None	Min	None	None	Min	
Act Effct Green (s)		7.7	36.6	37.4	37.4	45.8	25.9	78.9	124.2	6.7	56.5	
Actuated g/C Ratio		0.05	0.25	0.25	0.25	0.31	0.17	0.53	0.83	0.04	0.38	
v/c Ratio		0.33	0.55	0.81	0.80	0.06	0.78	0.44	0.15	0.22	0.86	
Control Delay		85.0	45.8	69.9	69.3	0.2	80.7	25.7	0.7	83.7	51.2	
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay		85.0	45.8	69.9	69.3	0.2	80.7	25.7	0.7	83.7	51.2	
LOS		F	D	E	E	A	F	C	A	F	D	

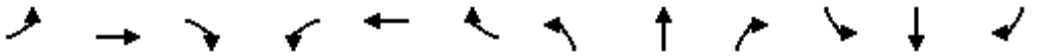
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		50.4			66.5			32.3			51.7	
Approach LOS		D			E			C			D	
Queue Length 50th (ft)		32	168	342	342	0	249	282	0	17	559	
Queue Length 95th (ft)		67	247	490	490	0	#463	408	17	48	705	
Internal Link Dist (ft)		725			506			919			1435	
Turn Bay Length (ft)			250	200		75	575		275	175		
Base Capacity (vph)		255	428	569	575	606	310	1924	1411	182	1595	
Starvation Cap Reductn		0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn		0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn		0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio		0.12	0.55	0.58	0.58	0.05	0.78	0.43	0.14	0.09	0.72	

Intersection Summary			
Area Type:	Other		
Cycle Length: 184			
Actuated Cycle Length: 149.2			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.86			
Intersection Signal Delay: 47.4		Intersection LOS: D	
Intersection Capacity Utilization 79.3%		ICU Level of Service D	
Analysis Period (min) 15			

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

Splits and Phases: 5: Lowell Road (Route 3A) & Flagstone Drive/Wason Road





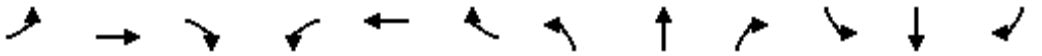
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	8	0	11	2	2	4	113	706	2	2	1048	57
Future Volume (vph)	8	0	11	2	2	4	113	706	2	2	1048	57
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	13	13	13	12	12	12	11	12	12
Storage Length (ft)	0		100	0		100	225		0	225		0
Storage Lanes	0		1	0		1	1		0	1		0
Taper Length (ft)	25			25			50			50		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850			0.850					0.992	
Flt Protected		0.950			0.976		0.950			0.950		
Satd. Flow (prot)	0	1719	1455	0	1916	1669	1752	3505	0	1745	3477	0
Flt Permitted							0.950			0.950		
Satd. Flow (perm)	0	1810	1455	0	1963	1669	1752	3505	0	1745	3477	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			86			86					7	
Link Speed (mph)		30			10			30			30	
Link Distance (ft)		495			382			1515			1791	
Travel Time (s)		11.3			26.0			34.4			40.7	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.90	0.90	0.90	0.83	0.83	0.83
Heavy Vehicles (%)	5%	0%	11%	0%	0%	0%	3%	3%	0%	0%	3%	3%
Adj. Flow (vph)	10	0	14	3	3	5	126	784	2	2	1263	69
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	10	14	0	6	5	126	786	0	2	1332	0
Turn Type	Perm	NA	pt+ov	Perm	NA	pt+ov	Prot	NA		Prot	NA	
Protected Phases		4	4 1		8	8 5	1	6		5	2	
Permitted Phases	4			8								
Detector Phase	4	4	4 1	8	8	8 5	1	6		5	2	
Switch Phase												
Minimum Initial (s)	3.0	3.0		3.0	3.0		4.0	15.0		4.0	15.0	
Minimum Split (s)	9.0	9.0		9.0	9.0		8.0	21.0		8.0	21.0	
Total Split (s)	16.0	16.0		16.0	16.0		16.0	66.0		16.0	66.0	
Total Split (%)	14.0%	14.0%		14.0%	14.0%		14.0%	57.9%		14.0%	57.9%	
Maximum Green (s)	10.0	10.0		10.0	10.0		12.0	60.0		12.0	60.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		3.0	4.0		3.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		1.0	2.0		1.0	2.0	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.0			6.0		4.0	6.0		4.0	6.0	
Lead/Lag	Lead	Lead		Lag	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		2.0	3.0		2.0	3.0	
Recall Mode	None	None		None	None		None	Min		None	Min	
Act Effct Green (s)		7.5	11.0		6.5	9.1	10.4	63.3		5.2	44.5	
Actuated g/C Ratio		0.10	0.15		0.09	0.12	0.14	0.86		0.07	0.60	
v/c Ratio		0.05	0.05		0.03	0.02	0.51	0.26		0.02	0.64	
Control Delay		42.4	0.3		44.6	0.0	44.7	5.0		47.0	13.8	
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		42.4	0.3		44.6	0.0	44.7	5.0		47.0	13.8	
LOS		D	A		D	A	D	A		D	B	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		17.8			24.3			10.5			13.9	
Approach LOS		B			C			B			B	
Queue Length 50th (ft)		3	0		2	0	39	0		1	114	
Queue Length 95th (ft)		22	0		16	0	#168	180		8	378	
Internal Link Dist (ft)		415			302			1435			1711	
Turn Bay Length (ft)			100			100	225			225		
Base Capacity (vph)		275	346		299	387	320	3001		319	2877	
Starvation Cap Reductn		0	0		0	0	0	0		0	0	
Spillback Cap Reductn		0	0		0	0	0	0		0	0	
Storage Cap Reductn		0	0		0	0	0	0		0	0	
Reduced v/c Ratio		0.04	0.04		0.02	0.01	0.39	0.26		0.01	0.46	

Intersection Summary			
Area Type:	Other		
Cycle Length: 114			
Actuated Cycle Length: 73.9			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.64			
Intersection Signal Delay: 12.6		Intersection LOS: B	
Intersection Capacity Utilization 57.0%		ICU Level of Service B	
Analysis Period (min) 15			

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

Splits and Phases: 6: Lowell Road (Route 3A) & Hampshire Drive/Oblate Drive



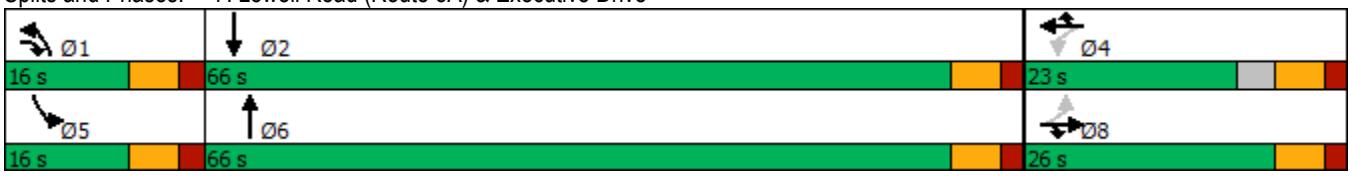
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	2	10	141	30	101	159	392	60	107	953	197
Future Volume (vph)	35	2	10	141	30	101	159	392	60	107	953	197
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	15	12	12	13	11	12	12	11	12	12
Storage Length (ft)	0		225	0		80	350		0	150		0
Storage Lanes	0		1	0		1	1		0	1		0
Taper Length (ft)	25			25			50			50		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850			0.850		0.980			0.974	
Flt Protected		0.955			0.961		0.950			0.950		
Satd. Flow (prot)	0	1577	1558	0	1811	1620	1711	3406	0	1728	3447	0
Flt Permitted		0.508			0.732		0.950			0.950		
Satd. Flow (perm)	0	839	1558	0	1379	1620	1711	3406	0	1728	3447	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			30			101		25			36	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		492			577			1791			1168	
Travel Time (s)		11.2			13.1			40.7			26.5	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	12%	0%	14%	1%	0%	3%	2%	4%	3%	1%	2%	2%
Adj. Flow (vph)	44	3	13	176	38	126	175	431	66	118	1047	216
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	47	13	0	214	126	175	497	0	118	1263	0
Turn Type	Perm	NA	pt+ov	Perm	NA	Prot	Prot	NA		Prot	NA	
Protected Phases		8	8 1		4	4	1	6		5	2	
Permitted Phases	8			4								
Detector Phase	8	8	8 1	4	4	4	1	6		5	2	
Switch Phase												
Minimum Initial (s)	3.0	3.0		5.0	5.0	5.0	3.0	8.0		3.0	8.0	
Minimum Split (s)	9.0	9.0		11.0	11.0	11.0	9.0	14.0		9.0	14.0	
Total Split (s)	26.0	26.0		23.0	23.0	23.0	16.0	66.0		16.0	66.0	
Total Split (%)	24.1%	24.1%		21.3%	21.3%	21.3%	14.8%	61.1%		14.8%	61.1%	
Maximum Green (s)	20.0	20.0		17.0	17.0	17.0	10.0	60.0		10.0	60.0	
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.0			6.0	6.0	6.0	6.0		6.0	6.0	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	2.0	2.0		2.0	2.0	2.0	2.0	3.0		2.0	3.0	
Recall Mode	None	None		None	None	None	None	Min		None	Min	
Act Effct Green (s)		12.0	25.5		15.7	15.7	10.2	41.4		9.1	40.3	
Actuated g/C Ratio		0.14	0.30		0.19	0.19	0.12	0.49		0.11	0.48	
v/c Ratio		0.40	0.03		0.84	0.33	0.85	0.30		0.64	0.76	
Control Delay		44.5	3.3		63.5	13.4	75.0	12.6		55.7	20.7	
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		44.5	3.3		63.5	13.4	75.0	12.6		55.7	20.7	
LOS		D	A		E	B	E	B		E	C	

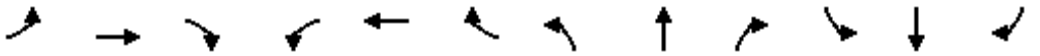
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		35.6			45.0			28.8			23.7	
Approach LOS		D			D			C			C	
Queue Length 50th (ft)		22	0		109	11	94	78		61	275	
Queue Length 95th (ft)		56	4		#227	51	#254	108		#157	347	
Internal Link Dist (ft)		412			497			1711			1088	
Turn Bay Length (ft)			225			80	350			150		
Base Capacity (vph)		202	570		332	466	206	2468		208	2501	
Starvation Cap Reductn		0	0		0	0	0	0		0	0	
Spillback Cap Reductn		0	0		0	0	0	0		0	0	
Storage Cap Reductn		0	0		0	0	0	0		0	0	
Reduced v/c Ratio		0.23	0.02		0.64	0.27	0.85	0.20		0.57	0.50	

Intersection Summary			
Area Type:	Other		
Cycle Length: 108			
Actuated Cycle Length: 84.5			
Natural Cycle: 65			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.85			
Intersection Signal Delay: 28.3		Intersection LOS: C	
Intersection Capacity Utilization 72.5%		ICU Level of Service C	
Analysis Period (min) 15			

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

Splits and Phases: 7: Lowell Road (Route 3A) & Executive Drive





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	11	0	48	6	0	10	4	500	1	16	1211	3
Future Volume (vph)	11	0	48	6	0	10	4	500	1	16	1211	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	14	13	13	11	11	12	12	12	12
Storage Length (ft)	0		50	0		100	210		325	125		0
Storage Lanes	0		1	0		1	1		1	1		0
Taper Length (ft)	25			25			50			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850			
Flt Protected		0.950			0.950		0.950			0.950		
Satd. Flow (prot)	0	1719	1583	0	1865	1669	1745	1766	1615	1805	1863	0
Flt Permitted		0.752			0.748		0.950			0.950		
Satd. Flow (perm)	0	1361	1583	0	1469	1669	1745	1766	1615	1805	1863	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			91			55			91			
Link Speed (mph)		10			30			30			30	
Link Distance (ft)		598			262			1405			549	
Travel Time (s)		40.8			6.0			31.9			12.5	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.91	0.91	0.91	0.95	0.95	0.95
Heavy Vehicles (%)	5%	0%	2%	0%	0%	0%	0%	4%	0%	0%	2%	0%
Adj. Flow (vph)	14	0	60	8	0	13	4	549	1	17	1275	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	14	60	0	8	13	4	549	1	17	1278	0
Turn Type	Perm	NA	Prot	Perm	NA	pm+ov	Prot	NA	Prot	Prot	NA	
Protected Phases		8	8		4	5	1	6	6	5	2	
Permitted Phases	8			4		4						
Detector Phase	8	8	8	4	4	5	1	6	6	5	2	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	10.0	10.0	5.0	10.0	
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0	11.0	11.0	16.0	16.0	11.0	16.0	
Total Split (s)	16.0	16.0	16.0	16.0	16.0	16.0	16.0	116.0	116.0	16.0	116.0	
Total Split (%)	8.9%	8.9%	8.9%	8.9%	8.9%	8.9%	8.9%	64.4%	64.4%	8.9%	64.4%	
Maximum Green (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	110.0	110.0	10.0	110.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)		6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Lead/Lag						Lead	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?						Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	1.5	1.5	1.5	1.5	1.5	1.5	1.0	1.5	1.5	1.5	1.5	
Recall Mode	None	None	None	None	None	None	None	C-Min	C-Min	None	C-Min	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)		6.3	6.3		6.3	18.3	5.0	147.7	147.7	6.0	153.1	
Actuated g/C Ratio		0.04	0.04		0.04	0.10	0.03	0.82	0.82	0.03	0.85	
v/c Ratio		0.30	0.42		0.16	0.06	0.08	0.38	0.00	0.28	0.81	
Control Delay		100.2	12.4		90.2	0.5	89.0	7.7	0.0	95.9	15.2	

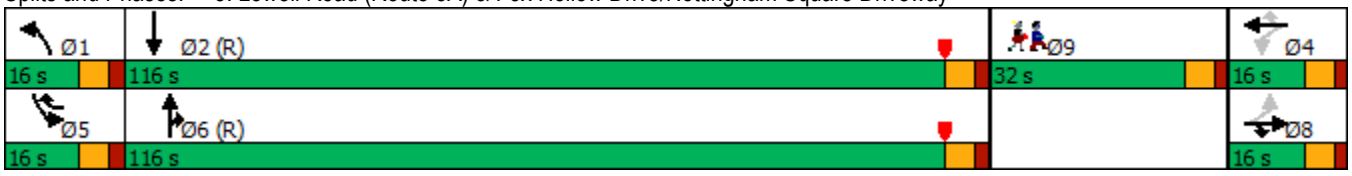
Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	32.0
Total Split (s)	32.0
Total Split (%)	18%
Maximum Green (s)	26.0
Yellow Time (s)	4.0
All-Red Time (s)	2.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	5.0
Flash Dont Walk (s)	21.0
Pedestrian Calls (#/hr)	5
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	18.1	
Total Delay		100.2	12.4		90.2	0.5	89.0	7.7	0.0	95.9	33.3	
LOS		F	B		F	A	F	A	A	F	C	
Approach Delay		29.0			34.7			8.3			34.1	
Approach LOS		C			C			A			C	
Queue Length 50th (ft)		17	0		9	0	5	129	0	20	334	
Queue Length 95th (ft)		40	3		27	0	20	431	0	50	#1917	
Internal Link Dist (ft)		518			182			1325			469	
Turn Bay Length (ft)			50			100	210		325	125		
Base Capacity (vph)		75	173		81	254	96	1449	1341	100	1585	
Starvation Cap Reductn		0	0		0	0	0	0	0	0	333	
Spillback Cap Reductn		0	0		0	0	0	0	0	0	0	
Storage Cap Reductn		0	0		0	0	0	0	0	0	0	
Reduced v/c Ratio		0.19	0.35		0.10	0.05	0.04	0.38	0.00	0.17	1.02	

Intersection Summary	
Area Type:	Other
Cycle Length: 180	
Actuated Cycle Length: 180	
Offset: 0 (0%), Referenced to phase 2:SBT and 6:NBT, Start of Yellow, Master Intersection	
Natural Cycle: 150	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.81	
Intersection Signal Delay: 26.6	Intersection LOS: C
Intersection Capacity Utilization 87.3%	ICU Level of Service E
Analysis Period (min) 15	

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

Splits and Phases: 8: Lowell Road (Route 3A) & Fox Hollow Drive/Nottingham Square Driveway



Lane Group	Ø9
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø9
Lane Configurations							
Traffic Volume (vph)	225	71	436	82	62	1008	
Future Volume (vph)	225	71	436	82	62	1008	
Ideal Flow (vphpl)	1900	1000	1900	1900	1900	1900	
Lane Width (ft)	12	12	13	13	12	12	
Storage Length (ft)	0	75		0	150		
Storage Lanes	1	1		0	1		
Taper Length (ft)	25				50		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		0.850	0.979				
Flt Protected	0.950				0.950		
Satd. Flow (prot)	1787	802	1836	0	1719	1863	
Flt Permitted	0.950				0.950		
Satd. Flow (perm)	1787	802	1836	0	1719	1863	
Right Turn on Red		Yes		Yes			
Satd. Flow (RTOR)		29	8				
Link Speed (mph)	20		30			30	
Link Distance (ft)	512		549			1309	
Travel Time (s)	17.5		12.5			29.8	
Peak Hour Factor	0.88	0.88	0.92	0.92	0.96	0.96	
Heavy Vehicles (%)	1%	6%	5%	3%	5%	2%	
Adj. Flow (vph)	256	81	474	89	65	1050	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	256	81	563	0	65	1050	
Turn Type	Prot	pt+ov	NA		Prot	NA	
Protected Phases	4	4 5	6		5	2	9
Permitted Phases							
Detector Phase	4	4 5	6		5	2	
Switch Phase							
Minimum Initial (s)	5.0		10.0		3.0	10.0	5.0
Minimum Split (s)	11.0		16.0		9.0	16.0	35.0
Total Split (s)	26.0		116.0		13.0	116.0	35.0
Total Split (%)	13.7%		61.1%		6.8%	61.1%	18%
Maximum Green (s)	20.0		110.0		7.0	110.0	29.0
Yellow Time (s)	4.0		4.0		4.0	4.0	4.0
All-Red Time (s)	2.0		2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0		0.0	0.0	
Total Lost Time (s)	6.0		6.0		6.0	6.0	
Lead/Lag			Lag		Lead		
Lead-Lag Optimize?			Yes		Yes		
Vehicle Extension (s)	1.5		1.5		1.5	1.5	3.0
Recall Mode	None		C-Min		None	C-Min	None
Walk Time (s)							5.0
Flash Dont Walk (s)							24.0
Pedestrian Calls (#/hr)							5
Act Effct Green (s)	20.0	33.0	138.0		7.0	151.0	
Actuated g/C Ratio	0.11	0.17	0.73		0.04	0.79	
v/c Ratio	1.36	0.50	0.42		1.03	0.71	
Control Delay	250.3	56.6	13.1		204.4	15.5	

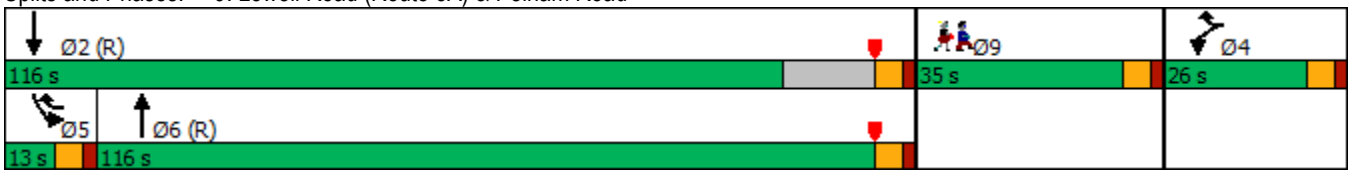
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø9
Queue Delay	0.0	0.0	2.8		0.0	0.0	
Total Delay	250.3	56.6	16.0		204.4	15.5	
LOS	F	E	B		F	B	
Approach Delay	203.7		16.0			26.5	
Approach LOS	F		B			C	
Queue Length 50th (ft)	~419	59	217		~86	436	
Queue Length 95th (ft)	#599	122	523		#205	1285	
Internal Link Dist (ft)	432		469			1229	
Turn Bay Length (ft)		75			150		
Base Capacity (vph)	188	163	1336		63	1480	
Starvation Cap Reductn	0	0	639		0	0	
Spillback Cap Reductn	0	0	0		0	0	
Storage Cap Reductn	0	0	0		0	0	
Reduced v/c Ratio	1.36	0.50	0.81		1.03	0.71	

Intersection Summary			
Area Type:	Other		
Cycle Length: 190			
Actuated Cycle Length: 190			
Offset: 30 (16%), Referenced to phase 2:SBT and 6:NBT, Start of Yellow			
Natural Cycle: 150			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.36			
Intersection Signal Delay: 53.2		Intersection LOS: D	
Intersection Capacity Utilization 75.5%		ICU Level of Service D	
Analysis Period (min) 15			

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

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

Splits and Phases: 9: Lowell Road (Route 3A) & Pelham Road



2019 Existing Weekday P.M.

Lane Group	EBL	EBR	EBR2	NBL	NBT	NBR	SBL	SBT	SBR	NWL2	NWL	NWR
Lane Configurations												
Traffic Volume (vph)	35	2	2	1	560	1	831	372	13	4	0	605
Future Volume (vph)	35	2	2	1	560	1	831	372	13	4	0	605
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	12	12	10	12	12	12	12	12
Storage Length (ft)	0	50		200		300	775		0		100	0
Storage Lanes	1	1		1		1	1		0		1	1
Taper Length (ft)	25			100			75				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00
Frt		0.850						0.995				0.850
Flt Protected	0.950			0.950			0.950				0.950	
Satd. Flow (prot)	1668	1507	0	1685	3610	0	1685	3558	0	0	1805	1615
Flt Permitted	0.950			0.950			0.950				0.950	
Satd. Flow (perm)	1668	1507	0	1685	3610	0	1685	3558	0	0	1805	1615
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		191						4				269
Link Speed (mph)	30				35			35			35	
Link Distance (ft)	591				758			1733			622	
Travel Time (s)	13.4				14.8			33.8			12.1	
Peak Hour Factor	0.80	0.80	0.80	0.91	0.91	0.91	0.90	0.90	0.90	0.91	0.91	0.91
Heavy Vehicles (%)	1%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%
Adj. Flow (vph)	44	3	3	1	615	1	923	413	14	4	0	665
Shared Lane Traffic (%)												
Lane Group Flow (vph)	44	6	0	1	616	0	923	427	0	0	4	665
Turn Type	Prot	Prot		Prot	NA		Prot	NA		Prot	Prot	pt+ov
Protected Phases	4	4		1	6		5	2		3	3	3 5
Permitted Phases												
Detector Phase	4	4		1	6		5	2		3	3	3 5
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	8.0		8.0	8.0		5.0	5.0	
Minimum Split (s)	11.0	11.0		11.0	14.0		14.0	14.0		11.0	11.0	
Total Split (s)	21.0	21.0		16.0	32.0		51.0	67.0		16.0	16.0	
Total Split (%)	17.5%	17.5%		13.3%	26.7%		42.5%	55.8%		13.3%	13.3%	
Maximum Green (s)	15.0	15.0		10.0	26.0		45.0	61.0		10.0	10.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0			0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0			6.0	
Lead/Lag	Lag	Lag		Lead	Lag		Lead	Lag		Lead	Lead	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	4.0		4.0	4.0		4.0	4.0	
Recall Mode	None	None		None	C-Min		None	C-Min		None	None	
Act Effct Green (s)	8.6	8.6		5.6	24.9		54.0	82.5			10.8	66.0
Actuated g/C Ratio	0.07	0.07		0.05	0.21		0.45	0.69			0.09	0.55
v/c Ratio	0.37	0.02		0.01	0.82		1.22	0.17			0.02	0.66
Control Delay	61.0	0.2		55.0	55.4		132.6	4.1			51.0	12.9
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0			0.0	0.0
Total Delay	61.0	0.2		55.0	55.4		132.6	4.1			51.0	12.9
LOS	E	A		D	E		F	A			D	B

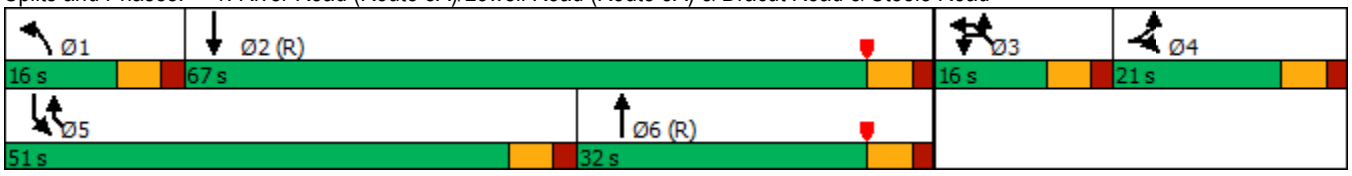
Lane Group	EBL	EBR	EBR2	NBL	NBT	NBR	SBL	SBT	SBR	NWL2	NWL	NWR
Approach Delay	53.7				55.4			92.0			13.2	
Approach LOS	D				E			F			B	
Queue Length 50th (ft)	33	0		1	238		~920	10			3	131
Queue Length 95th (ft)	62	0		7	307		#1166	58			15	283
Internal Link Dist (ft)	511				678			1653			542	
Turn Bay Length (ft)		50		200			775				100	
Base Capacity (vph)	208	355		140	782		758	2447			162	1009
Starvation Cap Reductn	0	0		0	0		0	0			0	0
Spillback Cap Reductn	0	0		0	0		0	0			0	0
Storage Cap Reductn	0	0		0	0		0	0			0	0
Reduced v/c Ratio	0.21	0.02		0.01	0.79		1.22	0.17			0.02	0.66

Intersection Summary	
Area Type:	Other
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 5 (4%), Referenced to phase 2:SBT and 6:NBT, Start of Yellow	
Natural Cycle: 120	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.22	
Intersection Signal Delay: 63.2	Intersection LOS: E
Intersection Capacity Utilization 89.9%	ICU Level of Service E
Analysis Period (min) 15	
Description: NHDOT Int. No.: S-229-04	

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

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

Splits and Phases: 1: River Road (Route 3A)/Lowell Road (Route 3A) & Dracut Road & Steele Road



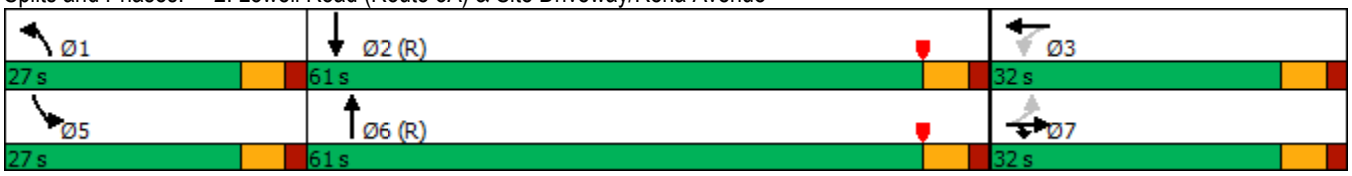
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	50	0	17	1	0	15	2	1210	5	23	1190	6
Future Volume (vph)	50	0	17	1	0	15	2	1210	5	23	1190	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	13	13	13	10	12	12	12	12	12
Storage Length (ft)	0		50	0		0	300		0	350		0
Storage Lanes	0		1	0		0	1		0	1		0
Taper Length (ft)	25			25			75			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850		0.872			0.999			0.999	
Flt Protected		0.950			0.998		0.950			0.950		
Satd. Flow (prot)	0	1668	1507	0	1709	0	1685	3606	0	1805	3605	0
Flt Permitted		0.744			0.985		0.950			0.950		
Satd. Flow (perm)	0	1306	1507	0	1686	0	1685	3606	0	1805	3605	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			82		82						1	
Link Speed (mph)		15			30			35			35	
Link Distance (ft)		510			557			1733			980	
Travel Time (s)		23.2			12.7			33.8			19.1	
Peak Hour Factor	0.84	0.84	0.84	0.80	0.80	0.80	0.93	0.93	0.93	0.90	0.90	0.90
Heavy Vehicles (%)	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	9%
Adj. Flow (vph)	60	0	20	1	0	19	2	1301	5	26	1322	7
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	60	20	0	20	0	2	1306	0	26	1329	0
Turn Type	Perm	NA	Prot	Perm	NA		Prot	NA		Prot	NA	
Protected Phases		7	7		3		1	6		5	2	
Permitted Phases	7			3								
Detector Phase	7	7	7	3	3		1	6		5	2	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0		11.0	16.0		11.0	16.0	
Total Split (s)	32.0	32.0	32.0	32.0	32.0		27.0	61.0		27.0	61.0	
Total Split (%)	26.7%	26.7%	26.7%	26.7%	26.7%		22.5%	50.8%		22.5%	50.8%	
Maximum Green (s)	26.0	26.0	26.0	26.0	26.0		21.0	55.0		21.0	55.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.0	6.0		6.0		6.0	6.0		6.0	6.0	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Recall Mode	None	None	None	None	None		None	C-Min		None	C-Min	
Act Effct Green (s)		11.8	11.8		10.0		6.8	90.9		8.3	97.3	
Actuated g/C Ratio		0.10	0.10		0.08		0.06	0.76		0.07	0.81	
v/c Ratio		0.47	0.09		0.09		0.02	0.48		0.21	0.45	
Control Delay		61.9	0.8		0.9		59.5	6.6		47.0	3.6	
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Delay		61.9	0.8		0.9		59.5	6.6		47.0	3.6	
LOS		E	A		A		E	A		D	A	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		46.6			0.9			6.7			4.4	
Approach LOS		D			A			A			A	
Queue Length 50th (ft)		45	0		0		0	148		20	80	
Queue Length 95th (ft)		80	0		0		m2	226		m36	150	
Internal Link Dist (ft)		430			477			1653			900	
Turn Bay Length (ft)			50				300			350		
Base Capacity (vph)		282	390		429		294	2730		315	2924	
Starvation Cap Reductn		0	0		0		0	0		0	0	
Spillback Cap Reductn		0	0		0		0	0		0	0	
Storage Cap Reductn		0	0		0		0	0		0	0	
Reduced v/c Ratio		0.21	0.05		0.05		0.01	0.48		0.08	0.45	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 74 (62%), Referenced to phase 2:SBT and 6:NBT, Start of Yellow			
Natural Cycle: 55			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.48			
Intersection Signal Delay: 6.7		Intersection LOS: A	
Intersection Capacity Utilization 56.4%		ICU Level of Service B	
Analysis Period (min) 15			
Description: NHDOT Int. No.: S-229-03			

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

Splits and Phases: 2: Lowell Road (Route 3A) & Site Driveway/Rena Avenue



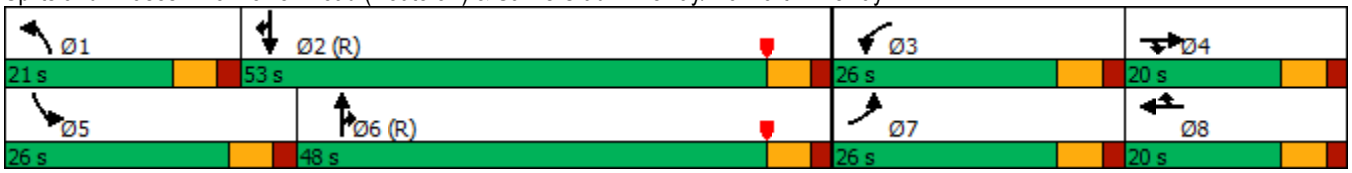
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	248	13	113	88	20	244	95	1118	74	310	1030	197
Future Volume (vph)	248	13	113	88	20	244	95	1118	74	310	1030	197
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	13	12	12	12	13	12	12	12	12	12	12
Storage Length (ft)	175		175	150		200	350		175	350		0
Storage Lanes	2		1	2		1	2		1	2		1
Taper Length (ft)	25			75			125			100		
Lane Util. Factor	0.97	1.00	1.00	0.97	1.00	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3502	1963	1615	3502	1900	1669	3467	3610	1615	3502	3574	1615
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3502	1963	1615	3502	1900	1669	3467	3610	1615	3502	3574	1615
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			136			247			136			197
Link Speed (mph)		30			30			35			30	
Link Distance (ft)		401			449			980			1189	
Travel Time (s)		9.1			10.2			19.1			27.0	
Peak Hour Factor	0.88	0.88	0.88	0.86	0.86	0.86	0.89	0.89	0.89	0.91	0.91	0.91
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	1%	0%
Adj. Flow (vph)	282	15	128	102	23	284	107	1256	83	341	1132	216
Shared Lane Traffic (%)												
Lane Group Flow (vph)	282	15	128	102	23	284	107	1256	83	341	1132	216
Turn Type	Prot	NA	Prot	Prot	NA	Prot	Prot	NA	Prot	Prot	NA	Prot
Protected Phases	7	4	4	3	8	8	1	6	6	5	2	2
Permitted Phases												
Detector Phase	7	4	4	3	8	8	1	6	6	5	2	2
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0	11.0	11.0	16.0	16.0	11.0	16.0	16.0
Total Split (s)	26.0	20.0	20.0	26.0	20.0	20.0	21.0	48.0	48.0	26.0	53.0	53.0
Total Split (%)	21.7%	16.7%	16.7%	21.7%	16.7%	16.7%	17.5%	40.0%	40.0%	21.7%	44.2%	44.2%
Maximum Green (s)	20.0	14.0	14.0	20.0	14.0	14.0	15.0	42.0	42.0	20.0	47.0	47.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	6.0	6.0	4.0	6.0	6.0
Recall Mode	None	None	None	None	None	None	None	C-Min	C-Min	None	C-Min	C-Min
Act Effct Green (s)	15.8	16.1	16.1	9.8	10.1	10.1	10.0	52.7	52.7	17.4	60.0	60.0
Actuated g/C Ratio	0.13	0.13	0.13	0.08	0.08	0.08	0.08	0.44	0.44	0.14	0.50	0.50
v/c Ratio	0.61	0.06	0.38	0.36	0.14	0.77	0.37	0.79	0.11	0.67	0.63	0.24
Control Delay	54.8	43.0	9.6	55.1	51.0	24.8	70.5	22.4	0.6	61.9	20.6	1.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	54.8	43.0	9.6	55.1	51.0	24.8	70.5	22.4	0.6	61.9	20.6	1.3
LOS	D	D	A	E	D	C	E	C	A	E	C	A

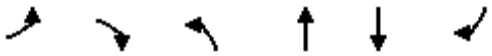
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		40.8			33.8			24.7			26.5	
Approach LOS		D			C			C			C	
Queue Length 50th (ft)	107	10	0	39	17	28	44	278	4	135	382	0
Queue Length 95th (ft)	144	29	44	63	41	101	75	#643	0	156	511	m22
Internal Link Dist (ft)		321			369			900			1109	
Turn Bay Length (ft)	175		175	150		200	350		175	350		
Base Capacity (vph)	583	279	346	583	222	413	433	1585	785	583	1788	906
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.48	0.05	0.37	0.17	0.10	0.69	0.25	0.79	0.11	0.58	0.63	0.24

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 64 (53%), Referenced to phase 2:SBT and 6:NBT, Start of Yellow			
Natural Cycle: 75			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.79			
Intersection Signal Delay: 28.1		Intersection LOS: C	
Intersection Capacity Utilization 68.5%		ICU Level of Service C	
Analysis Period (min) 15			
Description: NHDOT Int. No.: S-229-06			

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Lowell Road (Route 3A) & Sam's Club Driveway/Walmart Driveway





Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	1423	1163	1025	604	427	1183
Future Volume (vph)	1423	1163	1025	604	427	1183
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	14	14	12	12	12	12
Storage Length (ft)	0	0	525			200
Storage Lanes	2	1	2			1
Taper Length (ft)	25		100			
Lane Util. Factor	0.97	1.00	0.97	0.95	0.95	1.00
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	3698	1706	3502	3610	3610	1599
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	3698	1706	3502	3610	3610	1599
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		523				739
Link Speed (mph)	35			30	30	
Link Distance (ft)	929			1189	999	
Travel Time (s)	18.1			27.0	22.7	
Peak Hour Factor	0.96	0.96	0.94	0.94	0.89	0.89
Heavy Vehicles (%)	1%	1%	0%	0%	0%	1%
Adj. Flow (vph)	1482	1211	1090	643	480	1329
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1482	1211	1090	643	480	1329
Turn Type	Prot	Free	Prot	NA	NA	Free
Protected Phases	3		1	6	2	
Permitted Phases		Free				Free
Detector Phase	3		1	6	2	
Switch Phase						
Minimum Initial (s)	10.0		7.0	10.0	10.0	
Minimum Split (s)	16.0		15.0	17.0	17.0	
Total Split (s)	50.0		40.0	67.0	30.0	
Total Split (%)	41.7%		33.3%	55.8%	25.0%	
Maximum Green (s)	44.0		32.0	60.0	23.0	
Yellow Time (s)	4.0		4.0	4.0	4.0	
All-Red Time (s)	2.0		4.0	3.0	3.0	
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	
Total Lost Time (s)	6.0		8.0	7.0	7.0	
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	4.0		4.0	4.0	4.0	
Recall Mode	None		None	C-Min	C-Min	
Act Effct Green (s)	45.7	120.0	32.0	61.3	21.3	120.0
Actuated g/C Ratio	0.38	1.00	0.27	0.51	0.18	1.00
v/c Ratio	1.05	0.71	1.17	0.35	0.75	0.83
Control Delay	76.0	2.5	114.5	9.0	54.6	5.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	76.0	2.5	114.5	9.0	54.6	5.2
LOS	E	A	F	A	D	A

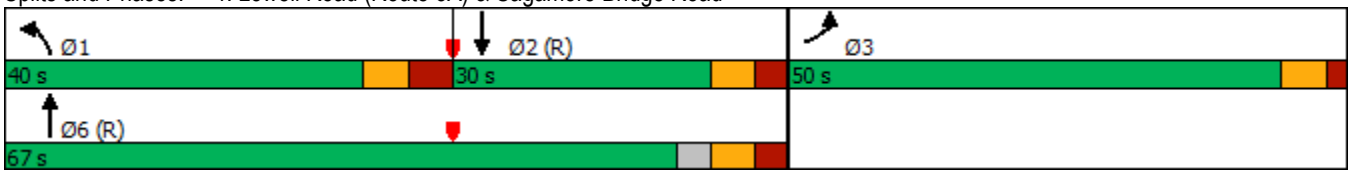
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Approach Delay	43.0			75.4	18.3	
Approach LOS	D			E	B	
Queue Length 50th (ft)	~665	0	~531	146	184	0
Queue Length 95th (ft)	#804	0	#644	113	240	0
Internal Link Dist (ft)	849			1109	919	
Turn Bay Length (ft)			525			200
Base Capacity (vph)	1407	1706	933	1895	691	1599
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.05	0.71	1.17	0.34	0.69	0.83

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 100 (83%), Referenced to phase 2:SBT and 6:NBT, Start of Green			
Natural Cycle: 130			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.17			
Intersection Signal Delay: 44.8		Intersection LOS: D	
Intersection Capacity Utilization 98.3%		ICU Level of Service F	
Analysis Period (min) 15			
Description: NHDOT Int. No.: S-229-02			

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

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

Splits and Phases: 4: Lowell Road (Route 3A) & Sagamore Bridge Road



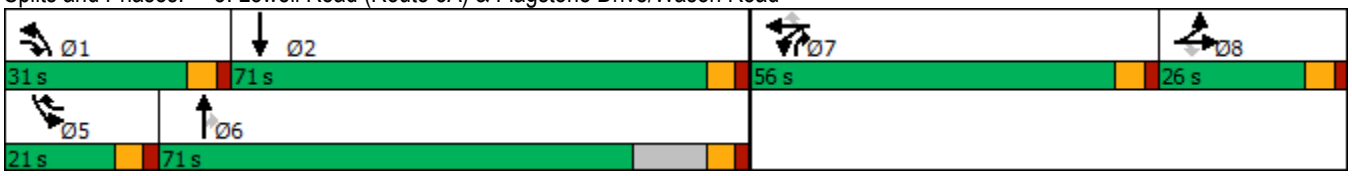
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	61	373	416	15	27	77	992	979	70	808	2
Future Volume (vph)	20	61	373	416	15	27	77	992	979	70	808	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	11	11	11	12	12	12	12	12	12
Storage Length (ft)	0		250	200		75	575		275	175		0
Storage Lanes	0		1	1		1	1		1	1		0
Taper Length (ft)	25			50			175			75		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Frt			0.850			0.850			0.850			
Flt Protected		0.988		0.950	0.956		0.950			0.950		
Satd. Flow (prot)	0	1877	1599	1658	1668	1546	1787	3574	1615	1805	3574	0
Flt Permitted		0.988		0.950	0.956		0.950			0.950		
Satd. Flow (perm)	0	1877	1599	1658	1668	1546	1787	3574	1615	1805	3574	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			68			89			384			
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		805			586			999			1515	
Travel Time (s)		18.3			13.3			22.7			34.4	
Peak Hour Factor	0.80	0.80	0.80	0.90	0.90	0.90	0.94	0.94	0.94	0.88	0.88	0.88
Heavy Vehicles (%)	0%	0%	1%	0%	0%	1%	1%	1%	0%	0%	1%	0%
Adj. Flow (vph)	25	76	466	462	17	30	82	1055	1041	80	918	2
Shared Lane Traffic (%)				48%								
Lane Group Flow (vph)	0	101	466	240	239	30	82	1055	1041	80	920	0
Turn Type	Split	NA	pm+ov	Split	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	
Protected Phases	8	8	1	7	7	5	1	6	7	5	2	
Permitted Phases			8			7			6			
Detector Phase	8	8	1	7	7	5	1	6	7	5	2	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	10.0	5.0	5.0	10.0	
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0	11.0	11.0	16.0	11.0	11.0	16.0	
Total Split (s)	26.0	26.0	31.0	56.0	56.0	21.0	31.0	71.0	56.0	21.0	71.0	
Total Split (%)	14.1%	14.1%	16.8%	30.4%	30.4%	11.4%	16.8%	38.6%	30.4%	11.4%	38.6%	
Maximum Green (s)	20.0	20.0	25.0	50.0	50.0	15.0	25.0	65.0	50.0	15.0	65.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)		6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Lead/Lag	Lag	Lag	Lead	Lead	Lead	Lead	Lead	Lag	Lead	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	3.0	2.5	2.5	3.0	
Recall Mode	None	None	None	None	None	None	None	Min	None	None	Min	
Act Effct Green (s)		13.0	44.7	33.9	33.9	45.1	25.4	59.5	99.7	11.2	45.3	
Actuated g/C Ratio		0.09	0.31	0.24	0.24	0.32	0.18	0.42	0.70	0.08	0.32	
v/c Ratio		0.59	0.85	0.61	0.60	0.05	0.26	0.71	0.84	0.57	0.81	
Control Delay		81.7	57.2	57.2	56.9	0.2	61.1	39.3	16.8	85.7	51.8	
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	
Total Delay		81.7	57.2	57.2	56.9	0.2	61.1	39.3	17.2	85.7	51.8	
LOS		F	E	E	E	A	E	D	B	F	D	

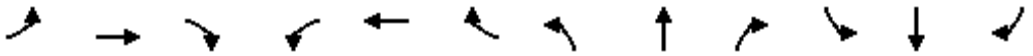
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		61.6			53.7			29.6			54.5	
Approach LOS		E			D			C			D	
Queue Length 50th (ft)		90	351	207	206	0	66	416	423	72	406	
Queue Length 95th (ft)		165	#556	368	366	0	153	648	809	156	576	
Internal Link Dist (ft)		725			506			919			1435	
Turn Bay Length (ft)			250	200		75	575		275	175		
Base Capacity (vph)		274	554	604	608	594	325	1955	1400	197	1694	
Starvation Cap Reductn		0	0	0	0	0	0	0	85	0	0	
Spillback Cap Reductn		0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn		0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio		0.37	0.84	0.40	0.39	0.05	0.25	0.54	0.79	0.41	0.54	

Intersection Summary			
Area Type:	Other		
Cycle Length: 184			
Actuated Cycle Length: 142.6			
Natural Cycle: 80			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.85			
Intersection Signal Delay: 42.6		Intersection LOS: D	
Intersection Capacity Utilization 84.1%		ICU Level of Service E	
Analysis Period (min) 15			

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

Splits and Phases: 5: Lowell Road (Route 3A) & Flagstone Drive/Wason Road



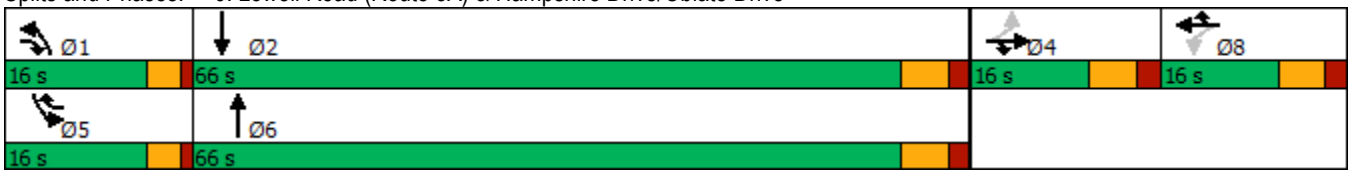


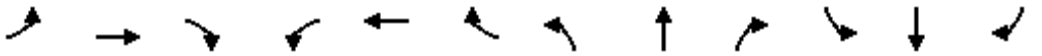
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	2	102	10	1	4	16	1022	12	5	780	7
Future Volume (vph)	25	2	102	10	1	4	16	1022	12	5	780	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	13	13	13	12	12	12	11	12	12
Storage Length (ft)	0		100	0		100	225		0	225		0
Storage Lanes	0		1	0		1	1		0	1		0
Taper Length (ft)	25			25			50			50		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850			0.850		0.998			0.999	
Flt Protected		0.956			0.956		0.950			0.950		
Satd. Flow (prot)	0	1816	1583	0	1877	1669	1736	3568	0	1745	3571	0
Flt Permitted		0.445					0.950			0.950		
Satd. Flow (perm)	0	846	1583	0	1963	1669	1736	3568	0	1745	3571	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			128			86		2			1	
Link Speed (mph)		30			10			30			30	
Link Distance (ft)		495			382			1515			1791	
Travel Time (s)		11.3			26.0			34.4			40.7	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.95	0.95	0.95	0.87	0.87	0.87
Heavy Vehicles (%)	0%	0%	2%	0%	0%	0%	4%	1%	0%	0%	1%	0%
Adj. Flow (vph)	31	3	128	13	1	5	17	1076	13	6	897	8
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	34	128	0	14	5	17	1089	0	6	905	0
Turn Type	Perm	NA	pt+ov	Perm	NA	pt+ov	Prot	NA		Prot	NA	
Protected Phases		4	4 1		8	8 5	1	6		5	2	
Permitted Phases	4			8								
Detector Phase	4	4	4 1	8	8	8 5	1	6		5	2	
Switch Phase												
Minimum Initial (s)	3.0	3.0		3.0	3.0		4.0	15.0		4.0	15.0	
Minimum Split (s)	9.0	9.0		9.0	9.0		8.0	21.0		8.0	21.0	
Total Split (s)	16.0	16.0		16.0	16.0		16.0	66.0		16.0	66.0	
Total Split (%)	14.0%	14.0%		14.0%	14.0%		14.0%	57.9%		14.0%	57.9%	
Maximum Green (s)	10.0	10.0		10.0	10.0		12.0	60.0		12.0	60.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		3.0	4.0		3.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		1.0	2.0		1.0	2.0	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.0			6.0		4.0	6.0		4.0	6.0	
Lead/Lag	Lead	Lead		Lag	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		2.0	3.0		2.0	3.0	
Recall Mode	None	None		None	None		None	Min		None	Min	
Act Effct Green (s)		8.6	16.4		6.6	9.5	5.5	36.0		5.1	27.6	
Actuated g/C Ratio		0.14	0.26		0.10	0.15	0.09	0.57		0.08	0.44	
v/c Ratio		0.30	0.25		0.07	0.02	0.11	0.53		0.04	0.58	
Control Delay		37.4	5.2		33.0	0.0	35.0	11.4		35.2	15.9	
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		37.4	5.2		33.0	0.0	35.0	11.4		35.2	15.9	
LOS		D	A		C	A	C	B		D	B	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		11.9			24.3			11.7			16.0	
Approach LOS		B			C			B			B	
Queue Length 50th (ft)		9	0		4	0	5	83		2	104	
Queue Length 95th (ft)		43	24		22	0	30	293		15	226	
Internal Link Dist (ft)		415			302			1435			1711	
Turn Bay Length (ft)			100			100	225			225		
Base Capacity (vph)		142	619		331	432	351	3210		353	3212	
Starvation Cap Reductn		0	0		0	0	0	0		0	0	
Spillback Cap Reductn		0	0		0	0	0	0		0	0	
Storage Cap Reductn		0	0		0	0	0	0		0	0	
Reduced v/c Ratio		0.24	0.21		0.04	0.01	0.05	0.34		0.02	0.28	

Intersection Summary			
Area Type:	Other		
Cycle Length: 114			
Actuated Cycle Length: 62.9			
Natural Cycle: 55			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.58			
Intersection Signal Delay: 13.6		Intersection LOS: B	
Intersection Capacity Utilization 50.3%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 6: Lowell Road (Route 3A) & Hampshire Drive/Oblate Drive





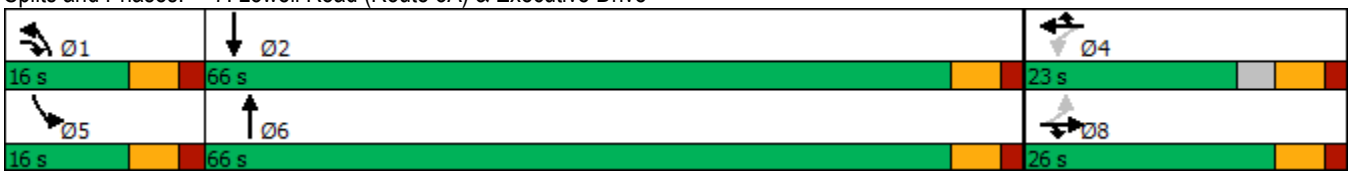
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	218	3	78	23	2	22	50	933	7	16	629	39
Future Volume (vph)	218	3	78	23	2	22	50	933	7	16	629	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	15	12	12	13	11	12	12	11	12	12
Storage Length (ft)	0		225	0		80	350		0	150		0
Storage Lanes	0		1	0		1	1		0	1		0
Taper Length (ft)	25			25			50			50		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850			0.850		0.999			0.991	
Flt Protected		0.953			0.957		0.950			0.950		
Satd. Flow (prot)	0	1733	1742	0	1818	1620	1678	3571	0	1646	3536	0
Flt Permitted		0.706			0.680		0.950			0.950		
Satd. Flow (perm)	0	1284	1742	0	1292	1620	1678	3571	0	1646	3536	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			98			91		1			9	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		492			577			1791			1168	
Travel Time (s)		11.2			13.1			40.7			26.5	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.97	0.97	0.97	0.92	0.92	0.92
Heavy Vehicles (%)	1%	0%	2%	0%	0%	3%	4%	1%	0%	6%	1%	4%
Adj. Flow (vph)	273	4	98	29	3	28	52	962	7	17	684	42
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	277	98	0	32	28	52	969	0	17	726	0
Turn Type	Perm	NA	pt+ov	Perm	NA	Prot	Prot	NA		Prot	NA	
Protected Phases		8	8 1		4	4	1	6		5	2	
Permitted Phases	8			4								
Detector Phase	8	8	8 1	4	4	4	1	6		5	2	
Switch Phase												
Minimum Initial (s)	3.0	3.0		5.0	5.0	5.0	3.0	8.0		3.0	8.0	
Minimum Split (s)	9.0	9.0		11.0	11.0	11.0	9.0	14.0		9.0	14.0	
Total Split (s)	26.0	26.0		23.0	23.0	23.0	16.0	66.0		16.0	66.0	
Total Split (%)	24.1%	24.1%		21.3%	21.3%	21.3%	14.8%	61.1%		14.8%	61.1%	
Maximum Green (s)	20.0	20.0		17.0	17.0	17.0	10.0	60.0		10.0	60.0	
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.0			6.0	6.0	6.0	6.0		6.0	6.0	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	2.0	2.0		2.0	2.0	2.0	2.0	3.0		2.0	3.0	
Recall Mode	None	None		None	None	None	None	Min		None	Min	
Act Effct Green (s)		20.6	33.4		13.5	13.5	6.6	29.8		5.4	21.9	
Actuated g/C Ratio		0.32	0.52		0.21	0.21	0.10	0.46		0.08	0.34	
v/c Ratio		0.68	0.10		0.12	0.07	0.30	0.59		0.12	0.61	
Control Delay		33.9	3.4		21.9	0.3	34.8	14.7		34.0	20.4	
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		33.9	3.4		21.9	0.3	34.8	14.7		34.0	20.4	
LOS		C	A		C	A	C	B		C	C	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		25.9			11.8			15.7			20.7	
Approach LOS		C			B			B			C	
Queue Length 50th (ft)		94	0		9	0	19	126		6	126	
Queue Length 95th (ft)		#226	19		31	0	58	249		28	186	
Internal Link Dist (ft)		412			497			1711			1088	
Turn Bay Length (ft)			225			80	350			150		
Base Capacity (vph)		407	1038		410	576	266	3232		261	3201	
Starvation Cap Reductn		0	0		0	0	0	0		0	0	
Spillback Cap Reductn		0	0		0	0	0	0		0	0	
Storage Cap Reductn		0	0		0	0	0	0		0	0	
Reduced v/c Ratio		0.68	0.09		0.08	0.05	0.20	0.30		0.07	0.23	

Intersection Summary			
Area Type:	Other		
Cycle Length: 108			
Actuated Cycle Length: 64.8			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.68			
Intersection Signal Delay: 19.0		Intersection LOS: B	
Intersection Capacity Utilization 63.2%		ICU Level of Service B	
Analysis Period (min) 15			

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

Splits and Phases: 7: Lowell Road (Route 3A) & Executive Drive



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	2	25	31	0	48	27	1112	15	56	637	11
Future Volume (vph)	9	2	25	31	0	48	27	1112	15	56	637	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	14	13	13	11	11	12	12	12	12
Storage Length (ft)	0		50	0		100	210		325	125		0
Storage Lanes	0		1	0		1	1		1	1		0
Taper Length (ft)	25			25			50			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850		0.997	
Flt Protected		0.962			0.950		0.950			0.950		
Satd. Flow (prot)	0	1828	1583	0	1865	1669	1745	1818	1615	1805	1876	0
Flt Permitted		0.746			0.748		0.950			0.950		
Satd. Flow (perm)	0	1417	1583	0	1469	1669	1745	1818	1615	1805	1876	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			91			60			91		1	
Link Speed (mph)		10			30			30			30	
Link Distance (ft)		598			262			1405			549	
Travel Time (s)		40.8			6.0			31.9			12.5	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.99	0.99	0.99	0.94	0.94	0.94
Heavy Vehicles (%)	0%	0%	2%	0%	0%	0%	0%	1%	0%	0%	1%	0%
Adj. Flow (vph)	11	3	31	39	0	60	27	1123	15	60	678	12
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	14	31	0	39	60	27	1123	15	60	690	0
Turn Type	Perm	NA	Prot	Perm	NA	pm+ov	Prot	NA	Prot	Prot	NA	
Protected Phases		8	8		4	5	1	6	6	5	2	
Permitted Phases	8			4		4						
Detector Phase	8	8	8	4	4	5	1	6	6	5	2	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	10.0	10.0	5.0	10.0	
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0	11.0	11.0	16.0	16.0	11.0	16.0	
Total Split (s)	16.0	16.0	16.0	16.0	16.0	16.0	16.0	116.0	116.0	16.0	116.0	
Total Split (%)	8.9%	8.9%	8.9%	8.9%	8.9%	8.9%	8.9%	64.4%	64.4%	8.9%	64.4%	
Maximum Green (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	110.0	110.0	10.0	110.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)		6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Lead/Lag						Lead	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?						Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	1.5	1.5	1.5	1.5	1.5	1.5	1.0	1.5	1.5	1.5	1.5	
Recall Mode	None	None	None	None	None	None	None	C-Min	C-Min	None	C-Min	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)		8.1	8.1		8.1	20.7	6.6	140.9	140.9	8.8	146.5	
Actuated g/C Ratio		0.04	0.04		0.04	0.12	0.04	0.78	0.78	0.05	0.81	
v/c Ratio		0.22	0.20		0.59	0.25	0.42	0.79	0.01	0.68	0.45	
Control Delay		90.1	2.8		117.7	16.3	103.9	19.7	0.0	119.5	9.7	

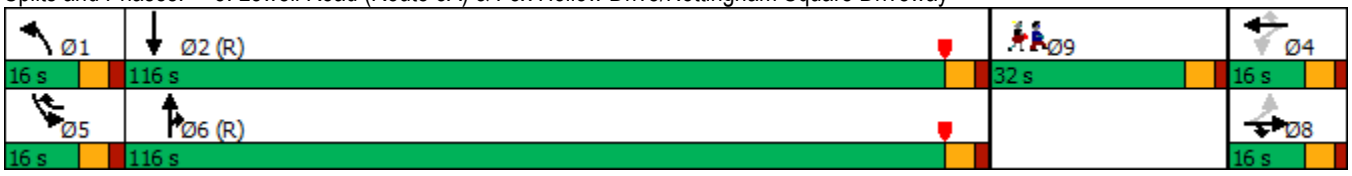
Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	32.0
Total Split (s)	32.0
Total Split (%)	18%
Maximum Green (s)	26.0
Yellow Time (s)	4.0
All-Red Time (s)	2.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	5.0
Flash Dont Walk (s)	21.0
Pedestrian Calls (#/hr)	5
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	1.8	
Total Delay		90.1	2.8		117.7	16.3	103.9	19.7	0.0	119.5	11.5	
LOS		F	A		F	B	F	B	A	F	B	
Approach Delay		29.9			56.2			21.4			20.2	
Approach LOS		C			E			C			C	
Queue Length 50th (ft)		16	0		46	0	32	627	0	71	204	
Queue Length 95th (ft)		40	0		81	36	70	#1657	0	#134	606	
Internal Link Dist (ft)		518			182			1325			469	
Turn Bay Length (ft)			50			100	210		325	125		
Base Capacity (vph)		78	173		81	255	96	1423	1284	100	1527	
Starvation Cap Reductn		0	0		0	0	0	0	0	0	640	
Spillback Cap Reductn		0	0		0	0	0	0	0	0	0	
Storage Cap Reductn		0	0		0	0	0	0	0	0	0	
Reduced v/c Ratio		0.18	0.18		0.48	0.24	0.28	0.79	0.01	0.60	0.78	

Intersection Summary

Area Type: Other
Cycle Length: 180
Actuated Cycle Length: 180
Offset: 0 (0%), Referenced to phase 2:SBT and 6:NBT, Start of Yellow, Master Intersection
Natural Cycle: 150
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.79
Intersection Signal Delay: 22.8 Intersection LOS: C
Intersection Capacity Utilization 81.9% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 8: Lowell Road (Route 3A) & Fox Hollow Drive/Nottingham Square Driveway



Lane Group	Ø9
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø9
Lane Configurations							
Traffic Volume (vph)	83	138	1054	106	107	627	
Future Volume (vph)	83	138	1054	106	107	627	
Ideal Flow (vphpl)	1900	1000	1900	1900	1900	1900	
Lane Width (ft)	12	12	13	13	12	12	
Storage Length (ft)	0	75		0	150		
Storage Lanes	1	1		0	1		
Taper Length (ft)	25				50		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		0.850	0.988				
Flt Protected	0.950				0.950		
Satd. Flow (prot)	1805	850	1922	0	1805	1881	
Flt Permitted	0.950				0.950		
Satd. Flow (perm)	1805	850	1922	0	1805	1881	
Right Turn on Red		Yes		Yes			
Satd. Flow (RTOR)		154	5				
Link Speed (mph)	20		30			30	
Link Distance (ft)	512		549			1309	
Travel Time (s)	17.5		12.5			29.8	
Peak Hour Factor	0.87	0.87	0.98	0.98	0.89	0.89	
Heavy Vehicles (%)	0%	0%	1%	0%	0%	1%	
Adj. Flow (vph)	95	159	1076	108	120	704	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	95	159	1184	0	120	704	
Turn Type	Prot	pt+ov	NA		Prot	NA	
Protected Phases	4	4 5	6		5	2	9
Permitted Phases							
Detector Phase	4	4 5	6		5	2	
Switch Phase							
Minimum Initial (s)	5.0		10.0		3.0	10.0	5.0
Minimum Split (s)	11.0		16.0		9.0	16.0	35.0
Total Split (s)	26.0		116.0		13.0	116.0	35.0
Total Split (%)	13.7%		61.1%		6.8%	61.1%	18%
Maximum Green (s)	20.0		110.0		7.0	110.0	29.0
Yellow Time (s)	4.0		4.0		4.0	4.0	4.0
All-Red Time (s)	2.0		2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0		0.0	0.0	
Total Lost Time (s)	6.0		6.0		6.0	6.0	
Lead/Lag			Lag		Lead		
Lead-Lag Optimize?			Yes		Yes		
Vehicle Extension (s)	1.5		1.5		1.5	1.5	3.0
Recall Mode	None		C-Min		None	C-Min	None
Walk Time (s)							5.0
Flash Dont Walk (s)							24.0
Pedestrian Calls (#/hr)							5
Act Effct Green (s)	14.0	27.0	144.0		7.0	157.0	
Actuated g/C Ratio	0.07	0.14	0.76		0.04	0.83	
v/c Ratio	0.72	0.63	0.81		1.82	0.45	
Control Delay	113.5	21.8	22.5		463.5	8.2	

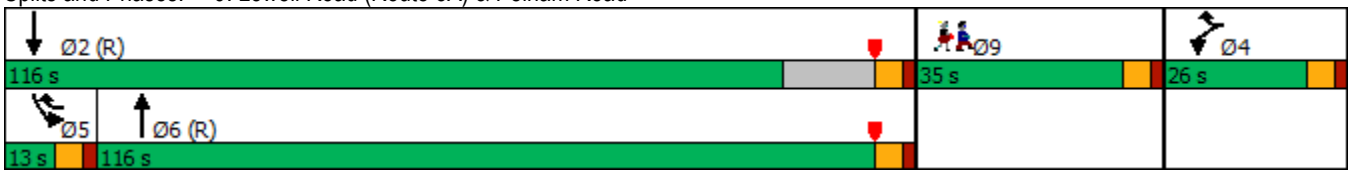
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø9
Queue Delay	0.0	0.0	46.4		0.0	0.0	
Total Delay	113.5	21.8	69.0		463.5	8.2	
LOS	F	C	E		F	A	
Approach Delay	56.1		69.0			74.5	
Approach LOS	E		E			E	
Queue Length 50th (ft)	118	6	701		~224	156	
Queue Length 95th (ft)	178	80	#1887		#369	585	
Internal Link Dist (ft)	432		469			1229	
Turn Bay Length (ft)		75			150		
Base Capacity (vph)	190	251	1458		66	1554	
Starvation Cap Reductn	0	0	377		0	0	
Spillback Cap Reductn	0	0	0		0	0	
Storage Cap Reductn	0	0	0		0	0	
Reduced v/c Ratio	0.50	0.63	1.10		1.82	0.45	

Intersection Summary			
Area Type:	Other		
Cycle Length: 190			
Actuated Cycle Length: 190			
Offset: 30 (16%), Referenced to phase 2:SBT and 6:NBT, Start of Yellow			
Natural Cycle: 150			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.82			
Intersection Signal Delay: 69.5		Intersection LOS: E	
Intersection Capacity Utilization 88.1%		ICU Level of Service E	
Analysis Period (min) 15			

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

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

Splits and Phases: 9: Lowell Road (Route 3A) & Pelham Road



Appendix E

Capacity Analysis – 2022 No-Build Traffic Conditions

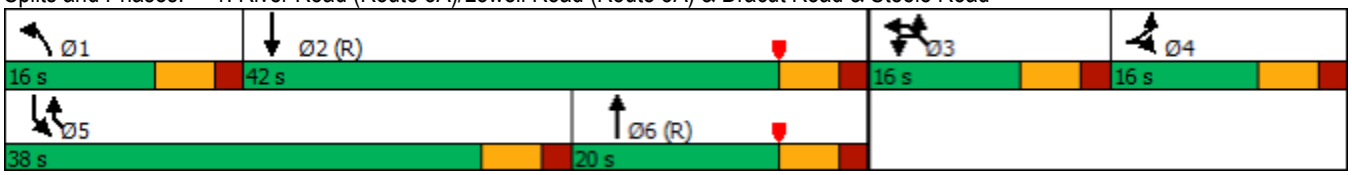
2022 No-Build Weekday A.M.

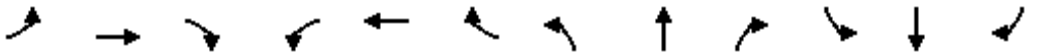
Lane Group	EBL	EBR	EBR2	NBL	NBT	NBR	SBL	SBT	SBR	NWL	NWR
Lane Configurations											
Traffic Volume (vph)	2	0	2	0	262	0	466	503	12	1	816
Future Volume (vph)	2	0	2	0	262	0	466	503	12	1	816
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	12	12	10	12	12	12	12
Storage Length (ft)	0	50		200		300	775		0	100	0
Storage Lanes	1	1		1		1	1		0	1	1
Taper Length (ft)	25			100			75			25	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00
Frt		0.850						0.997			0.850
Flt Protected	0.950						0.950			0.950	
Satd. Flow (prot)	1685	1133	0	1773	3574	0	1652	3564	0	1805	1583
Flt Permitted	0.950						0.950			0.950	
Satd. Flow (perm)	1685	1133	0	1773	3574	0	1652	3564	0	1805	1583
Right Turn on Red			Yes			Yes			Yes		Yes
Satd. Flow (RTOR)		545						3			477
Link Speed (mph)	30				35			35		35	
Link Distance (ft)	591				758			1733		622	
Travel Time (s)	13.4				14.8			33.8		12.1	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.92	0.92	0.92	0.86	0.86
Heavy Vehicles (%)	0%	0%	33%	0%	1%	0%	2%	1%	0%	0%	2%
Adj. Flow (vph)	3	0	3	0	328	0	507	547	13	1	949
Shared Lane Traffic (%)											
Lane Group Flow (vph)	3	3	0	0	328	0	507	560	0	1	949
Turn Type	Prot	Prot		Prot	NA		Prot	NA		Prot	pt+ov
Protected Phases	4	4		1	6		5	2		3	3 5
Permitted Phases											
Detector Phase	4	4		1	6		5	2		3	3 5
Switch Phase											
Minimum Initial (s)	5.0	5.0		5.0	8.0		8.0	8.0		5.0	
Minimum Split (s)	11.0	11.0		11.0	14.0		14.0	14.0		11.0	
Total Split (s)	16.0	16.0		16.0	20.0		38.0	42.0		16.0	
Total Split (%)	17.8%	17.8%		17.8%	22.2%		42.2%	46.7%		17.8%	
Maximum Green (s)	10.0	10.0		10.0	14.0		32.0	36.0		10.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	
Lead/Lag	Lag	Lag		Lead	Lag		Lead	Lag		Lead	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	
Vehicle Extension (s)	3.0	3.0		3.0	4.0		4.0	4.0		4.0	
Recall Mode	None	None		None	C-Min		None	C-Min		None	
Act Effct Green (s)	5.8	5.8			21.0		37.3	64.3		11.2	53.3
Actuated g/C Ratio	0.06	0.06			0.23		0.41	0.71		0.12	0.59
v/c Ratio	0.03	0.01			0.39		0.74	0.22		0.00	0.84
Control Delay	40.0	0.0			32.8		37.3	3.4		36.0	15.2
Queue Delay	0.0	0.0			0.0		0.0	0.0		0.0	0.0
Total Delay	40.0	0.0			32.8		37.3	3.4		36.0	15.2
LOS	D	A			C		D	A		D	B

Lane Group	EBL	EBR	EBR2	NBL	NBT	NBR	SBL	SBT	SBR	NWL	NWR
Approach Delay	20.0				32.8			19.5		15.2	
Approach LOS	B				C			B		B	
Queue Length 50th (ft)	2	0			84		293	114		1	168
Queue Length 95th (ft)	9	0			119		#382	2		5	#319
Internal Link Dist (ft)	511				678			1653		542	
Turn Bay Length (ft)		50					775			100	
Base Capacity (vph)	187	610			833		700	2548		224	1142
Starvation Cap Reductn	0	0			0		0	0		0	0
Spillback Cap Reductn	0	0			0		0	0		0	0
Storage Cap Reductn	0	0			0		0	0		0	0
Reduced v/c Ratio	0.02	0.00			0.39		0.72	0.22		0.00	0.83

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 0 (0%), Referenced to phase 2:SBT and 6:NBT, Start of Yellow			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.84			
Intersection Signal Delay: 19.6		Intersection LOS: B	
Intersection Capacity Utilization 67.8%		ICU Level of Service C	
Analysis Period (min) 15			
Description: NHDOT Int. No.: S-229-04			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 1: River Road (Route 3A)/Lowell Road (Route 3A) & Dracut Road & Steele Road





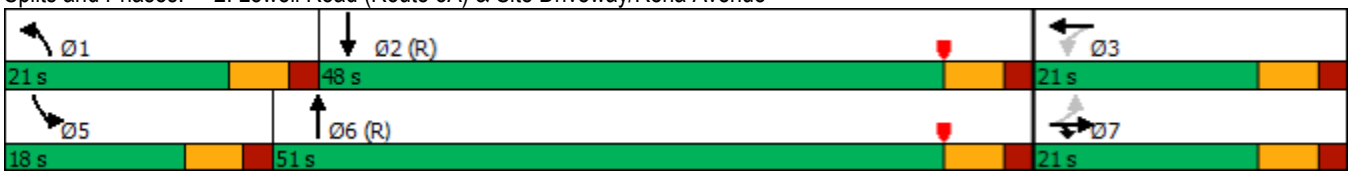
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	0	2	1	1	33	15	1110	2	7	983	51
Future Volume (vph)	3	0	2	1	1	33	15	1110	2	7	983	51
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	13	13	13	10	12	12	12	12	12
Storage Length (ft)	0		50	0		0	300		0	350		0
Storage Lanes	0		1	0		0	1		0	1		0
Taper Length (ft)	25			25			75			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850		0.872						0.993	
Flt Protected		0.950			0.999		0.950			0.950		
Satd. Flow (prot)	0	1685	1133	0	1659	0	1685	3538	0	1570	3518	0
Flt Permitted		0.851			0.991		0.950			0.950		
Satd. Flow (perm)	0	1509	1133	0	1646	0	1685	3538	0	1570	3518	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			109		39						8	
Link Speed (mph)		15			30			35			35	
Link Distance (ft)		510			557			1733			980	
Travel Time (s)		23.2			12.7			33.8			19.1	
Peak Hour Factor	0.80	0.80	0.80	0.85	0.85	0.85	0.85	0.85	0.85	0.95	0.95	0.95
Heavy Vehicles (%)	0%	0%	33%	9%	0%	3%	0%	2%	20%	15%	2%	0%
Adj. Flow (vph)	4	0	3	1	1	39	18	1306	2	7	1035	54
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	4	3	0	41	0	18	1308	0	7	1089	0
Turn Type	Perm	NA	Prot	Perm	NA		Prot	NA		Prot	NA	
Protected Phases		7	7		3		1	6		5	2	
Permitted Phases	7			3								
Detector Phase	7	7	7	3	3		1	6		5	2	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0		11.0	16.0		11.0	16.0	
Total Split (s)	21.0	21.0	21.0	21.0	21.0		21.0	51.0		18.0	48.0	
Total Split (%)	23.3%	23.3%	23.3%	23.3%	23.3%		23.3%	56.7%		20.0%	53.3%	
Maximum Green (s)	15.0	15.0	15.0	15.0	15.0		15.0	45.0		12.0	42.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.0	6.0		6.0		6.0	6.0		6.0	6.0	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Recall Mode	None	None	None	None	None		None	C-Min		None	C-Min	
Act Effct Green (s)		7.2	7.2		7.3		7.6	75.3		7.0	72.2	
Actuated g/C Ratio		0.08	0.08		0.08		0.08	0.84		0.08	0.80	
v/c Ratio		0.03	0.02		0.24		0.13	0.44		0.06	0.39	
Control Delay		38.0	0.0		17.1		40.5	3.8		24.4	11.0	
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Delay		38.0	0.0		17.1		40.5	3.8		24.4	11.0	
LOS		D	A		B		D	A		C	B	

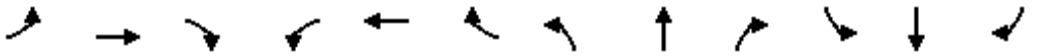
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		21.7			17.1			4.3			11.1	
Approach LOS		C			B			A			B	
Queue Length 50th (ft)		2	0		1		9	106		4	230	
Queue Length 95th (ft)		11	0		28		m15	193		m10	182	
Internal Link Dist (ft)		430			477			1653			900	
Turn Bay Length (ft)			50				300			350		
Base Capacity (vph)		251	279		306		280	2959		209	2825	
Starvation Cap Reductn		0	0		0		0	0		0	0	
Spillback Cap Reductn		0	0		0		0	0		0	0	
Storage Cap Reductn		0	0		0		0	0		0	0	
Reduced v/c Ratio		0.02	0.01		0.13		0.06	0.44		0.03	0.39	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 51 (57%), Referenced to phase 2:SBT and 6:NBT, Start of Yellow			
Natural Cycle: 50			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.44			
Intersection Signal Delay: 7.6		Intersection LOS: A	
Intersection Capacity Utilization 52.1%		ICU Level of Service A	
Analysis Period (min) 15			
Description: NHDOT Int. No.: S-229-03			

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

Splits and Phases: 2: Lowell Road (Route 3A) & Site Driveway/Rena Avenue





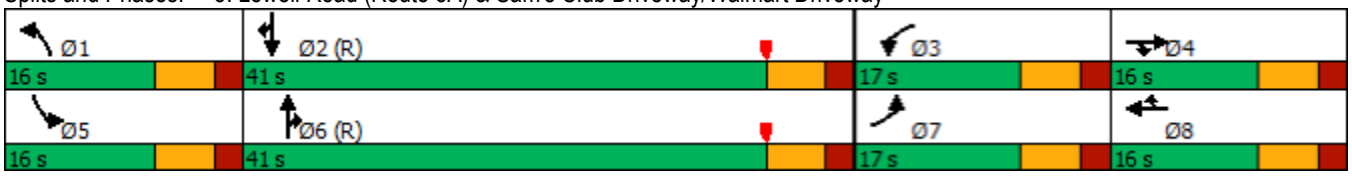
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	101	4	55	15	5	71	62	1062	27	85	962	63
Future Volume (vph)	101	4	55	15	5	71	62	1062	27	85	962	63
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	13	12	12	12	13	12	12	12	12	12	12
Storage Length (ft)	175		175	150		200	350		175	350		0
Storage Lanes	2		1	2		1	2		1	2		1
Taper Length (ft)	25			75			125			100		
Lane Util. Factor	0.97	1.00	1.00	0.97	1.00	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3467	1852	1568	3502	1900	1589	3467	3539	1583	3433	3574	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3467	1852	1568	3502	1900	1589	3467	3539	1583	3433	3574	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			182			182			182			182
Link Speed (mph)		30			30			35			30	
Link Distance (ft)		401			449			980			1189	
Travel Time (s)		9.1			10.2			19.1			27.0	
Peak Hour Factor	0.93	0.93	0.93	0.88	0.88	0.88	0.87	0.87	0.87	0.96	0.96	0.96
Heavy Vehicles (%)	1%	6%	3%	0%	0%	5%	1%	2%	2%	2%	1%	2%
Adj. Flow (vph)	109	4	59	17	6	81	71	1221	31	89	1002	66
Shared Lane Traffic (%)												
Lane Group Flow (vph)	109	4	59	17	6	81	71	1221	31	89	1002	66
Turn Type	Prot	NA	Prot	Prot	NA	Prot	Prot	NA	Prot	Prot	NA	Prot
Protected Phases	7	4	4	3	8	8	1	6	6	5	2	2
Permitted Phases												
Detector Phase	7	4	4	3	8	8	1	6	6	5	2	2
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0	11.0	11.0	16.0	16.0	11.0	16.0	16.0
Total Split (s)	17.0	16.0	16.0	17.0	16.0	16.0	16.0	41.0	41.0	16.0	41.0	41.0
Total Split (%)	18.9%	17.8%	17.8%	18.9%	17.8%	17.8%	17.8%	45.6%	45.6%	17.8%	45.6%	45.6%
Maximum Green (s)	11.0	10.0	10.0	11.0	10.0	10.0	10.0	35.0	35.0	10.0	35.0	35.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	6.0	6.0	4.0	6.0	6.0
Recall Mode	None	None	None	None	None	None	None	C-Min	C-Min	None	C-Min	C-Min
Act Effct Green (s)	9.1	14.0	14.0	7.0	6.9	6.9	8.2	50.2	50.2	8.7	50.6	50.6
Actuated g/C Ratio	0.10	0.16	0.16	0.08	0.08	0.08	0.09	0.56	0.56	0.10	0.56	0.56
v/c Ratio	0.31	0.01	0.15	0.06	0.04	0.28	0.23	0.62	0.03	0.27	0.50	0.07
Control Delay	39.5	34.2	0.8	38.7	38.8	2.4	42.5	13.8	0.1	48.9	15.5	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.5	34.2	0.8	38.7	38.8	2.4	42.5	13.8	0.1	48.9	15.5	0.3
LOS	D	C	A	D	D	A	D	B	A	D	B	A

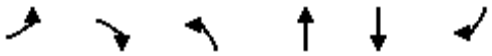
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		26.1			10.4			15.1			17.2	
Approach LOS		C			B			B			B	
Queue Length 50th (ft)	29	2	0	4	3	0	17	250	0	25	255	1
Queue Length 95th (ft)	54	12	0	14	15	0	44	85	m0	m46	339	m1
Internal Link Dist (ft)		321			369			900			1109	
Turn Bay Length (ft)	175		175	150		200	350		175	350		
Base Capacity (vph)	423	302	408	428	211	338	385	1973	963	386	2010	970
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.26	0.01	0.14	0.04	0.03	0.24	0.18	0.62	0.03	0.23	0.50	0.07

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 51 (57%), Referenced to phase 2:SBT and 6:NBT, Start of Yellow			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.62			
Intersection Signal Delay: 16.5		Intersection LOS: B	
Intersection Capacity Utilization 55.9%		ICU Level of Service B	
Analysis Period (min) 15			
Description: NHDOT Int. No.: S-229-06			

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

Splits and Phases: 3: Lowell Road (Route 3A) & Sam's Club Driveway/Walmart Driveway





Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	948	854	887	339	336	1517
Future Volume (vph)	948	854	887	339	336	1517
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	14	14	12	12	12	12
Storage Length (ft)	0	0	525			200
Storage Lanes	2	1	2			1
Taper Length (ft)	25		100			
Lane Util. Factor	0.97	1.00	0.97	0.95	0.95	0.88
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	3662	1689	3467	3539	3539	2760
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	3662	1689	3467	3539	3539	2760
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		769				1283
Link Speed (mph)	35			30	30	
Link Distance (ft)	929			1189	999	
Travel Time (s)	18.1			27.0	22.7	
Peak Hour Factor	0.94	0.94	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	1%	2%	2%	3%
Adj. Flow (vph)	1009	909	964	368	365	1649
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1009	909	964	368	365	1649
Turn Type	Prot	Free	Prot	NA	NA	Free
Protected Phases	3		1	6	2	
Permitted Phases		Free				Free
Detector Phase	3		1	6	2	
Switch Phase						
Minimum Initial (s)	10.0		7.0	10.0	10.0	
Minimum Split (s)	16.0		15.0	17.0	17.0	
Total Split (s)	32.0		31.0	58.0	27.0	
Total Split (%)	35.6%		34.4%	64.4%	30.0%	
Maximum Green (s)	26.0		23.0	51.0	20.0	
Yellow Time (s)	4.0		4.0	4.0	4.0	
All-Red Time (s)	2.0		4.0	3.0	3.0	
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	
Total Lost Time (s)	6.0		8.0	7.0	7.0	
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	4.0		4.0	4.0	4.0	
Recall Mode	None		None	C-Min	C-Min	
Act Effct Green (s)	28.8	90.0	24.5	48.2	15.7	90.0
Actuated g/C Ratio	0.32	1.00	0.27	0.54	0.17	1.00
v/c Ratio	0.86	0.54	1.02	0.19	0.59	0.60
Control Delay	38.4	1.2	60.2	2.9	37.8	1.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.4	1.2	60.2	2.9	37.8	1.0
LOS	D	A	E	A	D	A

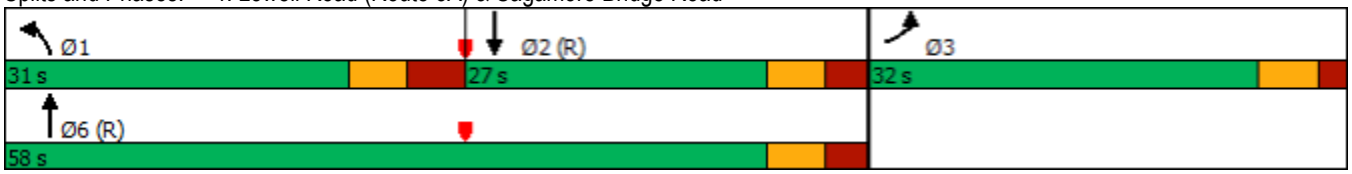
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Approach Delay	20.8			44.4	7.6	
Approach LOS	C			D	A	
Queue Length 50th (ft)	266	0	~313	7	102	0
Queue Length 95th (ft)	#416	0	#425	4	138	0
Internal Link Dist (ft)	849			1109	919	
Turn Bay Length (ft)			525			200
Base Capacity (vph)	1170	1689	944	2005	786	2760
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.86	0.54	1.02	0.18	0.46	0.60

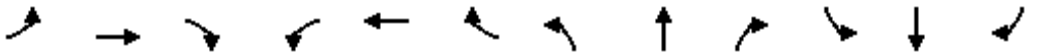
Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 70 (78%), Referenced to phase 2:SBT and 6:NBT, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.02			
Intersection Signal Delay: 21.7		Intersection LOS: C	
Intersection Capacity Utilization 78.3%		ICU Level of Service D	
Analysis Period (min) 15			
Description: NHDOT Int. No.: S-229-02			

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

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

Splits and Phases: 4: Lowell Road (Route 3A) & Sagamore Bridge Road





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	65	28	282	614	41	30	303	779	188	15	1037	10
Future Volume (vph)	65	28	282	614	41	30	303	779	188	15	1037	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	11	11	11	12	12	12	12	12	12
Storage Length (ft)	0		250	200		75	575		275	175		300
Storage Lanes	0		1	1		1	1		1	1		1
Taper Length (ft)	25			50			175			75		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.91	0.91
Frt			0.850			0.850			0.850		0.999	
Flt Protected		0.966		0.950	0.958		0.950			0.950		
Satd. Flow (prot)	0	1835	1583	1641	1657	1501	1787	3539	1583	1752	5078	0
Flt Permitted		0.966		0.950	0.958		0.950			0.950		
Satd. Flow (perm)	0	1835	1583	1641	1657	1501	1787	3539	1583	1752	5078	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			53			89			198		1	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		805			586			999			1515	
Travel Time (s)		18.3			13.3			22.7			34.4	
Peak Hour Factor	0.81	0.81	0.81	0.94	0.94	0.94	0.95	0.95	0.95	0.87	0.87	0.87
Heavy Vehicles (%)	0%	0%	2%	1%	0%	4%	1%	2%	2%	3%	2%	6%
Adj. Flow (vph)	80	35	348	653	44	32	319	820	198	17	1192	11
Shared Lane Traffic (%)				47%								
Lane Group Flow (vph)	0	115	348	346	351	32	319	820	198	17	1203	0
Turn Type	Split	NA	pm+ov	Split	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	
Protected Phases	8	8	1	7	7	5	1	6	7	5	2	
Permitted Phases			8			7			6			
Detector Phase	8	8	1	7	7	5	1	6	7	5	2	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	10.0	5.0	5.0	10.0	
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0	11.0	11.0	16.0	11.0	11.0	16.0	
Total Split (s)	26.0	26.0	31.0	56.0	56.0	21.0	31.0	71.0	56.0	21.0	71.0	
Total Split (%)	14.1%	14.1%	16.8%	30.4%	30.4%	11.4%	16.8%	38.6%	30.4%	11.4%	38.6%	
Maximum Green (s)	20.0	20.0	25.0	50.0	50.0	15.0	25.0	65.0	50.0	15.0	65.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)		6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Lead/Lag	Lag	Lag	Lead	Lead	Lead	Lead	Lead	Lag	Lead	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	3.0	2.5	2.5	3.0	
Recall Mode	None	None	None	None	None	None	None	Min	None	None	Min	
Act Effct Green (s)		14.3	46.1	38.2	38.2	44.9	25.7	68.8	113.2	6.7	46.9	
Actuated g/C Ratio		0.10	0.31	0.26	0.26	0.30	0.17	0.46	0.76	0.04	0.31	
v/c Ratio		0.66	0.66	0.83	0.83	0.06	1.04	0.50	0.16	0.22	0.76	
Control Delay		87.4	48.0	71.2	71.5	0.2	121.9	32.3	1.0	84.4	50.3	
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay		87.4	48.0	71.2	71.5	0.2	121.9	32.3	1.0	84.4	50.3	
LOS		F	D	E	E	A	F	C	A	F	D	

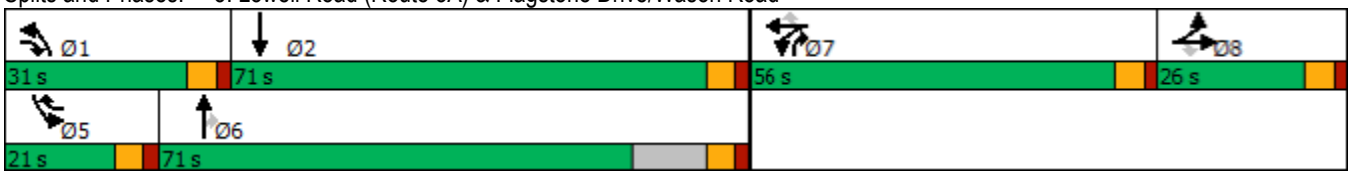
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		57.8			68.2			49.1			50.7	
Approach LOS		E			E			D			D	
Queue Length 50th (ft)		111	257	336	342	0	~349	308	0	16	390	
Queue Length 95th (ft)		184	386	540	546	0	#691	445	22	48	485	
Internal Link Dist (ft)		725			506			919			1435	
Turn Bay Length (ft)			250	200		75	575		275	175		
Base Capacity (vph)		251	524	562	567	594	306	1830	1352	180	2263	
Starvation Cap Reductn		0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn		0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn		0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio		0.46	0.66	0.62	0.62	0.05	1.04	0.45	0.15	0.09	0.53	

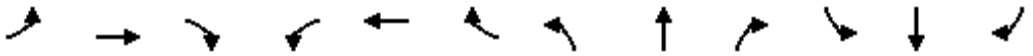
Intersection Summary			
Area Type:	Other		
Cycle Length: 184			
Actuated Cycle Length: 149.8			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.04			
Intersection Signal Delay: 54.4		Intersection LOS: D	
Intersection Capacity Utilization 76.8%		ICU Level of Service D	
Analysis Period (min) 15			

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

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

Splits and Phases: 5: Lowell Road (Route 3A) & Flagstone Drive/Wason Road





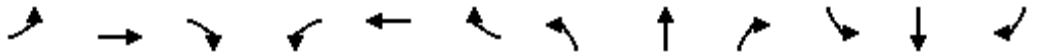
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	8	0	11	2	2	4	116	746	2	2	1099	59
Future Volume (vph)	8	0	11	2	2	4	116	746	2	2	1099	59
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	13	13	13	12	12	12	11	12	12
Storage Length (ft)	0		100	0		100	225		0	225		0
Storage Lanes	0		1	0		1	1		0	1		0
Taper Length (ft)	25			25			50			50		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850			0.850					0.992	
Flt Protected		0.950			0.976		0.950			0.950		
Satd. Flow (prot)	0	1719	1455	0	1916	1669	1752	3505	0	1745	3477	0
Flt Permitted							0.950			0.950		
Satd. Flow (perm)	0	1810	1455	0	1963	1669	1752	3505	0	1745	3477	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			86			86					7	
Link Speed (mph)		30			10			30			30	
Link Distance (ft)		495			382			1515			1791	
Travel Time (s)		11.3			26.0			34.4			40.7	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.90	0.90	0.90	0.83	0.83	0.83
Heavy Vehicles (%)	5%	0%	11%	0%	0%	0%	3%	3%	0%	0%	3%	3%
Adj. Flow (vph)	10	0	14	3	3	5	129	829	2	2	1324	71
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	10	14	0	6	5	129	831	0	2	1395	0
Turn Type	Perm	NA	pt+ov	Perm	NA	pt+ov	Prot	NA		Prot	NA	
Protected Phases		4	4 1		8	8 5	1	6		5	2	
Permitted Phases	4			8								
Detector Phase	4	4	4 1	8	8	8 5	1	6		5	2	
Switch Phase												
Minimum Initial (s)	3.0	3.0		3.0	3.0		4.0	15.0		4.0	15.0	
Minimum Split (s)	9.0	9.0		9.0	9.0		8.0	21.0		8.0	21.0	
Total Split (s)	16.0	16.0		16.0	16.0		16.0	66.0		16.0	66.0	
Total Split (%)	14.0%	14.0%		14.0%	14.0%		14.0%	57.9%		14.0%	57.9%	
Maximum Green (s)	10.0	10.0		10.0	10.0		12.0	60.0		12.0	60.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		3.0	4.0		3.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		1.0	2.0		1.0	2.0	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.0			6.0		4.0	6.0		4.0	6.0	
Lead/Lag	Lead	Lead		Lag	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		2.0	3.0		2.0	3.0	
Recall Mode	None	None		None	None		None	Min		None	Min	
Act Effct Green (s)		7.4	11.2		6.5	9.1	10.7	65.4		5.2	46.5	
Actuated g/C Ratio		0.10	0.15		0.09	0.12	0.14	0.86		0.07	0.61	
v/c Ratio		0.06	0.05		0.04	0.02	0.53	0.28		0.02	0.66	
Control Delay		43.4	0.4		45.6	0.0	46.1	5.0		47.5	14.2	
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		43.4	0.4		45.6	0.0	46.1	5.0		47.5	14.2	
LOS		D	A		D	A	D	A		D	B	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		18.3			24.9			10.5			14.2	
Approach LOS		B			C			B			B	
Queue Length 50th (ft)		3	0		2	0	43	0		1	128	
Queue Length 95th (ft)		22	0		16	0	#174	193		8	405	
Internal Link Dist (ft)		415			302			1435			1711	
Turn Bay Length (ft)			100			100	225			225		
Base Capacity (vph)		265	337		287	377	308	2990		307	2843	
Starvation Cap Reductn		0	0		0	0	0	0		0	0	
Spillback Cap Reductn		0	0		0	0	0	0		0	0	
Storage Cap Reductn		0	0		0	0	0	0		0	0	
Reduced v/c Ratio		0.04	0.04		0.02	0.01	0.42	0.28		0.01	0.49	

Intersection Summary			
Area Type:	Other		
Cycle Length: 114			
Actuated Cycle Length: 76.2			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.66			
Intersection Signal Delay: 12.8		Intersection LOS: B	
Intersection Capacity Utilization 58.7%		ICU Level of Service B	
Analysis Period (min) 15			

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

Splits and Phases: 6: Lowell Road (Route 3A) & Hampshire Drive/Oblate Drive

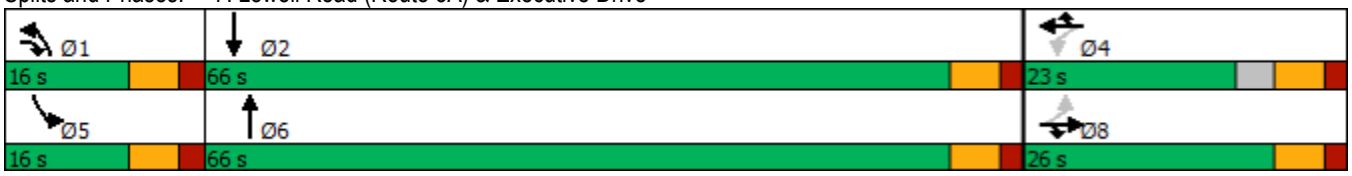


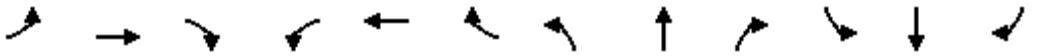
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	36	2	10	141	30	101	164	423	60	107	1001	203
Future Volume (vph)	36	2	10	141	30	101	164	423	60	107	1001	203
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	15	12	12	13	11	12	12	11	12	12
Storage Length (ft)	0		225	0		80	350		0	150		0
Storage Lanes	0		1	0		1	1		0	1		0
Taper Length (ft)	25			25			50			50		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850			0.850		0.981			0.975	
Flt Protected		0.955			0.961		0.950			0.950		
Satd. Flow (prot)	0	1577	1558	0	1811	1620	1711	3409	0	1728	3451	0
Flt Permitted		0.485			0.731		0.950			0.950		
Satd. Flow (perm)	0	801	1558	0	1378	1620	1711	3409	0	1728	3451	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			30			101		23			35	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		492			577			1791			1168	
Travel Time (s)		11.2			13.1			40.7			26.5	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	12%	0%	14%	1%	0%	3%	2%	4%	3%	1%	2%	2%
Adj. Flow (vph)	45	3	13	176	38	126	180	465	66	118	1100	223
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	48	13	0	214	126	180	531	0	118	1323	0
Turn Type	Perm	NA	pt+ov	Perm	NA	Prot	Prot	NA		Prot	NA	
Protected Phases		8	8 1		4	4	1	6		5	2	
Permitted Phases	8			4								
Detector Phase	8	8	8 1	4	4	4	1	6		5	2	
Switch Phase												
Minimum Initial (s)	3.0	3.0		5.0	5.0	5.0	3.0	8.0		3.0	8.0	
Minimum Split (s)	9.0	9.0		11.0	11.0	11.0	9.0	14.0		9.0	14.0	
Total Split (s)	26.0	26.0		23.0	23.0	23.0	16.0	66.0		16.0	66.0	
Total Split (%)	24.1%	24.1%		21.3%	21.3%	21.3%	14.8%	61.1%		14.8%	61.1%	
Maximum Green (s)	20.0	20.0		17.0	17.0	17.0	10.0	60.0		10.0	60.0	
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.0			6.0	6.0	6.0	6.0		6.0	6.0	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	2.0	2.0		2.0	2.0	2.0	2.0	3.0		2.0	3.0	
Recall Mode	None	None		None	None	None	None	Min		None	Min	
Act Effct Green (s)		12.1	25.6		15.9	15.9	10.2	44.3		9.1	43.3	
Actuated g/C Ratio		0.14	0.29		0.18	0.18	0.12	0.51		0.10	0.49	
v/c Ratio		0.44	0.03		0.86	0.34	0.91	0.31		0.66	0.77	
Control Delay		49.0	3.3		68.4	14.0	87.0	12.5		59.3	20.8	
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		49.0	3.3		68.4	14.0	87.0	12.5		59.3	20.8	
LOS		D	A		E	B	F	B		E	C	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		39.2			48.2			31.4			23.9	
Approach LOS		D			D			C			C	
Queue Length 50th (ft)		23	0		115	12	101	85		64	296	
Queue Length 95th (ft)		59	4		#238	52	#277	117		#167	375	
Internal Link Dist (ft)		412			497			1711			1088	
Turn Bay Length (ft)			225			80	350			150		
Base Capacity (vph)		186	552		320	454	198	2385		201	2418	
Starvation Cap Reductn		0	0		0	0	0	0		0	0	
Spillback Cap Reductn		0	0		0	0	0	0		0	0	
Storage Cap Reductn		0	0		0	0	0	0		0	0	
Reduced v/c Ratio		0.26	0.02		0.67	0.28	0.91	0.22		0.59	0.55	

Intersection Summary			
Area Type:	Other		
Cycle Length: 108			
Actuated Cycle Length: 87.7			
Natural Cycle: 70			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.91			
Intersection Signal Delay: 29.6		Intersection LOS: C	
Intersection Capacity Utilization 74.3%		ICU Level of Service D	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 7: Lowell Road (Route 3A) & Executive Drive





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	11	0	48	6	0	10	4	534	1	16	1267	3
Future Volume (vph)	11	0	48	6	0	10	4	534	1	16	1267	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	14	13	13	11	11	12	12	12	12
Storage Length (ft)	0		50	0		100	210		325	125		0
Storage Lanes	0		1	0		1	1		1	1		0
Taper Length (ft)	25			25			50			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850			
Flt Protected		0.950			0.950		0.950			0.950		
Satd. Flow (prot)	0	1719	1583	0	1865	1669	1745	1766	1615	1805	1863	0
Flt Permitted		0.752			0.748		0.950			0.950		
Satd. Flow (perm)	0	1361	1583	0	1469	1669	1745	1766	1615	1805	1863	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			91			55			91			
Link Speed (mph)		10			30			30			30	
Link Distance (ft)		598			262			1405			549	
Travel Time (s)		40.8			6.0			31.9			12.5	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.91	0.91	0.91	0.95	0.95	0.95
Heavy Vehicles (%)	5%	0%	2%	0%	0%	0%	0%	4%	0%	0%	2%	0%
Adj. Flow (vph)	14	0	60	8	0	13	4	587	1	17	1334	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	14	60	0	8	13	4	587	1	17	1337	0
Turn Type	Perm	NA	Prot	Perm	NA	pm+ov	Prot	NA	Prot	Prot	NA	
Protected Phases		8	8		4	5	1	6	6	5	2	
Permitted Phases	8			4		4						
Detector Phase	8	8	8	4	4	5	1	6	6	5	2	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	10.0	10.0	5.0	10.0	
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0	11.0	11.0	16.0	16.0	11.0	16.0	
Total Split (s)	16.0	16.0	16.0	16.0	16.0	16.0	16.0	116.0	116.0	16.0	116.0	
Total Split (%)	8.9%	8.9%	8.9%	8.9%	8.9%	8.9%	8.9%	64.4%	64.4%	8.9%	64.4%	
Maximum Green (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	110.0	110.0	10.0	110.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)		6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Lead/Lag						Lead	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?						Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	1.5	1.5	1.5	1.5	1.5	1.5	1.0	1.5	1.5	1.5	1.5	
Recall Mode	None	None	None	None	None	None	None	C-Min	C-Min	None	C-Min	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)		6.3	6.3		6.3	18.3	5.0	147.7	147.7	6.0	153.1	
Actuated g/C Ratio		0.04	0.04		0.04	0.10	0.03	0.82	0.82	0.03	0.85	
v/c Ratio		0.30	0.42		0.16	0.06	0.08	0.41	0.00	0.28	0.84	
Control Delay		100.2	12.4		90.2	0.5	89.0	8.0	0.0	95.9	16.8	

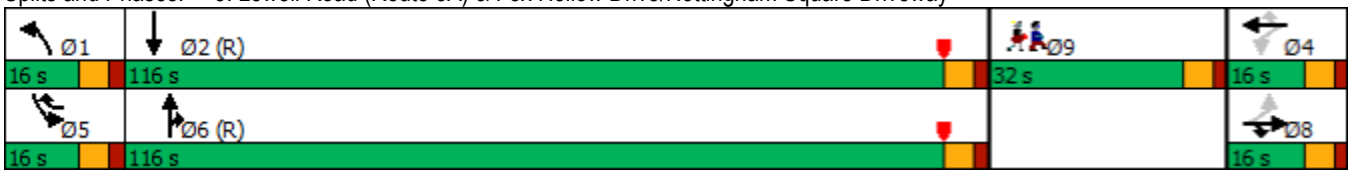
Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	32.0
Total Split (s)	32.0
Total Split (%)	18%
Maximum Green (s)	26.0
Yellow Time (s)	4.0
All-Red Time (s)	2.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	5.0
Flash Dont Walk (s)	21.0
Pedestrian Calls (#/hr)	5
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	22.6	
Total Delay		100.2	12.4		90.2	0.5	89.0	8.0	0.0	95.9	39.4	
LOS		F	B		F	A	F	A	A	F	D	
Approach Delay		29.0			34.7			8.6			40.1	
Approach LOS		C			C			A			D	
Queue Length 50th (ft)		17	0		9	0	5	143	0	20	390	
Queue Length 95th (ft)		40	3		27	0	20	475	0	50	#2059	
Internal Link Dist (ft)		518			182			1325			469	
Turn Bay Length (ft)			50			100	210		325	125		
Base Capacity (vph)		75	173		81	254	96	1449	1341	100	1585	
Starvation Cap Reductn		0	0		0	0	0	0	0	0	295	
Spillback Cap Reductn		0	0		0	0	0	0	0	0	0	
Storage Cap Reductn		0	0		0	0	0	0	0	0	0	
Reduced v/c Ratio		0.19	0.35		0.10	0.05	0.04	0.41	0.00	0.17	1.04	

Intersection Summary	
Area Type:	Other
Cycle Length: 180	
Actuated Cycle Length: 180	
Offset: 0 (0%), Referenced to phase 2:SBT and 6:NBT, Start of Yellow, Master Intersection	
Natural Cycle: 150	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.84	
Intersection Signal Delay: 30.5	Intersection LOS: C
Intersection Capacity Utilization 90.2%	ICU Level of Service E
Analysis Period (min) 15	

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

Splits and Phases: 8: Lowell Road (Route 3A) & Fox Hollow Drive/Nottingham Square Driveway



Lane Group	Ø9
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø9
Lane Configurations							
Traffic Volume (vph)	232	73	468	84	64	1058	
Future Volume (vph)	232	73	468	84	64	1058	
Ideal Flow (vphpl)	1900	1000	1900	1900	1900	1900	
Lane Width (ft)	12	12	13	13	12	12	
Storage Length (ft)	0	75		0	150		
Storage Lanes	1	1		0	1		
Taper Length (ft)	25				50		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		0.850	0.980				
Flt Protected	0.950				0.950		
Satd. Flow (prot)	1787	802	1838	0	1719	1863	
Flt Permitted	0.950				0.950		
Satd. Flow (perm)	1787	802	1838	0	1719	1863	
Right Turn on Red		Yes		Yes			
Satd. Flow (RTOR)		29	8				
Link Speed (mph)	20		30			30	
Link Distance (ft)	512		549			1309	
Travel Time (s)	17.5		12.5			29.8	
Peak Hour Factor	0.88	0.88	0.92	0.92	0.96	0.96	
Heavy Vehicles (%)	1%	6%	5%	3%	5%	2%	
Adj. Flow (vph)	264	83	509	91	67	1102	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	264	83	600	0	67	1102	
Turn Type	Prot	pt+ov	NA		Prot	NA	
Protected Phases	4	4 5	6		5	2	9
Permitted Phases							
Detector Phase	4	4 5	6		5	2	
Switch Phase							
Minimum Initial (s)	5.0		10.0		3.0	10.0	5.0
Minimum Split (s)	11.0		16.0		9.0	16.0	35.0
Total Split (s)	26.0		116.0		13.0	116.0	35.0
Total Split (%)	13.7%		61.1%		6.8%	61.1%	18%
Maximum Green (s)	20.0		110.0		7.0	110.0	29.0
Yellow Time (s)	4.0		4.0		4.0	4.0	4.0
All-Red Time (s)	2.0		2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0		0.0	0.0	
Total Lost Time (s)	6.0		6.0		6.0	6.0	
Lead/Lag			Lag		Lead		
Lead-Lag Optimize?			Yes		Yes		
Vehicle Extension (s)	1.5		1.5		1.5	1.5	3.0
Recall Mode	None		C-Min		None	C-Min	None
Walk Time (s)							5.0
Flash Dont Walk (s)							24.0
Pedestrian Calls (#/hr)							5
Act Effct Green (s)	20.0	33.0	138.0		7.0	151.0	
Actuated g/C Ratio	0.11	0.17	0.73		0.04	0.79	
v/c Ratio	1.40	0.51	0.45		1.06	0.74	
Control Delay	265.8	57.8	13.6		211.0	16.5	

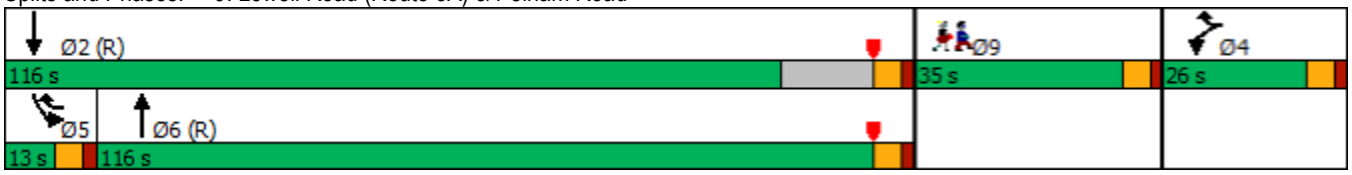
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø9
Queue Delay	0.0	0.0	3.3		0.0	0.0	
Total Delay	265.8	57.8	17.0		211.0	16.5	
LOS	F	E	B		F	B	
Approach Delay	216.0		17.0			27.7	
Approach LOS	F		B			C	
Queue Length 50th (ft)	~439	62	238		~91	488	
Queue Length 95th (ft)	#620	125	572		#210	1449	
Internal Link Dist (ft)	432		469			1229	
Turn Bay Length (ft)		75			150		
Base Capacity (vph)	188	163	1337		63	1480	
Starvation Cap Reductn	0	0	620		0	0	
Spillback Cap Reductn	0	0	0		0	0	
Storage Cap Reductn	0	0	0		0	0	
Reduced v/c Ratio	1.40	0.51	0.84		1.06	0.74	

Intersection Summary			
Area Type:	Other		
Cycle Length: 190			
Actuated Cycle Length: 190			
Offset: 30 (16%), Referenced to phase 2:SBT and 6:NBT, Start of Yellow			
Natural Cycle: 150			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.40			
Intersection Signal Delay: 55.5		Intersection LOS: E	
Intersection Capacity Utilization 78.5%		ICU Level of Service D	
Analysis Period (min) 15			

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

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

Splits and Phases: 9: Lowell Road (Route 3A) & Pelham Road



2022 No-Build Weekday P.M.

Lane Group	EBL	EBR	EBR2	NBL	NBT	NBR	SBL	SBT	SBR	NWL2	NWL	NWR
Lane Configurations												
Traffic Volume (vph)	36	2	2	1	582	1	856	387	13	4	0	623
Future Volume (vph)	36	2	2	1	582	1	856	387	13	4	0	623
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	12	12	10	12	12	12	12	12
Storage Length (ft)	0	50		200		300	775		0		100	0
Storage Lanes	1	1		1		1	1		0		1	1
Taper Length (ft)	25			100			75				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00
Frt		0.850						0.995				0.850
Flt Protected	0.950			0.950			0.950				0.950	
Satd. Flow (prot)	1668	1507	0	1685	3610	0	1685	3557	0	0	1805	1615
Flt Permitted	0.950			0.950			0.950				0.950	
Satd. Flow (perm)	1668	1507	0	1685	3610	0	1685	3557	0	0	1805	1615
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		191						4				264
Link Speed (mph)	30				35			35			35	
Link Distance (ft)	591				758			1733			622	
Travel Time (s)	13.4				14.8			33.8			12.1	
Peak Hour Factor	0.80	0.80	0.80	0.91	0.91	0.91	0.90	0.90	0.90	0.91	0.91	0.91
Heavy Vehicles (%)	1%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%
Adj. Flow (vph)	45	3	3	1	640	1	951	430	14	4	0	685
Shared Lane Traffic (%)												
Lane Group Flow (vph)	45	6	0	1	641	0	951	444	0	0	4	685
Turn Type	Prot	Prot		Prot	NA		Prot	NA		Prot	Prot	pt+ov
Protected Phases	4	4		1	6		5	2		3	3	3 5
Permitted Phases												
Detector Phase	4	4		1	6		5	2		3	3	3 5
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	8.0		8.0	8.0		5.0	5.0	
Minimum Split (s)	11.0	11.0		11.0	14.0		14.0	14.0		11.0	11.0	
Total Split (s)	21.0	21.0		16.0	32.0		51.0	67.0		16.0	16.0	
Total Split (%)	17.5%	17.5%		13.3%	26.7%		42.5%	55.8%		13.3%	13.3%	
Maximum Green (s)	15.0	15.0		10.0	26.0		45.0	61.0		10.0	10.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0			0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0			6.0	
Lead/Lag	Lag	Lag		Lead	Lag		Lead	Lag		Lead	Lead	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	4.0		4.0	4.0		4.0	4.0	
Recall Mode	None	None		None	C-Min		None	C-Min		None	None	
Act Effct Green (s)	8.7	8.7		5.6	25.3		53.6	82.6			10.7	65.5
Actuated g/C Ratio	0.07	0.07		0.05	0.21		0.45	0.69			0.09	0.55
v/c Ratio	0.38	0.02		0.01	0.84		1.26	0.18			0.03	0.68
Control Delay	61.1	0.2		55.0	56.5		151.5	4.1			51.0	14.3
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0			0.0	0.0
Total Delay	61.1	0.2		55.0	56.5		151.5	4.1			51.0	14.3
LOS	E	A		D	E		F	A			D	B

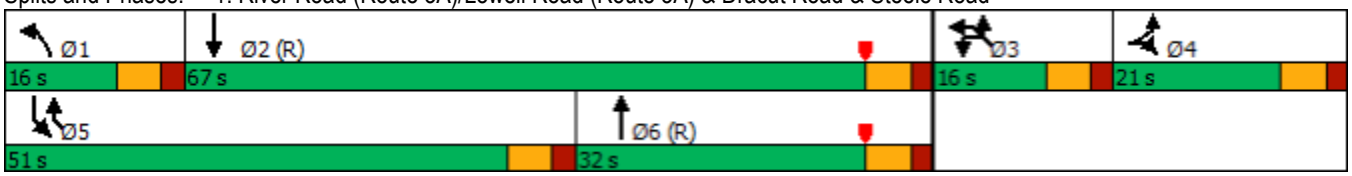
Lane Group	EBL	EBR	EBR2	NBL	NBT	NBR	SBL	SBT	SBR	NWL2	NWL	NWR
Approach Delay	53.9				56.5			104.6			14.6	
Approach LOS	D				E			F			B	
Queue Length 50th (ft)	34	0		1	250		~961	18			3	144
Queue Length 95th (ft)	63	0		7	321		#1216	65			15	316
Internal Link Dist (ft)	511				678			1653			542	
Turn Bay Length (ft)		50		200			775				100	
Base Capacity (vph)	208	355		140	782		753	2448			160	1001
Starvation Cap Reductn	0	0		0	0		0	0			0	0
Spillback Cap Reductn	0	0		0	0		0	0			0	0
Storage Cap Reductn	0	0		0	0		0	0			0	0
Reduced v/c Ratio	0.22	0.02		0.01	0.82		1.26	0.18			0.03	0.68

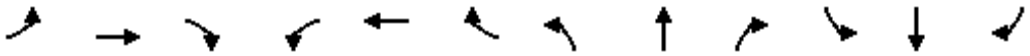
Intersection Summary	
Area Type:	Other
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 5 (4%), Referenced to phase 2:SBT and 6:NBT, Start of Yellow	
Natural Cycle: 140	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.26	
Intersection Signal Delay: 70.2	Intersection LOS: E
Intersection Capacity Utilization 91.9%	ICU Level of Service F
Analysis Period (min) 15	
Description: NHDOT Int. No.: S-229-04	

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

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

Splits and Phases: 1: River Road (Route 3A)/Lowell Road (Route 3A) & Dracut Road & Steele Road





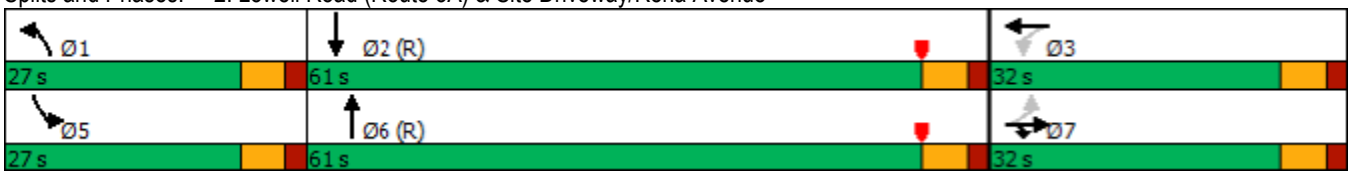
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	50	0	17	1	0	16	2	1252	5	24	1230	6
Future Volume (vph)	50	0	17	1	0	16	2	1252	5	24	1230	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	13	13	13	10	12	12	12	12	12
Storage Length (ft)	0		50	0		0	300		0	350		0
Storage Lanes	0		1	0		0	1		0	1		0
Taper Length (ft)	25			25			75			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850		0.871			0.999			0.999	
Flt Protected		0.950			0.998		0.950			0.950		
Satd. Flow (prot)	0	1668	1507	0	1707	0	1685	3606	0	1805	3605	0
Flt Permitted		0.744			0.985		0.950			0.950		
Satd. Flow (perm)	0	1306	1507	0	1684	0	1685	3606	0	1805	3605	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			82		82						1	
Link Speed (mph)		15			30			35			35	
Link Distance (ft)		510			557			1733			980	
Travel Time (s)		23.2			12.7			33.8			19.1	
Peak Hour Factor	0.84	0.84	0.84	0.80	0.80	0.80	0.93	0.93	0.93	0.90	0.90	0.90
Heavy Vehicles (%)	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	9%
Adj. Flow (vph)	60	0	20	1	0	20	2	1346	5	27	1367	7
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	60	20	0	21	0	2	1351	0	27	1374	0
Turn Type	Perm	NA	Prot	Perm	NA		Prot	NA		Prot	NA	
Protected Phases		7	7		3		1	6		5	2	
Permitted Phases	7			3								
Detector Phase	7	7	7	3	3		1	6		5	2	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0		11.0	16.0		11.0	16.0	
Total Split (s)	32.0	32.0	32.0	32.0	32.0		27.0	61.0		27.0	61.0	
Total Split (%)	26.7%	26.7%	26.7%	26.7%	26.7%		22.5%	50.8%		22.5%	50.8%	
Maximum Green (s)	26.0	26.0	26.0	26.0	26.0		21.0	55.0		21.0	55.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.0	6.0		6.0		6.0	6.0		6.0	6.0	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Recall Mode	None	None	None	None	None		None	C-Min		None	C-Min	
Act Effct Green (s)		11.8	11.8		10.0		6.8	90.8		8.3	97.3	
Actuated g/C Ratio		0.10	0.10		0.08		0.06	0.76		0.07	0.81	
v/c Ratio		0.47	0.09		0.10		0.02	0.50		0.22	0.47	
Control Delay		61.9	0.8		0.9		63.0	7.0		47.0	3.9	
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Delay		61.9	0.8		0.9		63.0	7.0		47.0	3.9	
LOS		E	A		A		E	A		D	A	

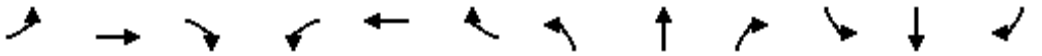
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		46.6			0.9			7.1			4.7	
Approach LOS		D			A			A			A	
Queue Length 50th (ft)		45	0		0		0	160		20	76	
Queue Length 95th (ft)		80	0		0		m1	236		m36	168	
Internal Link Dist (ft)		430			477			1653			900	
Turn Bay Length (ft)			50				300			350		
Base Capacity (vph)		282	390		429		294	2728		315	2924	
Starvation Cap Reductn		0	0		0		0	0		0	0	
Spillback Cap Reductn		0	0		0		0	0		0	0	
Storage Cap Reductn		0	0		0		0	0		0	0	
Reduced v/c Ratio		0.21	0.05		0.05		0.01	0.50		0.09	0.47	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 74 (62%), Referenced to phase 2:SBT and 6:NBT, Start of Yellow			
Natural Cycle: 55			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.50			
Intersection Signal Delay: 7.0		Intersection LOS: A	
Intersection Capacity Utilization 57.5%		ICU Level of Service B	
Analysis Period (min) 15			
Description: NHDOT Int. No.: S-229-03			

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

Splits and Phases: 2: Lowell Road (Route 3A) & Site Driveway/Rena Avenue





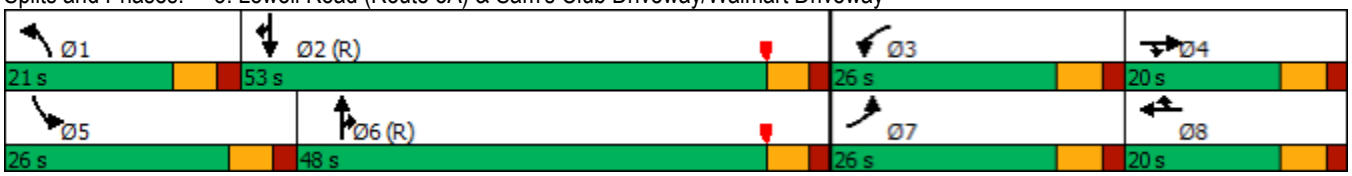
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	248	13	113	88	20	244	95	1157	74	310	1065	197
Future Volume (vph)	248	13	113	88	20	244	95	1157	74	310	1065	197
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	13	12	12	12	13	12	12	12	12	12	12
Storage Length (ft)	175		175	150		200	350		175	350		0
Storage Lanes	2		1	2		1	2		1	2		1
Taper Length (ft)	25			75			125			100		
Lane Util. Factor	0.97	1.00	1.00	0.97	1.00	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3502	1963	1615	3502	1900	1669	3467	3610	1615	3502	3574	1615
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3502	1963	1615	3502	1900	1669	3467	3610	1615	3502	3574	1615
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			136			246			136			190
Link Speed (mph)		30			30			35			30	
Link Distance (ft)		401			449			980			1189	
Travel Time (s)		9.1			10.2			19.1			27.0	
Peak Hour Factor	0.88	0.88	0.88	0.86	0.86	0.86	0.89	0.89	0.89	0.91	0.91	0.91
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	1%	0%
Adj. Flow (vph)	282	15	128	102	23	284	107	1300	83	341	1170	216
Shared Lane Traffic (%)												
Lane Group Flow (vph)	282	15	128	102	23	284	107	1300	83	341	1170	216
Turn Type	Prot	NA	Prot	Prot	NA	Prot	Prot	NA	Prot	Prot	NA	Prot
Protected Phases	7	4	4	3	8	8	1	6	6	5	2	2
Permitted Phases												
Detector Phase	7	4	4	3	8	8	1	6	6	5	2	2
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0	11.0	11.0	16.0	16.0	11.0	16.0	16.0
Total Split (s)	26.0	20.0	20.0	26.0	20.0	20.0	21.0	48.0	48.0	26.0	53.0	53.0
Total Split (%)	21.7%	16.7%	16.7%	21.7%	16.7%	16.7%	17.5%	40.0%	40.0%	21.7%	44.2%	44.2%
Maximum Green (s)	20.0	14.0	14.0	20.0	14.0	14.0	15.0	42.0	42.0	20.0	47.0	47.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	6.0	6.0	4.0	6.0	6.0
Recall Mode	None	None	None	None	None	None	None	C-Min	C-Min	None	C-Min	C-Min
Act Effct Green (s)	15.8	16.1	16.1	9.8	10.2	10.2	10.0	52.7	52.7	17.4	60.0	60.0
Actuated g/C Ratio	0.13	0.13	0.13	0.08	0.08	0.08	0.08	0.44	0.44	0.14	0.50	0.50
v/c Ratio	0.61	0.06	0.38	0.36	0.14	0.78	0.37	0.82	0.11	0.67	0.66	0.24
Control Delay	54.8	42.9	9.6	55.1	50.9	25.0	70.5	23.7	0.5	61.9	21.1	1.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	54.8	42.9	9.6	55.1	50.9	25.0	70.5	23.7	0.5	61.9	21.1	1.5
LOS	D	D	A	E	D	C	E	C	A	E	C	A

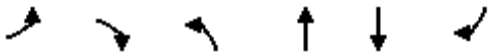
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		40.8			33.9			25.8			26.7	
Approach LOS		D			C			C			C	
Queue Length 50th (ft)	107	10	0	39	17	28	45	289	3	135	401	0
Queue Length 95th (ft)	144	29	44	63	41	102	76	#670	0	157	532	m21
Internal Link Dist (ft)		321			369			900			1109	
Turn Bay Length (ft)	175		175	150		200	350		175	350		
Base Capacity (vph)	583	279	346	583	222	413	433	1584	785	583	1786	902
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.48	0.05	0.37	0.17	0.10	0.69	0.25	0.82	0.11	0.58	0.66	0.24

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 64 (53%), Referenced to phase 2:SBT and 6:NBT, Start of Yellow			
Natural Cycle: 75			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.82			
Intersection Signal Delay: 28.5		Intersection LOS: C	
Intersection Capacity Utilization 69.6%		ICU Level of Service C	
Analysis Period (min) 15			
Description: NHDOT Int. No.: S-229-06			

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Lowell Road (Route 3A) & Sam's Club Driveway/Walmart Driveway





Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	1479	1198	1056	627	444	1233
Future Volume (vph)	1479	1198	1056	627	444	1233
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	14	14	12	12	12	12
Storage Length (ft)	0	0	525			200
Storage Lanes	2	1	2			1
Taper Length (ft)	25		100			
Lane Util. Factor	0.97	1.00	0.97	0.95	0.95	0.88
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	3698	1706	3502	3610	3610	2814
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	3698	1706	3502	3610	3610	2814
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		519				1301
Link Speed (mph)	35			30	30	
Link Distance (ft)	929			1189	999	
Travel Time (s)	18.1			27.0	22.7	
Peak Hour Factor	0.96	0.96	0.94	0.94	0.89	0.89
Heavy Vehicles (%)	1%	1%	0%	0%	0%	1%
Adj. Flow (vph)	1541	1248	1123	667	499	1385
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1541	1248	1123	667	499	1385
Turn Type	Prot	Free	Prot	NA	NA	Free
Protected Phases	3		1	6	2	
Permitted Phases		Free				Free
Detector Phase	3		1	6	2	
Switch Phase						
Minimum Initial (s)	10.0		7.0	10.0	10.0	
Minimum Split (s)	16.0		15.0	17.0	17.0	
Total Split (s)	50.0		40.0	67.0	30.0	
Total Split (%)	41.7%		33.3%	55.8%	25.0%	
Maximum Green (s)	44.0		32.0	60.0	23.0	
Yellow Time (s)	4.0		4.0	4.0	4.0	
All-Red Time (s)	2.0		4.0	3.0	3.0	
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	
Total Lost Time (s)	6.0		8.0	7.0	7.0	
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	4.0		4.0	4.0	4.0	
Recall Mode	None		None	C-Min	C-Min	
Act Effct Green (s)	45.4	120.0	32.0	61.6	21.6	120.0
Actuated g/C Ratio	0.38	1.00	0.27	0.51	0.18	1.00
v/c Ratio	1.10	0.73	1.20	0.36	0.77	0.49
Control Delay	92.6	2.8	128.6	9.1	55.4	0.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	92.6	2.8	128.6	9.1	55.4	0.6
LOS	F	A	F	A	E	A

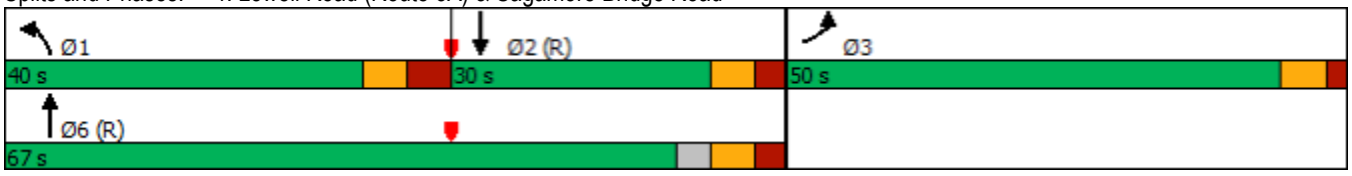
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Approach Delay	52.4			84.1	15.1	
Approach LOS	D			F	B	
Queue Length 50th (ft)	~717	0	~560	147	192	0
Queue Length 95th (ft)	#854	0	#673	120	250	0
Internal Link Dist (ft)	849			1109	919	
Turn Bay Length (ft)			525			200
Base Capacity (vph)	1400	1706	933	1895	691	2814
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.10	0.73	1.20	0.35	0.72	0.49

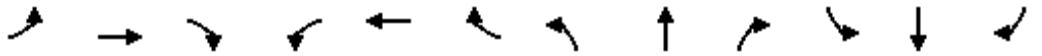
Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 100 (83%), Referenced to phase 2:SBT and 6:NBT, Start of Green			
Natural Cycle: 150			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.20			
Intersection Signal Delay: 50.3		Intersection LOS: D	
Intersection Capacity Utilization 101.3%		ICU Level of Service G	
Analysis Period (min) 15			
Description: NHDOT Int. No.: S-229-02			

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

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

Splits and Phases: 4: Lowell Road (Route 3A) & Sagamore Bridge Road





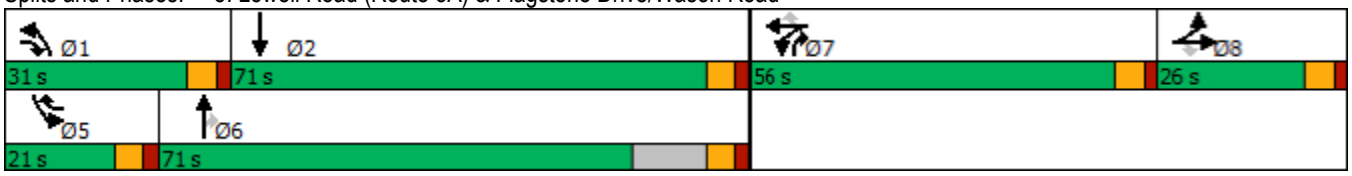
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	52	92	433	435	17	28	137	1003	988	72	841	5
Future Volume (vph)	52	92	433	435	17	28	137	1003	988	72	841	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	11	11	11	12	12	12	12	12	12
Storage Length (ft)	0		250	200		75	575		275	175		300
Storage Lanes	0		1	1		1	1		1	1		1
Taper Length (ft)	25			50			175			75		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.91	0.91
Frt			0.850			0.850			0.850		0.999	
Flt Protected		0.982		0.950	0.956		0.950			0.950		
Satd. Flow (prot)	0	1866	1599	1658	1668	1546	1787	3574	1615	1805	5131	0
Flt Permitted		0.982		0.950	0.956		0.950			0.950		
Satd. Flow (perm)	0	1866	1599	1658	1668	1546	1787	3574	1615	1805	5131	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			61			89			283		1	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		805			586			999			1515	
Travel Time (s)		18.3			13.3			22.7			34.4	
Peak Hour Factor	0.80	0.80	0.80	0.90	0.90	0.90	0.94	0.94	0.94	0.88	0.88	0.88
Heavy Vehicles (%)	0%	0%	1%	0%	0%	1%	1%	1%	0%	0%	1%	0%
Adj. Flow (vph)	65	115	541	483	19	31	146	1067	1051	82	956	6
Shared Lane Traffic (%)				48%								
Lane Group Flow (vph)	0	180	541	251	251	31	146	1067	1051	82	962	0
Turn Type	Split	NA	pm+ov	Split	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	
Protected Phases	8	8	1	7	7	5	1	6	7	5	2	
Permitted Phases			8			7			6			
Detector Phase	8	8	1	7	7	5	1	6	7	5	2	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	10.0	5.0	5.0	10.0	
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0	11.0	11.0	16.0	11.0	11.0	16.0	
Total Split (s)	26.0	26.0	31.0	56.0	56.0	21.0	31.0	71.0	56.0	21.0	71.0	
Total Split (%)	14.1%	14.1%	16.8%	30.4%	30.4%	11.4%	16.8%	38.6%	30.4%	11.4%	38.6%	
Maximum Green (s)	20.0	20.0	25.0	50.0	50.0	15.0	25.0	65.0	50.0	15.0	65.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)		6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Lead/Lag	Lag	Lag	Lead	Lead	Lead	Lead	Lead	Lag	Lead	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	3.0	2.5	2.5	3.0	
Recall Mode	None	None	None	None	None	None	None	Min	None	None	Min	
Act Effct Green (s)		18.7	50.6	40.9	40.9	52.5	25.7	55.3	102.4	11.6	41.2	
Actuated g/C Ratio		0.12	0.33	0.27	0.27	0.35	0.17	0.37	0.68	0.08	0.27	
v/c Ratio		0.78	0.94	0.56	0.56	0.05	0.48	0.82	0.89	0.59	0.69	
Control Delay		90.4	70.5	53.6	53.4	0.2	68.4	51.0	24.7	90.4	52.3	
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.7	0.0	0.0	
Total Delay		90.4	70.5	53.6	53.4	0.2	68.4	51.0	26.4	90.4	52.3	
LOS		F	E	D	D	A	E	D	C	F	D	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		75.4			50.4			40.7			55.3	
Approach LOS		E			D			D			E	
Queue Length 50th (ft)		187	521	227	227	0	144	557	643	85	339	
Queue Length 95th (ft)		#276	#696	358	358	0	239	663	992	151	379	
Internal Link Dist (ft)		725			506			919			1435	
Turn Bay Length (ft)			250	200		75	575		275	175		
Base Capacity (vph)		254	575	564	568	632	304	1825	1277	184	2271	
Starvation Cap Reductn		0	0	0	0	0	0	0	101	0	0	
Spillback Cap Reductn		0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn		0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio		0.71	0.94	0.45	0.44	0.05	0.48	0.58	0.89	0.45	0.42	

Intersection Summary			
Area Type:	Other		
Cycle Length: 184			
Actuated Cycle Length: 151.2			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.94			
Intersection Signal Delay: 50.6		Intersection LOS: D	
Intersection Capacity Utilization 88.1%		ICU Level of Service E	
Analysis Period (min) 15			

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

Splits and Phases: 5: Lowell Road (Route 3A) & Flagstone Drive/Wason Road

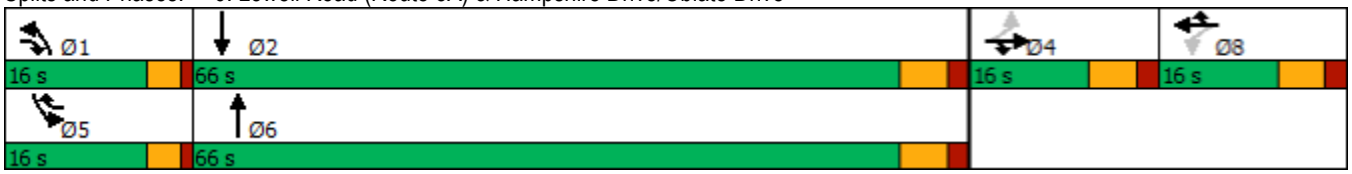


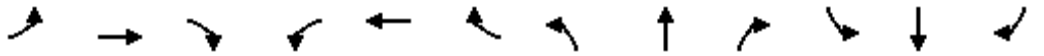
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	26	2	105	10	1	4	16	1065	12	5	816	7
Future Volume (vph)	26	2	105	10	1	4	16	1065	12	5	816	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	13	13	13	12	12	12	11	12	12
Storage Length (ft)	0		100	0		100	225		0	225		0
Storage Lanes	0		1	0		1	1		0	1		0
Taper Length (ft)	25			25			50			50		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850			0.850		0.998			0.999	
Flt Protected		0.956			0.956		0.950			0.950		
Satd. Flow (prot)	0	1816	1583	0	1877	1669	1736	3568	0	1745	3571	0
Flt Permitted		0.441					0.950			0.950		
Satd. Flow (perm)	0	838	1583	0	1963	1669	1736	3568	0	1745	3571	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			131			86		1			1	
Link Speed (mph)		30			10			30			30	
Link Distance (ft)		495			382			1515			1791	
Travel Time (s)		11.3			26.0			34.4			40.7	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.95	0.95	0.95	0.87	0.87	0.87
Heavy Vehicles (%)	0%	0%	2%	0%	0%	0%	4%	1%	0%	0%	1%	0%
Adj. Flow (vph)	33	3	131	13	1	5	17	1121	13	6	938	8
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	36	131	0	14	5	17	1134	0	6	946	0
Turn Type	Perm	NA	pt+ov	Perm	NA	pt+ov	Prot	NA		Prot	NA	
Protected Phases		4	4 1		8	8 5	1	6		5	2	
Permitted Phases	4			8								
Detector Phase	4	4	4 1	8	8	8 5	1	6		5	2	
Switch Phase												
Minimum Initial (s)	3.0	3.0		3.0	3.0		4.0	15.0		4.0	15.0	
Minimum Split (s)	9.0	9.0		9.0	9.0		8.0	21.0		8.0	21.0	
Total Split (s)	16.0	16.0		16.0	16.0		16.0	66.0		16.0	66.0	
Total Split (%)	14.0%	14.0%		14.0%	14.0%		14.0%	57.9%		14.0%	57.9%	
Maximum Green (s)	10.0	10.0		10.0	10.0		12.0	60.0		12.0	60.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		3.0	4.0		3.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		1.0	2.0		1.0	2.0	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.0			6.0		4.0	6.0		4.0	6.0	
Lead/Lag	Lead	Lead		Lag	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		2.0	3.0		2.0	3.0	
Recall Mode	None	None		None	None		None	Min		None	Min	
Act Effct Green (s)		8.7	16.7		6.6	9.6	5.5	37.2		5.1	28.8	
Actuated g/C Ratio		0.14	0.26		0.10	0.15	0.09	0.58		0.08	0.45	
v/c Ratio		0.32	0.26		0.07	0.02	0.11	0.55		0.04	0.59	
Control Delay		39.3	5.4		34.2	0.0	36.1	11.4		36.6	15.9	
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		39.3	5.4		34.2	0.0	36.1	11.4		36.6	15.9	
LOS		D	A		C	A	D	B		D	B	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		12.7			25.2			11.8			16.1	
Approach LOS		B			C			B			B	
Queue Length 50th (ft)		10	0		4	0	5	90		2	112	
Queue Length 95th (ft)		46	25		23	0	30	310		15	238	
Internal Link Dist (ft)		415			302			1435			1711	
Turn Bay Length (ft)			100			100	225			225		
Base Capacity (vph)		138	611		325	424	344	3177		346	3179	
Starvation Cap Reductn		0	0		0	0	0	0		0	0	
Spillback Cap Reductn		0	0		0	0	0	0		0	0	
Storage Cap Reductn		0	0		0	0	0	0		0	0	
Reduced v/c Ratio		0.26	0.21		0.04	0.01	0.05	0.36		0.02	0.30	

Intersection Summary			
Area Type:	Other		
Cycle Length: 114			
Actuated Cycle Length: 64.3			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.59			
Intersection Signal Delay: 13.7		Intersection LOS: B	
Intersection Capacity Utilization 51.5%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 6: Lowell Road (Route 3A) & Hampshire Drive/Oblate Drive



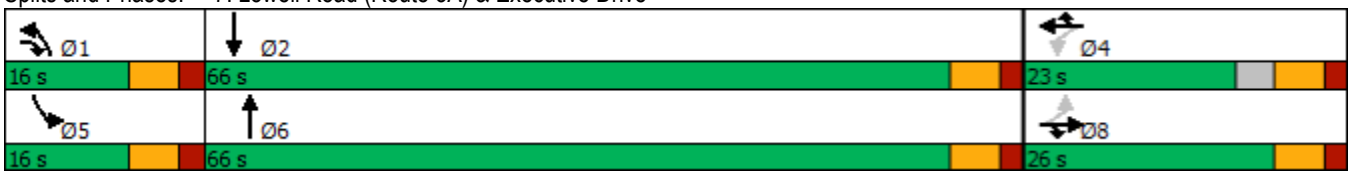


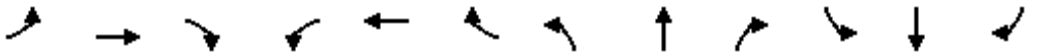
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	225	3	79	23	2	22	52	973	7	16	660	40
Future Volume (vph)	225	3	79	23	2	22	52	973	7	16	660	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	15	12	12	13	11	12	12	11	12	12
Storage Length (ft)	0		225	0		80	350		0	150		0
Storage Lanes	0		1	0		1	1		0	1		0
Taper Length (ft)	25			25			50			50		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850			0.850		0.999			0.992	
Flt Protected		0.953			0.957		0.950			0.950		
Satd. Flow (prot)	0	1733	1742	0	1818	1620	1678	3571	0	1646	3540	0
Flt Permitted		0.706			0.675		0.950			0.950		
Satd. Flow (perm)	0	1284	1742	0	1282	1620	1678	3571	0	1646	3540	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			99			91		1			9	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		492			577			1791			1168	
Travel Time (s)		11.2			13.1			40.7			26.5	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.97	0.97	0.97	0.92	0.92	0.92
Heavy Vehicles (%)	1%	0%	2%	0%	0%	3%	4%	1%	0%	6%	1%	4%
Adj. Flow (vph)	281	4	99	29	3	28	54	1003	7	17	717	43
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	285	99	0	32	28	54	1010	0	17	760	0
Turn Type	Perm	NA	pt+ov	Perm	NA	Prot	Prot	NA		Prot	NA	
Protected Phases		8	8 1		4	4	1	6		5	2	
Permitted Phases	8			4								
Detector Phase	8	8	8 1	4	4	4	1	6		5	2	
Switch Phase												
Minimum Initial (s)	3.0	3.0		5.0	5.0	5.0	3.0	8.0		3.0	8.0	
Minimum Split (s)	9.0	9.0		11.0	11.0	11.0	9.0	14.0		9.0	14.0	
Total Split (s)	26.0	26.0		23.0	23.0	23.0	16.0	66.0		16.0	66.0	
Total Split (%)	24.1%	24.1%		21.3%	21.3%	21.3%	14.8%	61.1%		14.8%	61.1%	
Maximum Green (s)	20.0	20.0		17.0	17.0	17.0	10.0	60.0		10.0	60.0	
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.0			6.0	6.0	6.0	6.0		6.0	6.0	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	2.0	2.0		2.0	2.0	2.0	2.0	3.0		2.0	3.0	
Recall Mode	None	None		None	None	None	None	Min		None	Min	
Act Effct Green (s)		20.6	33.5		13.5	13.5	6.8	31.2		5.4	23.0	
Actuated g/C Ratio		0.31	0.51		0.20	0.20	0.10	0.47		0.08	0.35	
v/c Ratio		0.71	0.11		0.12	0.07	0.32	0.60		0.13	0.61	
Control Delay		36.5	3.5		22.8	0.3	35.6	14.7		34.8	20.4	
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		36.5	3.5		22.8	0.3	35.6	14.7		34.8	20.4	
LOS		D	A		C	A	D	B		C	C	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		28.0			12.3			15.7			20.7	
Approach LOS		C			B			B			C	
Queue Length 50th (ft)		99	0		9	0	20	133		6	134	
Queue Length 95th (ft)		#246	20		32	0	61	262		28	196	
Internal Link Dist (ft)		412			497			1711			1088	
Turn Bay Length (ft)			225			80	350			150		
Base Capacity (vph)		399	1018		398	566	260	3189		256	3163	
Starvation Cap Reductn		0	0		0	0	0	0		0	0	
Spillback Cap Reductn		0	0		0	0	0	0		0	0	
Storage Cap Reductn		0	0		0	0	0	0		0	0	
Reduced v/c Ratio		0.71	0.10		0.08	0.05	0.21	0.32		0.07	0.24	

Intersection Summary			
Area Type:	Other		
Cycle Length: 108			
Actuated Cycle Length: 66.1			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.71			
Intersection Signal Delay: 19.4		Intersection LOS: B	
Intersection Capacity Utilization 64.7%		ICU Level of Service C	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 7: Lowell Road (Route 3A) & Executive Drive





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	2	25	31	0	48	27	1158	15	56	668	11
Future Volume (vph)	9	2	25	31	0	48	27	1158	15	56	668	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	14	13	13	11	11	12	12	12	12
Storage Length (ft)	0		50	0		100	210		325	125		0
Storage Lanes	0		1	0		1	1		1	1		0
Taper Length (ft)	25			25			50			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850		0.998	
Flt Protected		0.962			0.950		0.950			0.950		
Satd. Flow (prot)	0	1828	1583	0	1865	1669	1745	1818	1615	1805	1878	0
Flt Permitted		0.746			0.748		0.950			0.950		
Satd. Flow (perm)	0	1417	1583	0	1469	1669	1745	1818	1615	1805	1878	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			91			60			91		1	
Link Speed (mph)		10			30			30			30	
Link Distance (ft)		598			262			1405			549	
Travel Time (s)		40.8			6.0			31.9			12.5	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.99	0.99	0.99	0.94	0.94	0.94
Heavy Vehicles (%)	0%	0%	2%	0%	0%	0%	0%	1%	0%	0%	1%	0%
Adj. Flow (vph)	11	3	31	39	0	60	27	1170	15	60	711	12
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	14	31	0	39	60	27	1170	15	60	723	0
Turn Type	Perm	NA	Prot	Perm	NA	pm+ov	Prot	NA	Prot	Prot	NA	
Protected Phases		8	8		4	5	1	6	6	5	2	
Permitted Phases	8			4		4						
Detector Phase	8	8	8	4	4	5	1	6	6	5	2	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	10.0	10.0	5.0	10.0	
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0	11.0	11.0	16.0	16.0	11.0	16.0	
Total Split (s)	16.0	16.0	16.0	16.0	16.0	16.0	16.0	116.0	116.0	16.0	116.0	
Total Split (%)	8.9%	8.9%	8.9%	8.9%	8.9%	8.9%	8.9%	64.4%	64.4%	8.9%	64.4%	
Maximum Green (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	110.0	110.0	10.0	110.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)		6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Lead/Lag						Lead	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?						Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	1.5	1.5	1.5	1.5	1.5	1.5	1.0	1.5	1.5	1.5	1.5	
Recall Mode	None	None	None	None	None	None	None	C-Min	C-Min	None	C-Min	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)		8.1	8.1		8.1	20.7	6.6	140.9	140.9	8.8	146.5	
Actuated g/C Ratio		0.04	0.04		0.04	0.12	0.04	0.78	0.78	0.05	0.81	
v/c Ratio		0.22	0.20		0.59	0.25	0.42	0.82	0.01	0.68	0.47	
Control Delay		90.1	2.8		117.7	16.3	103.9	21.3	0.0	119.5	10.1	

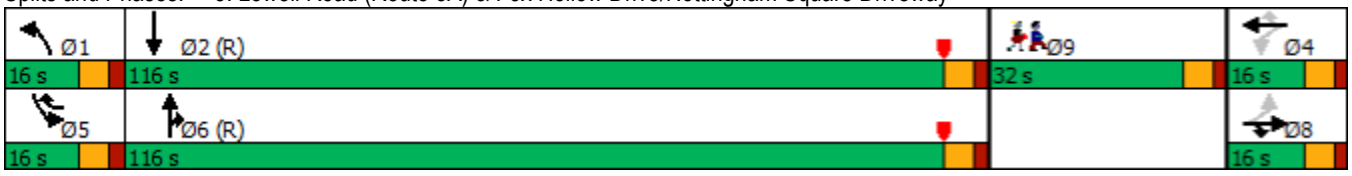
Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	32.0
Total Split (s)	32.0
Total Split (%)	18%
Maximum Green (s)	26.0
Yellow Time (s)	4.0
All-Red Time (s)	2.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	5.0
Flash Dont Walk (s)	21.0
Pedestrian Calls (#/hr)	5
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	2.0	
Total Delay		90.1	2.8		117.7	16.3	103.9	21.3	0.0	119.5	12.1	
LOS		F	A		F	B	F	C	A	F	B	
Approach Delay		29.9			56.2			22.9			20.3	
Approach LOS		C			E			C			C	
Queue Length 50th (ft)		16	0		46	0	32	701	0	71	219	
Queue Length 95th (ft)		40	0		81	36	70	#1772	0	#134	652	
Internal Link Dist (ft)		518			182			1325			469	
Turn Bay Length (ft)			50			100	210		325	125		
Base Capacity (vph)		78	173		81	255	96	1423	1284	100	1528	
Starvation Cap Reductn		0	0		0	0	0	0	0	0	622	
Spillback Cap Reductn		0	0		0	0	0	0	0	0	0	
Storage Cap Reductn		0	0		0	0	0	0	0	0	0	
Reduced v/c Ratio		0.18	0.18		0.48	0.24	0.28	0.82	0.01	0.60	0.80	

Intersection Summary

Area Type: Other
Cycle Length: 180
Actuated Cycle Length: 180
Offset: 0 (0%), Referenced to phase 2:SBT and 6:NBT, Start of Yellow, Master Intersection
Natural Cycle: 150
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.82
Intersection Signal Delay: 23.6 Intersection LOS: C
Intersection Capacity Utilization 84.3% ICU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 8: Lowell Road (Route 3A) & Fox Hollow Drive/Nottingham Square Driveway



Lane Group	Ø9
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø9
Lane Configurations							
Traffic Volume (vph)	86	142	1098	109	110	658	
Future Volume (vph)	86	142	1098	109	110	658	
Ideal Flow (vphpl)	1900	1000	1900	1900	1900	1900	
Lane Width (ft)	12	12	13	13	12	12	
Storage Length (ft)	0	75		0	150		
Storage Lanes	1	1		0	1		
Taper Length (ft)	25				50		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		0.850	0.988				
Flt Protected	0.950				0.950		
Satd. Flow (prot)	1805	850	1922	0	1805	1881	
Flt Permitted	0.950				0.950		
Satd. Flow (perm)	1805	850	1922	0	1805	1881	
Right Turn on Red		Yes		Yes			
Satd. Flow (RTOR)		151	4				
Link Speed (mph)	20		30			30	
Link Distance (ft)	512		549			1309	
Travel Time (s)	17.5		12.5			29.8	
Peak Hour Factor	0.87	0.87	0.98	0.98	0.89	0.89	
Heavy Vehicles (%)	0%	0%	1%	0%	0%	1%	
Adj. Flow (vph)	99	163	1120	111	124	739	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	99	163	1231	0	124	739	
Turn Type	Prot	pt+ov	NA		Prot	NA	
Protected Phases	4	4 5	6		5	2	9
Permitted Phases							
Detector Phase	4	4 5	6		5	2	
Switch Phase							
Minimum Initial (s)	5.0		10.0		3.0	10.0	5.0
Minimum Split (s)	11.0		16.0		9.0	16.0	35.0
Total Split (s)	26.0		116.0		13.0	116.0	35.0
Total Split (%)	13.7%		61.1%		6.8%	61.1%	18%
Maximum Green (s)	20.0		110.0		7.0	110.0	29.0
Yellow Time (s)	4.0		4.0		4.0	4.0	4.0
All-Red Time (s)	2.0		2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0		0.0	0.0	
Total Lost Time (s)	6.0		6.0		6.0	6.0	
Lead/Lag			Lag		Lead		
Lead-Lag Optimize?			Yes		Yes		
Vehicle Extension (s)	1.5		1.5		1.5	1.5	3.0
Recall Mode	None		C-Min		None	C-Min	None
Walk Time (s)							5.0
Flash Dont Walk (s)							24.0
Pedestrian Calls (#/hr)							5
Act Effct Green (s)	14.3	27.3	143.7		7.0	156.7	
Actuated g/C Ratio	0.08	0.14	0.76		0.04	0.82	
v/c Ratio	0.73	0.65	0.85		1.88	0.48	
Control Delay	114.7	24.5	24.5		487.8	8.6	

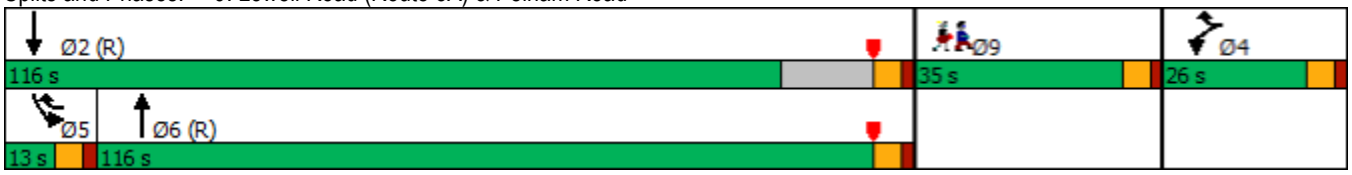
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø9
Queue Delay	0.0	0.0	47.9		0.0	0.0	
Total Delay	114.7	24.5	72.4		487.8	8.6	
LOS	F	C	E		F	A	
Approach Delay	58.6		72.4			77.4	
Approach LOS	E		E			E	
Queue Length 50th (ft)	123	13	790		~235	172	
Queue Length 95th (ft)	184	91	#2011		#384	631	
Internal Link Dist (ft)	432		469			1229	
Turn Bay Length (ft)		75			150		
Base Capacity (vph)	190	249	1455		66	1551	
Starvation Cap Reductn	0	0	350		0	0	
Spillback Cap Reductn	0	0	0		0	0	
Storage Cap Reductn	0	0	0		0	0	
Reduced v/c Ratio	0.52	0.65	1.11		1.88	0.48	

Intersection Summary			
Area Type:	Other		
Cycle Length: 190			
Actuated Cycle Length: 190			
Offset: 30 (16%), Referenced to phase 2:SBT and 6:NBT, Start of Yellow			
Natural Cycle: 150			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.88			
Intersection Signal Delay: 72.7		Intersection LOS: E	
Intersection Capacity Utilization 91.1%		ICU Level of Service F	
Analysis Period (min) 15			

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

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

Splits and Phases: 9: Lowell Road (Route 3A) & Pelham Road



Appendix F

Capacity Analysis – 2032 No-Build Traffic Conditions

2032 No-Build Weekday A.M.

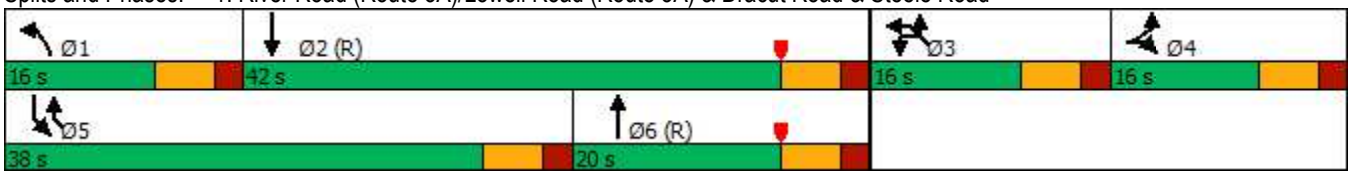
Lane Group	EBL	EBR	EBR2	NBL	NBT	NBR	SBL	SBT	SBR	NWL	NWR
Lane Configurations											
Traffic Volume (vph)	2	0	2	0	289	0	514	555	14	1	901
Future Volume (vph)	2	0	2	0	289	0	514	555	14	1	901
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	12	12	10	12	12	12	12
Storage Length (ft)	0	50		200		300	775		0	100	0
Storage Lanes	1	1		1		1	1		0	1	1
Taper Length (ft)	25			100			75			25	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00
Frt		0.850						0.996			0.850
Flt Protected	0.950						0.950			0.950	
Satd. Flow (prot)	1685	1133	0	1773	3574	0	1652	3561	0	1805	1583
Flt Permitted	0.950						0.950			0.950	
Satd. Flow (perm)	1685	1133	0	1773	3574	0	1652	3561	0	1805	1583
Right Turn on Red			Yes			Yes			Yes		Yes
Satd. Flow (RTOR)		526						3			467
Link Speed (mph)	30				35			35		35	
Link Distance (ft)	591				758			1733		622	
Travel Time (s)	13.4				14.8			33.8		12.1	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.92	0.92	0.92	0.86	0.86
Heavy Vehicles (%)	0%	0%	33%	0%	1%	0%	2%	1%	0%	0%	2%
Adj. Flow (vph)	3	0	3	0	361	0	559	603	15	1	1048
Shared Lane Traffic (%)											
Lane Group Flow (vph)	3	3	0	0	361	0	559	618	0	1	1048
Turn Type	Prot	Prot		Prot	NA		Prot	NA		Prot	pt+ov
Protected Phases	4	4		1	6		5	2		3	3 5
Permitted Phases											
Detector Phase	4	4		1	6		5	2		3	3 5
Switch Phase											
Minimum Initial (s)	5.0	5.0		5.0	8.0		8.0	8.0		5.0	
Minimum Split (s)	11.0	11.0		11.0	14.0		14.0	14.0		11.0	
Total Split (s)	16.0	16.0		16.0	20.0		38.0	42.0		16.0	
Total Split (%)	17.8%	17.8%		17.8%	22.2%		42.2%	46.7%		17.8%	
Maximum Green (s)	10.0	10.0		10.0	14.0		32.0	36.0		10.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	
Lead/Lag	Lag	Lag		Lead	Lag		Lead	Lag		Lead	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	
Vehicle Extension (s)	3.0	3.0		3.0	4.0		4.0	4.0		4.0	
Recall Mode	None	None		None	C-Min		None	C-Min		None	
Act Effct Green (s)	5.8	5.8			13.4		45.5	64.9		10.6	60.9
Actuated g/C Ratio	0.06	0.06			0.15		0.51	0.72		0.12	0.68
v/c Ratio	0.03	0.01			0.68		0.67	0.24		0.00	0.86
Control Delay	40.0	0.0			43.2		26.8	2.5		36.0	16.0
Queue Delay	0.0	0.0			0.0		0.0	0.0		0.0	0.0
Total Delay	40.0	0.0			43.2		26.8	2.5		36.0	16.0
LOS	D	A			D		C	A		D	B

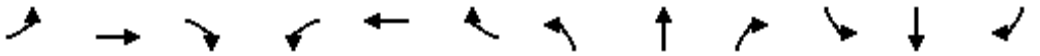
Lane Group	EBL	EBR	EBR2	NBL	NBT	NBR	SBL	SBT	SBR	NWL	NWR
Approach Delay	20.0				43.2			14.0		16.0	
Approach LOS	B				D			B		B	
Queue Length 50th (ft)	2	0			102		251	104		1	182
Queue Length 95th (ft)	9	0			131		#455	2		5	#726
Internal Link Dist (ft)	511				678			1653		542	
Turn Bay Length (ft)		50					775			100	
Base Capacity (vph)	187	593			555		836	2570		212	1222
Starvation Cap Reductn	0	0			0		0	0		0	0
Spillback Cap Reductn	0	0			0		0	0		0	0
Storage Cap Reductn	0	0			0		0	0		0	0
Reduced v/c Ratio	0.02	0.01			0.65		0.67	0.24		0.00	0.86

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 0 (0%), Referenced to phase 2:SBT and 6:NBT, Start of Yellow			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.86			
Intersection Signal Delay: 18.9		Intersection LOS: B	
Intersection Capacity Utilization 73.8%		ICU Level of Service D	
Analysis Period (min) 15			
Description: NHDOT Int. No.: S-229-04			

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

Splits and Phases: 1: River Road (Route 3A)/Lowell Road (Route 3A) & Dracut Road & Steele Road





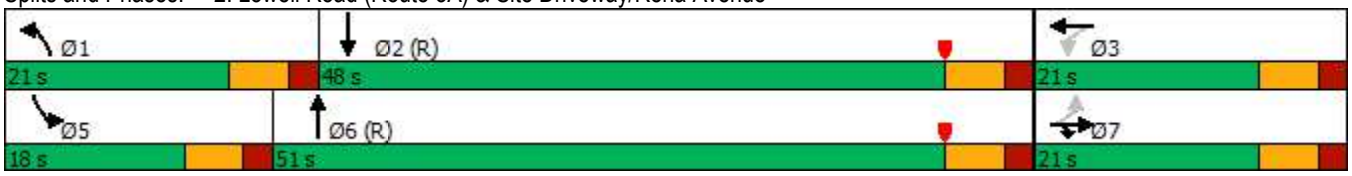
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	0	2	1	1	36	15	1226	2	8	1085	51
Future Volume (vph)	3	0	2	1	1	36	15	1226	2	8	1085	51
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	13	13	13	10	12	12	12	12	12
Storage Length (ft)	0		50	0		0	300		0	350		0
Storage Lanes	0		1	0		0	1		0	1		0
Taper Length (ft)	25			25			75			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850		0.871						0.993	
Flt Protected		0.950			0.999		0.950			0.950		
Satd. Flow (prot)	0	1685	1133	0	1657	0	1685	3538	0	1570	3518	0
Flt Permitted		0.851			0.991		0.950			0.950		
Satd. Flow (perm)	0	1509	1133	0	1644	0	1685	3538	0	1570	3518	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			109		42						7	
Link Speed (mph)		15			30			35			35	
Link Distance (ft)		510			557			1733			980	
Travel Time (s)		23.2			12.7			33.8			19.1	
Peak Hour Factor	0.80	0.80	0.80	0.85	0.85	0.85	0.85	0.85	0.85	0.95	0.95	0.95
Heavy Vehicles (%)	0%	0%	33%	9%	0%	3%	0%	2%	20%	15%	2%	0%
Adj. Flow (vph)	4	0	3	1	1	42	18	1442	2	8	1142	54
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	4	3	0	44	0	18	1444	0	8	1196	0
Turn Type	Perm	NA	Prot	Perm	NA		Prot	NA		Prot	NA	
Protected Phases		7	7		3		1	6		5	2	
Permitted Phases	7			3								
Detector Phase	7	7	7	3	3		1	6		5	2	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0		11.0	16.0		11.0	16.0	
Total Split (s)	21.0	21.0	21.0	21.0	21.0		21.0	51.0		18.0	48.0	
Total Split (%)	23.3%	23.3%	23.3%	23.3%	23.3%		23.3%	56.7%		20.0%	53.3%	
Maximum Green (s)	15.0	15.0	15.0	15.0	15.0		15.0	45.0		12.0	42.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.0	6.0		6.0		6.0	6.0		6.0	6.0	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Recall Mode	None	None	None	None	None		None	C-Min		None	C-Min	
Act Effct Green (s)		7.3	7.3		7.3		7.6	75.2		7.1	72.2	
Actuated g/C Ratio		0.08	0.08		0.08		0.08	0.84		0.08	0.80	
v/c Ratio		0.03	0.02		0.26		0.13	0.49		0.06	0.42	
Control Delay		38.0	0.0		17.0		40.7	4.2		25.9	9.6	
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Delay		38.0	0.0		17.0		40.7	4.2		25.9	9.6	
LOS		D	A		B		D	A		C	A	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		21.7			17.0			4.7			9.7	
Approach LOS		C			B			A			A	
Queue Length 50th (ft)		2	0		1		10	137		4	196	
Queue Length 95th (ft)		10	0		29		m12	234		m10	220	
Internal Link Dist (ft)		430			477			1653			900	
Turn Bay Length (ft)			50				300			350		
Base Capacity (vph)		251	279		309		280	2957		209	2824	
Starvation Cap Reductn		0	0		0		0	0		0	0	
Spillback Cap Reductn		0	0		0		0	0		0	0	
Storage Cap Reductn		0	0		0		0	0		0	0	
Reduced v/c Ratio		0.02	0.01		0.14		0.06	0.49		0.04	0.42	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 51 (57%), Referenced to phase 2:SBT and 6:NBT, Start of Yellow			
Natural Cycle: 55			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.49			
Intersection Signal Delay: 7.2		Intersection LOS: A	
Intersection Capacity Utilization 54.9%		ICU Level of Service A	
Analysis Period (min) 15			
Description: NHDOT Int. No.: S-229-03			

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

Splits and Phases: 2: Lowell Road (Route 3A) & Site Driveway/Rena Avenue



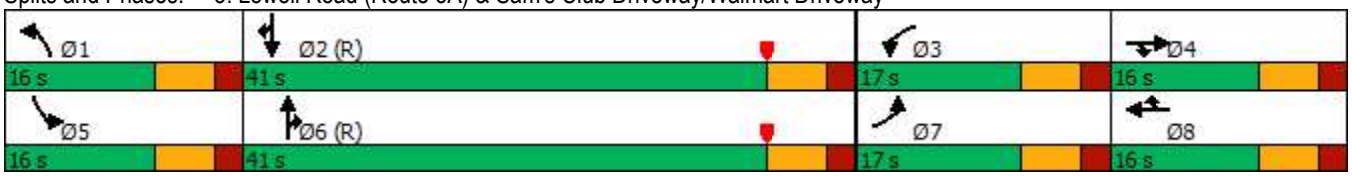
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	101	4	55	15	5	71	62	1172	27	85	1062	63
Future Volume (vph)	101	4	55	15	5	71	62	1172	27	85	1062	63
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	13	12	12	12	13	12	12	12	12	12	12
Storage Length (ft)	175		175	150		200	350		175	350		0
Storage Lanes	2		1	2		1	2		1	2		1
Taper Length (ft)	25			75			125			100		
Lane Util. Factor	0.97	1.00	1.00	0.97	1.00	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3467	1852	1568	3502	1900	1589	3467	3539	1583	3433	3574	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3467	1852	1568	3502	1900	1589	3467	3539	1583	3433	3574	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			182			182			182			182
Link Speed (mph)		30			30			35			30	
Link Distance (ft)		401			449			980			1189	
Travel Time (s)		9.1			10.2			19.1			27.0	
Peak Hour Factor	0.93	0.93	0.93	0.88	0.88	0.88	0.87	0.87	0.87	0.96	0.96	0.96
Heavy Vehicles (%)	1%	6%	3%	0%	0%	5%	1%	2%	2%	2%	1%	2%
Adj. Flow (vph)	109	4	59	17	6	81	71	1347	31	89	1106	66
Shared Lane Traffic (%)												
Lane Group Flow (vph)	109	4	59	17	6	81	71	1347	31	89	1106	66
Turn Type	Prot	NA	Prot	Prot	NA	Prot	Prot	NA	Prot	Prot	NA	Prot
Protected Phases	7	4	4	3	8	8	1	6	6	5	2	2
Permitted Phases												
Detector Phase	7	4	4	3	8	8	1	6	6	5	2	2
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0	11.0	11.0	16.0	16.0	11.0	16.0	16.0
Total Split (s)	17.0	16.0	16.0	17.0	16.0	16.0	16.0	41.0	41.0	16.0	41.0	41.0
Total Split (%)	18.9%	17.8%	17.8%	18.9%	17.8%	17.8%	17.8%	45.6%	45.6%	17.8%	45.6%	45.6%
Maximum Green (s)	11.0	10.0	10.0	11.0	10.0	10.0	10.0	35.0	35.0	10.0	35.0	35.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	6.0	6.0	4.0	6.0	6.0
Recall Mode	None	None	None	None	None	None	None	C-Min	C-Min	None	C-Min	C-Min
Act Effct Green (s)	9.1	14.0	14.0	7.0	6.9	6.9	8.2	50.2	50.2	8.7	50.6	50.6
Actuated g/C Ratio	0.10	0.16	0.16	0.08	0.08	0.08	0.09	0.56	0.56	0.10	0.56	0.56
v/c Ratio	0.31	0.01	0.15	0.06	0.04	0.28	0.23	0.68	0.03	0.27	0.55	0.07
Control Delay	39.5	34.2	0.8	38.7	38.8	2.4	44.6	15.4	0.0	48.9	16.4	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.5	34.2	0.8	38.7	38.8	2.4	44.6	15.4	0.0	48.9	16.4	0.3
LOS	D	C	A	D	D	A	D	B	A	D	B	A

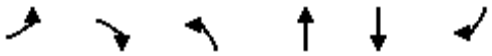
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		26.1			10.4			16.5			17.8	
Approach LOS		C			B			B			B	
Queue Length 50th (ft)	29	2	0	4	3	0	14	277	0	25	290	0
Queue Length 95th (ft)	54	12	0	14	15	0	44	#312	m0	m43	381	m0
Internal Link Dist (ft)		321			369			900			1109	
Turn Bay Length (ft)	175		175	150		200	350		175	350		
Base Capacity (vph)	423	302	408	428	211	338	385	1973	963	386	2010	970
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.26	0.01	0.14	0.04	0.03	0.24	0.18	0.68	0.03	0.23	0.55	0.07

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 51 (57%), Referenced to phase 2:SBT and 6:NBT, Start of Yellow			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.68			
Intersection Signal Delay: 17.4		Intersection LOS: B	
Intersection Capacity Utilization 56.0%		ICU Level of Service B	
Analysis Period (min) 15			
Description: NHDOT Int. No.: S-229-06			

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Lowell Road (Route 3A) & Sam's Club Driveway/Walmart Driveway





Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	1045	943	980	373	370	1673
Future Volume (vph)	1045	943	980	373	370	1673
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	14	14	12	12	12	12
Storage Length (ft)	0	0	525			200
Storage Lanes	2	1	2			1
Taper Length (ft)	25		100			
Lane Util. Factor	0.97	1.00	0.97	0.95	0.95	0.88
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	3662	1689	3467	3539	3539	2760
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	3662	1689	3467	3539	3539	2760
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		770				1282
Link Speed (mph)	35			30	30	
Link Distance (ft)	929			1189	999	
Travel Time (s)	18.1			27.0	22.7	
Peak Hour Factor	0.94	0.94	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	1%	2%	2%	3%
Adj. Flow (vph)	1112	1003	1065	405	402	1818
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1112	1003	1065	405	402	1818
Turn Type	Prot	Free	Prot	NA	NA	Free
Protected Phases	3		1	6	2	
Permitted Phases		Free				Free
Detector Phase	3		1	6	2	
Switch Phase						
Minimum Initial (s)	10.0		7.0	10.0	10.0	
Minimum Split (s)	16.0		15.0	17.0	17.0	
Total Split (s)	32.0		31.0	58.0	27.0	
Total Split (%)	35.6%		34.4%	64.4%	30.0%	
Maximum Green (s)	26.0		23.0	51.0	20.0	
Yellow Time (s)	4.0		4.0	4.0	4.0	
All-Red Time (s)	2.0		4.0	3.0	3.0	
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	
Total Lost Time (s)	6.0		8.0	7.0	7.0	
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	4.0		4.0	4.0	4.0	
Recall Mode	None		None	C-Min	C-Min	
Act Effct Green (s)	29.4	90.0	23.0	47.6	16.6	90.0
Actuated g/C Ratio	0.33	1.00	0.26	0.53	0.18	1.00
v/c Ratio	0.93	0.59	1.20	0.22	0.62	0.66
Control Delay	45.1	1.5	129.6	2.8	37.7	1.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	45.1	1.5	129.6	2.8	37.7	1.2
LOS	D	A	F	A	D	A

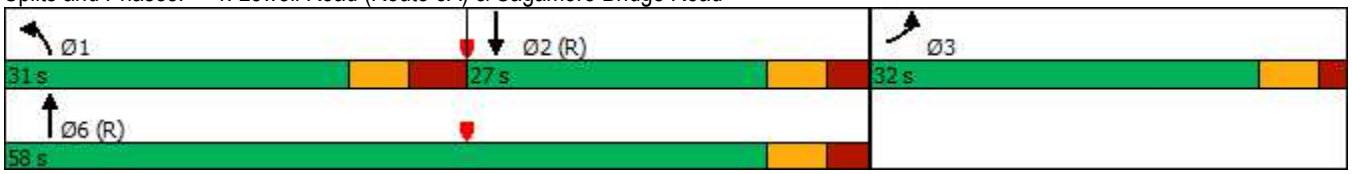
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Approach Delay	24.5			94.7	7.8	
Approach LOS	C			F	A	
Queue Length 50th (ft)	315	0	~378	3	110	0
Queue Length 95th (ft)	#482	0	#491	4	152	0
Internal Link Dist (ft)	849			1109	919	
Turn Bay Length (ft)			525			200
Base Capacity (vph)	1196	1689	886	2005	786	2760
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.93	0.59	1.20	0.20	0.51	0.66

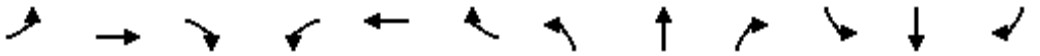
Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 70 (78%), Referenced to phase 2:SBT and 6:NBT, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.20			
Intersection Signal Delay: 35.9		Intersection LOS: D	
Intersection Capacity Utilization 84.7%		ICU Level of Service E	
Analysis Period (min) 15			
Description: NHDOT Int. No.: S-229-02			

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

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

Splits and Phases: 4: Lowell Road (Route 3A) & Sagamore Bridge Road





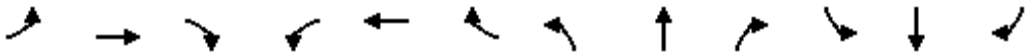
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	67	29	303	677	45	33	328	863	208	17	1144	11
Future Volume (vph)	67	29	303	677	45	33	328	863	208	17	1144	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	11	11	11	12	12	12	12	12	12
Storage Length (ft)	0		250	200		75	575		275	175		300
Storage Lanes	0		1	1		1	1		1	1		1
Taper Length (ft)	25			50			175			75		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.91	0.91
Frt			0.850			0.850			0.850		0.999	
Flt Protected		0.966		0.950	0.958		0.950			0.950		
Satd. Flow (prot)	0	1835	1583	1641	1657	1501	1787	3539	1583	1752	5078	0
Flt Permitted		0.966		0.950	0.958		0.950			0.950		
Satd. Flow (perm)	0	1835	1583	1641	1657	1501	1787	3539	1583	1752	5078	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			53			89			219		1	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		805			586			999			1515	
Travel Time (s)		18.3			13.3			22.7			34.4	
Peak Hour Factor	0.81	0.81	0.81	0.94	0.94	0.94	0.95	0.95	0.95	0.87	0.87	0.87
Heavy Vehicles (%)	0%	0%	2%	1%	0%	4%	1%	2%	2%	3%	2%	6%
Adj. Flow (vph)	83	36	374	720	48	35	345	908	219	20	1315	13
Shared Lane Traffic (%)				47%								
Lane Group Flow (vph)	0	119	374	382	386	35	345	908	219	20	1328	0
Turn Type	Split	NA	pm+ov	Split	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	
Protected Phases	8	8	1	7	7	5	1	6	7	5	2	
Permitted Phases			8			7			6			
Detector Phase	8	8	1	7	7	5	1	6	7	5	2	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	10.0	5.0	5.0	10.0	
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0	11.0	11.0	16.0	11.0	11.0	16.0	
Total Split (s)	26.0	26.0	31.0	56.0	56.0	21.0	31.0	71.0	56.0	21.0	71.0	
Total Split (%)	14.1%	14.1%	16.8%	30.4%	30.4%	11.4%	16.8%	38.6%	30.4%	11.4%	38.6%	
Maximum Green (s)	20.0	20.0	25.0	50.0	50.0	15.0	25.0	65.0	50.0	15.0	65.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)		6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Lead/Lag	Lag	Lag	Lead	Lead	Lead	Lead	Lead	Lag	Lead	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	3.0	2.5	2.5	3.0	
Recall Mode	None	None	None	None	None	None	None	Min	None	None	Min	
Act Effct Green (s)		15.1	46.7	43.0	43.0	50.0	25.5	75.2	124.3	7.0	53.9	
Actuated g/C Ratio		0.09	0.29	0.27	0.27	0.31	0.16	0.46	0.77	0.04	0.33	
v/c Ratio		0.70	0.76	0.88	0.88	0.07	1.23	0.55	0.17	0.27	0.79	
Control Delay		95.6	58.1	79.4	79.4	0.2	184.1	35.1	1.0	90.4	53.1	
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay		95.6	58.1	79.4	79.4	0.2	184.1	35.1	1.0	90.4	53.1	
LOS		F	E	E	E	A	F	D	A	F	D	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		67.1			76.0			64.9			53.7	
Approach LOS		E			E			E			D	
Queue Length 50th (ft)		130	336	418	424	0	~488	396	0	22	488	
Queue Length 95th (ft)		192	433	#655	#660	0	#777	507	23	55	547	
Internal Link Dist (ft)		725			506			919			1435	
Turn Bay Length (ft)			250	200		75	575		275	175		
Base Capacity (vph)		231	494	516	521	597	281	1706	1332	165	2077	
Starvation Cap Reductn		0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn		0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn		0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio		0.52	0.76	0.74	0.74	0.06	1.23	0.53	0.16	0.12	0.64	

Intersection Summary

Area Type: Other
Cycle Length: 184
Actuated Cycle Length: 162
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 1.23
Intersection Signal Delay: 63.7 Intersection LOS: E
Intersection Capacity Utilization 82.1% ICU Level of Service E
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 5: Lowell Road (Route 3A) & Flagstone Drive/Wason Road



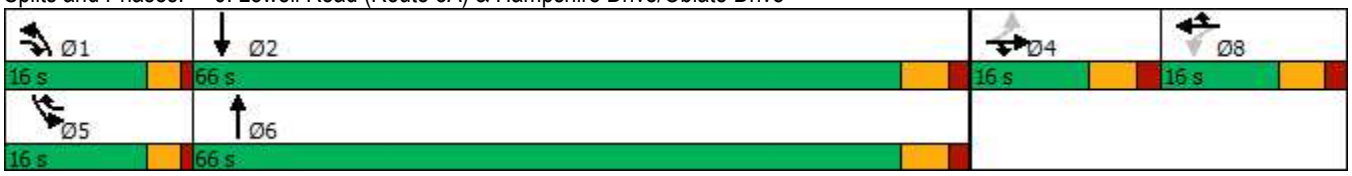
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	0	13	2	2	5	129	822	2	2	1212	65
Future Volume (vph)	9	0	13	2	2	5	129	822	2	2	1212	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	13	13	13	12	12	12	11	12	12
Storage Length (ft)	0		100	0		100	225		0	225		0
Storage Lanes	0		1	0		1	1		0	1		0
Taper Length (ft)	25			25			50			50		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850			0.850					0.992	
Flt Protected		0.950			0.976		0.950			0.950		
Satd. Flow (prot)	0	1719	1455	0	1916	1669	1752	3505	0	1745	3477	0
Flt Permitted							0.950			0.950		
Satd. Flow (perm)	0	1810	1455	0	1963	1669	1752	3505	0	1745	3477	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			86			86					7	
Link Speed (mph)		30			10			30			30	
Link Distance (ft)		495			382			1515			1791	
Travel Time (s)		11.3			26.0			34.4			40.7	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.90	0.90	0.90	0.83	0.83	0.83
Heavy Vehicles (%)	5%	0%	11%	0%	0%	0%	3%	3%	0%	0%	3%	3%
Adj. Flow (vph)	11	0	16	3	3	6	143	913	2	2	1460	78
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	11	16	0	6	6	143	915	0	2	1538	0
Turn Type	Perm	NA	pt+ov	Perm	NA	pt+ov	Prot	NA		Prot	NA	
Protected Phases		4	4 1		8	8 5	1	6		5	2	
Permitted Phases	4			8								
Detector Phase	4	4	4 1	8	8	8 5	1	6		5	2	
Switch Phase												
Minimum Initial (s)	3.0	3.0		3.0	3.0		4.0	15.0		4.0	15.0	
Minimum Split (s)	9.0	9.0		9.0	9.0		8.0	21.0		8.0	21.0	
Total Split (s)	16.0	16.0		16.0	16.0		16.0	66.0		16.0	66.0	
Total Split (%)	14.0%	14.0%		14.0%	14.0%		14.0%	57.9%		14.0%	57.9%	
Maximum Green (s)	10.0	10.0		10.0	10.0		12.0	60.0		12.0	60.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		3.0	4.0		3.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		1.0	2.0		1.0	2.0	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.0			6.0		4.0	6.0		4.0	6.0	
Lead/Lag	Lead	Lead		Lag	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		2.0	3.0		2.0	3.0	
Recall Mode	None	None		None	None		None	Min		None	Min	
Act Effct Green (s)		7.5	11.9		6.4	9.1	11.4	69.2		5.1	50.0	
Actuated g/C Ratio		0.09	0.15		0.08	0.11	0.14	0.86		0.06	0.62	
v/c Ratio		0.07	0.06		0.04	0.02	0.58	0.30		0.02	0.71	
Control Delay		44.6	0.4		46.8	0.2	49.1	5.1		49.0	15.5	
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		44.6	0.4		46.8	0.2	49.1	5.1		49.0	15.5	
LOS		D	A		D	A	D	A		D	B	

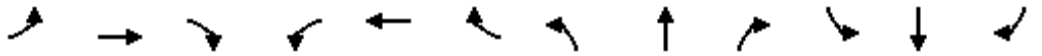
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		18.4			23.5			11.1			15.5	
Approach LOS		B			C			B			B	
Queue Length 50th (ft)		4	0		2	0	56	0		1	160	
Queue Length 95th (ft)		23	0		16	0	#201	217		8	475	
Internal Link Dist (ft)		415			302			1435			1711	
Turn Bay Length (ft)			100			100	225			225		
Base Capacity (vph)		246	322		267	359	286	3014		285	2747	
Starvation Cap Reductn		0	0		0	0	0	0		0	0	
Spillback Cap Reductn		0	0		0	0	0	0		0	0	
Storage Cap Reductn		0	0		0	0	0	0		0	0	
Reduced v/c Ratio		0.04	0.05		0.02	0.02	0.50	0.30		0.01	0.56	

Intersection Summary	
Area Type:	Other
Cycle Length: 114	
Actuated Cycle Length: 80.5	
Natural Cycle: 65	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.71	
Intersection Signal Delay: 13.8	Intersection LOS: B
Intersection Capacity Utilization 63.2%	ICU Level of Service B
Analysis Period (min) 15	

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

Splits and Phases: 6: Lowell Road (Route 3A) & Hampshire Drive/Oblate Drive





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	2	11	141	30	101	181	465	60	107	1104	224
Future Volume (vph)	40	2	11	141	30	101	181	465	60	107	1104	224
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	15	12	12	13	11	12	12	11	12	12
Storage Length (ft)	0		225	0		80	350		0	150		0
Storage Lanes	0		1	0		1	1		0	1		0
Taper Length (ft)	25			25			50			50		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850			0.850		0.983			0.975	
Flt Protected		0.955			0.961		0.950			0.950		
Satd. Flow (prot)	0	1576	1558	0	1811	1620	1711	3416	0	1728	3451	0
Flt Permitted		0.435			0.728		0.950			0.950		
Satd. Flow (perm)	0	718	1558	0	1372	1620	1711	3416	0	1728	3451	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			30			101		21			35	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		492			577			1791			1168	
Travel Time (s)		11.2			13.1			40.7			26.5	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	12%	0%	14%	1%	0%	3%	2%	4%	3%	1%	2%	2%
Adj. Flow (vph)	50	3	14	176	38	126	199	511	66	118	1213	246
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	53	14	0	214	126	199	577	0	118	1459	0
Turn Type	Perm	NA	pt+ov	Perm	NA	Prot	Prot	NA		Prot	NA	
Protected Phases		8	8 1		4	4	1	6		5	2	
Permitted Phases	8			4								
Detector Phase	8	8	8 1	4	4	4	1	6		5	2	
Switch Phase												
Minimum Initial (s)	3.0	3.0		5.0	5.0	5.0	3.0	8.0		3.0	8.0	
Minimum Split (s)	9.0	9.0		11.0	11.0	11.0	9.0	14.0		9.0	14.0	
Total Split (s)	26.0	26.0		23.0	23.0	23.0	16.0	66.0		16.0	66.0	
Total Split (%)	24.1%	24.1%		21.3%	21.3%	21.3%	14.8%	61.1%		14.8%	61.1%	
Maximum Green (s)	20.0	20.0		17.0	17.0	17.0	10.0	60.0		10.0	60.0	
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.0			6.0	6.0	6.0	6.0		6.0	6.0	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	2.0	2.0		2.0	2.0	2.0	2.0	3.0		2.0	3.0	
Recall Mode	None	None		None	None	None	None	Min		None	Min	
Act Effct Green (s)		14.6	29.4		16.5	16.5	10.2	50.0		9.2	49.1	
Actuated g/C Ratio		0.16	0.31		0.18	0.18	0.11	0.53		0.10	0.52	
v/c Ratio		0.48	0.03		0.89	0.34	1.08	0.32		0.70	0.80	
Control Delay		52.8	3.6		76.5	14.4	132.9	12.4		66.2	21.9	
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		52.8	3.6		76.5	14.4	132.9	12.4		66.2	21.9	
LOS		D	A		E	B	F	B		E	C	

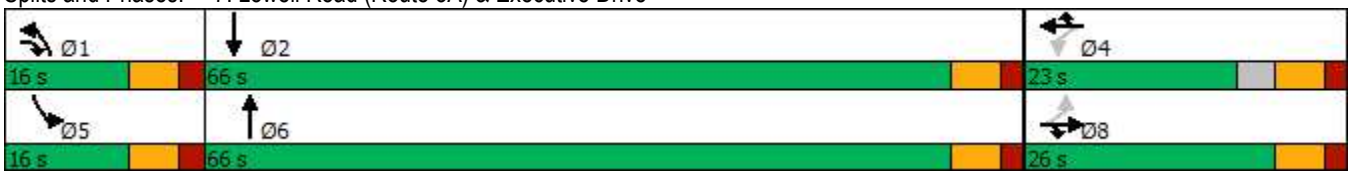
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		42.5			53.5			43.3			25.2	
Approach LOS		D			D			D			C	
Queue Length 50th (ft)		29	0		127	13	~139	94		70	350	
Queue Length 95th (ft)		65	5		#226	51	#318	135		#171	464	
Internal Link Dist (ft)		412			497			1711			1088	
Turn Bay Length (ft)			225			80	350			150		
Base Capacity (vph)		155	517		296	429	184	2221		186	2248	
Starvation Cap Reductn		0	0		0	0	0	0		0	0	
Spillback Cap Reductn		0	0		0	0	0	0		0	0	
Storage Cap Reductn		0	0		0	0	0	0		0	0	
Reduced v/c Ratio		0.34	0.03		0.72	0.29	1.08	0.26		0.63	0.65	

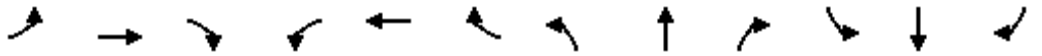
Intersection Summary			
Area Type:	Other		
Cycle Length: 108			
Actuated Cycle Length: 94.1			
Natural Cycle: 80			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.08			
Intersection Signal Delay: 34.2		Intersection LOS: C	
Intersection Capacity Utilization 78.7%		ICU Level of Service D	
Analysis Period (min) 15			

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

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

Splits and Phases: 7: Lowell Road (Route 3A) & Executive Drive





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	11	0	48	6	0	10	4	588	1	16	1397	3
Future Volume (vph)	11	0	48	6	0	10	4	588	1	16	1397	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	14	13	13	11	11	12	12	12	12
Storage Length (ft)	0		50	0		100	210		325	125		0
Storage Lanes	0		1	0		1	1		1	1		0
Taper Length (ft)	25			25			50			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850			
Flt Protected		0.950			0.950		0.950			0.950		
Satd. Flow (prot)	0	1719	1583	0	1865	1669	1745	1766	1615	1805	1863	0
Flt Permitted		0.752			0.748		0.950			0.950		
Satd. Flow (perm)	0	1361	1583	0	1469	1669	1745	1766	1615	1805	1863	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			91			55			91			
Link Speed (mph)		10			30			30			30	
Link Distance (ft)		598			262			1405			549	
Travel Time (s)		40.8			6.0			31.9			12.5	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.91	0.91	0.91	0.95	0.95	0.95
Heavy Vehicles (%)	5%	0%	2%	0%	0%	0%	0%	4%	0%	0%	2%	0%
Adj. Flow (vph)	14	0	60	8	0	13	4	646	1	17	1471	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	14	60	0	8	13	4	646	1	17	1474	0
Turn Type	Perm	NA	Prot	Perm	NA	pm+ov	Prot	NA	Prot	Prot	NA	
Protected Phases		8	8		4	5	1	6	6	5	2	
Permitted Phases	8			4		4						
Detector Phase	8	8	8	4	4	5	1	6	6	5	2	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	10.0	10.0	5.0	10.0	
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0	11.0	11.0	16.0	16.0	11.0	16.0	
Total Split (s)	16.0	16.0	16.0	16.0	16.0	16.0	16.0	116.0	116.0	16.0	116.0	
Total Split (%)	8.9%	8.9%	8.9%	8.9%	8.9%	8.9%	8.9%	64.4%	64.4%	8.9%	64.4%	
Maximum Green (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	110.0	110.0	10.0	110.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)		6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Lead/Lag						Lead	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?						Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	1.5	1.5	1.5	1.5	1.5	1.5	1.0	1.5	1.5	1.5	1.5	
Recall Mode	None	None	None	None	None	None	None	C-Min	C-Min	None	C-Min	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)		6.3	6.3		6.3	18.3	5.0	147.7	147.7	6.0	153.1	
Actuated g/C Ratio		0.04	0.04		0.04	0.10	0.03	0.82	0.82	0.03	0.85	
v/c Ratio		0.30	0.42		0.16	0.06	0.08	0.45	0.00	0.28	0.93	
Control Delay		100.2	12.4		90.2	0.5	89.0	8.6	0.0	95.9	23.5	

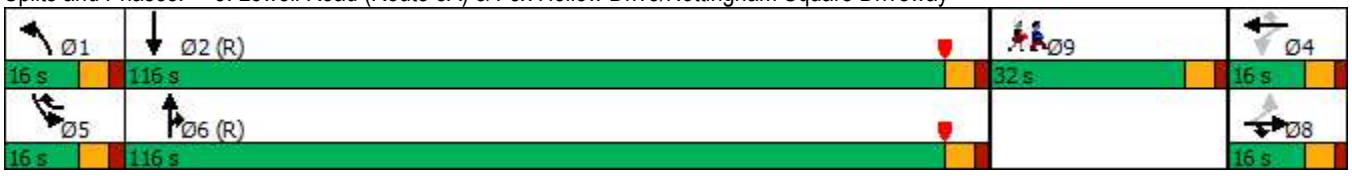
Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	32.0
Total Split (s)	32.0
Total Split (%)	18%
Maximum Green (s)	26.0
Yellow Time (s)	4.0
All-Red Time (s)	2.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	5.0
Flash Dont Walk (s)	21.0
Pedestrian Calls (#/hr)	5
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	33.1	
Total Delay		100.2	12.4		90.2	0.5	89.0	8.6	0.0	95.9	56.6	
LOS		F	B		F	A	F	A	A	F	E	
Approach Delay		29.0			34.7			9.1			57.1	
Approach LOS		C			C			A			E	
Queue Length 50th (ft)		17	0		9	0	5	166	0	20	582	
Queue Length 95th (ft)		40	3		27	0	20	548	0	50	#2389	
Internal Link Dist (ft)		518			182			1325			469	
Turn Bay Length (ft)			50			100	210		325	125		
Base Capacity (vph)		75	173		81	254	96	1449	1341	100	1585	
Starvation Cap Reductn		0	0		0	0	0	0	0	0	209	
Spillback Cap Reductn		0	0		0	0	0	0	0	0	0	
Storage Cap Reductn		0	0		0	0	0	0	0	0	0	
Reduced v/c Ratio		0.19	0.35		0.10	0.05	0.04	0.45	0.00	0.17	1.07	

Intersection Summary			
Area Type:	Other		
Cycle Length: 180			
Actuated Cycle Length: 180			
Offset: 0 (0%), Referenced to phase 2:SBT and 6:NBT, Start of Yellow, Master Intersection			
Natural Cycle: 150			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.93			
Intersection Signal Delay: 42.0		Intersection LOS: D	
Intersection Capacity Utilization 97.0%		ICU Level of Service F	
Analysis Period (min) 15			

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

Splits and Phases: 8: Lowell Road (Route 3A) & Fox Hollow Drive/Nottingham Square Driveway



Lane Group	Ø9
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø9
Lane Configurations							
Traffic Volume (vph)	256	81	515	93	71	1166	
Future Volume (vph)	256	81	515	93	71	1166	
Ideal Flow (vphpl)	1900	1000	1900	1900	1900	1900	
Lane Width (ft)	12	12	13	13	12	12	
Storage Length (ft)	0	75		0	150		
Storage Lanes	1	1		0	1		
Taper Length (ft)	25				50		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		0.850	0.979				
Flt Protected	0.950				0.950		
Satd. Flow (prot)	1787	802	1836	0	1719	1863	
Flt Permitted	0.950				0.950		
Satd. Flow (perm)	1787	802	1836	0	1719	1863	
Right Turn on Red		Yes		Yes			
Satd. Flow (RTOR)		29	8				
Link Speed (mph)	20		30			30	
Link Distance (ft)	512		549			1309	
Travel Time (s)	17.5		12.5			29.8	
Peak Hour Factor	0.88	0.88	0.92	0.92	0.96	0.96	
Heavy Vehicles (%)	1%	6%	5%	3%	5%	2%	
Adj. Flow (vph)	291	92	560	101	74	1215	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	291	92	661	0	74	1215	
Turn Type	Prot	pt+ov	NA		Prot	NA	
Protected Phases	4	4 5	6		5	2	9
Permitted Phases							
Detector Phase	4	4 5	6		5	2	
Switch Phase							
Minimum Initial (s)	5.0		10.0		3.0	10.0	5.0
Minimum Split (s)	11.0		16.0		9.0	16.0	35.0
Total Split (s)	26.0		116.0		13.0	116.0	35.0
Total Split (%)	13.7%		61.1%		6.8%	61.1%	18%
Maximum Green (s)	20.0		110.0		7.0	110.0	29.0
Yellow Time (s)	4.0		4.0		4.0	4.0	4.0
All-Red Time (s)	2.0		2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0		0.0	0.0	
Total Lost Time (s)	6.0		6.0		6.0	6.0	
Lead/Lag			Lag		Lead		
Lead-Lag Optimize?			Yes		Yes		
Vehicle Extension (s)	1.5		1.5		1.5	1.5	3.0
Recall Mode	None		C-Min		None	C-Min	None
Walk Time (s)							5.0
Flash Dont Walk (s)							24.0
Pedestrian Calls (#/hr)							5
Act Effct Green (s)	20.0	33.0	138.0		7.0	151.0	
Actuated g/C Ratio	0.11	0.17	0.73		0.04	0.79	
v/c Ratio	1.55	0.56	0.49		1.17	0.82	
Control Delay	320.3	63.3	14.6		238.7	19.6	

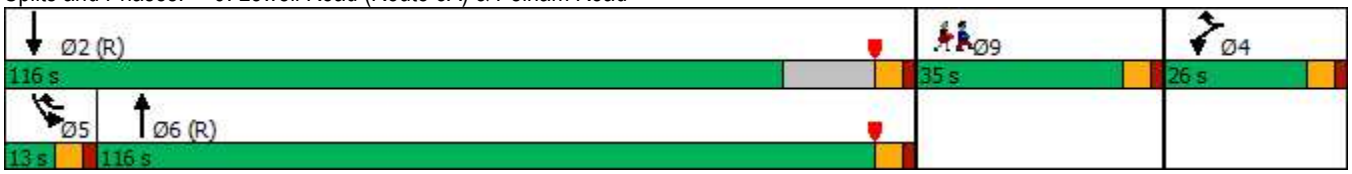
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø9
Queue Delay	0.0	0.0	4.6		0.0	0.0	
Total Delay	320.3	63.3	19.1		238.7	19.6	
LOS	F	E	B		F	B	
Approach Delay	258.6		19.1			32.2	
Approach LOS	F		B			C	
Queue Length 50th (ft)	~509	73	276		~109	632	
Queue Length 95th (ft)	#695	143	661		#233	#1850	
Internal Link Dist (ft)	432		469			1229	
Turn Bay Length (ft)		75			150		
Base Capacity (vph)	188	163	1336		63	1480	
Starvation Cap Reductn	0	0	587		0	0	
Spillback Cap Reductn	0	0	0		0	0	
Storage Cap Reductn	0	0	0		0	0	
Reduced v/c Ratio	1.55	0.56	0.88		1.17	0.82	

Intersection Summary			
Area Type:	Other		
Cycle Length: 190			
Actuated Cycle Length: 190			
Offset: 30 (16%), Referenced to phase 2:SBT and 6:NBT, Start of Yellow			
Natural Cycle: 150			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.55			
Intersection Signal Delay: 65.7		Intersection LOS: E	
Intersection Capacity Utilization 85.6%		ICU Level of Service E	
Analysis Period (min) 15			

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

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

Splits and Phases: 9: Lowell Road (Route 3A) & Pelham Road



2032 No-Build Weekday P.M.

Lane Group	EBL	EBR	EBR2	NBL	NBT	NBR	SBL	SBT	SBR	NWL2	NWL	NWR
Lane Configurations												
Traffic Volume (vph)	40	2	2	1	642	1	946	427	15	5	0	689
Future Volume (vph)	40	2	2	1	642	1	946	427	15	5	0	689
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	12	12	10	12	12	12	12	12
Storage Length (ft)	0	50		200		300	775		0		100	0
Storage Lanes	1	1		1		1	1		0		1	1
Taper Length (ft)	25			100			75				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00
Frt		0.850						0.995				0.850
Flt Protected	0.950			0.950			0.950				0.950	
Satd. Flow (prot)	1668	1507	0	1685	3610	0	1685	3558	0	0	1805	1615
Flt Permitted	0.950			0.950			0.950				0.950	
Satd. Flow (perm)	1668	1507	0	1685	3610	0	1685	3558	0	0	1805	1615
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		191						4				247
Link Speed (mph)	30				35			35			35	
Link Distance (ft)	591				758			1733			622	
Travel Time (s)	13.4				14.8			33.8			12.1	
Peak Hour Factor	0.80	0.80	0.80	0.91	0.91	0.91	0.90	0.90	0.90	0.91	0.91	0.91
Heavy Vehicles (%)	1%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%
Adj. Flow (vph)	50	3	3	1	705	1	1051	474	17	5	0	757
Shared Lane Traffic (%)												
Lane Group Flow (vph)	50	6	0	1	706	0	1051	491	0	0	5	757
Turn Type	Prot	Prot		Prot	NA		Prot	NA		Prot	Prot	pt+ov
Protected Phases	4	4		1	6		5	2		3	3	3 5
Permitted Phases												
Detector Phase	4	4		1	6		5	2		3	3	3 5
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	8.0		8.0	8.0		5.0	5.0	
Minimum Split (s)	11.0	11.0		11.0	14.0		14.0	14.0		11.0	11.0	
Total Split (s)	21.0	21.0		16.0	32.0		51.0	67.0		16.0	16.0	
Total Split (%)	17.5%	17.5%		13.3%	26.7%		42.5%	55.8%		13.3%	13.3%	
Maximum Green (s)	15.0	15.0		10.0	26.0		45.0	61.0		10.0	10.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0			0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0			6.0	
Lead/Lag	Lag	Lag		Lead	Lag		Lead	Lag		Lead	Lead	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	4.0		4.0	4.0		4.0	4.0	
Recall Mode	None	None		None	C-Min		None	C-Min		None	None	
Act Effct Green (s)	9.0	9.0		5.6	25.8		53.3	82.7			10.2	64.7
Actuated g/C Ratio	0.08	0.08		0.05	0.22		0.44	0.69			0.08	0.54
v/c Ratio	0.40	0.02		0.01	0.91		1.41	0.20			0.03	0.77
Control Delay	61.5	0.2		55.0	62.6		211.8	4.3			51.2	19.5
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0			0.0	0.0
Total Delay	61.5	0.2		55.0	62.6		211.8	4.3			51.2	19.5
LOS	E	A		D	E		F	A			D	B

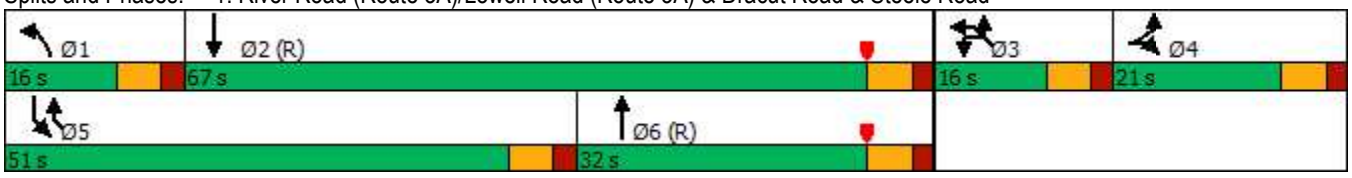
Lane Group	EBL	EBR	EBR2	NBL	NBT	NBR	SBL	SBT	SBR	NWL2	NWL	NWR
Approach Delay	54.9				62.6			145.8			19.7	
Approach LOS	D				E			F			B	
Queue Length 50th (ft)	38	0		1	282		~1088	36			4	222
Queue Length 95th (ft)	68	0		7	#390		#1394	86			17	#315
Internal Link Dist (ft)	511				678			1653			542	
Turn Bay Length (ft)		50		200			775				100	
Base Capacity (vph)	208	355		140	782		748	2454			152	984
Starvation Cap Reductn	0	0		0	0		0	0			0	0
Spillback Cap Reductn	0	0		0	0		0	0			0	0
Storage Cap Reductn	0	0		0	0		0	0			0	0
Reduced v/c Ratio	0.24	0.02		0.01	0.90		1.41	0.20			0.03	0.77

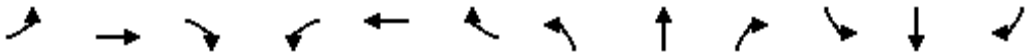
Intersection Summary	
Area Type:	Other
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 5 (4%), Referenced to phase 2:SBT and 6:NBT, Start of Yellow	
Natural Cycle: 150	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.41	
Intersection Signal Delay: 93.6	Intersection LOS: F
Intersection Capacity Utilization 98.5%	ICU Level of Service F
Analysis Period (min) 15	
Description: NHDOT Int. No.: S-229-04	

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

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

Splits and Phases: 1: River Road (Route 3A)/Lowell Road (Route 3A) & Dracut Road & Steele Road





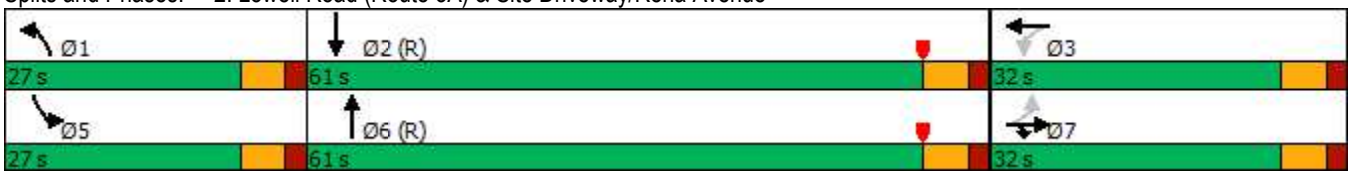
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	50	0	17	1	0	17	2	1382	6	26	1358	6
Future Volume (vph)	50	0	17	1	0	17	2	1382	6	26	1358	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	13	13	13	10	12	12	12	12	12
Storage Length (ft)	0		50	0		0	300		0	350		0
Storage Lanes	0		1	0		0	1		0	1		0
Taper Length (ft)	25			25			75			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850		0.871			0.999			0.999	
Flt Protected		0.950			0.998		0.950			0.950		
Satd. Flow (prot)	0	1668	1507	0	1707	0	1685	3606	0	1805	3605	0
Flt Permitted		0.743			0.986		0.950			0.950		
Satd. Flow (perm)	0	1305	1507	0	1686	0	1685	3606	0	1805	3605	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			82		82							
Link Speed (mph)		15			30			35			35	
Link Distance (ft)		510			557			1733			980	
Travel Time (s)		23.2			12.7			33.8			19.1	
Peak Hour Factor	0.84	0.84	0.84	0.80	0.80	0.80	0.93	0.93	0.93	0.90	0.90	0.90
Heavy Vehicles (%)	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	9%
Adj. Flow (vph)	60	0	20	1	0	21	2	1486	6	29	1509	7
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	60	20	0	22	0	2	1492	0	29	1516	0
Turn Type	Perm	NA	Prot	Perm	NA		Prot	NA		Prot	NA	
Protected Phases		7	7		3		1	6		5	2	
Permitted Phases	7			3								
Detector Phase	7	7	7	3	3		1	6		5	2	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0		11.0	16.0		11.0	16.0	
Total Split (s)	32.0	32.0	32.0	32.0	32.0		27.0	61.0		27.0	61.0	
Total Split (%)	26.7%	26.7%	26.7%	26.7%	26.7%		22.5%	50.8%		22.5%	50.8%	
Maximum Green (s)	26.0	26.0	26.0	26.0	26.0		21.0	55.0		21.0	55.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.0	6.0		6.0		6.0	6.0		6.0	6.0	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Recall Mode	None	None	None	None	None		None	C-Min		None	C-Min	
Act Effct Green (s)		11.8	11.8		11.1		6.8	90.7		8.5	97.3	
Actuated g/C Ratio		0.10	0.10		0.09		0.06	0.76		0.07	0.81	
v/c Ratio		0.47	0.09		0.10		0.02	0.55		0.23	0.52	
Control Delay		61.9	0.8		0.8		63.5	8.1		48.7	4.8	
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Delay		61.9	0.8		0.8		63.5	8.1		48.7	4.8	
LOS		E	A		A		E	A		D	A	

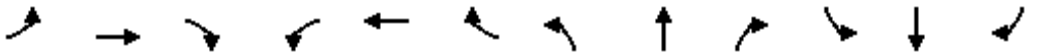
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		46.6			0.8			8.2			5.7	
Approach LOS		D			A			A			A	
Queue Length 50th (ft)		45	0		0		1	197		22	97	
Queue Length 95th (ft)		80	0		0		m1	m628		m38	204	
Internal Link Dist (ft)		430			477			1653			900	
Turn Bay Length (ft)			50				300			350		
Base Capacity (vph)		282	390		429		294	2725		315	2923	
Starvation Cap Reductn		0	0		0		0	0		0	0	
Spillback Cap Reductn		0	0		0		0	0		0	0	
Storage Cap Reductn		0	0		0		0	0		0	0	
Reduced v/c Ratio		0.21	0.05		0.05		0.01	0.55		0.09	0.52	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 74 (62%), Referenced to phase 2:SBT and 6:NBT, Start of Yellow			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.55			
Intersection Signal Delay: 7.9		Intersection LOS: A	
Intersection Capacity Utilization 61.1%		ICU Level of Service B	
Analysis Period (min) 15			
Description: NHDOT Int. No.: S-229-03			

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

Splits and Phases: 2: Lowell Road (Route 3A) & Site Driveway/Rena Avenue





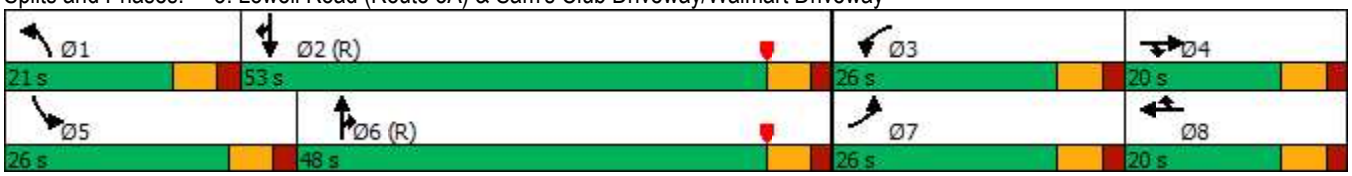
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	248	13	113	88	20	244	95	1277	74	310	1176	197
Future Volume (vph)	248	13	113	88	20	244	95	1277	74	310	1176	197
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	13	12	12	12	13	12	12	12	12	12	12
Storage Length (ft)	175		175	150		200	350		175	350		0
Storage Lanes	2		1	2		1	2		1	2		1
Taper Length (ft)	25			75			125			100		
Lane Util. Factor	0.97	1.00	1.00	0.97	1.00	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3502	1963	1615	3502	1900	1669	3467	3610	1615	3502	3574	1615
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3502	1963	1615	3502	1900	1669	3467	3610	1615	3502	3574	1615
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			136			245			136			172
Link Speed (mph)		30			30			35			30	
Link Distance (ft)		401			449			980			1189	
Travel Time (s)		9.1			10.2			19.1			27.0	
Peak Hour Factor	0.88	0.88	0.88	0.86	0.86	0.86	0.89	0.89	0.89	0.91	0.91	0.91
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	1%	0%
Adj. Flow (vph)	282	15	128	102	23	284	107	1435	83	341	1292	216
Shared Lane Traffic (%)												
Lane Group Flow (vph)	282	15	128	102	23	284	107	1435	83	341	1292	216
Turn Type	Prot	NA	Prot	Prot	NA	Prot	Prot	NA	Prot	Prot	NA	Prot
Protected Phases	7	4	4	3	8	8	1	6	6	5	2	2
Permitted Phases												
Detector Phase	7	4	4	3	8	8	1	6	6	5	2	2
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0	11.0	11.0	16.0	16.0	11.0	16.0	16.0
Total Split (s)	26.0	20.0	20.0	26.0	20.0	20.0	21.0	48.0	48.0	26.0	53.0	53.0
Total Split (%)	21.7%	16.7%	16.7%	21.7%	16.7%	16.7%	17.5%	40.0%	40.0%	21.7%	44.2%	44.2%
Maximum Green (s)	20.0	14.0	14.0	20.0	14.0	14.0	15.0	42.0	42.0	20.0	47.0	47.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	6.0	6.0	4.0	6.0	6.0
Recall Mode	None	None	None	None	None	None	None	C-Min	C-Min	None	C-Min	C-Min
Act Effct Green (s)	15.8	16.1	16.1	9.8	10.2	10.2	10.0	52.7	52.7	17.4	60.0	60.0
Actuated g/C Ratio	0.13	0.13	0.13	0.08	0.08	0.08	0.08	0.44	0.44	0.14	0.50	0.50
v/c Ratio	0.61	0.06	0.38	0.36	0.14	0.78	0.37	0.91	0.11	0.67	0.72	0.24
Control Delay	54.8	42.9	9.6	55.1	50.9	25.3	67.7	29.7	0.7	61.3	22.6	2.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	54.8	42.9	9.6	55.1	50.9	25.3	67.7	29.7	0.7	61.3	22.6	2.0
LOS	D	D	A	E	D	C	E	C	A	E	C	A

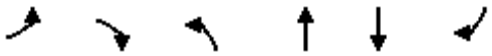
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		40.8			34.1			30.7			27.3	
Approach LOS		D			C			C			C	
Queue Length 50th (ft)	107	10	0	39	17	29	45	325	0	135	461	0
Queue Length 95th (ft)	144	29	44	63	41	103	75	#787	5	m145	602	m17
Internal Link Dist (ft)		321			369			900			1109	
Turn Bay Length (ft)	175		175	150		200	350		175	350		
Base Capacity (vph)	583	279	346	583	222	412	433	1584	785	583	1786	893
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.48	0.05	0.37	0.17	0.10	0.69	0.25	0.91	0.11	0.58	0.72	0.24

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 64 (53%), Referenced to phase 2:SBT and 6:NBT, Start of Yellow			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.91			
Intersection Signal Delay: 30.6		Intersection LOS: C	
Intersection Capacity Utilization 72.9%		ICU Level of Service C	
Analysis Period (min) 15			
Description: NHDOT Int. No.: S-229-06			

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Lowell Road (Route 3A) & Sam's Club Driveway/Walmart Driveway





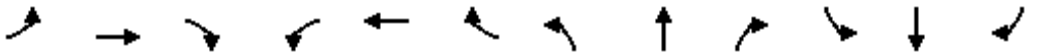
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	1633	1324	1167	692	490	1360
Future Volume (vph)	1633	1324	1167	692	490	1360
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	14	14	12	12	12	12
Storage Length (ft)	0	0	525			200
Storage Lanes	2	1	2			1
Taper Length (ft)	25		100			
Lane Util. Factor	0.97	1.00	0.97	0.95	0.95	0.88
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	3698	1706	3502	3610	3610	2814
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	3698	1706	3502	3610	3610	2814
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		519				1300
Link Speed (mph)	35			30	30	
Link Distance (ft)	929			1189	999	
Travel Time (s)	18.1			27.0	22.7	
Peak Hour Factor	0.96	0.96	0.94	0.94	0.89	0.89
Heavy Vehicles (%)	1%	1%	0%	0%	0%	1%
Adj. Flow (vph)	1701	1379	1241	736	551	1528
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1701	1379	1241	736	551	1528
Turn Type	Prot	Free	Prot	NA	NA	Free
Protected Phases	3		1	6	2	
Permitted Phases		Free				Free
Detector Phase	3		1	6	2	
Switch Phase						
Minimum Initial (s)	10.0		7.0	10.0	10.0	
Minimum Split (s)	16.0		15.0	17.0	17.0	
Total Split (s)	50.0		40.0	67.0	30.0	
Total Split (%)	41.7%		33.3%	55.8%	25.0%	
Maximum Green (s)	44.0		32.0	60.0	23.0	
Yellow Time (s)	4.0		4.0	4.0	4.0	
All-Red Time (s)	2.0		4.0	3.0	3.0	
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	
Total Lost Time (s)	6.0		8.0	7.0	7.0	
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	4.0		4.0	4.0	4.0	
Recall Mode	None		None	C-Min	C-Min	
Act Effct Green (s)	44.8	120.0	32.0	62.2	22.2	120.0
Actuated g/C Ratio	0.37	1.00	0.27	0.52	0.18	1.00
v/c Ratio	1.23	0.81	1.33	0.39	0.82	0.54
Control Delay	145.4	4.2	180.9	9.4	58.3	0.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	145.4	4.2	180.9	9.4	58.3	0.8
LOS	F	A	F	A	E	A

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Approach Delay	82.2			117.0	16.0	
Approach LOS	F			F	B	
Queue Length 50th (ft)	~850	0	~660	155	216	0
Queue Length 95th (ft)	#987	0	m#753	m126	277	0
Internal Link Dist (ft)	849			1109	919	
Turn Bay Length (ft)			525			200
Base Capacity (vph)	1379	1706	933	1895	691	2814
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.23	0.81	1.33	0.39	0.80	0.54

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 100 (83%), Referenced to phase 2:SBT and 6:NBT, Start of Green			
Natural Cycle: 150			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.33			
Intersection Signal Delay: 72.6		Intersection LOS: E	
Intersection Capacity Utilization 110.1%		ICU Level of Service H	
Analysis Period (min) 15			
Description: NHDOT Int. No.: S-229-02			

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Lowell Road (Route 3A) & Sagamore Bridge Road



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	54	98	474	479	19	31	146	1110	1093	80	929	5
Future Volume (vph)	54	98	474	479	19	31	146	1110	1093	80	929	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	11	11	11	12	12	12	12	12	12
Storage Length (ft)	0		250	200		75	575		275	175		300
Storage Lanes	0		1	1		1	1		1	1		1
Taper Length (ft)	25			50			175			75		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.91	0.91
Frt			0.850			0.850			0.850		0.999	
Flt Protected		0.983		0.950	0.956		0.950			0.950		
Satd. Flow (prot)	0	1868	1599	1658	1668	1546	1787	3574	1615	1805	5131	0
Flt Permitted		0.983		0.950	0.956		0.950			0.950		
Satd. Flow (perm)	0	1868	1599	1658	1668	1546	1787	3574	1615	1805	5131	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			53			89			252			
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		805			586			999			1515	
Travel Time (s)		18.3			13.3			22.7			34.4	
Peak Hour Factor	0.80	0.80	0.80	0.90	0.90	0.90	0.94	0.94	0.94	0.88	0.88	0.88
Heavy Vehicles (%)	0%	0%	1%	0%	0%	1%	1%	1%	0%	0%	1%	0%
Adj. Flow (vph)	68	123	593	532	21	34	155	1181	1163	91	1056	6
Shared Lane Traffic (%)				48%								
Lane Group Flow (vph)	0	191	593	277	276	34	155	1181	1163	91	1062	0
Turn Type	Split	NA	pm+ov	Split	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	
Protected Phases	8	8	1	7	7	5	1	6	7	5	2	
Permitted Phases			8			7			6			
Detector Phase	8	8	1	7	7	5	1	6	7	5	2	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	10.0	5.0	5.0	10.0	
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0	11.0	11.0	16.0	11.0	11.0	16.0	
Total Split (s)	26.0	26.0	31.0	56.0	56.0	21.0	31.0	71.0	56.0	21.0	71.0	
Total Split (%)	14.1%	14.1%	16.8%	30.4%	30.4%	11.4%	16.8%	38.6%	30.4%	11.4%	38.6%	
Maximum Green (s)	20.0	20.0	25.0	50.0	50.0	15.0	25.0	65.0	50.0	15.0	65.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)		6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Lead/Lag	Lag	Lag	Lead	Lead	Lead	Lead	Lead	Lag	Lead	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	3.0	2.5	2.5	3.0	
Recall Mode	None	None	None	None	None	None	None	Min	None	None	Min	
Act Effct Green (s)		19.6	50.8	48.7	48.7	61.1	25.1	60.9	115.6	12.5	48.2	
Actuated g/C Ratio		0.12	0.31	0.29	0.29	0.37	0.15	0.37	0.70	0.08	0.29	
v/c Ratio		0.86	1.13	0.57	0.56	0.05	0.57	0.90	0.97	0.67	0.71	
Control Delay		105.9	125.3	56.3	56.1	0.2	76.7	60.1	38.1	100.1	55.3	
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0	17.5	0.0	0.0	
Total Delay		105.9	125.3	56.3	56.1	0.2	76.7	60.1	55.5	100.1	55.3	
LOS		F	F	E	E	A	E	E	E	F	E	

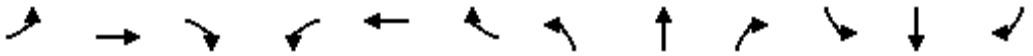
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		120.6			52.9			59.0			58.8	
Approach LOS		F			D			E			E	
Queue Length 50th (ft)		216	~749	283	281	0	167	654	993	102	384	
Queue Length 95th (ft)		#302	#825	400	395	0	253	763	#1506	165	425	
Internal Link Dist (ft)		725			506			919			1435	
Turn Bay Length (ft)			250	200		75	575		275	175		
Base Capacity (vph)		226	526	502	505	649	270	1625	1215	163	2022	
Starvation Cap Reductn		0	0	0	0	0	0	0	91	0	0	
Spillback Cap Reductn		0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn		0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio		0.85	1.13	0.55	0.55	0.05	0.57	0.73	1.03	0.56	0.53	

Intersection Summary			
Area Type:	Other		
Cycle Length: 184			
Actuated Cycle Length: 165.8			
Natural Cycle: 110			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.13			
Intersection Signal Delay: 67.9		Intersection LOS: E	
Intersection Capacity Utilization 95.3%		ICU Level of Service F	
Analysis Period (min) 15			

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

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

Splits and Phases: 5: Lowell Road (Route 3A) & Flagstone Drive/Wason Road

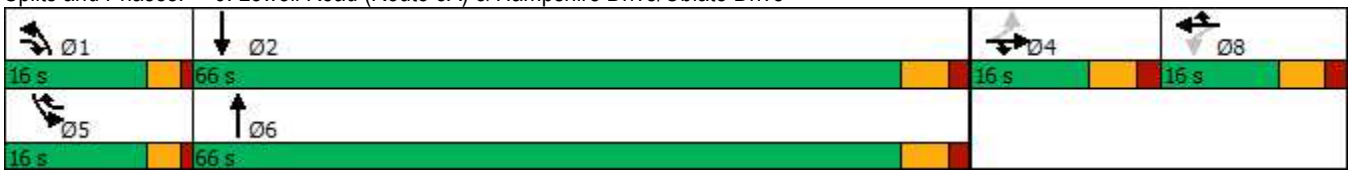


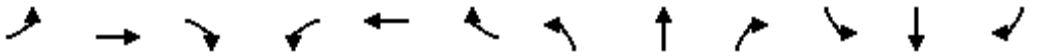
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	28	2	116	11	1	5	18	1175	14	6	900	8
Future Volume (vph)	28	2	116	11	1	5	18	1175	14	6	900	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	13	13	13	12	12	12	11	12	12
Storage Length (ft)	0		100	0		100	225		0	225		0
Storage Lanes	0		1	0		1	1		0	1		0
Taper Length (ft)	25			25			50			50		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850			0.850		0.998			0.999	
Flt Protected		0.956			0.955		0.950			0.950		
Satd. Flow (prot)	0	1816	1583	0	1875	1669	1736	3568	0	1745	3571	0
Flt Permitted		0.422					0.950			0.950		
Satd. Flow (perm)	0	802	1583	0	1963	1669	1736	3568	0	1745	3571	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			145			86		2			1	
Link Speed (mph)		30			10			30			30	
Link Distance (ft)		495			382			1515			1791	
Travel Time (s)		11.3			26.0			34.4			40.7	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.95	0.95	0.95	0.87	0.87	0.87
Heavy Vehicles (%)	0%	0%	2%	0%	0%	0%	4%	1%	0%	0%	1%	0%
Adj. Flow (vph)	35	3	145	14	1	6	19	1237	15	7	1034	9
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	38	145	0	15	6	19	1252	0	7	1043	0
Turn Type	Perm	NA	pt+ov	Perm	NA	pt+ov	Prot	NA		Prot	NA	
Protected Phases		4	4 1		8	8 5	1	6		5	2	
Permitted Phases	4			8								
Detector Phase	4	4	4 1	8	8	8 5	1	6		5	2	
Switch Phase												
Minimum Initial (s)	3.0	3.0		3.0	3.0		4.0	15.0		4.0	15.0	
Minimum Split (s)	9.0	9.0		9.0	9.0		8.0	21.0		8.0	21.0	
Total Split (s)	16.0	16.0		16.0	16.0		16.0	66.0		16.0	66.0	
Total Split (%)	14.0%	14.0%		14.0%	14.0%		14.0%	57.9%		14.0%	57.9%	
Maximum Green (s)	10.0	10.0		10.0	10.0		12.0	60.0		12.0	60.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		3.0	4.0		3.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		1.0	2.0		1.0	2.0	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.0			6.0		4.0	6.0		4.0	6.0	
Lead/Lag	Lead	Lead		Lag	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		2.0	3.0		2.0	3.0	
Recall Mode	None	None		None	None		None	Min		None	Min	
Act Effct Green (s)		9.1	17.3		6.8	9.7	5.7	40.8		5.2	33.6	
Actuated g/C Ratio		0.13	0.25		0.10	0.14	0.08	0.58		0.07	0.48	
v/c Ratio		0.37	0.29		0.08	0.02	0.13	0.60		0.05	0.61	
Control Delay		46.2	5.9		38.3	0.2	40.6	12.9		40.8	15.5	
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		46.2	5.9		38.3	0.2	40.6	12.9		40.8	15.5	
LOS		D	A		D	A	D	B		D	B	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		14.3			27.4			13.3			15.6	
Approach LOS		B			C			B			B	
Queue Length 50th (ft)		11	0		5	0	6	108		2	131	
Queue Length 95th (ft)		51	28		26	0	35	358		18	272	
Internal Link Dist (ft)		415			302			1435			1711	
Turn Bay Length (ft)			100			100	225			225		
Base Capacity (vph)		124	590		304	398	322	3056		324	3059	
Starvation Cap Reductn		0	0		0	0	0	0		0	0	
Spillback Cap Reductn		0	0		0	0	0	0		0	0	
Storage Cap Reductn		0	0		0	0	0	0		0	0	
Reduced v/c Ratio		0.31	0.25		0.05	0.02	0.06	0.41		0.02	0.34	

Intersection Summary			
Area Type:	Other		
Cycle Length: 114			
Actuated Cycle Length: 69.8			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.61			
Intersection Signal Delay: 14.5		Intersection LOS: B	
Intersection Capacity Utilization 54.6%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 6: Lowell Road (Route 3A) & Hampshire Drive/Oblate Drive





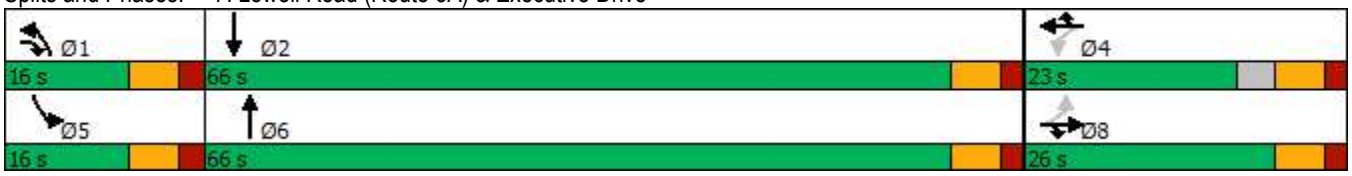
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	248	3	89	23	2	22	57	1074	7	16	728	44
Future Volume (vph)	248	3	89	23	2	22	57	1074	7	16	728	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	15	12	12	13	11	12	12	11	12	12
Storage Length (ft)	0		225	0		80	350		0	150		0
Storage Lanes	0		1	0		1	1		0	1		0
Taper Length (ft)	25			25			50			50		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850			0.850		0.999			0.991	
Flt Protected		0.953			0.957		0.950			0.950		
Satd. Flow (prot)	0	1733	1742	0	1818	1620	1678	3571	0	1646	3536	0
Flt Permitted		0.705			0.656		0.950			0.950		
Satd. Flow (perm)	0	1282	1742	0	1246	1620	1678	3571	0	1646	3536	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			111			91		1			9	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		492			577			1791			1168	
Travel Time (s)		11.2			13.1			40.7			26.5	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.97	0.97	0.97	0.92	0.92	0.92
Heavy Vehicles (%)	1%	0%	2%	0%	0%	3%	4%	1%	0%	6%	1%	4%
Adj. Flow (vph)	310	4	111	29	3	28	59	1107	7	17	791	48
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	314	111	0	32	28	59	1114	0	17	839	0
Turn Type	Perm	NA	pt+ov	Perm	NA	Prot	Prot	NA		Prot	NA	
Protected Phases		8	8 1		4	4	1	6		5	2	
Permitted Phases	8			4								
Detector Phase	8	8	8 1	4	4	4	1	6		5	2	
Switch Phase												
Minimum Initial (s)	3.0	3.0		5.0	5.0	5.0	3.0	8.0		3.0	8.0	
Minimum Split (s)	9.0	9.0		11.0	11.0	11.0	9.0	14.0		9.0	14.0	
Total Split (s)	26.0	26.0		23.0	23.0	23.0	16.0	66.0		16.0	66.0	
Total Split (%)	24.1%	24.1%		21.3%	21.3%	21.3%	14.8%	61.1%		14.8%	61.1%	
Maximum Green (s)	20.0	20.0		17.0	17.0	17.0	10.0	60.0		10.0	60.0	
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.0			6.0	6.0	6.0	6.0		6.0	6.0	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	2.0	2.0		2.0	2.0	2.0	2.0	3.0		2.0	3.0	
Recall Mode	None	None		None	None	None	None	Min		None	Min	
Act Effct Green (s)		20.7	33.8		13.5	13.5	7.0	34.1		5.5	25.8	
Actuated g/C Ratio		0.30	0.49		0.20	0.20	0.10	0.49		0.08	0.37	
v/c Ratio		0.82	0.12		0.13	0.07	0.35	0.63		0.13	0.63	
Control Delay		46.9	3.8		25.0	0.4	38.4	14.8		37.0	20.3	
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		46.9	3.8		25.0	0.4	38.4	14.8		37.0	20.3	
LOS		D	A		C	A	D	B		D	C	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		35.6			13.5			16.0			20.6	
Approach LOS		D			B			B			C	
Queue Length 50th (ft)		122	0		10	0	24	153		7	154	
Queue Length 95th (ft)		#301	22		34	0	68	296		29	220	
Internal Link Dist (ft)		412			497			1711			1088	
Turn Bay Length (ft)			225			80	350			150		
Base Capacity (vph)		382	987		371	547	250	3079		245	3050	
Starvation Cap Reductn		0	0		0	0	0	0		0	0	
Spillback Cap Reductn		0	0		0	0	0	0		0	0	
Storage Cap Reductn		0	0		0	0	0	0		0	0	
Reduced v/c Ratio		0.82	0.11		0.09	0.05	0.24	0.36		0.07	0.28	

Intersection Summary			
Area Type:	Other		
Cycle Length: 108			
Actuated Cycle Length: 69.2			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.82			
Intersection Signal Delay: 20.8		Intersection LOS: C	
Intersection Capacity Utilization 68.8%		ICU Level of Service C	
Analysis Period (min) 15			

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

Splits and Phases: 7: Lowell Road (Route 3A) & Executive Drive



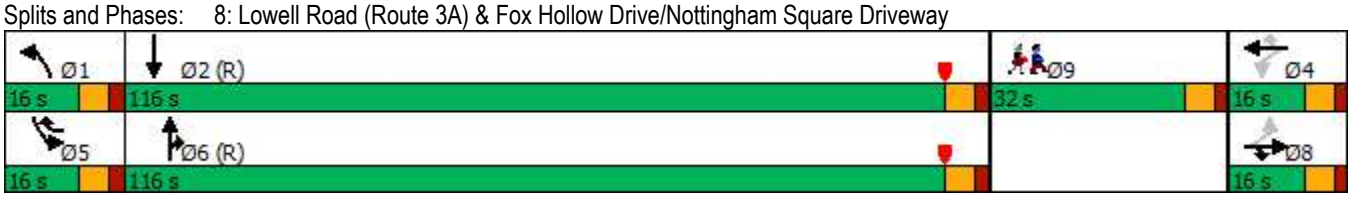
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	2	25	31	0	48	27	1278	15	56	737	11
Future Volume (vph)	9	2	25	31	0	48	27	1278	15	56	737	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	14	13	13	11	11	12	12	12	12
Storage Length (ft)	0		50	0		100	210		325	125		0
Storage Lanes	0		1	0		1	1		1	1		0
Taper Length (ft)	25			25			50			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor					0.98							
Frt			0.850			0.850			0.850		0.998	
Flt Protected		0.962			0.950		0.950			0.950		
Satd. Flow (prot)	0	1828	1583	0	1865	1669	1745	1818	1615	1805	1878	0
Flt Permitted		0.746			0.748		0.950			0.950		
Satd. Flow (perm)	0	1417	1583	0	1445	1669	1745	1818	1615	1805	1878	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			91			60			91		1	
Link Speed (mph)		10			30			30			30	
Link Distance (ft)		598			262			1405			549	
Travel Time (s)		40.8			6.0			31.9			12.5	
Confl. Peds. (#/hr)				3								
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.99	0.99	0.99	0.94	0.94	0.94
Heavy Vehicles (%)	0%	0%	2%	0%	0%	0%	0%	1%	0%	0%	1%	0%
Adj. Flow (vph)	11	3	31	39	0	60	27	1291	15	60	784	12
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	14	31	0	39	60	27	1291	15	60	796	0
Turn Type	Perm	NA	Prot	Perm	NA	pm+ov	Prot	NA	Prot	Prot	NA	
Protected Phases		8	8		4	5	1	6	6	5	2	
Permitted Phases	8			4		4						
Detector Phase	8	8	8	4	4	5	1	6	6	5	2	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	10.0	10.0	5.0	10.0	
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0	11.0	11.0	16.0	16.0	11.0	16.0	
Total Split (s)	16.0	16.0	16.0	16.0	16.0	16.0	16.0	116.0	116.0	16.0	116.0	
Total Split (%)	8.9%	8.9%	8.9%	8.9%	8.9%	8.9%	8.9%	64.4%	64.4%	8.9%	64.4%	
Maximum Green (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	110.0	110.0	10.0	110.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)		6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Lead/Lag						Lead	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?						Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	1.5	1.5	1.5	1.5	1.5	1.5	1.0	1.5	1.5	1.5	1.5	
Recall Mode	None	None	None	None	None	None	None	C-Min	C-Min	None	C-Min	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)		8.1	8.1		8.1	20.7	6.6	140.9	140.9	8.8	146.5	
Actuated g/C Ratio		0.04	0.04		0.04	0.12	0.04	0.78	0.78	0.05	0.81	

Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	32.0
Total Split (s)	32.0
Total Split (%)	18%
Maximum Green (s)	26.0
Yellow Time (s)	4.0
All-Red Time (s)	2.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	5.0
Flash Dont Walk (s)	21.0
Pedestrian Calls (#/hr)	5
Act Effct Green (s)	
Actuated g/C Ratio	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio		0.22	0.20		0.60	0.24	0.42	0.91	0.01	0.68	0.52	
Control Delay		90.0	2.8		118.9	16.3	103.9	27.8	0.0	119.5	11.0	
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	2.5	
Total Delay		90.0	2.8		118.9	16.3	103.9	27.8	0.0	119.5	13.5	
LOS		F	A		F	B	F	C	A	F	B	
Approach Delay		29.9			56.7			29.0			20.9	
Approach LOS		C			E			C			C	
Queue Length 50th (ft)		16	0		46	0	32	954	0	71	259	
Queue Length 95th (ft)		40	0		81	36	70	#2065	0	#134	766	
Internal Link Dist (ft)		518			182			1325			469	
Turn Bay Length (ft)			50			100	210		325	125		
Base Capacity (vph)		78	173		80	256	96	1423	1283	100	1528	
Starvation Cap Reductn		0	0		0	0	0	0	0	0	580	
Spillback Cap Reductn		0	0		0	0	0	0	0	0	0	
Storage Cap Reductn		0	0		0	0	0	0	0	0	0	
Reduced v/c Ratio		0.18	0.18		0.49	0.23	0.28	0.91	0.01	0.60	0.84	

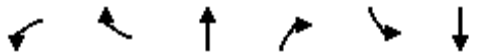
Intersection Summary			
Area Type:	Other		
Cycle Length: 180			
Actuated Cycle Length: 180			
Offset: 0 (0%), Referenced to phase 2:SBT and 6:NBT, Start of Yellow, Master Intersection			
Natural Cycle: 150			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.91			
Intersection Signal Delay: 27.2		Intersection LOS: C	
Intersection Capacity Utilization 90.6%		ICU Level of Service E	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 8: Lowell Road (Route 3A) & Fox Hollow Drive/Nottingham Square Driveway



Lane Group	Ø9
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø9
Lane Configurations							
Traffic Volume (vph)	94	157	1212	121	122	726	
Future Volume (vph)	94	157	1212	121	122	726	
Ideal Flow (vphpl)	1900	1000	1900	1900	1900	1900	
Lane Width (ft)	12	12	13	13	12	12	
Storage Length (ft)	0	75		0	150		
Storage Lanes	1	1		0	1		
Taper Length (ft)	25				50		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		0.850	0.988				
Flt Protected	0.950				0.950		
Satd. Flow (prot)	1805	850	1922	0	1805	1881	
Flt Permitted	0.950				0.950		
Satd. Flow (perm)	1805	850	1922	0	1805	1881	
Right Turn on Red		Yes		Yes			
Satd. Flow (RTOR)		153	4				
Link Speed (mph)	20		30			30	
Link Distance (ft)	512		549			1309	
Travel Time (s)	17.5		12.5			29.8	
Peak Hour Factor	0.87	0.87	0.98	0.98	0.89	0.89	
Heavy Vehicles (%)	0%	0%	1%	0%	0%	1%	
Adj. Flow (vph)	108	180	1237	123	137	816	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	108	180	1360	0	137	816	
Turn Type	Prot	pt+ov	NA		Prot	NA	
Protected Phases	4	4 5	6		5	2	9
Permitted Phases							
Detector Phase	4	4 5	6		5	2	
Switch Phase							
Minimum Initial (s)	5.0		10.0		3.0	10.0	5.0
Minimum Split (s)	11.0		16.0		9.0	16.0	35.0
Total Split (s)	26.0		116.0		13.0	116.0	35.0
Total Split (%)	13.7%		61.1%		6.8%	61.1%	18%
Maximum Green (s)	20.0		110.0		7.0	110.0	29.0
Yellow Time (s)	4.0		4.0		4.0	4.0	4.0
All-Red Time (s)	2.0		2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0		0.0	0.0	
Total Lost Time (s)	6.0		6.0		6.0	6.0	
Lead/Lag			Lag		Lead		
Lead-Lag Optimize?			Yes		Yes		
Vehicle Extension (s)	1.5		1.5		1.5	1.5	3.0
Recall Mode	None		C-Min		None	C-Min	None
Walk Time (s)							5.0
Flash Dont Walk (s)							24.0
Pedestrian Calls (#/hr)							5
Act Effct Green (s)	15.1	28.1	142.9		7.0	155.9	
Actuated g/C Ratio	0.08	0.15	0.75		0.04	0.82	
v/c Ratio	0.76	0.70	0.94		2.08	0.53	
Control Delay	115.2	30.4	34.2		568.2	9.6	

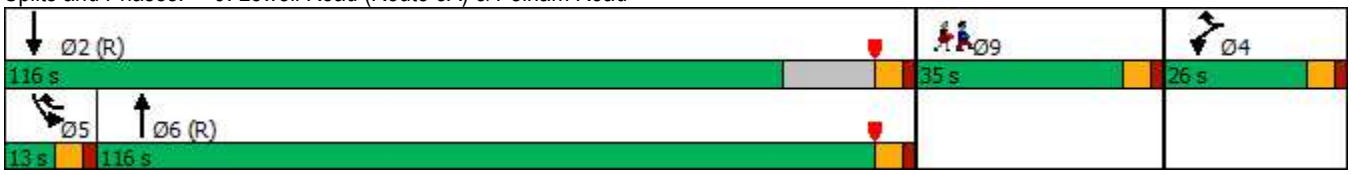
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø9
Queue Delay	0.0	0.0	44.6		0.0	0.0	
Total Delay	115.2	30.4	78.8		568.2	9.6	
LOS	F	C	E		F	A	
Approach Delay	62.2		78.8			89.9	
Approach LOS	E		E			F	
Queue Length 50th (ft)	135	30	1104		~268	213	
Queue Length 95th (ft)	197	118	#2345		#423	745	
Internal Link Dist (ft)	432		469			1229	
Turn Bay Length (ft)		75			150		
Base Capacity (vph)	190	252	1446		66	1543	
Starvation Cap Reductn	0	0	276		0	0	
Spillback Cap Reductn	0	0	0		0	0	
Storage Cap Reductn	0	0	0		0	0	
Reduced v/c Ratio	0.57	0.71	1.16		2.08	0.53	

Intersection Summary			
Area Type:	Other		
Cycle Length: 190			
Actuated Cycle Length: 190			
Offset: 30 (16%), Referenced to phase 2:SBT and 6:NBT, Start of Yellow			
Natural Cycle: 150			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 2.08			
Intersection Signal Delay: 81.1		Intersection LOS: F	
Intersection Capacity Utilization 99.6%		ICU Level of Service F	
Analysis Period (min) 15			

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

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

Splits and Phases: 9: Lowell Road (Route 3A) & Pelham Road



Appendix G

Capacity Analysis – 2022 Build Traffic Conditions

2022 Build Weekday A.M.

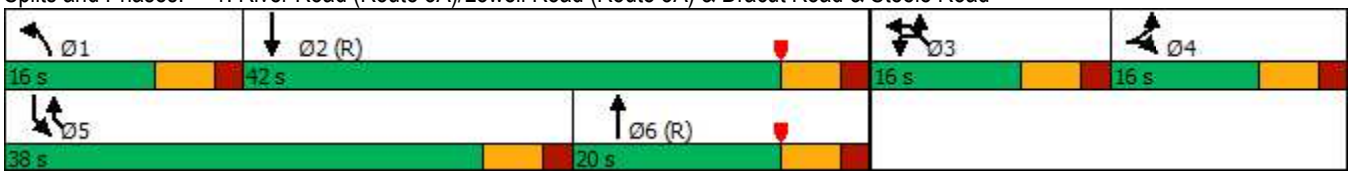
Lane Group	EBL	EBR	EBR2	NBL	NBT	NBR	SBL	SBT	SBR	NWL	NWR
Lane Configurations											
Traffic Volume (vph)	2	0	2	0	272	0	487	509	12	1	849
Future Volume (vph)	2	0	2	0	272	0	487	509	12	1	849
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	12	12	10	12	12	12	12
Storage Length (ft)	0	50		200		300	775		0	100	0
Storage Lanes	1	1		1		1	1		0	1	1
Taper Length (ft)	25			100			75			25	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00
Frt		0.850						0.997			0.850
Flt Protected	0.950						0.950			0.950	
Satd. Flow (prot)	1685	1133	0	1773	3574	0	1652	3564	0	1805	1583
Flt Permitted	0.950						0.950			0.950	
Satd. Flow (perm)	1685	1133	0	1773	3574	0	1652	3564	0	1805	1583
Right Turn on Red			Yes			Yes			Yes		Yes
Satd. Flow (RTOR)		543						3			473
Link Speed (mph)	30				35			35		35	
Link Distance (ft)	591				758			1733		622	
Travel Time (s)	13.4				14.8			33.8		12.1	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.92	0.92	0.92	0.86	0.86
Heavy Vehicles (%)	0%	0%	33%	0%	1%	0%	2%	1%	0%	0%	2%
Adj. Flow (vph)	3	0	3	0	340	0	529	553	13	1	987
Shared Lane Traffic (%)											
Lane Group Flow (vph)	3	3	0	0	340	0	529	566	0	1	987
Turn Type	Prot	Prot		Prot	NA		Prot	NA		Prot	pt+ov
Protected Phases	4	4		1	6		5	2		3	3 5
Permitted Phases											
Detector Phase	4	4		1	6		5	2		3	3 5
Switch Phase											
Minimum Initial (s)	5.0	5.0		5.0	8.0		8.0	8.0		5.0	
Minimum Split (s)	11.0	11.0		11.0	14.0		14.0	14.0		11.0	
Total Split (s)	16.0	16.0		16.0	20.0		38.0	42.0		16.0	
Total Split (%)	17.8%	17.8%		17.8%	22.2%		42.2%	46.7%		17.8%	
Maximum Green (s)	10.0	10.0		10.0	14.0		32.0	36.0		10.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	
Lead/Lag	Lag	Lag		Lead	Lag		Lead	Lag		Lead	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	
Vehicle Extension (s)	3.0	3.0		3.0	4.0		4.0	4.0		4.0	
Recall Mode	None	None		None	C-Min		None	C-Min		None	
Act Effct Green (s)	5.8	5.8			16.3		42.4	64.7		10.8	58.0
Actuated g/C Ratio	0.06	0.06			0.18		0.47	0.72		0.12	0.64
v/c Ratio	0.03	0.01			0.53		0.68	0.22		0.00	0.83
Control Delay	40.0	0.0			37.6		23.6	0.7		36.0	14.2
Queue Delay	0.0	0.0			0.0		0.0	0.0		0.0	0.0
Total Delay	40.0	0.0			37.6		23.6	0.7		36.0	14.2
LOS	D	A			D		C	A		D	B

Lane Group	EBL	EBR	EBR2	NBL	NBT	NBR	SBL	SBT	SBR	NWL	NWR
Approach Delay	20.0				37.6			11.8		14.3	
Approach LOS	B				D			B		B	
Queue Length 50th (ft)	2	0			96		149	2		1	138
Queue Length 95th (ft)	9	0			123		#427	5		5	#455
Internal Link Dist (ft)	511				678			1653		542	
Turn Bay Length (ft)		50					775			100	
Base Capacity (vph)	187	608			646		778	2562		217	1188
Starvation Cap Reductn	0	0			0		0	0		0	0
Spillback Cap Reductn	0	0			0		0	0		0	0
Storage Cap Reductn	0	0			0		0	0		0	0
Reduced v/c Ratio	0.02	0.00			0.53		0.68	0.22		0.00	0.83

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 0 (0%), Referenced to phase 2:SBT and 6:NBT, Start of Yellow			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.83			
Intersection Signal Delay: 16.4		Intersection LOS: B	
Intersection Capacity Utilization 70.1%		ICU Level of Service C	
Analysis Period (min) 15			
Description: NHDOT Int. No.: S-229-04			

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

Splits and Phases: 1: River Road (Route 3A)/Lowell Road (Route 3A) & Dracut Road & Steele Road



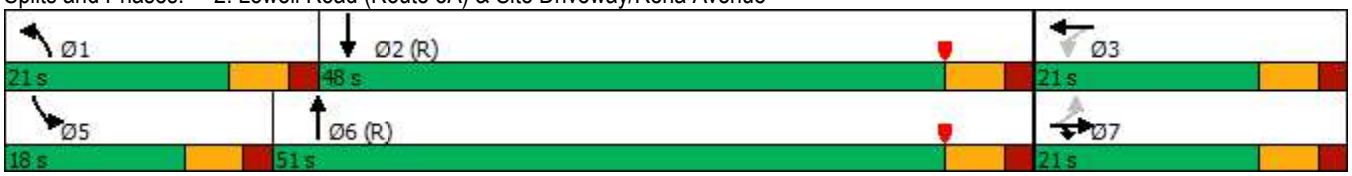
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	156	0	25	1	1	33	43	1126	2	7	987	241
Future Volume (vph)	156	0	25	1	1	33	43	1126	2	7	987	241
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	13	13	13	10	12	12	12	12	12
Storage Length (ft)	0		50	0		0	300		0	350		0
Storage Lanes	0		1	0		0	1		0	1		0
Taper Length (ft)	25			25			75			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850		0.872						0.971	
Flt Protected		0.950			0.999		0.950			0.950		
Satd. Flow (prot)	0	1532	1133	0	1659	0	1685	3538	0	1570	3410	0
Flt Permitted		0.730			0.993		0.950			0.950		
Satd. Flow (perm)	0	1177	1133	0	1649	0	1685	3538	0	1570	3410	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			109		39						45	
Link Speed (mph)		15			30			35			35	
Link Distance (ft)		510			557			1733			980	
Travel Time (s)		23.2			12.7			33.8			19.1	
Peak Hour Factor	0.80	0.80	0.80	0.85	0.85	0.85	0.85	0.85	0.85	0.95	0.95	0.95
Heavy Vehicles (%)	10%	0%	33%	9%	0%	3%	0%	2%	20%	15%	2%	6%
Adj. Flow (vph)	195	0	31	1	1	39	51	1325	2	7	1039	254
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	195	31	0	41	0	51	1327	0	7	1293	0
Turn Type	Perm	NA	Prot	Perm	NA		Prot	NA		Prot	NA	
Protected Phases		7	7		3		1	6		5	2	
Permitted Phases	7			3								
Detector Phase	7	7	7	3	3		1	6		5	2	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0		11.0	16.0		11.0	16.0	
Total Split (s)	21.0	21.0	21.0	21.0	21.0		21.0	51.0		18.0	48.0	
Total Split (%)	23.3%	23.3%	23.3%	23.3%	23.3%		23.3%	56.7%		20.0%	53.3%	
Maximum Green (s)	15.0	15.0	15.0	15.0	15.0		15.0	45.0		12.0	42.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.0	6.0		6.0		6.0	6.0		6.0	6.0	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Recall Mode	None	None	None	None	None		None	C-Min		None	C-Min	
Act Effct Green (s)		18.0	18.0		11.6		9.1	57.2		7.0	50.1	
Actuated g/C Ratio		0.20	0.20		0.13		0.10	0.64		0.08	0.56	
v/c Ratio		0.83	0.10		0.17		0.30	0.59		0.06	0.67	
Control Delay		66.1	0.6		13.2		42.1	10.1		29.9	19.6	
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Delay		66.1	0.6		13.2		42.1	10.1		29.9	19.6	
LOS		E	A		B		D	B		C	B	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		57.1			13.2			11.3			19.6	
Approach LOS		E			B			B			B	
Queue Length 50th (ft)		112	0		1		29	140		4	147	
Queue Length 95th (ft)		#208	0		26		m37	250		m7	261	
Internal Link Dist (ft)		430			477			1653			900	
Turn Bay Length (ft)			50				300			350		
Base Capacity (vph)		235	313		307		280	2247		209	1918	
Starvation Cap Reductn		0	0		0		0	0		0	0	
Spillback Cap Reductn		0	0		0		0	0		0	0	
Storage Cap Reductn		0	0		0		0	0		0	0	
Reduced v/c Ratio		0.83	0.10		0.13		0.18	0.59		0.03	0.67	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 51 (57%), Referenced to phase 2:SBT and 6:NBT, Start of Yellow			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.83			
Intersection Signal Delay: 18.5		Intersection LOS: B	
Intersection Capacity Utilization 61.0%		ICU Level of Service B	
Analysis Period (min) 15			
Description: NHDOT Int. No.: S-229-03			

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Lowell Road (Route 3A) & Site Driveway/Rena Avenue



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	131	4	59	15	5	71	78	1215	27	85	1152	164
Future Volume (vph)	131	4	59	15	5	71	78	1215	27	85	1152	164
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	13	12	12	12	13	12	12	12	12	12	12
Storage Length (ft)	175		175	150		200	350		175	350		0
Storage Lanes	2		1	2		1	2		1	2		1
Taper Length (ft)	25			75			125			100		
Lane Util. Factor	0.97	1.00	1.00	0.97	1.00	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3213	1852	1568	3502	1900	1589	3467	3505	1583	3433	3539	1482
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3213	1852	1568	3502	1900	1589	3467	3505	1583	3433	3539	1482
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			182			182			182			182
Link Speed (mph)		30			30			35			30	
Link Distance (ft)		401			449			980			1189	
Travel Time (s)		9.1			10.2			19.1			27.0	
Peak Hour Factor	0.93	0.93	0.93	0.88	0.88	0.88	0.87	0.87	0.87	0.96	0.96	0.96
Heavy Vehicles (%)	9%	6%	3%	0%	0%	5%	1%	3%	2%	2%	2%	9%
Adj. Flow (vph)	141	4	63	17	6	81	90	1397	31	89	1200	171
Shared Lane Traffic (%)												
Lane Group Flow (vph)	141	4	63	17	6	81	90	1397	31	89	1200	171
Turn Type	Prot	NA	Prot	Prot	NA	Prot	Prot	NA	Prot	Prot	NA	Prot
Protected Phases	7	4	4	3	8	8	1	6	6	5	2	2
Permitted Phases												
Detector Phase	7	4	4	3	8	8	1	6	6	5	2	2
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0	11.0	11.0	16.0	16.0	11.0	16.0	16.0
Total Split (s)	17.0	16.0	16.0	17.0	16.0	16.0	16.0	41.0	41.0	16.0	41.0	41.0
Total Split (%)	18.9%	17.8%	17.8%	18.9%	17.8%	17.8%	17.8%	45.6%	45.6%	17.8%	45.6%	45.6%
Maximum Green (s)	11.0	10.0	10.0	11.0	10.0	10.0	10.0	35.0	35.0	10.0	35.0	35.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	6.0	6.0	4.0	6.0	6.0
Recall Mode	None	None	None	None	None	None	None	C-Min	C-Min	None	C-Min	C-Min
Act Effct Green (s)	9.8	14.8	14.8	7.0	6.9	6.9	8.7	45.7	45.7	8.7	45.7	45.7
Actuated g/C Ratio	0.11	0.16	0.16	0.08	0.08	0.08	0.10	0.51	0.51	0.10	0.51	0.51
v/c Ratio	0.40	0.01	0.15	0.06	0.04	0.28	0.27	0.79	0.03	0.27	0.67	0.20
Control Delay	40.6	34.0	0.8	38.7	38.8	2.4	48.1	18.2	0.1	48.3	19.4	1.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.6	34.0	0.8	38.7	38.8	2.4	48.1	18.2	0.1	48.3	19.4	1.3
LOS	D	C	A	D	D	A	D	B	A	D	B	A

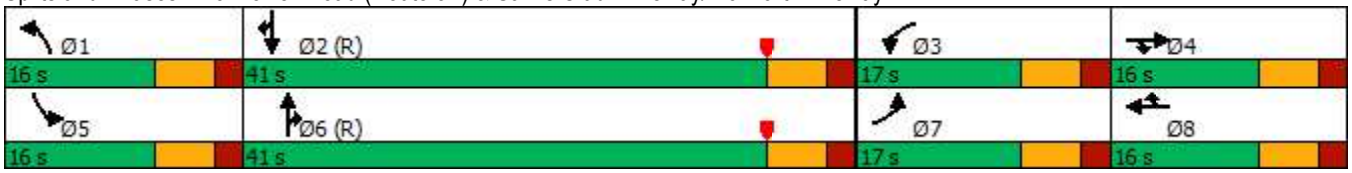
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		28.4			10.4			19.6			19.0	
Approach LOS		C			B			B			B	
Queue Length 50th (ft)	39	2	0	4	3	0	26	323	0	25	326	0
Queue Length 95th (ft)	67	12	0	14	15	0	m45	#509	m0	m38	424	m6
Internal Link Dist (ft)		321			369			900			1109	
Turn Bay Length (ft)	175		175	150		200	350		175	350		
Base Capacity (vph)	392	314	417	428	211	338	390	1778	892	386	1795	841
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.36	0.01	0.15	0.04	0.03	0.24	0.23	0.79	0.03	0.23	0.67	0.20

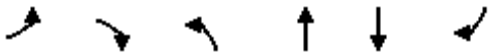
Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 51 (57%), Referenced to phase 2:SBT and 6:NBT, Start of Yellow			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.79			
Intersection Signal Delay: 19.6		Intersection LOS: B	
Intersection Capacity Utilization 57.1%		ICU Level of Service B	
Analysis Period (min) 15			
Description: NHDOT Int. No.: S-229-06			

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

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

Splits and Phases: 3: Lowell Road (Route 3A) & Sam's Club Driveway/Walmart Driveway





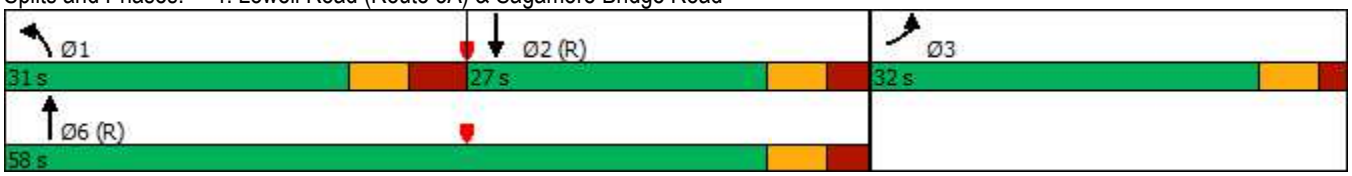
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	948	1095	1038	371	386	1517
Future Volume (vph)	948	1095	1038	371	386	1517
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	14	14	12	12	12	12
Storage Length (ft)	0	0	525			200
Storage Lanes	2	1	2			1
Taper Length (ft)	25		100			
Lane Util. Factor	0.97	1.00	0.97	0.95	0.95	0.88
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	3662	1656	3367	3539	3539	2760
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	3662	1656	3367	3539	3539	2760
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		800				1281
Link Speed (mph)	35			30	30	
Link Distance (ft)	929			1189	999	
Travel Time (s)	18.1			27.0	22.7	
Peak Hour Factor	0.94	0.94	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	4%	4%	2%	2%	3%
Adj. Flow (vph)	1009	1165	1128	403	420	1649
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1009	1165	1128	403	420	1649
Turn Type	Prot	Free	Prot	NA	NA	Free
Protected Phases	3		1	6	2	
Permitted Phases		Free				Free
Detector Phase	3		1	6	2	
Switch Phase						
Minimum Initial (s)	10.0		7.0	10.0	10.0	
Minimum Split (s)	16.0		15.0	17.0	17.0	
Total Split (s)	32.0		31.0	58.0	27.0	
Total Split (%)	35.6%		34.4%	64.4%	30.0%	
Maximum Green (s)	26.0		23.0	51.0	20.0	
Yellow Time (s)	4.0		4.0	4.0	4.0	
All-Red Time (s)	2.0		4.0	3.0	3.0	
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	
Total Lost Time (s)	6.0		8.0	7.0	7.0	
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	4.0		4.0	4.0	4.0	
Recall Mode	None		None	C-Min	C-Min	
Act Effct Green (s)	27.9	90.0	24.2	49.1	16.9	90.0
Actuated g/C Ratio	0.31	1.00	0.27	0.55	0.19	1.00
v/c Ratio	0.89	0.70	1.25	0.21	0.63	0.60
Control Delay	41.3	2.5	146.2	2.2	37.8	1.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	41.3	2.5	146.2	2.2	37.8	1.0
LOS	D	A	F	A	D	A

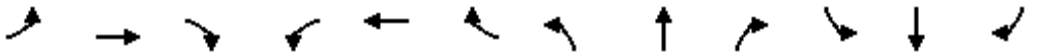
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Approach Delay	20.5			108.3	8.4	
Approach LOS	C			F	A	
Queue Length 50th (ft)	277	0	~414	3	115	0
Queue Length 95th (ft)	#416	0	#538	m4	158	0
Internal Link Dist (ft)	849			1109	919	
Turn Bay Length (ft)			525			200
Base Capacity (vph)	1135	1656	903	2005	786	2760
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.89	0.70	1.25	0.20	0.53	0.60

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 70 (78%), Referenced to phase 2:SBT and 6:NBT, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.25			
Intersection Signal Delay: 39.5		Intersection LOS: D	
Intersection Capacity Utilization 84.0%		ICU Level of Service E	
Analysis Period (min) 15			
Description: NHDOT Int. No.: S-229-02			

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Lowell Road (Route 3A) & Sagamore Bridge Road





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	65	28	282	614	41	30	303	811	188	15	1087	10
Future Volume (vph)	65	28	282	614	41	30	303	811	188	15	1087	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	11	11	11	12	12	12	12	12	12
Storage Length (ft)	0		250	200		75	575		275	175		300
Storage Lanes	0		1	1		1	1		1	1		1
Taper Length (ft)	25			50			175			75		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.91	0.91
Frt			0.850			0.850			0.850		0.999	
Flt Protected		0.966		0.950	0.958		0.950			0.950		
Satd. Flow (prot)	0	1835	1583	1641	1657	1501	1787	3539	1583	1752	5078	0
Flt Permitted		0.966		0.950	0.958		0.950			0.950		
Satd. Flow (perm)	0	1835	1583	1641	1657	1501	1787	3539	1583	1752	5078	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			53			89			198		1	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		805			586			999			1515	
Travel Time (s)		18.3			13.3			22.7			34.4	
Peak Hour Factor	0.81	0.81	0.81	0.94	0.94	0.94	0.95	0.95	0.95	0.87	0.87	0.87
Heavy Vehicles (%)	0%	0%	2%	1%	0%	4%	1%	2%	2%	3%	2%	6%
Adj. Flow (vph)	80	35	348	653	44	32	319	854	198	17	1249	11
Shared Lane Traffic (%)				47%								
Lane Group Flow (vph)	0	115	348	346	351	32	319	854	198	17	1260	0
Turn Type	Split	NA	pm+ov	Split	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	
Protected Phases	8	8	1	7	7	5	1	6	7	5	2	
Permitted Phases			8			7			6			
Detector Phase	8	8	1	7	7	5	1	6	7	5	2	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	10.0	5.0	5.0	10.0	
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0	11.0	11.0	16.0	11.0	11.0	16.0	
Total Split (s)	26.0	26.0	31.0	56.0	56.0	21.0	31.0	71.0	56.0	21.0	71.0	
Total Split (%)	14.1%	14.1%	16.8%	30.4%	30.4%	11.4%	16.8%	38.6%	30.4%	11.4%	38.6%	
Maximum Green (s)	20.0	20.0	25.0	50.0	50.0	15.0	25.0	65.0	50.0	15.0	65.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)		6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Lead/Lag	Lag	Lag	Lead	Lead	Lead	Lead	Lead	Lag	Lead	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	3.0	2.5	2.5	3.0	
Recall Mode	None	None	None	None	None	None	None	Min	None	None	Min	
Act Effct Green (s)		14.5	46.3	38.9	38.9	45.5	25.7	71.7	116.7	6.7	49.8	
Actuated g/C Ratio		0.09	0.30	0.25	0.25	0.30	0.17	0.47	0.76	0.04	0.32	
v/c Ratio		0.66	0.68	0.83	0.84	0.06	1.07	0.52	0.16	0.22	0.76	
Control Delay		89.9	50.2	73.5	73.7	0.2	130.4	32.6	1.0	86.6	50.6	
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay		89.9	50.2	73.5	73.7	0.2	130.4	32.6	1.0	86.6	50.6	
LOS		F	D	E	E	A	F	C	A	F	D	

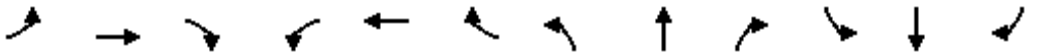
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		60.1			70.4			50.8			51.0	
Approach LOS		E			E			D			D	
Queue Length 50th (ft)		114	268	347	353	0	~368	330	0	17	420	
Queue Length 95th (ft)		187	394	550	556	0	#707	467	22	49	512	
Internal Link Dist (ft)		725			506			919			1435	
Turn Bay Length (ft)			250	200		75	575		275	175		
Base Capacity (vph)		245	514	549	554	588	298	1799	1352	175	2210	
Starvation Cap Reductn		0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn		0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn		0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio		0.47	0.68	0.63	0.63	0.05	1.07	0.47	0.15	0.10	0.57	

Intersection Summary			
Area Type:	Other		
Cycle Length: 184			
Actuated Cycle Length: 153.5			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.07			
Intersection Signal Delay: 55.7		Intersection LOS: E	
Intersection Capacity Utilization 77.8%		ICU Level of Service D	
Analysis Period (min) 15			

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

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

Splits and Phases: 5: Lowell Road (Route 3A) & Flagstone Drive/Wason Road



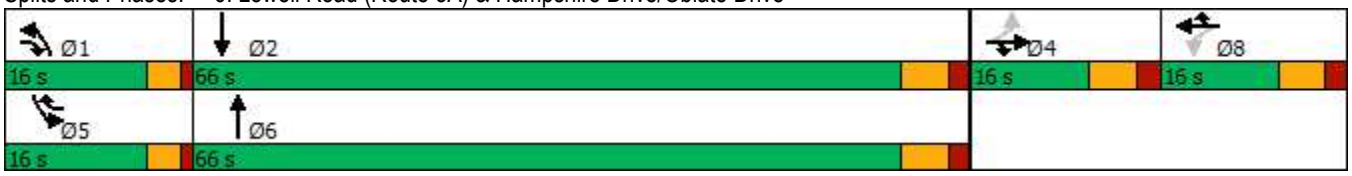
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	8	0	11	2	2	4	116	778	2	2	1149	59
Future Volume (vph)	8	0	11	2	2	4	116	778	2	2	1149	59
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	13	13	13	12	12	12	11	12	12
Storage Length (ft)	0		100	0		100	225		0	225		0
Storage Lanes	0		1	0		1	1		0	1		0
Taper Length (ft)	25			25			50			50		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850			0.850					0.993	
Flt Protected		0.950			0.976		0.950			0.950		
Satd. Flow (prot)	0	1719	1455	0	1916	1669	1752	3505	0	1745	3480	0
Flt Permitted							0.950			0.950		
Satd. Flow (perm)	0	1810	1455	0	1963	1669	1752	3505	0	1745	3480	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			86			86					7	
Link Speed (mph)		30			10			30			30	
Link Distance (ft)		495			382			1515			1791	
Travel Time (s)		11.3			26.0			34.4			40.7	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.90	0.90	0.90	0.83	0.83	0.83
Heavy Vehicles (%)	5%	0%	11%	0%	0%	0%	3%	3%	0%	0%	3%	3%
Adj. Flow (vph)	10	0	14	3	3	5	129	864	2	2	1384	71
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	10	14	0	6	5	129	866	0	2	1455	0
Turn Type	Perm	NA	pt+ov	Perm	NA	pt+ov	Prot	NA		Prot	NA	
Protected Phases		4	4 1		8	8 5	1	6		5	2	
Permitted Phases	4			8								
Detector Phase	4	4	4 1	8	8	8 5	1	6		5	2	
Switch Phase												
Minimum Initial (s)	3.0	3.0		3.0	3.0		4.0	15.0		4.0	15.0	
Minimum Split (s)	9.0	9.0		9.0	9.0		8.0	21.0		8.0	21.0	
Total Split (s)	16.0	16.0		16.0	16.0		16.0	66.0		16.0	66.0	
Total Split (%)	14.0%	14.0%		14.0%	14.0%		14.0%	57.9%		14.0%	57.9%	
Maximum Green (s)	10.0	10.0		10.0	10.0		12.0	60.0		12.0	60.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		3.0	4.0		3.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		1.0	2.0		1.0	2.0	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.0			6.0		4.0	6.0		4.0	6.0	
Lead/Lag	Lead	Lead		Lag	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		2.0	3.0		2.0	3.0	
Recall Mode	None	None		None	None		None	Min		None	Min	
Act Effct Green (s)		7.5	11.3		6.5	9.1	10.8	67.5		5.2	48.6	
Actuated g/C Ratio		0.10	0.14		0.08	0.12	0.14	0.86		0.07	0.62	
v/c Ratio		0.06	0.05		0.04	0.02	0.54	0.29		0.02	0.67	
Control Delay		44.1	0.4		46.4	0.2	47.4	5.0		48.5	14.4	
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		44.1	0.4		46.4	0.2	47.4	5.0		48.5	14.4	
LOS		D	A		D	A	D	A		D	B	

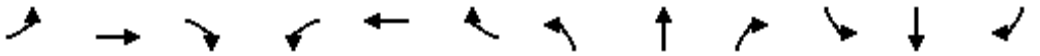
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		18.6			25.4			10.5			14.5	
Approach LOS		B			C			B			B	
Queue Length 50th (ft)		4	0		2	0	46	0		1	141	
Queue Length 95th (ft)		22	0		16	0	#174	203		8	433	
Internal Link Dist (ft)		415			302			1435			1711	
Turn Bay Length (ft)			100			100	225			225		
Base Capacity (vph)		256	329		277	367	297	2965		296	2800	
Starvation Cap Reductn		0	0		0	0	0	0		0	0	
Spillback Cap Reductn		0	0		0	0	0	0		0	0	
Storage Cap Reductn		0	0		0	0	0	0		0	0	
Reduced v/c Ratio		0.04	0.04		0.02	0.01	0.43	0.29		0.01	0.52	

Intersection Summary			
Area Type:	Other		
Cycle Length: 114			
Actuated Cycle Length: 78.4			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.67			
Intersection Signal Delay: 13.0		Intersection LOS: B	
Intersection Capacity Utilization 60.0%		ICU Level of Service B	
Analysis Period (min) 15			

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

Splits and Phases: 6: Lowell Road (Route 3A) & Hampshire Drive/Oblate Drive





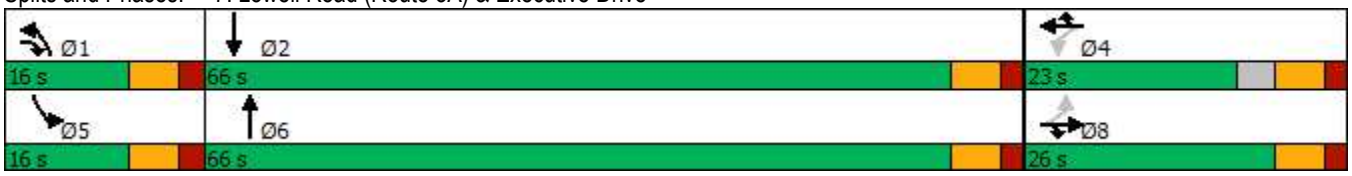
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	36	2	10	141	30	101	164	455	60	107	1051	203
Future Volume (vph)	36	2	10	141	30	101	164	455	60	107	1051	203
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	15	12	12	13	11	12	12	11	12	12
Storage Length (ft)	0		225	0		80	350		0	150		0
Storage Lanes	0		1	0		1	1		0	1		0
Taper Length (ft)	25			25			50			50		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850			0.850		0.983			0.976	
Flt Protected		0.955			0.961		0.950			0.950		
Satd. Flow (prot)	0	1577	1558	0	1811	1620	1711	3416	0	1728	3454	0
Flt Permitted		0.469			0.731		0.950			0.950		
Satd. Flow (perm)	0	774	1558	0	1378	1620	1711	3416	0	1728	3454	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			30			101		21			33	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		492			577			1791			1168	
Travel Time (s)		11.2			13.1			40.7			26.5	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	12%	0%	14%	1%	0%	3%	2%	4%	3%	1%	2%	2%
Adj. Flow (vph)	45	3	13	176	38	126	180	500	66	118	1155	223
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	48	13	0	214	126	180	566	0	118	1378	0
Turn Type	Perm	NA	pt+ov	Perm	NA	Prot	Prot	NA		Prot	NA	
Protected Phases		8	8 1		4	4	1	6		5	2	
Permitted Phases	8			4								
Detector Phase	8	8	8 1	4	4	4	1	6		5	2	
Switch Phase												
Minimum Initial (s)	3.0	3.0		5.0	5.0	5.0	3.0	8.0		3.0	8.0	
Minimum Split (s)	9.0	9.0		11.0	11.0	11.0	9.0	14.0		9.0	14.0	
Total Split (s)	26.0	26.0		23.0	23.0	23.0	16.0	66.0		16.0	66.0	
Total Split (%)	24.1%	24.1%		21.3%	21.3%	21.3%	14.8%	61.1%		14.8%	61.1%	
Maximum Green (s)	20.0	20.0		17.0	17.0	17.0	10.0	60.0		10.0	60.0	
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.0			6.0	6.0	6.0	6.0		6.0	6.0	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	2.0	2.0		2.0	2.0	2.0	2.0	3.0		2.0	3.0	
Recall Mode	None	None		None	None	None	None	Min		None	Min	
Act Effct Green (s)		12.1	25.6		16.0	16.0	10.2	46.7		9.2	45.7	
Actuated g/C Ratio		0.13	0.28		0.18	0.18	0.11	0.52		0.10	0.51	
v/c Ratio		0.47	0.03		0.88	0.34	0.93	0.32		0.67	0.78	
Control Delay		52.3	3.3		72.7	14.3	94.3	12.5		61.9	21.0	
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		52.3	3.3		72.7	14.3	94.3	12.5		61.9	21.0	
LOS		D	A		E	B	F	B		E	C	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		41.8			51.1			32.2			24.2	
Approach LOS		D			D			C			C	
Queue Length 50th (ft)		24	0		120	12	105	92		66	318	
Queue Length 95th (ft)		59	4		#239	52	#278	126		#167	402	
Internal Link Dist (ft)		412			497			1711			1088	
Turn Bay Length (ft)			225			80	350			150		
Base Capacity (vph)		174	537		311	443	193	2319		194	2349	
Starvation Cap Reductn		0	0		0	0	0	0		0	0	
Spillback Cap Reductn		0	0		0	0	0	0		0	0	
Storage Cap Reductn		0	0		0	0	0	0		0	0	
Reduced v/c Ratio		0.28	0.02		0.69	0.28	0.93	0.24		0.61	0.59	

Intersection Summary			
Area Type:	Other		
Cycle Length: 108			
Actuated Cycle Length: 90.2			
Natural Cycle: 80			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.93			
Intersection Signal Delay: 30.3		Intersection LOS: C	
Intersection Capacity Utilization 75.7%		ICU Level of Service D	
Analysis Period (min) 15			

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

Splits and Phases: 7: Lowell Road (Route 3A) & Executive Drive



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	11	0	48	6	0	10	4	566	1	16	1317	3
Future Volume (vph)	11	0	48	6	0	10	4	566	1	16	1317	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	14	13	13	11	11	12	12	12	12
Storage Length (ft)	0		50	0		100	210		325	125		0
Storage Lanes	0		1	0		1	1		1	1		0
Taper Length (ft)	25			25			50			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850			
Flt Protected		0.950			0.950		0.950			0.950		
Satd. Flow (prot)	0	1719	1583	0	1865	1669	1745	1766	1615	1805	1863	0
Flt Permitted		0.752			0.748		0.950			0.950		
Satd. Flow (perm)	0	1361	1583	0	1469	1669	1745	1766	1615	1805	1863	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			91			55			91			
Link Speed (mph)		10			30			30			30	
Link Distance (ft)		598			262			1405			549	
Travel Time (s)		40.8			6.0			31.9			12.5	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.91	0.91	0.91	0.95	0.95	0.95
Heavy Vehicles (%)	5%	0%	2%	0%	0%	0%	0%	4%	0%	0%	2%	0%
Adj. Flow (vph)	14	0	60	8	0	13	4	622	1	17	1386	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	14	60	0	8	13	4	622	1	17	1389	0
Turn Type	Perm	NA	Prot	Perm	NA	pm+ov	Prot	NA	Prot	Prot	NA	
Protected Phases		8	8		4	5	1	6	6	5	2	
Permitted Phases	8			4		4						
Detector Phase	8	8	8	4	4	5	1	6	6	5	2	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	10.0	10.0	5.0	10.0	
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0	11.0	11.0	16.0	16.0	11.0	16.0	
Total Split (s)	16.0	16.0	16.0	16.0	16.0	16.0	16.0	116.0	116.0	16.0	116.0	
Total Split (%)	8.9%	8.9%	8.9%	8.9%	8.9%	8.9%	8.9%	64.4%	64.4%	8.9%	64.4%	
Maximum Green (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	110.0	110.0	10.0	110.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)		6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Lead/Lag						Lead	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?						Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	1.5	1.5	1.5	1.5	1.5	1.5	1.0	1.5	1.5	1.5	1.5	
Recall Mode	None	None	None	None	None	None	None	C-Min	C-Min	None	C-Min	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)		6.3	6.3		6.3	18.3	5.0	147.7	147.7	6.0	153.1	
Actuated g/C Ratio		0.04	0.04		0.04	0.10	0.03	0.82	0.82	0.03	0.85	
v/c Ratio		0.30	0.42		0.16	0.06	0.08	0.43	0.00	0.28	0.88	
Control Delay		100.2	12.4		90.2	0.5	89.0	8.4	0.0	95.9	18.7	

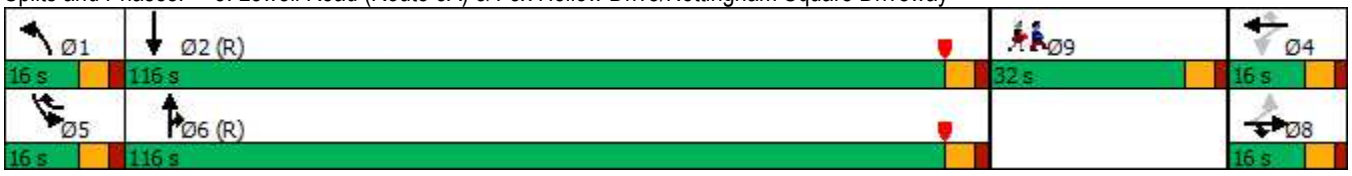
Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	32.0
Total Split (s)	32.0
Total Split (%)	18%
Maximum Green (s)	26.0
Yellow Time (s)	4.0
All-Red Time (s)	2.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	5.0
Flash Dont Walk (s)	21.0
Pedestrian Calls (#/hr)	5
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	26.8	
Total Delay		100.2	12.4		90.2	0.5	89.0	8.4	0.0	95.9	45.4	
LOS		F	B		F	A	F	A	A	F	D	
Approach Delay		29.0			34.7			8.9			46.0	
Approach LOS		C			C			A			D	
Queue Length 50th (ft)		17	0		9	0	5	156	0	20	449	
Queue Length 95th (ft)		40	3		27	0	20	517	0	50	#2186	
Internal Link Dist (ft)		518			182			1325			469	
Turn Bay Length (ft)			50			100	210		325	125		
Base Capacity (vph)		75	173		81	254	96	1449	1341	100	1585	
Starvation Cap Reductn		0	0		0	0	0	0	0	0	262	
Spillback Cap Reductn		0	0		0	0	0	0	0	0	0	
Storage Cap Reductn		0	0		0	0	0	0	0	0	0	
Reduced v/c Ratio		0.19	0.35		0.10	0.05	0.04	0.43	0.00	0.17	1.05	

Intersection Summary

Area Type: Other
Cycle Length: 180
Actuated Cycle Length: 180
Offset: 0 (0%), Referenced to phase 2:SBT and 6:NBT, Start of Yellow, Master Intersection
Natural Cycle: 150
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.88
Intersection Signal Delay: 34.4 Intersection LOS: C
Intersection Capacity Utilization 92.8% ICU Level of Service F
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 8: Lowell Road (Route 3A) & Fox Hollow Drive/Nottingham Square Driveway



Lane Group	Ø9
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø9
Lane Configurations							
Traffic Volume (vph)	232	73	500	84	64	1108	
Future Volume (vph)	232	73	500	84	64	1108	
Ideal Flow (vphpl)	1900	1000	1900	1900	1900	1900	
Lane Width (ft)	12	12	13	13	12	12	
Storage Length (ft)	0	75		0	150		
Storage Lanes	1	1		0	1		
Taper Length (ft)	25				50		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		0.850	0.981				
Flt Protected	0.950				0.950		
Satd. Flow (prot)	1787	802	1839	0	1719	1863	
Flt Permitted	0.950				0.950		
Satd. Flow (perm)	1787	802	1839	0	1719	1863	
Right Turn on Red		Yes		Yes			
Satd. Flow (RTOR)		29	8				
Link Speed (mph)	20		30			30	
Link Distance (ft)	512		549			1309	
Travel Time (s)	17.5		12.5			29.8	
Peak Hour Factor	0.88	0.88	0.92	0.92	0.96	0.96	
Heavy Vehicles (%)	1%	6%	5%	3%	5%	2%	
Adj. Flow (vph)	264	83	543	91	67	1154	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	264	83	634	0	67	1154	
Turn Type	Prot	pt+ov	NA		Prot	NA	
Protected Phases	4	4 5	6		5	2	9
Permitted Phases							
Detector Phase	4	4 5	6		5	2	
Switch Phase							
Minimum Initial (s)	5.0		10.0		3.0	10.0	5.0
Minimum Split (s)	11.0		16.0		9.0	16.0	35.0
Total Split (s)	26.0		116.0		13.0	116.0	35.0
Total Split (%)	13.7%		61.1%		6.8%	61.1%	18%
Maximum Green (s)	20.0		110.0		7.0	110.0	29.0
Yellow Time (s)	4.0		4.0		4.0	4.0	4.0
All-Red Time (s)	2.0		2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0		0.0	0.0	
Total Lost Time (s)	6.0		6.0		6.0	6.0	
Lead/Lag			Lag		Lead		
Lead-Lag Optimize?			Yes		Yes		
Vehicle Extension (s)	1.5		1.5		1.5	1.5	3.0
Recall Mode	None		C-Min		None	C-Min	None
Walk Time (s)							5.0
Flash Dont Walk (s)							24.0
Pedestrian Calls (#/hr)							5
Act Effct Green (s)	20.0	33.0	138.0		7.0	151.0	
Actuated g/C Ratio	0.11	0.17	0.73		0.04	0.79	
v/c Ratio	1.40	0.51	0.47		1.06	0.78	
Control Delay	265.8	57.8	14.1		211.0	17.8	

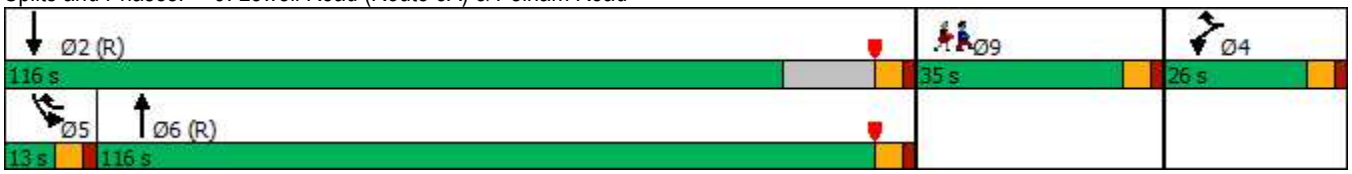
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø9
Queue Delay	0.0	0.0	3.9		0.0	0.0	
Total Delay	265.8	57.8	18.1		211.0	17.8	
LOS	F	E	B		F	B	
Approach Delay	216.0		18.1			28.4	
Approach LOS	F		B			C	
Queue Length 50th (ft)	~439	62	258		~91	548	
Queue Length 95th (ft)	#620	125	619		#210	#1690	
Internal Link Dist (ft)	432		469			1229	
Turn Bay Length (ft)		75			150		
Base Capacity (vph)	188	163	1338		63	1480	
Starvation Cap Reductn	0	0	603		0	0	
Spillback Cap Reductn	0	0	0		0	0	
Storage Cap Reductn	0	0	0		0	0	
Reduced v/c Ratio	1.40	0.51	0.86		1.06	0.78	

Intersection Summary			
Area Type:	Other		
Cycle Length: 190			
Actuated Cycle Length: 190			
Offset: 30 (16%), Referenced to phase 2:SBT and 6:NBT, Start of Yellow			
Natural Cycle: 150			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.40			
Intersection Signal Delay: 55.0		Intersection LOS: D	
Intersection Capacity Utilization 81.2%		ICU Level of Service D	
Analysis Period (min) 15			

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

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

Splits and Phases: 9: Lowell Road (Route 3A) & Pelham Road



2022 Build Weekday P.M.

Lane Group	EBL	EBR	EBR2	NBL	NBT	NBR	SBL	SBT	SBR	NWL2	NWL	NWR
Lane Configurations												
Traffic Volume (vph)	36	2	2	1	593	1	894	399	13	4	0	660
Future Volume (vph)	36	2	2	1	593	1	894	399	13	4	0	660
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	12	12	10	12	12	12	12	12
Storage Length (ft)	0	50		200		300	775		0		100	0
Storage Lanes	1	1		1		1	1		0		1	1
Taper Length (ft)	25			100			75				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00
Frt		0.850						0.995				0.850
Flt Protected	0.950			0.950			0.950				0.950	
Satd. Flow (prot)	1668	1507	0	1685	3610	0	1685	3557	0	0	1805	1615
Flt Permitted	0.950			0.950			0.950				0.950	
Satd. Flow (perm)	1668	1507	0	1685	3610	0	1685	3557	0	0	1805	1615
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		191						4				263
Link Speed (mph)	30				35			35			35	
Link Distance (ft)	591				758			1733			622	
Travel Time (s)	13.4				14.8			33.8			12.1	
Peak Hour Factor	0.80	0.80	0.80	0.91	0.91	0.91	0.90	0.90	0.90	0.91	0.91	0.91
Heavy Vehicles (%)	1%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%
Adj. Flow (vph)	45	3	3	1	652	1	993	443	14	4	0	725
Shared Lane Traffic (%)												
Lane Group Flow (vph)	45	6	0	1	653	0	993	457	0	0	4	725
Turn Type	Prot	Prot		Prot	NA		Prot	NA		Prot	Prot	pt+ov
Protected Phases	4	4		1	6		5	2		3	3	3 5
Permitted Phases												
Detector Phase	4	4		1	6		5	2		3	3	3 5
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	8.0		8.0	8.0		5.0	5.0	
Minimum Split (s)	11.0	11.0		11.0	14.0		14.0	14.0		11.0	11.0	
Total Split (s)	21.0	21.0		16.0	32.0		51.0	67.0		16.0	16.0	
Total Split (%)	17.5%	17.5%		13.3%	26.7%		42.5%	55.8%		13.3%	13.3%	
Maximum Green (s)	15.0	15.0		10.0	26.0		45.0	61.0		10.0	10.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0			0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0			6.0	
Lead/Lag	Lag	Lag		Lead	Lag		Lead	Lag		Lead	Lead	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	4.0		4.0	4.0		4.0	4.0	
Recall Mode	None	None		None	C-Min		None	C-Min		None	None	
Act Effct Green (s)	8.7	8.7		5.6	25.4		53.6	82.6			10.6	65.4
Actuated g/C Ratio	0.07	0.07		0.05	0.21		0.45	0.69			0.09	0.54
v/c Ratio	0.38	0.02		0.01	0.85		1.32	0.19			0.03	0.72
Control Delay	61.1	0.2		55.0	57.5		171.7	1.2			51.0	16.4
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0			0.0	0.0
Total Delay	61.1	0.2		55.0	57.5		171.7	1.2			51.0	16.4
LOS	E	A		D	E		F	A			D	B

Lane Group	EBL	EBR	EBR2	NBL	NBT	NBR	SBL	SBT	SBR	NWL2	NWL	NWR
Approach Delay	53.9				57.5			118.0			16.6	
Approach LOS	D				E			F			B	
Queue Length 50th (ft)	34	0		1	256		~997	2			3	175
Queue Length 95th (ft)	63	0		7	#334		#1296	m44			15	377
Internal Link Dist (ft)	511				678			1653			542	
Turn Bay Length (ft)		50		200			775				100	
Base Capacity (vph)	208	355		140	782		753	2450			159	1000
Starvation Cap Reductn	0	0		0	0		0	0			0	0
Spillback Cap Reductn	0	0		0	0		0	0			0	0
Storage Cap Reductn	0	0		0	0		0	0			0	0
Reduced v/c Ratio	0.22	0.02		0.01	0.84		1.32	0.19			0.03	0.72

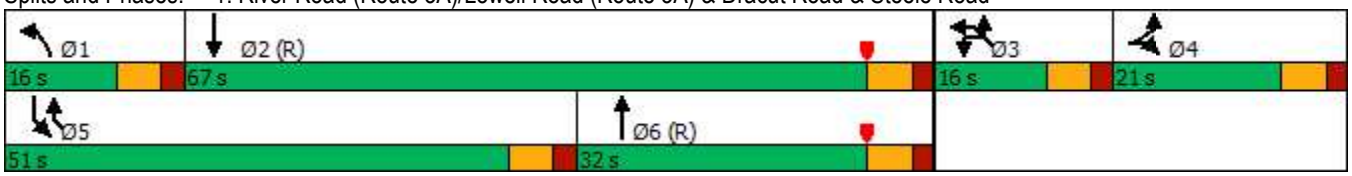
Intersection Summary	
Area Type:	Other
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 5 (4%), Referenced to phase 2:SBT and 6:NBT, Start of Yellow	
Natural Cycle: 150	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.32	
Intersection Signal Delay: 77.5	Intersection LOS: E
Intersection Capacity Utilization 94.3%	ICU Level of Service F
Analysis Period (min) 15	
Description: NHDOT Int. No.: S-229-04	

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

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

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

Splits and Phases: 1: River Road (Route 3A)/Lowell Road (Route 3A) & Dracut Road & Steele Road



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	273	0	51	1	0	16	35	1267	5	24	1246	228
Future Volume (vph)	273	0	51	1	0	16	35	1267	5	24	1246	228
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	13	13	13	10	12	12	12	12	12
Storage Length (ft)	0		50	0		0	300		0	350		0
Storage Lanes	0		1	0		0	1		0	1		0
Taper Length (ft)	25			25			75			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850		0.871			0.999			0.977	
Flt Protected		0.950			0.998		0.950			0.950		
Satd. Flow (prot)	0	1620	1507	0	1707	0	1685	3606	0	1805	3463	0
Flt Permitted		0.744			0.986		0.950			0.950		
Satd. Flow (perm)	0	1269	1507	0	1686	0	1685	3606	0	1805	3463	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			82		82						23	
Link Speed (mph)		15			30			35			35	
Link Distance (ft)		510			557			1733			980	
Travel Time (s)		23.2			12.7			33.8			19.1	
Peak Hour Factor	0.84	0.84	0.84	0.80	0.80	0.80	0.93	0.93	0.93	0.90	0.90	0.90
Heavy Vehicles (%)	4%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	12%
Adj. Flow (vph)	325	0	61	1	0	20	38	1362	5	27	1384	253
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	325	61	0	21	0	38	1367	0	27	1637	0
Turn Type	Perm	NA	Prot	Perm	NA		Prot	NA		Prot	NA	
Protected Phases		7	7		3		1	6		5	2	
Permitted Phases	7			3								
Detector Phase	7	7	7	3	3		1	6		5	2	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0		11.0	16.0		11.0	16.0	
Total Split (s)	32.0	32.0	32.0	32.0	32.0		27.0	61.0		27.0	61.0	
Total Split (%)	26.7%	26.7%	26.7%	26.7%	26.7%		22.5%	50.8%		22.5%	50.8%	
Maximum Green (s)	26.0	26.0	26.0	26.0	26.0		21.0	55.0		21.0	55.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.0	6.0		6.0		6.0	6.0		6.0	6.0	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Recall Mode	None	None	None	None	None		None	C-Min		None	C-Min	
Act Effct Green (s)		26.0	26.0		14.3		9.2	72.8		8.3	72.1	
Actuated g/C Ratio		0.22	0.22		0.12		0.08	0.61		0.07	0.60	
v/c Ratio		1.19	0.16		0.08		0.30	0.62		0.22	0.78	
Control Delay		155.9	5.2		0.5		66.0	15.7		57.3	14.8	
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Delay		155.9	5.2		0.5		66.0	15.7		57.3	14.8	
LOS		F	A		A		E	B		E	B	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		132.1			0.5			17.1			15.5	
Approach LOS		F			A			B			B	
Queue Length 50th (ft)		~302	0		0		30	498		22	137	
Queue Length 95th (ft)		#438	18		0		m38	600		m30	280	
Internal Link Dist (ft)		430			477			1653			900	
Turn Bay Length (ft)			50				300			350		
Base Capacity (vph)		274	390		429		294	2188		315	2089	
Starvation Cap Reductn		0	0		0		0	0		0	0	
Spillback Cap Reductn		0	0		0		0	0		0	0	
Storage Cap Reductn		0	0		0		0	0		0	0	
Reduced v/c Ratio		1.19	0.16		0.05		0.13	0.62		0.09	0.78	

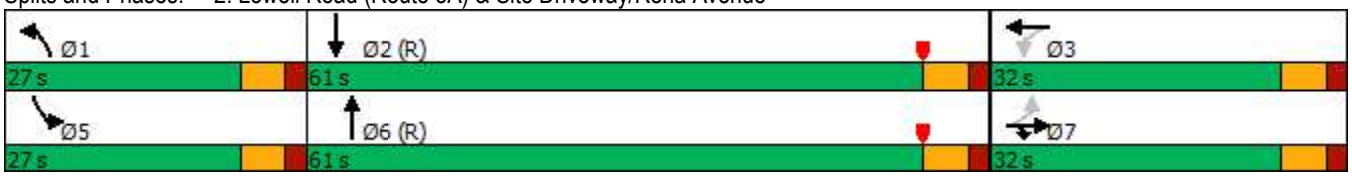
Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 74 (62%), Referenced to phase 2:SBT and 6:NBT, Start of Yellow			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.19			
Intersection Signal Delay: 29.0		Intersection LOS: C	
Intersection Capacity Utilization 73.5%		ICU Level of Service D	
Analysis Period (min) 15			
Description: NHDOT Int. No.: S-229-03			

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

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

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

Splits and Phases: 2: Lowell Road (Route 3A) & Site Driveway/Rena Avenue



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	357	13	129	88	20	244	110	1380	74	310	1287	300
Future Volume (vph)	357	13	129	88	20	244	110	1380	74	310	1287	300
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	13	12	12	12	13	12	12	12	12	12	12
Storage Length (ft)	175		175	150		200	350		175	350		0
Storage Lanes	2		1	2		1	2		1	2		1
Taper Length (ft)	25			75			125			100		
Lane Util. Factor	0.97	1.00	1.00	0.97	1.00	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3433	1963	1615	3502	1900	1669	3467	3574	1615	3502	3539	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3433	1963	1615	3502	1900	1669	3467	3574	1615	3502	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			147			224			136			241
Link Speed (mph)		30			30			35			30	
Link Distance (ft)		401			449			980			1189	
Travel Time (s)		9.1			10.2			19.1			27.0	
Peak Hour Factor	0.88	0.88	0.88	0.86	0.86	0.86	0.89	0.89	0.89	0.91	0.91	0.91
Heavy Vehicles (%)	2%	0%	0%	0%	0%	0%	1%	1%	0%	0%	2%	2%
Adj. Flow (vph)	406	15	147	102	23	284	124	1551	83	341	1414	330
Shared Lane Traffic (%)												
Lane Group Flow (vph)	406	15	147	102	23	284	124	1551	83	341	1414	330
Turn Type	Prot	NA	Prot	Prot	NA	Prot	Prot	NA	Prot	Prot	NA	Prot
Protected Phases	7	4	4	3	8	8	1	6	6	5	2	2
Permitted Phases												
Detector Phase	7	4	4	3	8	8	1	6	6	5	2	2
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0	11.0	11.0	16.0	16.0	11.0	16.0	16.0
Total Split (s)	26.0	20.0	20.0	26.0	20.0	20.0	21.0	48.0	48.0	26.0	53.0	53.0
Total Split (%)	21.7%	16.7%	16.7%	21.7%	16.7%	16.7%	17.5%	40.0%	40.0%	21.7%	44.2%	44.2%
Maximum Green (s)	20.0	14.0	14.0	20.0	14.0	14.0	15.0	42.0	42.0	20.0	47.0	47.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	6.0	6.0	4.0	6.0	6.0
Recall Mode	None	None	None	None	None	None	None	C-Min	C-Min	None	C-Min	C-Min
Act Effct Green (s)	18.7	19.6	19.6	9.8	10.7	10.7	10.6	49.2	49.2	17.4	55.9	55.9
Actuated g/C Ratio	0.16	0.16	0.16	0.08	0.09	0.09	0.09	0.41	0.41	0.14	0.47	0.47
v/c Ratio	0.76	0.05	0.38	0.36	0.14	0.80	0.41	1.06	0.11	0.67	0.86	0.38
Control Delay	58.2	40.9	9.7	55.1	50.4	30.7	58.8	63.5	1.0	58.3	29.4	3.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	58.2	40.9	9.7	55.1	50.4	30.7	58.8	63.5	1.0	58.3	29.4	3.2
LOS	E	D	A	E	D	C	E	E	A	E	C	A

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		45.2			37.9			60.3			30.0	
Approach LOS		D			D			E			C	
Queue Length 50th (ft)	155	10	0	39	17	44	47	~708	0	124	557	0
Queue Length 95th (ft)	205	29	53	63	41	123	m72	m#836	m5	m134	m#727	m37
Internal Link Dist (ft)		321			369			900			1109	
Turn Bay Length (ft)	175		175	150		200	350		175	350		
Base Capacity (vph)	572	320	386	583	221	392	433	1464	742	583	1649	866
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.71	0.05	0.38	0.17	0.10	0.72	0.29	1.06	0.11	0.58	0.86	0.38

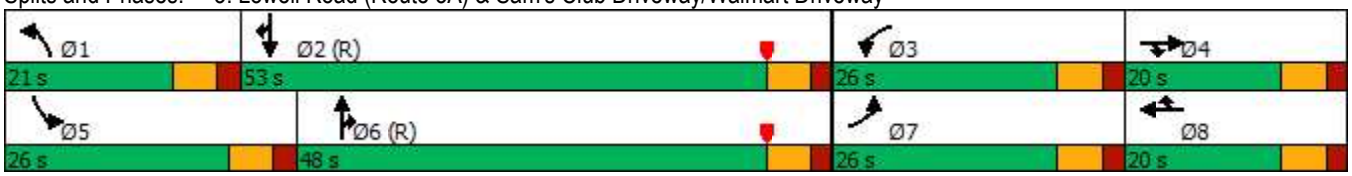
Intersection Summary	
Area Type:	Other
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 64 (53%), Referenced to phase 2:SBT and 6:NBT, Start of Yellow	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.06	
Intersection Signal Delay: 43.5	Intersection LOS: D
Intersection Capacity Utilization 78.8%	ICU Level of Service D
Analysis Period (min) 15	
Description: NHDOT Int. No.: S-229-06	

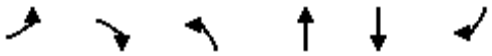
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

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

Splits and Phases: 3: Lowell Road (Route 3A) & Sam's Club Driveway/Walmart Driveway





Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	1479	1467	1331	684	500	1233
Future Volume (vph)	1479	1467	1331	684	500	1233
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	14	14	12	12	12	12
Storage Length (ft)	0	0	525			200
Storage Lanes	2	1	2			1
Taper Length (ft)	25		100			
Lane Util. Factor	0.97	1.00	0.97	0.95	0.95	0.88
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	3698	1689	3467	3610	3610	2814
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	3698	1689	3467	3610	3610	2814
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		635				1300
Link Speed (mph)	35			30	30	
Link Distance (ft)	929			1189	999	
Travel Time (s)	18.1			27.0	22.7	
Peak Hour Factor	0.96	0.96	0.94	0.94	0.89	0.89
Heavy Vehicles (%)	1%	2%	1%	0%	0%	1%
Adj. Flow (vph)	1541	1528	1416	728	562	1385
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1541	1528	1416	728	562	1385
Turn Type	Prot	Free	Prot	NA	NA	Free
Protected Phases	3		1	6	2	
Permitted Phases		Free				Free
Detector Phase	3		1	6	2	
Switch Phase						
Minimum Initial (s)	10.0		7.0	10.0	10.0	
Minimum Split (s)	16.0		15.0	17.0	17.0	
Total Split (s)	50.0		40.0	67.0	30.0	
Total Split (%)	41.7%		33.3%	55.8%	25.0%	
Maximum Green (s)	44.0		32.0	60.0	23.0	
Yellow Time (s)	4.0		4.0	4.0	4.0	
All-Red Time (s)	2.0		4.0	3.0	3.0	
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	
Total Lost Time (s)	6.0		8.0	7.0	7.0	
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	4.0		4.0	4.0	4.0	
Recall Mode	None		None	C-Min	C-Min	
Act Effct Green (s)	44.5	120.0	32.0	62.5	22.5	120.0
Actuated g/C Ratio	0.37	1.00	0.27	0.52	0.19	1.00
v/c Ratio	1.12	0.90	1.53	0.39	0.83	0.49
Control Delay	101.6	9.3	268.1	7.7	58.6	0.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	101.6	9.3	268.1	7.7	58.6	0.6
LOS	F	A	F	A	E	A

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Approach Delay	55.7			179.7	17.4	
Approach LOS	E			F	B	
Queue Length 50th (ft)	~717	0	~792	110	221	0
Queue Length 95th (ft)	#854	#5	m#785	m95	284	0
Internal Link Dist (ft)	849			1109	919	
Turn Bay Length (ft)			525			200
Base Capacity (vph)	1371	1689	924	1895	691	2814
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.12	0.90	1.53	0.38	0.81	0.49

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 100 (83%), Referenced to phase 2:SBT and 6:NBT, Start of Green			
Natural Cycle: 150			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.53			
Intersection Signal Delay: 82.4		Intersection LOS: F	
Intersection Capacity Utilization 110.7%		ICU Level of Service H	
Analysis Period (min) 15			
Description: NHDOT Int. No.: S-229-02			

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Lowell Road (Route 3A) & Sagamore Bridge Road

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	52	92	433	435	17	28	137	1060	988	72	897	5
Future Volume (vph)	52	92	433	435	17	28	137	1060	988	72	897	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	11	11	11	12	12	12	12	12	12
Storage Length (ft)	0		250	200		75	575		275	175		300
Storage Lanes	0		1	1		1	1		1	1		1
Taper Length (ft)	25			50			175			75		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.91	0.91
Frt			0.850			0.850			0.850		0.999	
Flt Protected		0.982		0.950	0.956		0.950			0.950		
Satd. Flow (prot)	0	1866	1599	1658	1668	1546	1787	3574	1615	1805	5131	0
Flt Permitted		0.982		0.950	0.956		0.950			0.950		
Satd. Flow (perm)	0	1866	1599	1658	1668	1546	1787	3574	1615	1805	5131	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			57			89			283			
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		805			586			999			1515	
Travel Time (s)		18.3			13.3			22.7			34.4	
Peak Hour Factor	0.80	0.80	0.80	0.90	0.90	0.90	0.94	0.94	0.94	0.88	0.88	0.88
Heavy Vehicles (%)	0%	0%	1%	0%	0%	1%	1%	1%	0%	0%	1%	0%
Adj. Flow (vph)	65	115	541	483	19	31	146	1128	1051	82	1019	6
Shared Lane Traffic (%)				48%								
Lane Group Flow (vph)	0	180	541	251	251	31	146	1128	1051	82	1025	0
Turn Type	Split	NA	pm+ov	Split	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	
Protected Phases	8	8	1	7	7	5	1	6	7	5	2	
Permitted Phases			8			7			6			
Detector Phase	8	8	1	7	7	5	1	6	7	5	2	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	10.0	5.0	5.0	10.0	
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0	11.0	11.0	16.0	11.0	11.0	16.0	
Total Split (s)	26.0	26.0	31.0	56.0	56.0	21.0	31.0	71.0	56.0	21.0	71.0	
Total Split (%)	14.1%	14.1%	16.8%	30.4%	30.4%	11.4%	16.8%	38.6%	30.4%	11.4%	38.6%	
Maximum Green (s)	20.0	20.0	25.0	50.0	50.0	15.0	25.0	65.0	50.0	15.0	65.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)		6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Lead/Lag	Lag	Lag	Lead	Lead	Lead	Lead	Lead	Lag	Lead	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	3.0	2.5	2.5	3.0	
Recall Mode	None	None	None	None	None	None	None	Min	None	None	Min	
Act Effct Green (s)		18.6	50.5	41.5	41.5	53.1	25.7	56.3	104.0	11.6	42.1	
Actuated g/C Ratio		0.12	0.33	0.27	0.27	0.35	0.17	0.37	0.68	0.08	0.28	
v/c Ratio		0.80	0.96	0.56	0.55	0.05	0.49	0.86	0.88	0.60	0.72	
Control Delay		92.7	74.4	53.8	53.7	0.2	69.2	53.7	24.2	91.8	53.5	
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.8	0.0	0.0	
Total Delay		92.7	74.4	53.8	53.7	0.2	69.2	53.7	26.0	91.8	53.5	
LOS		F	E	D	D	A	E	D	C	F	D	

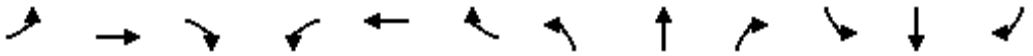
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		79.0			50.6			42.1			56.3	
Approach LOS		E			D			D			E	
Queue Length 50th (ft)		190	~540	231	231	0	146	603	641	87	368	
Queue Length 95th (ft)		#276	#703	358	358	0	239	715	992	151	408	
Internal Link Dist (ft)		725			506			919			1435	
Turn Bay Length (ft)			250	200		75	575		275	175		
Base Capacity (vph)		251	566	559	562	632	301	1807	1277	182	2249	
Starvation Cap Reductn		0	0	0	0	0	0	0	105	0	0	
Spillback Cap Reductn		0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn		0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio		0.72	0.96	0.45	0.45	0.05	0.49	0.62	0.90	0.45	0.46	

Intersection Summary			
Area Type:	Other		
Cycle Length: 184			
Actuated Cycle Length: 152.7			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.96			
Intersection Signal Delay: 52.1		Intersection LOS: D	
Intersection Capacity Utilization 88.1%		ICU Level of Service E	
Analysis Period (min) 15			

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

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

Splits and Phases: 5: Lowell Road (Route 3A) & Flagstone Drive/Wason Road

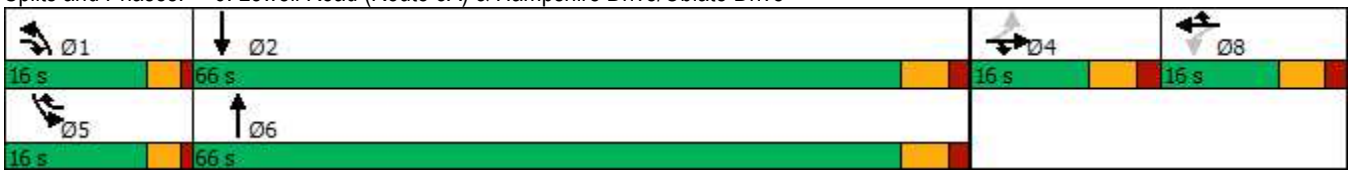


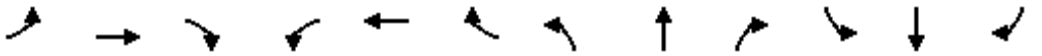
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	26	2	105	10	1	4	16	1122	12	5	872	7
Future Volume (vph)	26	2	105	10	1	4	16	1122	12	5	872	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	13	13	13	12	12	12	11	12	12
Storage Length (ft)	0		100	0		100	225		0	225		0
Storage Lanes	0		1	0		1	1		0	1		0
Taper Length (ft)	25			25			50			50		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850			0.850		0.998			0.999	
Flt Protected		0.956			0.956		0.950			0.950		
Satd. Flow (prot)	0	1816	1583	0	1877	1669	1736	3567	0	1745	3571	0
Flt Permitted		0.436					0.950			0.950		
Satd. Flow (perm)	0	828	1583	0	1963	1669	1736	3567	0	1745	3571	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			131			86		1			1	
Link Speed (mph)		30			10			30			30	
Link Distance (ft)		495			382			1515			1791	
Travel Time (s)		11.3			26.0			34.4			40.7	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.95	0.95	0.95	0.87	0.87	0.87
Heavy Vehicles (%)	0%	0%	2%	0%	0%	0%	4%	1%	0%	0%	1%	0%
Adj. Flow (vph)	33	3	131	13	1	5	17	1181	13	6	1002	8
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	36	131	0	14	5	17	1194	0	6	1010	0
Turn Type	Perm	NA	pt+ov	Perm	NA	pt+ov	Prot	NA		Prot	NA	
Protected Phases		4	4 1		8	8 5	1	6		5	2	
Permitted Phases	4			8								
Detector Phase	4	4	4 1	8	8	8 5	1	6		5	2	
Switch Phase												
Minimum Initial (s)	3.0	3.0		3.0	3.0		4.0	15.0		4.0	15.0	
Minimum Split (s)	9.0	9.0		9.0	9.0		8.0	21.0		8.0	21.0	
Total Split (s)	16.0	16.0		16.0	16.0		16.0	66.0		16.0	66.0	
Total Split (%)	14.0%	14.0%		14.0%	14.0%		14.0%	57.9%		14.0%	57.9%	
Maximum Green (s)	10.0	10.0		10.0	10.0		12.0	60.0		12.0	60.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		3.0	4.0		3.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		1.0	2.0		1.0	2.0	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.0			6.0		4.0	6.0		4.0	6.0	
Lead/Lag	Lead	Lead		Lag	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		2.0	3.0		2.0	3.0	
Recall Mode	None	None		None	None		None	Min		None	Min	
Act Effct Green (s)		8.8	16.8		6.7	9.6	5.6	39.7		5.1	31.2	
Actuated g/C Ratio		0.13	0.25		0.10	0.14	0.08	0.59		0.08	0.47	
v/c Ratio		0.33	0.26		0.07	0.02	0.12	0.56		0.05	0.61	
Control Delay		41.6	5.6		35.6	0.0	37.7	11.3		38.0	15.8	
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		41.6	5.6		35.6	0.0	37.7	11.3		38.0	15.8	
LOS		D	A		D	A	D	B		D	B	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		13.4			26.3			11.7			16.0	
Approach LOS		B			C			B			B	
Queue Length 50th (ft)		10	0		4	0	5	99		2	124	
Queue Length 95th (ft)		48	26		24	0	31	332		16	258	
Internal Link Dist (ft)		415			302			1435			1711	
Turn Bay Length (ft)			100			100	225			225		
Base Capacity (vph)		131	593		312	411	331	3136		333	3140	
Starvation Cap Reductn		0	0		0	0	0	0		0	0	
Spillback Cap Reductn		0	0		0	0	0	0		0	0	
Storage Cap Reductn		0	0		0	0	0	0		0	0	
Reduced v/c Ratio		0.27	0.22		0.04	0.01	0.05	0.38		0.02	0.32	

Intersection Summary			
Area Type:	Other		
Cycle Length: 114			
Actuated Cycle Length: 66.9			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.61			
Intersection Signal Delay: 13.7		Intersection LOS: B	
Intersection Capacity Utilization 53.1%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 6: Lowell Road (Route 3A) & Hampshire Drive/Oblate Drive





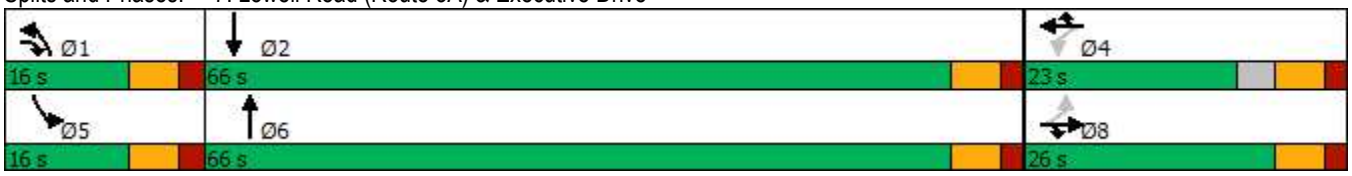
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	225	3	79	23	2	22	52	1030	7	16	716	40
Future Volume (vph)	225	3	79	23	2	22	52	1030	7	16	716	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	15	12	12	13	11	12	12	11	12	12
Storage Length (ft)	0		225	0		80	350		0	150		0
Storage Lanes	0		1	0		1	1		0	1		0
Taper Length (ft)	25			25			50			50		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850			0.850		0.999			0.992	
Flt Protected		0.953			0.957		0.950			0.950		
Satd. Flow (prot)	0	1733	1742	0	1818	1620	1678	3571	0	1646	3540	0
Flt Permitted		0.706			0.673		0.950			0.950		
Satd. Flow (perm)	0	1284	1742	0	1279	1620	1678	3571	0	1646	3540	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			99			91		1			8	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		492			577			1791			1168	
Travel Time (s)		11.2			13.1			40.7			26.5	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.97	0.97	0.97	0.92	0.92	0.92
Heavy Vehicles (%)	1%	0%	2%	0%	0%	3%	4%	1%	0%	6%	1%	4%
Adj. Flow (vph)	281	4	99	29	3	28	54	1062	7	17	778	43
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	285	99	0	32	28	54	1069	0	17	821	0
Turn Type	Perm	NA	pt+ov	Perm	NA	Prot	Prot	NA		Prot	NA	
Protected Phases		8	8 1		4	4	1	6		5	2	
Permitted Phases	8			4								
Detector Phase	8	8	8 1	4	4	4	1	6		5	2	
Switch Phase												
Minimum Initial (s)	3.0	3.0		5.0	5.0	5.0	3.0	8.0		3.0	8.0	
Minimum Split (s)	9.0	9.0		11.0	11.0	11.0	9.0	14.0		9.0	14.0	
Total Split (s)	26.0	26.0		23.0	23.0	23.0	16.0	66.0		16.0	66.0	
Total Split (%)	24.1%	24.1%		21.3%	21.3%	21.3%	14.8%	61.1%		14.8%	61.1%	
Maximum Green (s)	20.0	20.0		17.0	17.0	17.0	10.0	60.0		10.0	60.0	
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.0			6.0	6.0	6.0	6.0		6.0	6.0	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	2.0	2.0		2.0	2.0	2.0	2.0	3.0		2.0	3.0	
Recall Mode	None	None		None	None	None	None	Min		None	Min	
Act Effct Green (s)		20.6	33.6		13.4	13.4	6.8	33.2		5.4	25.0	
Actuated g/C Ratio		0.30	0.49		0.20	0.20	0.10	0.49		0.08	0.37	
v/c Ratio		0.73	0.11		0.13	0.07	0.32	0.62		0.13	0.63	
Control Delay		39.1	3.8		24.3	0.4	37.2	14.6		36.3	20.3	
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		39.1	3.8		24.3	0.4	37.2	14.6		36.3	20.3	
LOS		D	A		C	A	D	B		D	C	

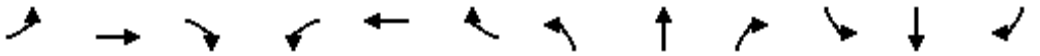
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		30.0			13.1			15.7			20.6	
Approach LOS		C			B			B			C	
Queue Length 50th (ft)		106	0		10	0	21	145		7	148	
Queue Length 95th (ft)		#258	21		33	0	63	282		29	215	
Internal Link Dist (ft)		412			497			1711			1088	
Turn Bay Length (ft)			225			80	350			150		
Base Capacity (vph)		388	993		386	553	253	3110		248	3084	
Starvation Cap Reductn		0	0		0	0	0	0		0	0	
Spillback Cap Reductn		0	0		0	0	0	0		0	0	
Storage Cap Reductn		0	0		0	0	0	0		0	0	
Reduced v/c Ratio		0.73	0.10		0.08	0.05	0.21	0.34		0.07	0.27	

Intersection Summary			
Area Type:	Other		
Cycle Length: 108			
Actuated Cycle Length: 68.2			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.73			
Intersection Signal Delay: 19.6		Intersection LOS: B	
Intersection Capacity Utilization 66.3%		ICU Level of Service C	
Analysis Period (min) 15			

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

Splits and Phases: 7: Lowell Road (Route 3A) & Executive Drive





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	2	25	31	0	48	27	1215	15	56	724	11
Future Volume (vph)	9	2	25	31	0	48	27	1215	15	56	724	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	14	13	13	11	11	12	12	12	12
Storage Length (ft)	0		50	0		100	210		325	125		0
Storage Lanes	0		1	0		1	1		1	1		0
Taper Length (ft)	25			25			50			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850		0.998	
Flt Protected		0.962			0.950		0.950			0.950		
Satd. Flow (prot)	0	1828	1583	0	1865	1669	1745	1818	1615	1805	1878	0
Flt Permitted		0.746			0.748		0.950			0.950		
Satd. Flow (perm)	0	1417	1583	0	1469	1669	1745	1818	1615	1805	1878	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			91			60			91		1	
Link Speed (mph)		10			30			30			30	
Link Distance (ft)		598			262			1405			549	
Travel Time (s)		40.8			6.0			31.9			12.5	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.99	0.99	0.99	0.94	0.94	0.94
Heavy Vehicles (%)	0%	0%	2%	0%	0%	0%	0%	1%	0%	0%	1%	0%
Adj. Flow (vph)	11	3	31	39	0	60	27	1227	15	60	770	12
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	14	31	0	39	60	27	1227	15	60	782	0
Turn Type	Perm	NA	Prot	Perm	NA	pm+ov	Prot	NA	Prot	Prot	NA	
Protected Phases		8	8		4	5	1	6	6	5	2	
Permitted Phases	8			4		4						
Detector Phase	8	8	8	4	4	5	1	6	6	5	2	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	10.0	10.0	5.0	10.0	
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0	11.0	11.0	16.0	16.0	11.0	16.0	
Total Split (s)	16.0	16.0	16.0	16.0	16.0	16.0	16.0	116.0	116.0	16.0	116.0	
Total Split (%)	8.9%	8.9%	8.9%	8.9%	8.9%	8.9%	8.9%	64.4%	64.4%	8.9%	64.4%	
Maximum Green (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	110.0	110.0	10.0	110.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)		6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Lead/Lag						Lead	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?						Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	1.5	1.5	1.5	1.5	1.5	1.5	1.0	1.5	1.5	1.5	1.5	
Recall Mode	None	None	None	None	None	None	None	C-Min	C-Min	None	C-Min	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)		8.1	8.1		8.1	20.7	6.6	140.9	140.9	8.8	146.5	
Actuated g/C Ratio		0.04	0.04		0.04	0.12	0.04	0.78	0.78	0.05	0.81	
v/c Ratio		0.22	0.20		0.59	0.25	0.42	0.86	0.01	0.68	0.51	
Control Delay		90.1	2.8		117.7	16.3	103.9	23.8	0.0	119.5	10.8	

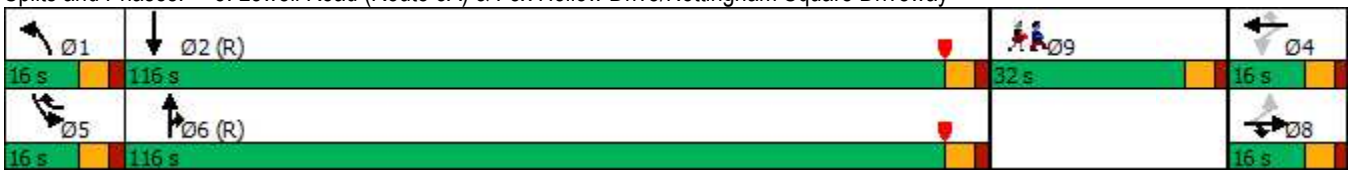
Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	32.0
Total Split (s)	32.0
Total Split (%)	18%
Maximum Green (s)	26.0
Yellow Time (s)	4.0
All-Red Time (s)	2.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	5.0
Flash Dont Walk (s)	21.0
Pedestrian Calls (#/hr)	5
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	2.4	
Total Delay		90.1	2.8		117.7	16.3	103.9	23.8	0.0	119.5	13.2	
LOS		F	A		F	B	F	C	A	F	B	
Approach Delay		29.9			56.2			25.2			20.8	
Approach LOS		C			E			C			C	
Queue Length 50th (ft)		16	0		46	0	32	806	0	71	250	
Queue Length 95th (ft)		40	0		81	36	70	#1911	0	#134	741	
Internal Link Dist (ft)		518			182			1325			469	
Turn Bay Length (ft)			50			100	210		325	125		
Base Capacity (vph)		78	173		81	255	96	1423	1284	100	1528	
Starvation Cap Reductn		0	0		0	0	0	0	0	0	588	
Spillback Cap Reductn		0	0		0	0	0	0	0	0	0	
Storage Cap Reductn		0	0		0	0	0	0	0	0	0	
Reduced v/c Ratio		0.18	0.18		0.48	0.24	0.28	0.86	0.01	0.60	0.83	

Intersection Summary

Area Type: Other
Cycle Length: 180
Actuated Cycle Length: 180
Offset: 0 (0%), Referenced to phase 2:SBT and 6:NBT, Start of Yellow, Master Intersection
Natural Cycle: 150
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.86
Intersection Signal Delay: 25.0 Intersection LOS: C
Intersection Capacity Utilization 87.3% ICU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 8: Lowell Road (Route 3A) & Fox Hollow Drive/Nottingham Square Driveway



Lane Group	Ø9
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø9
Lane Configurations							
Traffic Volume (vph)	86	142	1155	109	110	714	
Future Volume (vph)	86	142	1155	109	110	714	
Ideal Flow (vphpl)	1900	1000	1900	1900	1900	1900	
Lane Width (ft)	12	12	13	13	12	12	
Storage Length (ft)	0	75		0	150		
Storage Lanes	1	1		0	1		
Taper Length (ft)	25				50		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		0.850	0.988				
Flt Protected	0.950				0.950		
Satd. Flow (prot)	1805	850	1922	0	1805	1881	
Flt Permitted	0.950				0.950		
Satd. Flow (perm)	1805	850	1922	0	1805	1881	
Right Turn on Red		Yes		Yes			
Satd. Flow (RTOR)		151	4				
Link Speed (mph)	20		30			30	
Link Distance (ft)	512		549			1309	
Travel Time (s)	17.5		12.5			29.8	
Peak Hour Factor	0.87	0.87	0.98	0.98	0.89	0.89	
Heavy Vehicles (%)	0%	0%	1%	0%	0%	1%	
Adj. Flow (vph)	99	163	1179	111	124	802	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	99	163	1290	0	124	802	
Turn Type	Prot	pt+ov	NA		Prot	NA	
Protected Phases	4	4 5	6		5	2	9
Permitted Phases							
Detector Phase	4	4 5	6		5	2	
Switch Phase							
Minimum Initial (s)	5.0		10.0		3.0	10.0	5.0
Minimum Split (s)	11.0		16.0		9.0	16.0	35.0
Total Split (s)	26.0		116.0		13.0	116.0	35.0
Total Split (%)	13.7%		61.1%		6.8%	61.1%	18%
Maximum Green (s)	20.0		110.0		7.0	110.0	29.0
Yellow Time (s)	4.0		4.0		4.0	4.0	4.0
All-Red Time (s)	2.0		2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0		0.0	0.0	
Total Lost Time (s)	6.0		6.0		6.0	6.0	
Lead/Lag			Lag		Lead		
Lead-Lag Optimize?			Yes		Yes		
Vehicle Extension (s)	1.5		1.5		1.5	1.5	3.0
Recall Mode	None		C-Min		None	C-Min	None
Walk Time (s)							5.0
Flash Dont Walk (s)							24.0
Pedestrian Calls (#/hr)							5
Act Effct Green (s)	14.3	27.3	143.7		7.0	156.7	
Actuated g/C Ratio	0.08	0.14	0.76		0.04	0.82	
v/c Ratio	0.73	0.65	0.89		1.88	0.52	
Control Delay	114.7	24.5	27.5		487.8	9.2	

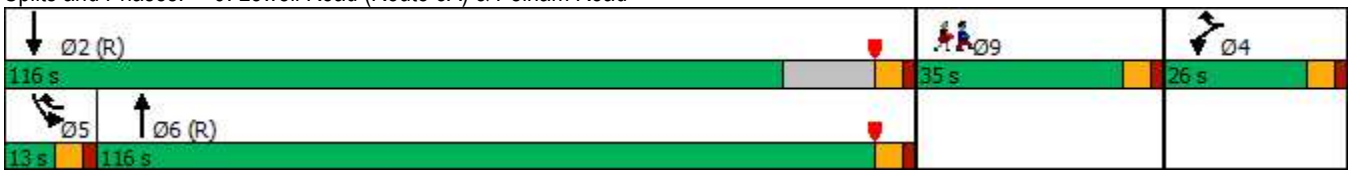
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø9
Queue Delay	0.0	0.0	47.0		0.0	0.0	
Total Delay	114.7	24.5	74.5		487.8	9.2	
LOS	F	C	E		F	A	
Approach Delay	58.6		74.5			73.3	
Approach LOS	E		E			E	
Queue Length 50th (ft)	123	13	904		~235	197	
Queue Length 95th (ft)	184	91	#2163		#384	722	
Internal Link Dist (ft)	432		469			1229	
Turn Bay Length (ft)		75			150		
Base Capacity (vph)	190	249	1455		66	1551	
Starvation Cap Reductn	0	0	317		0	0	
Spillback Cap Reductn	0	0	0		0	0	
Storage Cap Reductn	0	0	0		0	0	
Reduced v/c Ratio	0.52	0.65	1.13		1.88	0.52	

Intersection Summary			
Area Type:	Other		
Cycle Length: 190			
Actuated Cycle Length: 190			
Offset: 30 (16%), Referenced to phase 2:SBT and 6:NBT, Start of Yellow			
Natural Cycle: 150			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.88			
Intersection Signal Delay: 72.4		Intersection LOS: E	
Intersection Capacity Utilization 94.1%		ICU Level of Service F	
Analysis Period (min) 15			

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

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

Splits and Phases: 9: Lowell Road (Route 3A) & Pelham Road



Appendix H

Capacity Analysis – 2032 Build Traffic Conditions

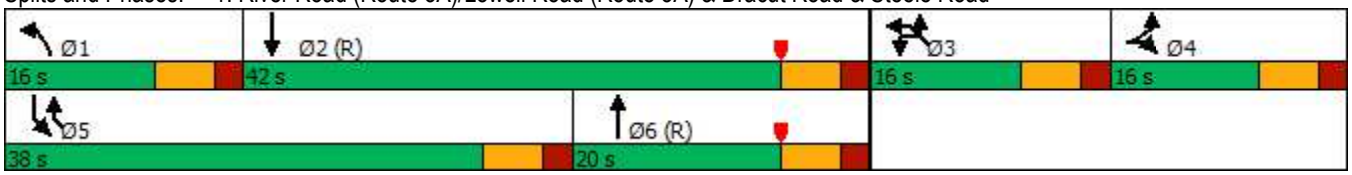
2032 Build Weekday A.M.

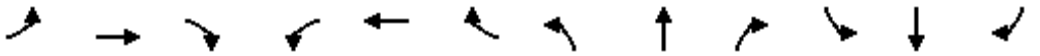
Lane Group	EBL	EBR	EBR2	NBL	NBT	NBR	SBL	SBT	SBR	NWL	NWR
Lane Configurations											
Traffic Volume (vph)	2	0	2	0	299	0	535	561	14	1	934
Future Volume (vph)	2	0	2	0	299	0	535	561	14	1	934
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	12	12	10	12	12	12	12
Storage Length (ft)	0	50		200		300	775		0	100	0
Storage Lanes	1	1		1		1	1		0	1	1
Taper Length (ft)	25			100			75			25	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00
Frt		0.850						0.996			0.850
Flt Protected	0.950						0.950			0.950	
Satd. Flow (prot)	1685	1133	0	1773	3574	0	1652	3561	0	1805	1583
Flt Permitted	0.950						0.950			0.950	
Satd. Flow (perm)	1685	1133	0	1773	3574	0	1652	3561	0	1805	1583
Right Turn on Red			Yes			Yes			Yes		Yes
Satd. Flow (RTOR)		524						3			464
Link Speed (mph)	30				35			35		35	
Link Distance (ft)	591				758			1733		622	
Travel Time (s)	13.4				14.8			33.8		12.1	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.92	0.92	0.92	0.86	0.86
Heavy Vehicles (%)	0%	0%	33%	0%	1%	0%	2%	1%	0%	0%	2%
Adj. Flow (vph)	3	0	3	0	374	0	582	610	15	1	1086
Shared Lane Traffic (%)											
Lane Group Flow (vph)	3	3	0	0	374	0	582	625	0	1	1086
Turn Type	Prot	Prot		Prot	NA		Prot	NA		Prot	pt+ov
Protected Phases	4	4		1	6		5	2		3	3 5
Permitted Phases											
Detector Phase	4	4		1	6		5	2		3	3 5
Switch Phase											
Minimum Initial (s)	5.0	5.0		5.0	8.0		8.0	8.0		5.0	
Minimum Split (s)	11.0	11.0		11.0	14.0		14.0	14.0		11.0	
Total Split (s)	16.0	16.0		16.0	20.0		38.0	42.0		16.0	
Total Split (%)	17.8%	17.8%		17.8%	22.2%		42.2%	46.7%		17.8%	
Maximum Green (s)	10.0	10.0		10.0	14.0		32.0	36.0		10.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	
Lead/Lag	Lag	Lag		Lead	Lag		Lead	Lag		Lead	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	
Vehicle Extension (s)	3.0	3.0		3.0	4.0		4.0	4.0		4.0	
Recall Mode	None	None		None	C-Min		None	C-Min		None	
Act Effct Green (s)	5.8	5.8			13.5		45.5	65.1		10.5	60.8
Actuated g/C Ratio	0.06	0.06			0.15		0.51	0.72		0.12	0.68
v/c Ratio	0.03	0.01			0.70		0.70	0.24		0.00	0.89
Control Delay	40.0	0.0			43.8		20.1	0.6		36.0	18.8
Queue Delay	0.0	0.0			0.0		0.0	0.0		0.0	0.0
Total Delay	40.0	0.0			43.8		20.1	0.6		36.0	18.8
LOS	D	A			D		C	A		D	B

Lane Group	EBL	EBR	EBR2	NBL	NBT	NBR	SBL	SBT	SBR	NWL	NWR
Approach Delay	20.0				43.8			10.0		18.8	
Approach LOS	B				D			B		B	
Queue Length 50th (ft)	2	0			106		152	2		1	215
Queue Length 95th (ft)	9	0			135		#495	5		5	#774
Internal Link Dist (ft)	511				678			1653		542	
Turn Bay Length (ft)		50					775			100	
Base Capacity (vph)	187	591			555		836	2575		210	1220
Starvation Cap Reductn	0	0			0		0	0		0	0
Spillback Cap Reductn	0	0			0		0	0		0	0
Storage Cap Reductn	0	0			0		0	0		0	0
Reduced v/c Ratio	0.02	0.01			0.67		0.70	0.24		0.00	0.89

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 0 (0%), Referenced to phase 2:SBT and 6:NBT, Start of Yellow			
Natural Cycle: 100			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.89			
Intersection Signal Delay: 18.3		Intersection LOS: B	
Intersection Capacity Utilization 76.1%		ICU Level of Service D	
Analysis Period (min) 15			
Description: NHDOT Int. No.: S-229-04			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 1: River Road (Route 3A)/Lowell Road (Route 3A) & Dracut Road & Steele Road





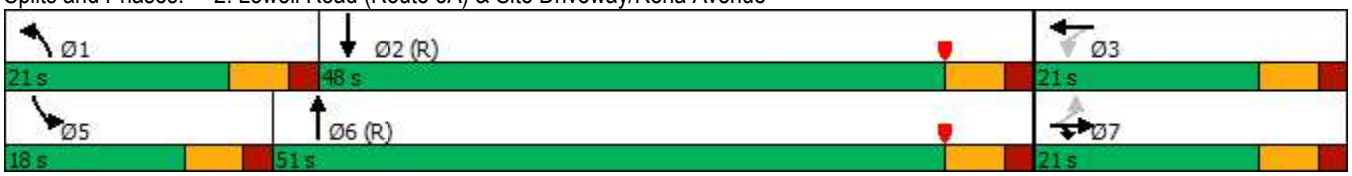
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	156	0	25	1	1	36	43	1242	2	8	1089	241
Future Volume (vph)	156	0	25	1	1	36	43	1242	2	8	1089	241
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	13	13	13	10	12	12	12	12	12
Storage Length (ft)	0		50	0		0	300		0	350		0
Storage Lanes	0		1	0		0	1		0	1		0
Taper Length (ft)	25			25			75			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850		0.871						0.973	
Flt Protected		0.950			0.999		0.950			0.950		
Satd. Flow (prot)	0	1532	1133	0	1657	0	1685	3538	0	1570	3419	0
Flt Permitted		0.728			0.993		0.950			0.950		
Satd. Flow (perm)	0	1174	1133	0	1648	0	1685	3538	0	1570	3419	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			109		42						39	
Link Speed (mph)		15			30			35			35	
Link Distance (ft)		510			557			1733			980	
Travel Time (s)		23.2			12.7			33.8			19.1	
Peak Hour Factor	0.80	0.80	0.80	0.85	0.85	0.85	0.85	0.85	0.85	0.95	0.95	0.95
Heavy Vehicles (%)	10%	0%	33%	9%	0%	3%	0%	2%	20%	15%	2%	6%
Adj. Flow (vph)	195	0	31	1	1	42	51	1461	2	8	1146	254
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	195	31	0	44	0	51	1463	0	8	1400	0
Turn Type	Perm	NA	Prot	Perm	NA		Prot	NA		Prot	NA	
Protected Phases		7	7		3		1	6		5	2	
Permitted Phases	7			3								
Detector Phase	7	7	7	3	3		1	6		5	2	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0		11.0	16.0		11.0	16.0	
Total Split (s)	21.0	21.0	21.0	21.0	21.0		21.0	51.0		18.0	48.0	
Total Split (%)	23.3%	23.3%	23.3%	23.3%	23.3%		23.3%	56.7%		20.0%	53.3%	
Maximum Green (s)	15.0	15.0	15.0	15.0	15.0		15.0	45.0		12.0	42.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.0	6.0		6.0		6.0	6.0		6.0	6.0	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Recall Mode	None	None	None	None	None		None	C-Min		None	C-Min	
Act Effct Green (s)		17.6	17.6		11.6		9.1	57.6		7.1	50.6	
Actuated g/C Ratio		0.20	0.20		0.13		0.10	0.64		0.08	0.56	
v/c Ratio		0.86	0.10		0.18		0.30	0.65		0.06	0.72	
Control Delay		70.4	0.6		13.0		41.0	10.4		30.5	20.5	
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Delay		70.4	0.6		13.0		41.0	10.4		30.5	20.5	
LOS		E	A		B		D	B		C	C	

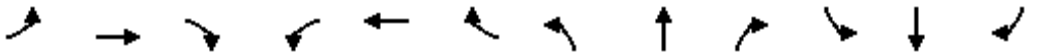
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		60.8			13.0			11.4			20.6	
Approach LOS		E			B			B			C	
Queue Length 50th (ft)		112	0		1		29	177		5	183	
Queue Length 95th (ft)		#208	0		27		m32	278		m7	298	
Internal Link Dist (ft)		430			477			1653			900	
Turn Bay Length (ft)			50				300			350		
Base Capacity (vph)		228	308		309		280	2264		209	1937	
Starvation Cap Reductn		0	0		0		0	0		0	0	
Spillback Cap Reductn		0	0		0		0	0		0	0	
Storage Cap Reductn		0	0		0		0	0		0	0	
Reduced v/c Ratio		0.86	0.10		0.14		0.18	0.65		0.04	0.72	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 51 (57%), Referenced to phase 2:SBT and 6:NBT, Start of Yellow			
Natural Cycle: 70			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.86			
Intersection Signal Delay: 19.0		Intersection LOS: B	
Intersection Capacity Utilization 63.1%		ICU Level of Service B	
Analysis Period (min) 15			
Description: NHDOT Int. No.: S-229-03			

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Lowell Road (Route 3A) & Site Driveway/Rena Avenue





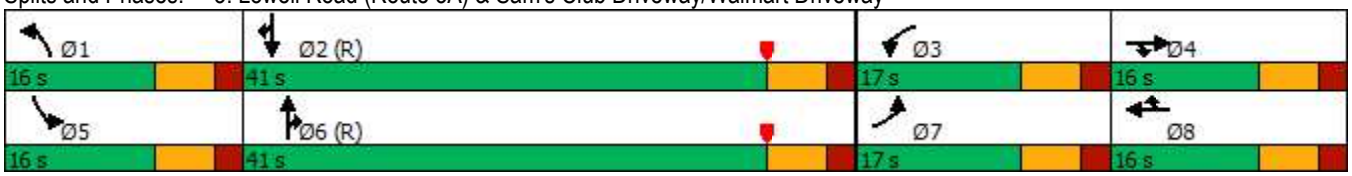
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	131	4	59	15	5	71	78	1325	27	85	1252	164
Future Volume (vph)	131	4	59	15	5	71	78	1325	27	85	1252	164
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	13	12	12	12	13	12	12	12	12	12	12
Storage Length (ft)	175		175	150		200	350		175	350		0
Storage Lanes	2		1	2		1	2		1	2		1
Taper Length (ft)	25			75			125			100		
Lane Util. Factor	0.97	1.00	1.00	0.97	1.00	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3213	1852	1568	3502	1900	1589	3467	3505	1583	3433	3539	1482
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3213	1852	1568	3502	1900	1589	3467	3505	1583	3433	3539	1482
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			182			182			182			182
Link Speed (mph)		30			30			35			30	
Link Distance (ft)		401			449			980			1189	
Travel Time (s)		9.1			10.2			19.1			27.0	
Peak Hour Factor	0.93	0.93	0.93	0.88	0.88	0.88	0.87	0.87	0.87	0.96	0.96	0.96
Heavy Vehicles (%)	9%	6%	3%	0%	0%	5%	1%	3%	2%	2%	2%	9%
Adj. Flow (vph)	141	4	63	17	6	81	90	1523	31	89	1304	171
Shared Lane Traffic (%)												
Lane Group Flow (vph)	141	4	63	17	6	81	90	1523	31	89	1304	171
Turn Type	Prot	NA	Prot	Prot	NA	Prot	Prot	NA	Prot	Prot	NA	Prot
Protected Phases	7	4	4	3	8	8	1	6	6	5	2	2
Permitted Phases												
Detector Phase	7	4	4	3	8	8	1	6	6	5	2	2
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0	11.0	11.0	16.0	16.0	11.0	16.0	16.0
Total Split (s)	17.0	16.0	16.0	17.0	16.0	16.0	16.0	41.0	41.0	16.0	41.0	41.0
Total Split (%)	18.9%	17.8%	17.8%	18.9%	17.8%	17.8%	17.8%	45.6%	45.6%	17.8%	45.6%	45.6%
Maximum Green (s)	11.0	10.0	10.0	11.0	10.0	10.0	10.0	35.0	35.0	10.0	35.0	35.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	6.0	6.0	4.0	6.0	6.0
Recall Mode	None	None	None	None	None	None	None	C-Min	C-Min	None	C-Min	C-Min
Act Effct Green (s)	9.8	14.8	14.8	7.0	6.9	6.9	8.7	45.7	45.7	8.7	45.7	45.7
Actuated g/C Ratio	0.11	0.16	0.16	0.08	0.08	0.08	0.10	0.51	0.51	0.10	0.51	0.51
v/c Ratio	0.40	0.01	0.15	0.06	0.04	0.28	0.27	0.86	0.03	0.27	0.73	0.20
Control Delay	40.6	34.0	0.8	38.7	38.8	2.4	47.3	21.4	0.0	48.1	20.8	1.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.6	34.0	0.8	38.7	38.8	2.4	47.3	21.4	0.0	48.1	20.8	1.2
LOS	D	C	A	D	D	A	D	C	A	D	C	A

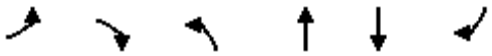
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		28.4			10.4			22.4			20.2	
Approach LOS		C			B			C			C	
Queue Length 50th (ft)	39	2	0	4	3	0	26	365	0	25	366	0
Queue Length 95th (ft)	67	12	0	14	15	0	m41	#591	m0	m35	#503	m4
Internal Link Dist (ft)		321			369			900			1109	
Turn Bay Length (ft)	175		175	150		200	350		175	350		
Base Capacity (vph)	392	314	417	428	211	338	390	1778	892	386	1795	841
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.36	0.01	0.15	0.04	0.03	0.24	0.23	0.86	0.03	0.23	0.73	0.20

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 51 (57%), Referenced to phase 2:SBT and 6:NBT, Start of Yellow			
Natural Cycle: 70			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.86			
Intersection Signal Delay: 21.4		Intersection LOS: C	
Intersection Capacity Utilization 60.2%		ICU Level of Service B	
Analysis Period (min) 15			
Description: NHDOT Int. No.: S-229-06			

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Lowell Road (Route 3A) & Sam's Club Driveway/Walmart Driveway





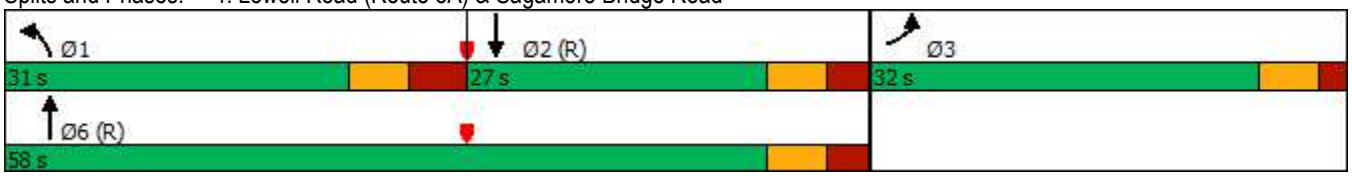
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	1045	1184	1131	405	420	1673
Future Volume (vph)	1045	1184	1131	405	420	1673
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	14	14	12	12	12	12
Storage Length (ft)	0	0	525			200
Storage Lanes	2	1	2			1
Taper Length (ft)	25		100			
Lane Util. Factor	0.97	1.00	0.97	0.95	0.95	0.88
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	3662	1656	3400	3539	3539	2760
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	3662	1656	3400	3539	3539	2760
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		795				1281
Link Speed (mph)	35			30	30	
Link Distance (ft)	929			1189	999	
Travel Time (s)	18.1			27.0	22.7	
Peak Hour Factor	0.94	0.94	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	4%	3%	2%	2%	3%
Adj. Flow (vph)	1112	1260	1229	440	457	1818
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1112	1260	1229	440	457	1818
Turn Type	Prot	Free	Prot	NA	NA	Free
Protected Phases	3		1	6	2	
Permitted Phases		Free				Free
Detector Phase	3		1	6	2	
Switch Phase						
Minimum Initial (s)	10.0		7.0	10.0	10.0	
Minimum Split (s)	16.0		15.0	17.0	17.0	
Total Split (s)	32.0		31.0	58.0	27.0	
Total Split (%)	35.6%		34.4%	64.4%	30.0%	
Maximum Green (s)	26.0		23.0	51.0	20.0	
Yellow Time (s)	4.0		4.0	4.0	4.0	
All-Red Time (s)	2.0		4.0	3.0	3.0	
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	
Total Lost Time (s)	6.0		8.0	7.0	7.0	
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	4.0		4.0	4.0	4.0	
Recall Mode	None		None	C-Min	C-Min	
Act Effct Green (s)	28.4	90.0	23.0	48.6	17.6	90.0
Actuated g/C Ratio	0.32	1.00	0.26	0.54	0.20	1.00
v/c Ratio	0.96	0.76	1.42	0.23	0.66	0.66
Control Delay	50.9	3.4	218.8	2.3	38.2	1.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	50.9	3.4	218.8	2.3	38.2	1.2
LOS	D	A	F	A	D	A

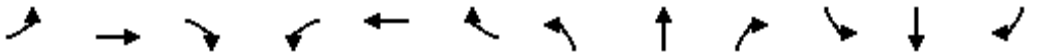
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Approach Delay	25.7			161.7	8.7	
Approach LOS	C			F	A	
Queue Length 50th (ft)	323	0	~476	3	125	0
Queue Length 95th (ft)	#482	0	#601	m4	173	0
Internal Link Dist (ft)	849			1109	919	
Turn Bay Length (ft)			525			200
Base Capacity (vph)	1156	1656	868	2005	786	2760
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.96	0.76	1.42	0.22	0.58	0.66

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 70 (78%), Referenced to phase 2:SBT and 6:NBT, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.42			
Intersection Signal Delay: 55.5		Intersection LOS: E	
Intersection Capacity Utilization 90.4%		ICU Level of Service E	
Analysis Period (min) 15			
Description: NHDOT Int. No.: S-229-02			

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Lowell Road (Route 3A) & Sagamore Bridge Road





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	67	29	303	677	45	33	328	895	208	17	1194	11
Future Volume (vph)	67	29	303	677	45	33	328	895	208	17	1194	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	11	11	11	12	12	12	12	12	12
Storage Length (ft)	0		250	200		75	575		275	175		300
Storage Lanes	0		1	1		1	1		1	1		1
Taper Length (ft)	25			50			175			75		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.91	0.91
Frt			0.850			0.850			0.850		0.999	
Flt Protected		0.966		0.950	0.958		0.950			0.950		
Satd. Flow (prot)	0	1835	1583	1641	1657	1501	1787	3539	1583	1752	5078	0
Flt Permitted		0.966		0.950	0.958		0.950			0.950		
Satd. Flow (perm)	0	1835	1583	1641	1657	1501	1787	3539	1583	1752	5078	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			53			89			219		1	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		805			586			999			1515	
Travel Time (s)		18.3			13.3			22.7			34.4	
Peak Hour Factor	0.81	0.81	0.81	0.94	0.94	0.94	0.95	0.95	0.95	0.87	0.87	0.87
Heavy Vehicles (%)	0%	0%	2%	1%	0%	4%	1%	2%	2%	3%	2%	6%
Adj. Flow (vph)	83	36	374	720	48	35	345	942	219	20	1372	13
Shared Lane Traffic (%)				47%								
Lane Group Flow (vph)	0	119	374	382	386	35	345	942	219	20	1385	0
Turn Type	Split	NA	pm+ov	Split	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	
Protected Phases	8	8	1	7	7	5	1	6	7	5	2	
Permitted Phases			8			7			6			
Detector Phase	8	8	1	7	7	5	1	6	7	5	2	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	10.0	5.0	5.0	10.0	
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0	11.0	11.0	16.0	11.0	11.0	16.0	
Total Split (s)	26.0	26.0	31.0	56.0	56.0	21.0	31.0	71.0	56.0	21.0	71.0	
Total Split (%)	14.1%	14.1%	16.8%	30.4%	30.4%	11.4%	16.8%	38.6%	30.4%	11.4%	38.6%	
Maximum Green (s)	20.0	20.0	25.0	50.0	50.0	15.0	25.0	65.0	50.0	15.0	65.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)		6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Lead/Lag	Lag	Lag	Lead	Lead	Lead	Lead	Lead	Lag	Lead	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	3.0	2.5	2.5	3.0	
Recall Mode	None	None	None	None	None	None	None	Min	None	None	Min	
Act Effct Green (s)		15.3	46.8	43.5	43.5	50.5	25.5	77.5	127.1	7.0	56.2	
Actuated g/C Ratio		0.09	0.28	0.26	0.26	0.31	0.15	0.47	0.77	0.04	0.34	
v/c Ratio		0.70	0.77	0.88	0.88	0.07	1.25	0.57	0.17	0.27	0.80	
Control Delay		97.4	59.9	81.4	81.3	0.2	193.7	35.4	1.0	91.8	53.8	
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay		97.4	59.9	81.4	81.3	0.2	193.7	35.4	1.0	91.8	53.8	
LOS		F	E	F	F	A	F	D	A	F	D	

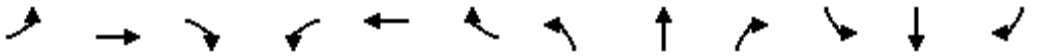
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		69.0			77.8			66.7			54.3	
Approach LOS		E			E			E			D	
Queue Length 50th (ft)		134	349	432	437	0	~510	422	0	23	523	
Queue Length 95th (ft)		192	433	#655	#660	0	#777	532	23	55	578	
Internal Link Dist (ft)		725			506			919			1435	
Turn Bay Length (ft)			250	200		75	575		275	175		
Base Capacity (vph)		226	487	506	511	592	275	1698	1331	162	2038	
Starvation Cap Reductn		0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn		0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn		0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio		0.53	0.77	0.75	0.76	0.06	1.25	0.55	0.16	0.12	0.68	

Intersection Summary			
Area Type:	Other		
Cycle Length: 184			
Actuated Cycle Length: 164.9			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.25			
Intersection Signal Delay: 64.9		Intersection LOS: E	
Intersection Capacity Utilization 83.1%		ICU Level of Service E	
Analysis Period (min) 15			

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

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

Splits and Phases: 5: Lowell Road (Route 3A) & Flagstone Drive/Wason Road



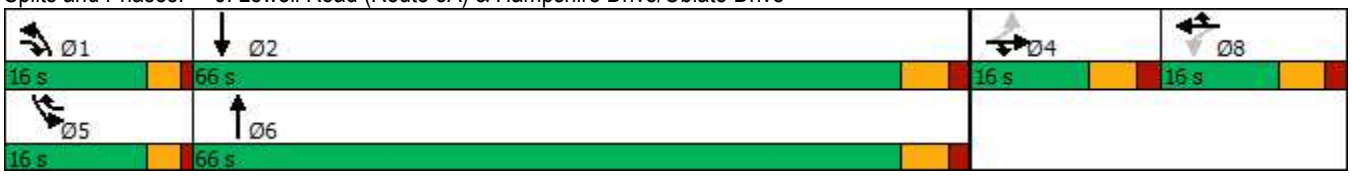
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	0	13	2	2	5	129	854	2	2	1262	65
Future Volume (vph)	9	0	13	2	2	5	129	854	2	2	1262	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	13	13	13	12	12	12	11	12	12
Storage Length (ft)	0		100	0		100	225		0	225		0
Storage Lanes	0		1	0		1	1		0	1		0
Taper Length (ft)	25			25			50			50		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850			0.850					0.993	
Flt Protected		0.950			0.976		0.950			0.950		
Satd. Flow (prot)	0	1719	1455	0	1916	1669	1752	3505	0	1745	3480	0
Flt Permitted							0.950			0.950		
Satd. Flow (perm)	0	1810	1455	0	1963	1669	1752	3505	0	1745	3480	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			86			86					7	
Link Speed (mph)		30			10			30			30	
Link Distance (ft)		495			382			1515			1791	
Travel Time (s)		11.3			26.0			34.4			40.7	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.90	0.90	0.90	0.83	0.83	0.83
Heavy Vehicles (%)	5%	0%	11%	0%	0%	0%	3%	3%	0%	0%	3%	3%
Adj. Flow (vph)	11	0	16	3	3	6	143	949	2	2	1520	78
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	11	16	0	6	6	143	951	0	2	1598	0
Turn Type	Perm	NA	pt+ov	Perm	NA	pt+ov	Prot	NA		Prot	NA	
Protected Phases		4	4 1		8	8 5	1	6		5	2	
Permitted Phases	4			8								
Detector Phase	4	4	4 1	8	8	8 5	1	6		5	2	
Switch Phase												
Minimum Initial (s)	3.0	3.0		3.0	3.0		4.0	15.0		4.0	15.0	
Minimum Split (s)	9.0	9.0		9.0	9.0		8.0	21.0		8.0	21.0	
Total Split (s)	16.0	16.0		16.0	16.0		16.0	66.0		16.0	66.0	
Total Split (%)	14.0%	14.0%		14.0%	14.0%		14.0%	57.9%		14.0%	57.9%	
Maximum Green (s)	10.0	10.0		10.0	10.0		12.0	60.0		12.0	60.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		3.0	4.0		3.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		1.0	2.0		1.0	2.0	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.0			6.0		4.0	6.0		4.0	6.0	
Lead/Lag	Lead	Lead		Lag	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		2.0	3.0		2.0	3.0	
Recall Mode	None	None		None	None		None	Min		None	Min	
Act Effct Green (s)		7.4	11.9		6.3	9.0	11.3	71.0		5.0	52.1	
Actuated g/C Ratio		0.09	0.14		0.08	0.11	0.14	0.86		0.06	0.63	
v/c Ratio		0.07	0.06		0.04	0.02	0.60	0.32		0.02	0.73	
Control Delay		45.0	0.4		47.0	0.2	50.7	5.2		49.0	15.9	
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		45.0	0.4		47.0	0.2	50.7	5.2		49.0	15.9	
LOS		D	A		D	A	D	A		D	B	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		18.6			23.6			11.2			15.9	
Approach LOS		B			C			B			B	
Queue Length 50th (ft)		5	0		3	0	61	0		1	172	
Queue Length 95th (ft)		23	0		16	0	#201	228		8	506	
Internal Link Dist (ft)		415			302			1435			1711	
Turn Bay Length (ft)			100			100	225			225		
Base Capacity (vph)		236	314		256	350	274	3005		273	2708	
Starvation Cap Reductn		0	0		0	0	0	0		0	0	
Spillback Cap Reductn		0	0		0	0	0	0		0	0	
Storage Cap Reductn		0	0		0	0	0	0		0	0	
Reduced v/c Ratio		0.05	0.05		0.02	0.02	0.52	0.32		0.01	0.59	

Intersection Summary			
Area Type:	Other		
Cycle Length: 114			
Actuated Cycle Length: 82.6			
Natural Cycle: 65			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.73			
Intersection Signal Delay: 14.1		Intersection LOS: B	
Intersection Capacity Utilization 64.6%		ICU Level of Service C	
Analysis Period (min) 15			

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

Splits and Phases: 6: Lowell Road (Route 3A) & Hampshire Drive/Oblate Drive



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	2	11	141	30	101	181	497	60	107	1154	224
Future Volume (vph)	40	2	11	141	30	101	181	497	60	107	1154	224
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	15	12	12	13	11	12	12	11	12	12
Storage Length (ft)	0		225	0		80	350		0	150		0
Storage Lanes	0		1	0		1	1		0	1		0
Taper Length (ft)	25			25			50			50		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850			0.850		0.984			0.976	
Flt Protected		0.955			0.961		0.950			0.950		
Satd. Flow (prot)	0	1576	1558	0	1811	1620	1711	3419	0	1728	3454	0
Flt Permitted		0.427			0.728		0.950			0.950		
Satd. Flow (perm)	0	705	1558	0	1372	1620	1711	3419	0	1728	3454	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			30			101		19			33	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		492			577			1791			1168	
Travel Time (s)		11.2			13.1			40.7			26.5	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	12%	0%	14%	1%	0%	3%	2%	4%	3%	1%	2%	2%
Adj. Flow (vph)	50	3	14	176	38	126	199	546	66	118	1268	246
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	53	14	0	214	126	199	612	0	118	1514	0
Turn Type	Perm	NA	pt+ov	Perm	NA	Prot	Prot	NA		Prot	NA	
Protected Phases		8	8 1		4	4	1	6		5	2	
Permitted Phases	8			4								
Detector Phase	8	8	8 1	4	4	4	1	6		5	2	
Switch Phase												
Minimum Initial (s)	3.0	3.0		5.0	5.0	5.0	3.0	8.0		3.0	8.0	
Minimum Split (s)	9.0	9.0		11.0	11.0	11.0	9.0	14.0		9.0	14.0	
Total Split (s)	26.0	26.0		23.0	23.0	23.0	16.0	66.0		16.0	66.0	
Total Split (%)	24.1%	24.1%		21.3%	21.3%	21.3%	14.8%	61.1%		14.8%	61.1%	
Maximum Green (s)	20.0	20.0		17.0	17.0	17.0	10.0	60.0		10.0	60.0	
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.0			6.0	6.0	6.0	6.0		6.0	6.0	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	2.0	2.0		2.0	2.0	2.0	2.0	3.0		2.0	3.0	
Recall Mode	None	None		None	None	None	None	Min		None	Min	
Act Effct Green (s)		14.6	29.3		16.6	16.6	10.1	51.9		9.3	51.0	
Actuated g/C Ratio		0.15	0.31		0.17	0.17	0.11	0.54		0.10	0.53	
v/c Ratio		0.50	0.03		0.91	0.35	1.11	0.33		0.71	0.82	
Control Delay		55.3	3.5		80.4	14.6	141.1	12.5		68.3	22.4	
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		55.3	3.5		80.4	14.6	141.1	12.5		68.3	22.4	
LOS		E	A		F	B	F	B		E	C	

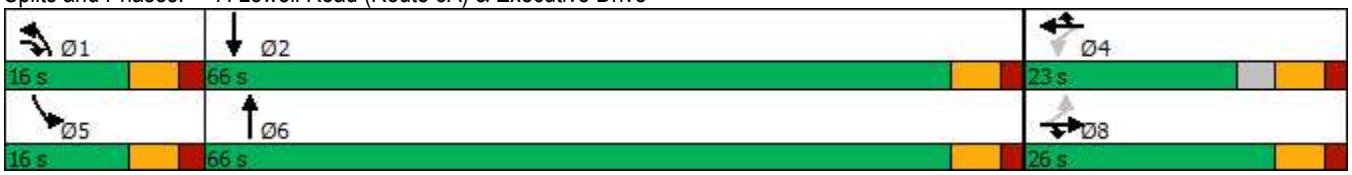
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		44.5			56.0			44.1			25.8	
Approach LOS		D			E			D			C	
Queue Length 50th (ft)		30	0		133	13	~148	102		73	375	
Queue Length 95th (ft)		65	5		#226	51	#318	145		#171	497	
Internal Link Dist (ft)		412			497			1711			1088	
Turn Bay Length (ft)			225			80	350			150		
Base Capacity (vph)		148	508		290	422	180	2174		182	2202	
Starvation Cap Reductn		0	0		0	0	0	0		0	0	
Spillback Cap Reductn		0	0		0	0	0	0		0	0	
Storage Cap Reductn		0	0		0	0	0	0		0	0	
Reduced v/c Ratio		0.36	0.03		0.74	0.30	1.11	0.28		0.65	0.69	

Intersection Summary			
Area Type:	Other		
Cycle Length: 108			
Actuated Cycle Length: 96			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.11			
Intersection Signal Delay: 35.0		Intersection LOS: D	
Intersection Capacity Utilization 80.1%		ICU Level of Service D	
Analysis Period (min) 15			

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

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

Splits and Phases: 7: Lowell Road (Route 3A) & Executive Drive



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	11	0	48	6	0	10	4	620	1	16	1447	3
Future Volume (vph)	11	0	48	6	0	10	4	620	1	16	1447	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	14	13	13	11	11	12	12	12	12
Storage Length (ft)	0		50	0		100	210		325	125		0
Storage Lanes	0		1	0		1	1		1	1		0
Taper Length (ft)	25			25			50			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850			
Flt Protected		0.950			0.950		0.950			0.950		
Satd. Flow (prot)	0	1719	1583	0	1865	1669	1745	1766	1615	1805	1863	0
Flt Permitted		0.752			0.748		0.950			0.950		
Satd. Flow (perm)	0	1361	1583	0	1469	1669	1745	1766	1615	1805	1863	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			91			55			91			
Link Speed (mph)		10			30			30			30	
Link Distance (ft)		598			262			1405			549	
Travel Time (s)		40.8			6.0			31.9			12.5	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.91	0.91	0.91	0.95	0.95	0.95
Heavy Vehicles (%)	5%	0%	2%	0%	0%	0%	0%	4%	0%	0%	2%	0%
Adj. Flow (vph)	14	0	60	8	0	13	4	681	1	17	1523	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	14	60	0	8	13	4	681	1	17	1526	0
Turn Type	Perm	NA	Prot	Perm	NA	pm+ov	Prot	NA	Prot	Prot	NA	
Protected Phases		8	8		4	5	1	6	6	5	2	
Permitted Phases	8			4		4						
Detector Phase	8	8	8	4	4	5	1	6	6	5	2	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	10.0	10.0	5.0	10.0	
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0	11.0	11.0	16.0	16.0	11.0	16.0	
Total Split (s)	16.0	16.0	16.0	16.0	16.0	16.0	16.0	116.0	116.0	16.0	116.0	
Total Split (%)	8.9%	8.9%	8.9%	8.9%	8.9%	8.9%	8.9%	64.4%	64.4%	8.9%	64.4%	
Maximum Green (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	110.0	110.0	10.0	110.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)		6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Lead/Lag						Lead	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?						Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	1.5	1.5	1.5	1.5	1.5	1.5	1.0	1.5	1.5	1.5	1.5	
Recall Mode	None	None	None	None	None	None	None	C-Min	C-Min	None	C-Min	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)		6.3	6.3		6.3	18.3	5.0	147.7	147.7	6.0	153.1	
Actuated g/C Ratio		0.04	0.04		0.04	0.10	0.03	0.82	0.82	0.03	0.85	
v/c Ratio		0.30	0.42		0.16	0.06	0.08	0.47	0.00	0.28	0.96	
Control Delay		100.2	12.4		90.2	0.5	89.0	9.0	0.0	95.9	28.4	

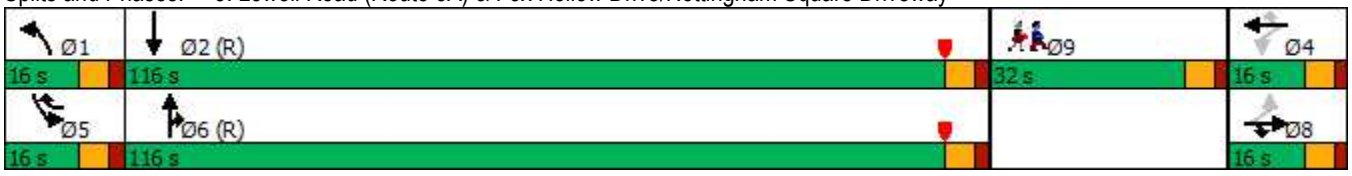
Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	32.0
Total Split (s)	32.0
Total Split (%)	18%
Maximum Green (s)	26.0
Yellow Time (s)	4.0
All-Red Time (s)	2.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	5.0
Flash Dont Walk (s)	21.0
Pedestrian Calls (#/hr)	5
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	35.1	
Total Delay		100.2	12.4		90.2	0.5	89.0	9.0	0.0	95.9	63.5	
LOS		F	B		F	A	F	A	A	F	E	
Approach Delay		29.0			34.7			9.4			63.9	
Approach LOS		C			C			A			E	
Queue Length 50th (ft)		17	0		9	0	5	180	0	20	695	
Queue Length 95th (ft)		40	3		27	0	20	595	0	50	#2516	
Internal Link Dist (ft)		518			182			1325			469	
Turn Bay Length (ft)			50			100	210		325	125		
Base Capacity (vph)		75	173		81	254	96	1449	1341	100	1585	
Starvation Cap Reductn		0	0		0	0	0	0	0	0	175	
Spillback Cap Reductn		0	0		0	0	0	0	0	0	0	
Storage Cap Reductn		0	0		0	0	0	0	0	0	0	
Reduced v/c Ratio		0.19	0.35		0.10	0.05	0.04	0.47	0.00	0.17	1.08	

Intersection Summary	
Area Type:	Other
Cycle Length: 180	
Actuated Cycle Length: 180	
Offset: 0 (0%), Referenced to phase 2:SBT and 6:NBT, Start of Yellow, Master Intersection	
Natural Cycle: 150	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.96	
Intersection Signal Delay: 46.4	Intersection LOS: D
Intersection Capacity Utilization 99.7%	ICU Level of Service F
Analysis Period (min) 15	

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

Splits and Phases: 8: Lowell Road (Route 3A) & Fox Hollow Drive/Nottingham Square Driveway



Lane Group	Ø9
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

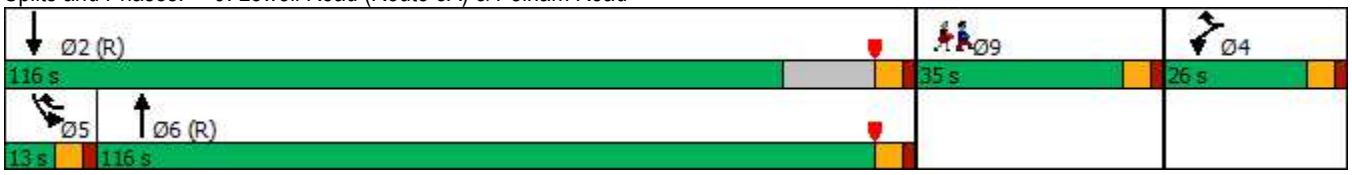
Intersection Summary

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø9
Lane Configurations							
Traffic Volume (vph)	256	81	547	93	71	1216	
Future Volume (vph)	256	81	547	93	71	1216	
Ideal Flow (vphpl)	1900	1000	1900	1900	1900	1900	
Lane Width (ft)	12	12	13	13	12	12	
Storage Length (ft)	0	75		0	150		
Storage Lanes	1	1		0	1		
Taper Length (ft)	25				50		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		0.850	0.980				
Flt Protected	0.950				0.950		
Satd. Flow (prot)	1787	802	1838	0	1719	1863	
Flt Permitted	0.950				0.950		
Satd. Flow (perm)	1787	802	1838	0	1719	1863	
Right Turn on Red		Yes		Yes			
Satd. Flow (RTOR)		29	8				
Link Speed (mph)	20		30			30	
Link Distance (ft)	512		549			1309	
Travel Time (s)	17.5		12.5			29.8	
Peak Hour Factor	0.88	0.88	0.92	0.92	0.96	0.96	
Heavy Vehicles (%)	1%	6%	5%	3%	5%	2%	
Adj. Flow (vph)	291	92	595	101	74	1267	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	291	92	696	0	74	1267	
Turn Type	Prot	pt+ov	NA		Prot	NA	
Protected Phases	4	4 5	6		5	2	9
Permitted Phases							
Detector Phase	4	4 5	6		5	2	
Switch Phase							
Minimum Initial (s)	5.0		10.0		3.0	10.0	5.0
Minimum Split (s)	11.0		16.0		9.0	16.0	35.0
Total Split (s)	26.0		116.0		13.0	116.0	35.0
Total Split (%)	13.7%		61.1%		6.8%	61.1%	18%
Maximum Green (s)	20.0		110.0		7.0	110.0	29.0
Yellow Time (s)	4.0		4.0		4.0	4.0	4.0
All-Red Time (s)	2.0		2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0		0.0	0.0	
Total Lost Time (s)	6.0		6.0		6.0	6.0	
Lead/Lag			Lag		Lead		
Lead-Lag Optimize?			Yes		Yes		
Vehicle Extension (s)	1.5		1.5		1.5	1.5	3.0
Recall Mode	None		C-Min		None	C-Min	None
Walk Time (s)							5.0
Flash Dont Walk (s)							24.0
Pedestrian Calls (#/hr)							5
Act Effct Green (s)	20.0	33.0	138.0		7.0	151.0	
Actuated g/C Ratio	0.11	0.17	0.73		0.04	0.79	
v/c Ratio	1.55	0.56	0.52		1.17	0.86	
Control Delay	320.3	63.3	15.1		238.7	21.6	

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø9
Queue Delay	0.0	0.0	5.6		0.0	0.0	
Total Delay	320.3	63.3	20.7		238.7	21.6	
LOS	F	E	C		F	C	
Approach Delay	258.6		20.7			33.6	
Approach LOS	F		C			C	
Queue Length 50th (ft)	~509	73	300		~109	716	
Queue Length 95th (ft)	#695	143	715		#233	#1982	
Internal Link Dist (ft)	432		469			1229	
Turn Bay Length (ft)		75			150		
Base Capacity (vph)	188	163	1337		63	1480	
Starvation Cap Reductn	0	0	570		0	0	
Spillback Cap Reductn	0	0	0		0	0	
Storage Cap Reductn	0	0	0		0	0	
Reduced v/c Ratio	1.55	0.56	0.91		1.17	0.86	

Intersection Summary			
Area Type:	Other		
Cycle Length: 190			
Actuated Cycle Length: 190			
Offset: 30 (16%), Referenced to phase 2:SBT and 6:NBT, Start of Yellow			
Natural Cycle: 150			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.55			
Intersection Signal Delay: 65.5		Intersection LOS: E	
Intersection Capacity Utilization 88.2%		ICU Level of Service E	
Analysis Period (min) 15			
~ Volume exceeds capacity, queue is theoretically infinite.			
Queue shown is maximum after two cycles.			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 9: Lowell Road (Route 3A) & Pelham Road



2032 Build Weekday P.M.

Lane Group	EBL	EBR	EBR2	NBL	NBT	NBR	SBL	SBT	SBR	NWL2	NWL	NWR
Lane Configurations												
Traffic Volume (vph)	40	2	2	1	653	1	984	439	15	5	0	726
Future Volume (vph)	40	2	2	1	653	1	984	439	15	5	0	726
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	12	12	10	12	12	12	12	12
Storage Length (ft)	0	50		200		300	775		0		100	0
Storage Lanes	1	1		1		1	1		0		1	1
Taper Length (ft)	25			100			75				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00
Frt		0.850						0.995				0.850
Flt Protected	0.950			0.950			0.950				0.950	
Satd. Flow (prot)	1668	1507	0	1685	3610	0	1685	3558	0	0	1805	1615
Flt Permitted	0.950			0.950			0.950				0.950	
Satd. Flow (perm)	1668	1507	0	1685	3610	0	1685	3558	0	0	1805	1615
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		191						4				246
Link Speed (mph)	30				35			35			35	
Link Distance (ft)	591				758			1733			622	
Travel Time (s)	13.4				14.8			33.8			12.1	
Peak Hour Factor	0.80	0.80	0.80	0.91	0.91	0.91	0.90	0.90	0.90	0.91	0.91	0.91
Heavy Vehicles (%)	1%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%
Adj. Flow (vph)	50	3	3	1	718	1	1093	488	17	5	0	798
Shared Lane Traffic (%)												
Lane Group Flow (vph)	50	6	0	1	719	0	1093	505	0	0	5	798
Turn Type	Prot	Prot		Prot	NA		Prot	NA		Prot	Prot	pt+ov
Protected Phases	4	4		1	6		5	2		3	3	3 5
Permitted Phases												
Detector Phase	4	4		1	6		5	2		3	3	3 5
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	8.0		8.0	8.0		5.0	5.0	
Minimum Split (s)	11.0	11.0		11.0	14.0		14.0	14.0		11.0	11.0	
Total Split (s)	21.0	21.0		16.0	32.0		51.0	67.0		16.0	16.0	
Total Split (%)	17.5%	17.5%		13.3%	26.7%		42.5%	55.8%		13.3%	13.3%	
Maximum Green (s)	15.0	15.0		10.0	26.0		45.0	61.0		10.0	10.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0			0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0			6.0	
Lead/Lag	Lag	Lag		Lead	Lag		Lead	Lag		Lead	Lead	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	4.0		4.0	4.0		4.0	4.0	
Recall Mode	None	None		None	C-Min		None	C-Min		None	None	
Act Effct Green (s)	9.0	9.0		5.6	26.0		53.3	82.9			10.0	64.5
Actuated g/C Ratio	0.08	0.08		0.05	0.22		0.44	0.69			0.08	0.54
v/c Ratio	0.40	0.02		0.01	0.92		1.46	0.21			0.03	0.81
Control Delay	61.5	0.2		55.0	64.1		234.0	1.3			51.2	22.4
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0			0.0	0.0
Total Delay	61.5	0.2		55.0	64.1		234.0	1.3			51.2	22.4
LOS	E	A		D	E		F	A			D	C

Lane Group	EBL	EBR	EBR2	NBL	NBT	NBR	SBL	SBT	SBR	NWL2	NWL	NWR
Approach Delay	54.9				64.1			160.4			22.6	
Approach LOS	D				E			F			C	
Queue Length 50th (ft)	38	0		1	288		~1169	2			4	270
Queue Length 95th (ft)	68	0		7	#402		#1470	m48			17	#446
Internal Link Dist (ft)	511				678			1653			542	
Turn Bay Length (ft)		50		200			775				100	
Base Capacity (vph)	208	355		140	782		748	2458			150	981
Starvation Cap Reductn	0	0		0	0		0	0			0	0
Spillback Cap Reductn	0	0		0	0		0	0			0	0
Storage Cap Reductn	0	0		0	0		0	0			0	0
Reduced v/c Ratio	0.24	0.02		0.01	0.92		1.46	0.21			0.03	0.81

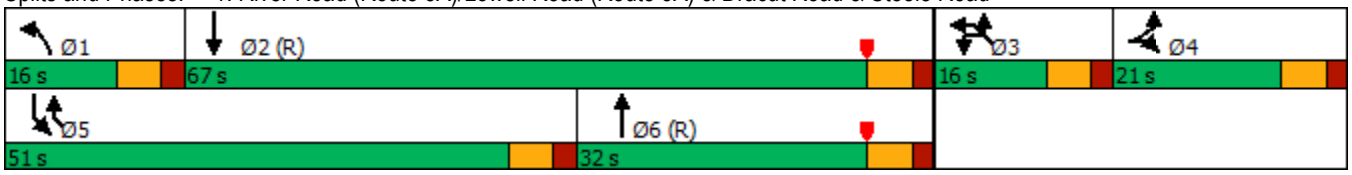
Intersection Summary	
Area Type:	Other
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 5 (4%), Referenced to phase 2:SBT and 6:NBT, Start of Yellow	
Natural Cycle: 150	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.46	
Intersection Signal Delay: 101.9	Intersection LOS: F
Intersection Capacity Utilization 100.9%	ICU Level of Service G
Analysis Period (min) 15	
Description: NHDOT Int. No.: S-229-04	

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

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

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

Splits and Phases: 1: River Road (Route 3A)/Lowell Road (Route 3A) & Dracut Road & Steele Road



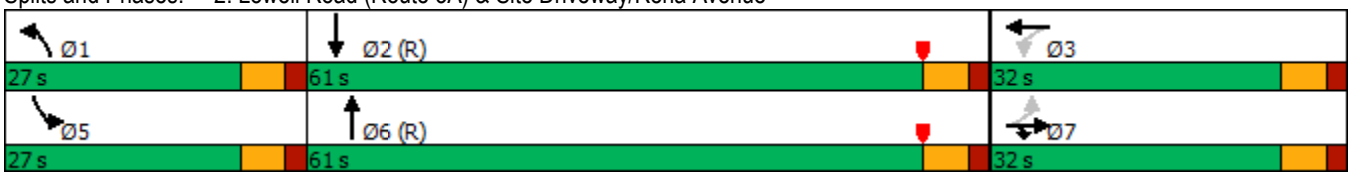
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	273	0	51	1	0	17	35	1397	6	26	1374	228
Future Volume (vph)	273	0	51	1	0	17	35	1397	6	26	1374	228
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	13	13	13	10	12	12	12	12	12
Storage Length (ft)	0		50	0		0	300		0	350		0
Storage Lanes	0		1	0		0	1		0	1		0
Taper Length (ft)	25			25			75			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850		0.871			0.999			0.979	
Flt Protected		0.950			0.998		0.950			0.950		
Satd. Flow (prot)	0	1620	1507	0	1707	0	1685	3606	0	1805	3475	0
Flt Permitted		0.743			0.987		0.950			0.950		
Satd. Flow (perm)	0	1267	1507	0	1688	0	1685	3606	0	1805	3475	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			82		82						20	
Link Speed (mph)		15			30			35			35	
Link Distance (ft)		510			557			1733			980	
Travel Time (s)		23.2			12.7			33.8			19.1	
Peak Hour Factor	0.84	0.84	0.84	0.80	0.80	0.80	0.93	0.93	0.93	0.90	0.90	0.90
Heavy Vehicles (%)	4%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	12%
Adj. Flow (vph)	325	0	61	1	0	21	38	1502	6	29	1527	253
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	325	61	0	22	0	38	1508	0	29	1780	0
Turn Type	Perm	NA	Prot	Perm	NA		Prot	NA		Prot	NA	
Protected Phases		7	7		3		1	6		5	2	
Permitted Phases	7			3								
Detector Phase	7	7	7	3	3		1	6		5	2	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0		11.0	16.0		11.0	16.0	
Total Split (s)	32.0	32.0	32.0	32.0	32.0		27.0	61.0		27.0	61.0	
Total Split (%)	26.7%	26.7%	26.7%	26.7%	26.7%		22.5%	50.8%		22.5%	50.8%	
Maximum Green (s)	26.0	26.0	26.0	26.0	26.0		21.0	55.0		21.0	55.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.0	6.0		6.0		6.0	6.0		6.0	6.0	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Recall Mode	None	None	None	None	None		None	C-Min		None	C-Min	
Act Effct Green (s)		26.0	26.0		18.2		9.2	72.7		8.5	72.1	
Actuated g/C Ratio		0.22	0.22		0.15		0.08	0.61		0.07	0.60	
v/c Ratio		1.19	0.16		0.07		0.30	0.69		0.23	0.85	
Control Delay		155.9	5.2		0.4		64.5	17.5		56.8	17.9	
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Delay		155.9	5.2		0.4		64.5	17.5		56.8	17.9	
LOS		F	A		A		E	B		E	B	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		132.1			0.4			18.7			18.5	
Approach LOS		F			A			B			B	
Queue Length 50th (ft)		~303	0		0		30	565		23	201	
Queue Length 95th (ft)		#438	18		0		m34	m688		m29	m#356	
Internal Link Dist (ft)		430			477			1653			900	
Turn Bay Length (ft)			50				300			350		
Base Capacity (vph)		274	390		429		294	2185		315	2095	
Starvation Cap Reductn		0	0		0		0	0		0	0	
Spillback Cap Reductn		0	0		0		0	0		0	0	
Storage Cap Reductn		0	0		0		0	0		0	0	
Reduced v/c Ratio		1.19	0.16		0.05		0.13	0.69		0.09	0.85	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 74 (62%), Referenced to phase 2:SBT and 6:NBT, Start of Yellow			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.19			
Intersection Signal Delay: 30.1		Intersection LOS: C	
Intersection Capacity Utilization 77.0%		ICU Level of Service D	
Analysis Period (min) 15			
Description: NHDOT Int. No.: S-229-03			

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Lowell Road (Route 3A) & Site Driveway/Rena Avenue



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	357	13	129	88	20	244	110	1500	74	310	1398	300
Future Volume (vph)	357	13	129	88	20	244	110	1500	74	310	1398	300
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	13	12	12	12	13	12	12	12	12	12	12
Storage Length (ft)	175		175	150		200	350		175	350		0
Storage Lanes	2		1	2		1	2		1	2		1
Taper Length (ft)	25			75			125			100		
Lane Util. Factor	0.97	1.00	1.00	0.97	1.00	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3433	1963	1615	3502	1900	1669	3467	3574	1615	3502	3539	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3433	1963	1615	3502	1900	1669	3467	3574	1615	3502	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			147			224			136			222
Link Speed (mph)		30			30			35			30	
Link Distance (ft)		401			449			980			1189	
Travel Time (s)		9.1			10.2			19.1			27.0	
Peak Hour Factor	0.88	0.88	0.88	0.86	0.86	0.86	0.89	0.89	0.89	0.91	0.91	0.91
Heavy Vehicles (%)	2%	0%	0%	0%	0%	0%	1%	1%	0%	0%	2%	2%
Adj. Flow (vph)	406	15	147	102	23	284	124	1685	83	341	1536	330
Shared Lane Traffic (%)												
Lane Group Flow (vph)	406	15	147	102	23	284	124	1685	83	341	1536	330
Turn Type	Prot	NA	Prot	Prot	NA	Prot	Prot	NA	Prot	Prot	NA	Prot
Protected Phases	7	4	4	3	8	8	1	6	6	5	2	2
Permitted Phases												
Detector Phase	7	4	4	3	8	8	1	6	6	5	2	2
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0	11.0	11.0	16.0	16.0	11.0	16.0	16.0
Total Split (s)	26.0	20.0	20.0	26.0	20.0	20.0	21.0	48.0	48.0	26.0	53.0	53.0
Total Split (%)	21.7%	16.7%	16.7%	21.7%	16.7%	16.7%	17.5%	40.0%	40.0%	21.7%	44.2%	44.2%
Maximum Green (s)	20.0	14.0	14.0	20.0	14.0	14.0	15.0	42.0	42.0	20.0	47.0	47.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	6.0	6.0	4.0	6.0	6.0
Recall Mode	None	None	None	None	None	None	None	C-Min	C-Min	None	C-Min	C-Min
Act Effct Green (s)	18.7	19.6	19.6	9.8	10.7	10.7	10.6	49.2	49.2	17.4	55.9	55.9
Actuated g/C Ratio	0.16	0.16	0.16	0.08	0.09	0.09	0.09	0.41	0.41	0.14	0.47	0.47
v/c Ratio	0.76	0.05	0.38	0.36	0.14	0.80	0.41	1.15	0.11	0.67	0.93	0.39
Control Delay	58.2	40.9	9.7	55.1	50.4	30.7	57.9	100.7	1.8	57.6	32.2	3.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	58.2	40.9	9.7	55.1	50.4	30.7	57.9	100.7	1.8	57.6	32.2	3.9
LOS	E	D	A	E	D	C	E	F	A	E	C	A

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		45.2			37.9			93.6			31.9	
Approach LOS		D			D			F			C	
Queue Length 50th (ft)	155	10	0	39	17	44	48	~821	0	125	627	8
Queue Length 95th (ft)	205	29	53	63	41	123	m67	m#954	m6	m122	m#756	m32
Internal Link Dist (ft)		321			369			900			1109	
Turn Bay Length (ft)	175		175	150		200	350		175	350		
Base Capacity (vph)	572	320	386	583	221	392	433	1464	742	583	1649	856
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.71	0.05	0.38	0.17	0.10	0.72	0.29	1.15	0.11	0.58	0.93	0.39

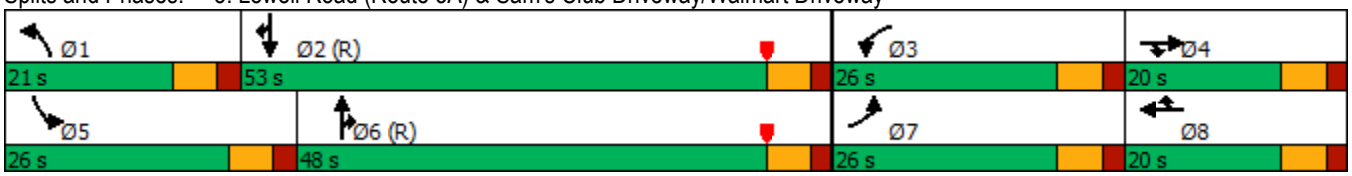
Intersection Summary	
Area Type:	Other
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 64 (53%), Referenced to phase 2:SBT and 6:NBT, Start of Yellow	
Natural Cycle: 100	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.15	
Intersection Signal Delay: 56.8	Intersection LOS: E
Intersection Capacity Utilization 82.2%	ICU Level of Service E
Analysis Period (min) 15	
Description: NHDOT Int. No.: S-229-06	

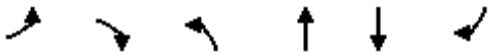
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

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

Splits and Phases: 3: Lowell Road (Route 3A) & Sam's Club Driveway/Walmart Driveway





Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	1633	1593	1442	749	546	1360
Future Volume (vph)	1633	1593	1442	749	546	1360
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	14	14	12	12	12	12
Storage Length (ft)	0	0	525			200
Storage Lanes	2	1	2			1
Taper Length (ft)	25		100			
Lane Util. Factor	0.97	1.00	0.97	0.95	0.95	0.88
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	3698	1689	3467	3610	3610	2814
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	3698	1689	3467	3610	3610	2814
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		624				1300
Link Speed (mph)	35			30	30	
Link Distance (ft)	929			1189	999	
Travel Time (s)	18.1			27.0	22.7	
Peak Hour Factor	0.96	0.96	0.94	0.94	0.89	0.89
Heavy Vehicles (%)	1%	2%	1%	0%	0%	1%
Adj. Flow (vph)	1701	1659	1534	797	613	1528
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1701	1659	1534	797	613	1528
Turn Type	Prot	Free	Prot	NA	NA	Free
Protected Phases	3		1	6	2	
Permitted Phases		Free				Free
Detector Phase	3		1	6	2	
Switch Phase						
Minimum Initial (s)	10.0		7.0	10.0	10.0	
Minimum Split (s)	16.0		15.0	17.0	17.0	
Total Split (s)	50.0		40.0	67.0	30.0	
Total Split (%)	41.7%		33.3%	55.8%	25.0%	
Maximum Green (s)	44.0		32.0	60.0	23.0	
Yellow Time (s)	4.0		4.0	4.0	4.0	
All-Red Time (s)	2.0		4.0	3.0	3.0	
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	
Total Lost Time (s)	6.0		8.0	7.0	7.0	
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	4.0		4.0	4.0	4.0	
Recall Mode	None		None	C-Min	C-Min	
Act Effct Green (s)	44.1	120.0	32.0	62.9	22.9	120.0
Actuated g/C Ratio	0.37	1.00	0.27	0.52	0.19	1.00
v/c Ratio	1.25	0.98	1.66	0.42	0.89	0.54
Control Delay	153.4	20.6	322.5	7.7	63.9	0.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	153.4	20.6	322.5	7.7	63.9	0.8
LOS	F	C	F	A	E	A

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Approach Delay	87.8			214.9	18.8	
Approach LOS	F			F	B	
Queue Length 50th (ft)	~850	0	~890	128	245	0
Queue Length 95th (ft)	#987	#216	m#807	m100	#337	0
Internal Link Dist (ft)	849			1109	919	
Turn Bay Length (ft)			525			200
Base Capacity (vph)	1359	1689	924	1895	691	2814
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.25	0.98	1.66	0.42	0.89	0.54

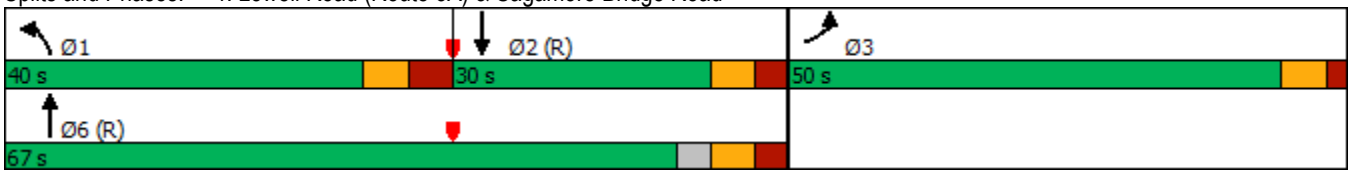
Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 100 (83%), Referenced to phase 2:SBT and 6:NBT, Start of Green			
Natural Cycle: 150			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.66			
Intersection Signal Delay: 106.8		Intersection LOS: F	
Intersection Capacity Utilization 119.5%		ICU Level of Service H	
Analysis Period (min) 15			
Description: NHDOT Int. No.: S-229-02			

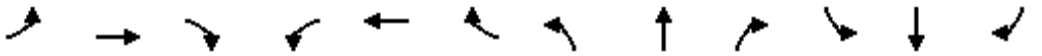
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

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

Splits and Phases: 4: Lowell Road (Route 3A) & Sagamore Bridge Road





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	54	98	474	479	19	31	146	1167	1093	80	985	5
Future Volume (vph)	54	98	474	479	19	31	146	1167	1093	80	985	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	11	11	11	12	12	12	12	12	12
Storage Length (ft)	0		250	200		75	575		275	175		300
Storage Lanes	0		1	1		1	1		1	1		1
Taper Length (ft)	25			50			175			75		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.91	0.91
Frt			0.850			0.850			0.850		0.999	
Flt Protected		0.983		0.950	0.956		0.950			0.950		
Satd. Flow (prot)	0	1868	1599	1658	1668	1546	1787	3574	1615	1805	5131	0
Flt Permitted		0.983		0.950	0.956		0.950			0.950		
Satd. Flow (perm)	0	1868	1599	1658	1668	1546	1787	3574	1615	1805	5131	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			53			89			252			
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		805			586			999			1515	
Travel Time (s)		18.3			13.3			22.7			34.4	
Peak Hour Factor	0.80	0.80	0.80	0.90	0.90	0.90	0.94	0.94	0.94	0.88	0.88	0.88
Heavy Vehicles (%)	0%	0%	1%	0%	0%	1%	1%	1%	0%	0%	1%	0%
Adj. Flow (vph)	68	123	593	532	21	34	155	1241	1163	91	1119	6
Shared Lane Traffic (%)				48%								
Lane Group Flow (vph)	0	191	593	277	276	34	155	1241	1163	91	1125	0
Turn Type	Split	NA	pm+ov	Split	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	
Protected Phases	8	8	1	7	7	5	1	6	7	5	2	
Permitted Phases			8			7			6			
Detector Phase	8	8	1	7	7	5	1	6	7	5	2	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	10.0	5.0	5.0	10.0	
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0	11.0	11.0	16.0	11.0	11.0	16.0	
Total Split (s)	26.0	26.0	31.0	56.0	56.0	21.0	31.0	71.0	56.0	21.0	71.0	
Total Split (%)	14.1%	14.1%	16.8%	30.4%	30.4%	11.4%	16.8%	38.6%	30.4%	11.4%	38.6%	
Maximum Green (s)	20.0	20.0	25.0	50.0	50.0	15.0	25.0	65.0	50.0	15.0	65.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)		6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Lead/Lag	Lag	Lag	Lead	Lead	Lead	Lead	Lead	Lag	Lead	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	3.0	2.5	2.5	3.0	
Recall Mode	None	None	None	None	None	None	None	Min	None	None	Min	
Act Effct Green (s)		19.7	50.8	48.3	48.3	60.8	25.1	62.6	116.9	12.5	50.0	
Actuated g/C Ratio		0.12	0.30	0.29	0.29	0.36	0.15	0.37	0.70	0.07	0.30	
v/c Ratio		0.87	1.13	0.58	0.57	0.05	0.58	0.93	0.97	0.68	0.73	
Control Delay		107.3	128.6	57.4	57.1	0.2	77.6	63.0	37.5	101.3	55.8	
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0	16.3	0.0	0.0	
Total Delay		107.3	128.6	57.4	57.1	0.2	77.6	63.0	53.8	101.3	55.8	
LOS		F	F	E	E	A	E	E	D	F	E	

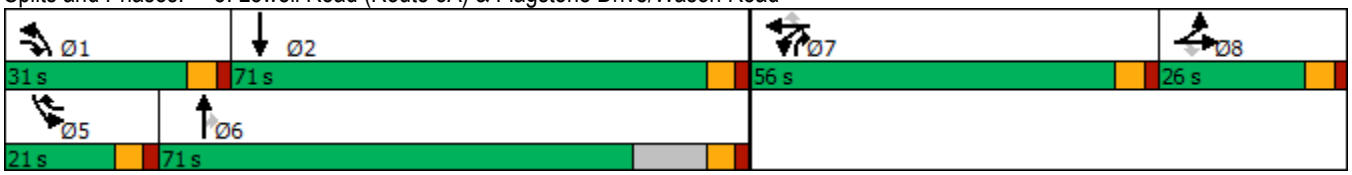
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		123.4			53.9			59.7			59.2	
Approach LOS		F			D			E			E	
Queue Length 50th (ft)		216	~749	283	281	0	167	705	993	102	414	
Queue Length 95th (ft)		#306	#835	402	400	0	255	#823	#1512	166	455	
Internal Link Dist (ft)		725			506			919			1435	
Turn Bay Length (ft)			250	200		75	575		275	175		
Base Capacity (vph)		224	523	498	501	641	268	1610	1220	162	2004	
Starvation Cap Reductn		0	0	0	0	0	0	0	91	0	0	
Spillback Cap Reductn		0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn		0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio		0.85	1.13	0.56	0.55	0.05	0.58	0.77	1.03	0.56	0.56	

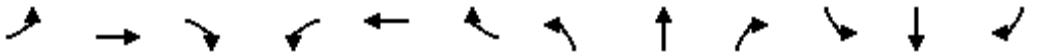
Intersection Summary			
Area Type:	Other		
Cycle Length: 184			
Actuated Cycle Length: 167.2			
Natural Cycle: 110			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.13			
Intersection Signal Delay: 68.7		Intersection LOS: E	
Intersection Capacity Utilization 95.3%		ICU Level of Service F	
Analysis Period (min) 15			

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

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

Splits and Phases: 5: Lowell Road (Route 3A) & Flagstone Drive/Wason Road





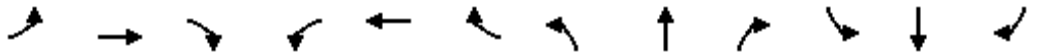
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	28	2	116	11	1	5	18	1232	14	6	956	8
Future Volume (vph)	28	2	116	11	1	5	18	1232	14	6	956	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	13	13	13	12	12	12	11	12	12
Storage Length (ft)	0		100	0		100	225		0	225		0
Storage Lanes	0		1	0		1	1		0	1		0
Taper Length (ft)	25			25			50			50		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850			0.850		0.998			0.999	
Flt Protected		0.956			0.955		0.950			0.950		
Satd. Flow (prot)	0	1816	1583	0	1875	1669	1736	3568	0	1745	3571	0
Flt Permitted		0.422					0.950			0.950		
Satd. Flow (perm)	0	802	1583	0	1963	1669	1736	3568	0	1745	3571	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			145			86		1			1	
Link Speed (mph)		30			10			30			30	
Link Distance (ft)		495			382			1515			1791	
Travel Time (s)		11.3			26.0			34.4			40.7	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.95	0.95	0.95	0.87	0.87	0.87
Heavy Vehicles (%)	0%	0%	2%	0%	0%	0%	4%	1%	0%	0%	1%	0%
Adj. Flow (vph)	35	3	145	14	1	6	19	1297	15	7	1099	9
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	38	145	0	15	6	19	1312	0	7	1108	0
Turn Type	Perm	NA	pt+ov	Perm	NA	pt+ov	Prot	NA		Prot	NA	
Protected Phases		4	4 1		8	8 5	1	6		5	2	
Permitted Phases	4			8								
Detector Phase	4	4	4 1	8	8	8 5	1	6		5	2	
Switch Phase												
Minimum Initial (s)	3.0	3.0		3.0	3.0		4.0	15.0		4.0	15.0	
Minimum Split (s)	9.0	9.0		9.0	9.0		8.0	21.0		8.0	21.0	
Total Split (s)	16.0	16.0		16.0	16.0		16.0	66.0		16.0	66.0	
Total Split (%)	14.0%	14.0%		14.0%	14.0%		14.0%	57.9%		14.0%	57.9%	
Maximum Green (s)	10.0	10.0		10.0	10.0		12.0	60.0		12.0	60.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		3.0	4.0		3.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		1.0	2.0		1.0	2.0	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.0			6.0		4.0	6.0		4.0	6.0	
Lead/Lag	Lead	Lead		Lag	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		2.0	3.0		2.0	3.0	
Recall Mode	None	None		None	None		None	Min		None	Min	
Act Effct Green (s)		9.2	17.5		6.9	9.7	5.8	43.5		5.3	36.2	
Actuated g/C Ratio		0.13	0.24		0.10	0.13	0.08	0.60		0.07	0.50	
v/c Ratio		0.38	0.30		0.08	0.02	0.14	0.61		0.06	0.62	
Control Delay		49.0	6.2		40.3	0.2	42.6	12.8		42.8	15.4	
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		49.0	6.2		40.3	0.2	42.6	12.8		42.8	15.4	
LOS		D	A		D	A	D	B		D	B	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		15.1			28.9			13.2			15.6	
Approach LOS		B			C			B			B	
Queue Length 50th (ft)		12	0		5	0	6	118		2	145	
Queue Length 95th (ft)		#55	29		27	0	36	381		18	293	
Internal Link Dist (ft)		415			302			1435			1711	
Turn Bay Length (ft)			100			100	225			225		
Base Capacity (vph)		119	574		292	387	310	3018		312	3021	
Starvation Cap Reductn		0	0		0	0	0	0		0	0	
Spillback Cap Reductn		0	0		0	0	0	0		0	0	
Storage Cap Reductn		0	0		0	0	0	0		0	0	
Reduced v/c Ratio		0.32	0.25		0.05	0.02	0.06	0.43		0.02	0.37	

Intersection Summary			
Area Type:	Other		
Cycle Length: 114			
Actuated Cycle Length: 72.6			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.62			
Intersection Signal Delay: 14.5		Intersection LOS: B	
Intersection Capacity Utilization 56.2%		ICU Level of Service B	
Analysis Period (min) 15			

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

Splits and Phases: 6: Lowell Road (Route 3A) & Hampshire Drive/Oblate Drive



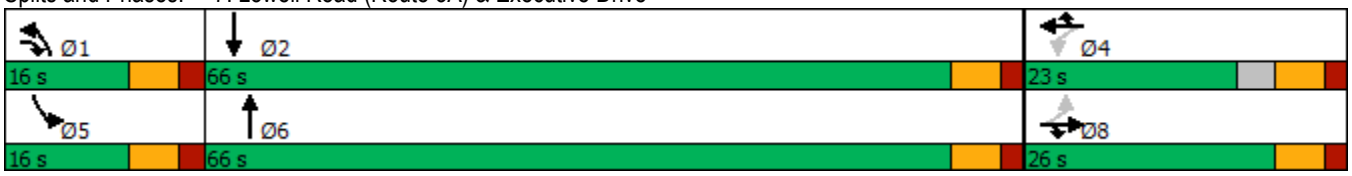
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	248	3	89	23	2	22	57	1131	7	16	784	44
Future Volume (vph)	248	3	89	23	2	22	57	1131	7	16	784	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	15	12	12	13	11	12	12	11	12	12
Storage Length (ft)	0		225	0		80	350		0	150		0
Storage Lanes	0		1	0		1	1		0	1		0
Taper Length (ft)	25			25			50			50		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850			0.850		0.999			0.992	
Flt Protected		0.953			0.957		0.950			0.950		
Satd. Flow (prot)	0	1733	1742	0	1818	1620	1678	3571	0	1646	3540	0
Flt Permitted		0.705			0.635		0.950			0.950		
Satd. Flow (perm)	0	1282	1742	0	1206	1620	1678	3571	0	1646	3540	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			111			91		1			8	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		492			577			1791			1168	
Travel Time (s)		11.2			13.1			40.7			26.5	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.97	0.97	0.97	0.92	0.92	0.92
Heavy Vehicles (%)	1%	0%	2%	0%	0%	3%	4%	1%	0%	6%	1%	4%
Adj. Flow (vph)	310	4	111	29	3	28	59	1166	7	17	852	48
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	314	111	0	32	28	59	1173	0	17	900	0
Turn Type	Perm	NA	pt+ov	Perm	NA	Prot	Prot	NA		Prot	NA	
Protected Phases		8	8 1		4	4	1	6		5	2	
Permitted Phases	8			4								
Detector Phase	8	8	8 1	4	4	4	1	6		5	2	
Switch Phase												
Minimum Initial (s)	3.0	3.0		5.0	5.0	5.0	3.0	8.0		3.0	8.0	
Minimum Split (s)	9.0	9.0		11.0	11.0	11.0	9.0	14.0		9.0	14.0	
Total Split (s)	26.0	26.0		23.0	23.0	23.0	16.0	66.0		16.0	66.0	
Total Split (%)	24.1%	24.1%		21.3%	21.3%	21.3%	14.8%	61.1%		14.8%	61.1%	
Maximum Green (s)	20.0	20.0		17.0	17.0	17.0	10.0	60.0		10.0	60.0	
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.0			6.0	6.0	6.0	6.0		6.0	6.0	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	2.0	2.0		2.0	2.0	2.0	2.0	3.0		2.0	3.0	
Recall Mode	None	None		None	None	None	None	Min		None	Min	
Act Effct Green (s)		20.7	33.9		13.5	13.5	7.0	36.7		5.5	28.3	
Actuated g/C Ratio		0.29	0.47		0.19	0.19	0.10	0.51		0.08	0.39	
v/c Ratio		0.85	0.13		0.14	0.07	0.36	0.64		0.13	0.64	
Control Delay		51.9	4.1		26.8	0.4	40.3	14.6		38.7	20.1	
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		51.9	4.1		26.8	0.4	40.3	14.6		38.7	20.1	
LOS		D	A		C	A	D	B		D	C	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		39.4			14.4			15.9			20.4	
Approach LOS		D			B			B			C	
Queue Length 50th (ft)		129	0		10	0	25	165		7	170	
Queue Length 95th (ft)		#322	24		36	0	71	318		31	238	
Internal Link Dist (ft)		412			497			1711			1088	
Turn Bay Length (ft)			225			80	350			150		
Base Capacity (vph)		369	955		346	531	241	2995		237	2970	
Starvation Cap Reductn		0	0		0	0	0	0		0	0	
Spillback Cap Reductn		0	0		0	0	0	0		0	0	
Storage Cap Reductn		0	0		0	0	0	0		0	0	
Reduced v/c Ratio		0.85	0.12		0.09	0.05	0.24	0.39		0.07	0.30	

Intersection Summary			
Area Type:	Other		
Cycle Length: 108			
Actuated Cycle Length: 71.8			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.85			
Intersection Signal Delay: 21.2		Intersection LOS: C	
Intersection Capacity Utilization 70.4%		ICU Level of Service C	
Analysis Period (min) 15			

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

Splits and Phases: 7: Lowell Road (Route 3A) & Executive Drive



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	2	25	31	0	48	27	1335	15	56	793	11
Future Volume (vph)	9	2	25	31	0	48	27	1335	15	56	793	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	14	13	13	11	11	12	12	12	12
Storage Length (ft)	0		50	0		100	210		325	125		0
Storage Lanes	0		1	0		1	1		1	1		0
Taper Length (ft)	25			25			50			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850		0.998	
Flt Protected		0.962			0.950		0.950			0.950		
Satd. Flow (prot)	0	1828	1583	0	1865	1669	1745	1818	1615	1805	1878	0
Flt Permitted		0.746			0.748		0.950			0.950		
Satd. Flow (perm)	0	1417	1583	0	1469	1669	1745	1818	1615	1805	1878	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			91			60			91		1	
Link Speed (mph)		10			30			30			30	
Link Distance (ft)		598			262			1405			549	
Travel Time (s)		40.8			6.0			31.9			12.5	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.99	0.99	0.99	0.94	0.94	0.94
Heavy Vehicles (%)	0%	0%	2%	0%	0%	0%	0%	1%	0%	0%	1%	0%
Adj. Flow (vph)	11	3	31	39	0	60	27	1348	15	60	844	12
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	14	31	0	39	60	27	1348	15	60	856	0
Turn Type	Perm	NA	Prot	Perm	NA	pm+ov	Prot	NA	Prot	Prot	NA	
Protected Phases		8	8		4	5	1	6	6	5	2	
Permitted Phases	8			4		4						
Detector Phase	8	8	8	4	4	5	1	6	6	5	2	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	10.0	10.0	5.0	10.0	
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0	11.0	11.0	16.0	16.0	11.0	16.0	
Total Split (s)	16.0	16.0	16.0	16.0	16.0	16.0	16.0	116.0	116.0	16.0	116.0	
Total Split (%)	8.9%	8.9%	8.9%	8.9%	8.9%	8.9%	8.9%	64.4%	64.4%	8.9%	64.4%	
Maximum Green (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	110.0	110.0	10.0	110.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)		6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Lead/Lag						Lead	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?						Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	1.5	1.5	1.5	1.5	1.5	1.5	1.0	1.5	1.5	1.5	1.5	
Recall Mode	None	None	None	None	None	None	None	C-Min	C-Min	None	C-Min	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)		8.1	8.1		8.1	20.7	6.6	140.9	140.9	8.8	146.5	
Actuated g/C Ratio		0.04	0.04		0.04	0.12	0.04	0.78	0.78	0.05	0.81	
v/c Ratio		0.22	0.20		0.59	0.25	0.42	0.95	0.01	0.68	0.56	
Control Delay		90.1	2.8		117.7	16.3	103.9	33.1	0.0	119.5	11.9	

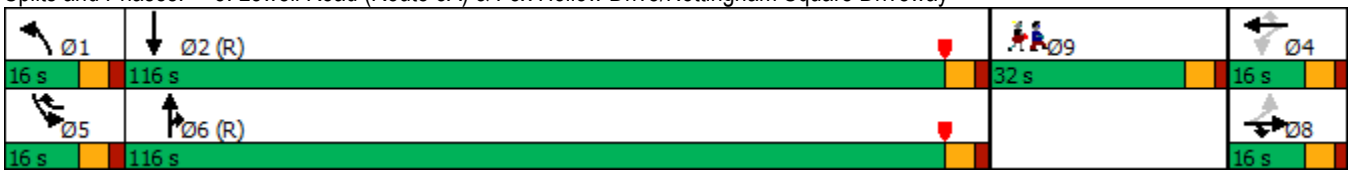
Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	32.0
Total Split (s)	32.0
Total Split (%)	18%
Maximum Green (s)	26.0
Yellow Time (s)	4.0
All-Red Time (s)	2.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	5.0
Flash Dont Walk (s)	21.0
Pedestrian Calls (#/hr)	5
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	3.1	
Total Delay		90.1	2.8		117.7	16.3	103.9	33.1	0.0	119.5	14.9	
LOS		F	A		F	B	F	C	A	F	B	
Approach Delay		29.9			56.2			34.2			21.8	
Approach LOS		C			E			C			C	
Queue Length 50th (ft)		16	0		46	0	32	1114	0	71	294	
Queue Length 95th (ft)		40	0		81	36	70	#2202	0	#134	870	
Internal Link Dist (ft)		518			182			1325			469	
Turn Bay Length (ft)			50			100	210		325	125		
Base Capacity (vph)		78	173		81	255	96	1423	1284	100	1528	
Starvation Cap Reductn		0	0		0	0	0	0	0	0	546	
Spillback Cap Reductn		0	0		0	0	0	0	0	0	0	
Storage Cap Reductn		0	0		0	0	0	0	0	0	0	
Reduced v/c Ratio		0.18	0.18		0.48	0.24	0.28	0.95	0.01	0.60	0.87	

Intersection Summary

Area Type: Other
Cycle Length: 180
Actuated Cycle Length: 180
Offset: 0 (0%), Referenced to phase 2:SBT and 6:NBT, Start of Yellow, Master Intersection
Natural Cycle: 150
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.95
Intersection Signal Delay: 30.4 Intersection LOS: C
Intersection Capacity Utilization 93.6% ICU Level of Service F
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 8: Lowell Road (Route 3A) & Fox Hollow Drive/Nottingham Square Driveway



Lane Group	Ø9
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø9
Lane Configurations							
Traffic Volume (vph)	94	157	1269	121	122	782	
Future Volume (vph)	94	157	1269	121	122	782	
Ideal Flow (vphpl)	1900	1000	1900	1900	1900	1900	
Lane Width (ft)	12	12	13	13	12	12	
Storage Length (ft)	0	75		0	150		
Storage Lanes	1	1		0	1		
Taper Length (ft)	25				50		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		0.850	0.988				
Flt Protected	0.950				0.950		
Satd. Flow (prot)	1805	850	1922	0	1805	1881	
Flt Permitted	0.950				0.950		
Satd. Flow (perm)	1805	850	1922	0	1805	1881	
Right Turn on Red		Yes		Yes			
Satd. Flow (RTOR)		153	4				
Link Speed (mph)	20		30			30	
Link Distance (ft)	512		549			1309	
Travel Time (s)	17.5		12.5			29.8	
Peak Hour Factor	0.87	0.87	0.98	0.98	0.89	0.89	
Heavy Vehicles (%)	0%	0%	1%	0%	0%	1%	
Adj. Flow (vph)	108	180	1295	123	137	879	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	108	180	1418	0	137	879	
Turn Type	Prot	pt+ov	NA		Prot	NA	
Protected Phases	4	4 5	6		5	2	9
Permitted Phases							
Detector Phase	4	4 5	6		5	2	
Switch Phase							
Minimum Initial (s)	5.0		10.0		3.0	10.0	5.0
Minimum Split (s)	11.0		16.0		9.0	16.0	35.0
Total Split (s)	26.0		116.0		13.0	116.0	35.0
Total Split (%)	13.7%		61.1%		6.8%	61.1%	18%
Maximum Green (s)	20.0		110.0		7.0	110.0	29.0
Yellow Time (s)	4.0		4.0		4.0	4.0	4.0
All-Red Time (s)	2.0		2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0		0.0	0.0	
Total Lost Time (s)	6.0		6.0		6.0	6.0	
Lead/Lag			Lag		Lead		
Lead-Lag Optimize?			Yes		Yes		
Vehicle Extension (s)	1.5		1.5		1.5	1.5	3.0
Recall Mode	None		C-Min		None	C-Min	None
Walk Time (s)							5.0
Flash Dont Walk (s)							24.0
Pedestrian Calls (#/hr)							5
Act Effct Green (s)	15.1	28.1	142.9		7.0	155.9	
Actuated g/C Ratio	0.08	0.15	0.75		0.04	0.82	
v/c Ratio	0.76	0.70	0.98		2.08	0.57	
Control Delay	115.2	30.4	41.7		568.2	10.5	

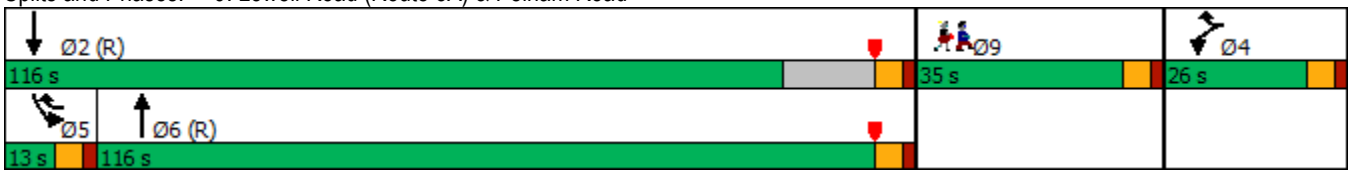
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø9
Queue Delay	0.0	0.0	40.3		0.0	0.0	
Total Delay	115.2	30.4	82.0		568.2	10.5	
LOS	F	C	F		F	B	
Approach Delay	62.2		82.0			85.7	
Approach LOS	E		F			F	
Queue Length 50th (ft)	135	30	1286		~268	244	
Queue Length 95th (ft)	197	118	#2494		#423	851	
Internal Link Dist (ft)	432		469			1229	
Turn Bay Length (ft)		75			150		
Base Capacity (vph)	190	252	1446		66	1543	
Starvation Cap Reductn	0	0	244		0	0	
Spillback Cap Reductn	0	0	0		0	0	
Storage Cap Reductn	0	0	0		0	0	
Reduced v/c Ratio	0.57	0.71	1.18		2.08	0.57	

Intersection Summary			
Area Type:	Other		
Cycle Length: 190			
Actuated Cycle Length: 190			
Offset: 30 (16%), Referenced to phase 2:SBT and 6:NBT, Start of Yellow			
Natural Cycle: 150			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 2.08			
Intersection Signal Delay: 81.3		Intersection LOS: F	
Intersection Capacity Utilization 102.6%		ICU Level of Service G	
Analysis Period (min) 15			

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

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

Splits and Phases: 9: Lowell Road (Route 3A) & Pelham Road



Appendix I

Capacity Analysis – 2022 Build with Improvements Traffic Conditions

2022 Build with Improvements Weekday A.M.

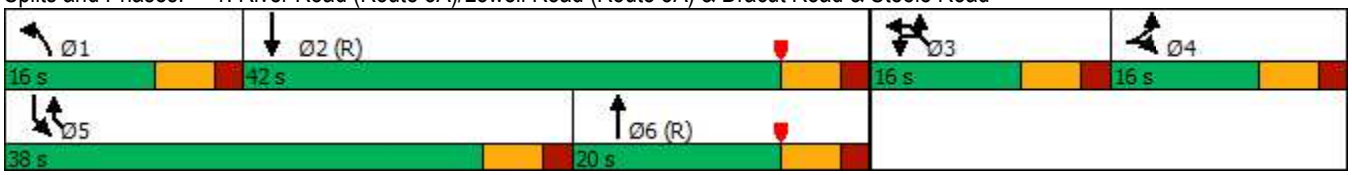
Lane Group	EBL	EBR	EBR2	NBL	NBT	NBR	SBL	SBT	SBR	NWL	NWR
Lane Configurations											
Traffic Volume (vph)	2	0	2	0	272	0	487	509	12	1	849
Future Volume (vph)	2	0	2	0	272	0	487	509	12	1	849
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	12	12	10	12	12	12	12
Storage Length (ft)	0	50		200		300	775		0	100	0
Storage Lanes	1	1		1		1	1		0	1	1
Taper Length (ft)	25			100			75			25	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00
Frt		0.850						0.997			0.850
Flt Protected	0.950						0.950			0.950	
Satd. Flow (prot)	1685	1133	0	1773	3574	0	1652	3564	0	1805	1583
Flt Permitted	0.950						0.950			0.950	
Satd. Flow (perm)	1685	1133	0	1773	3574	0	1652	3564	0	1805	1583
Right Turn on Red			Yes			Yes			Yes		Yes
Satd. Flow (RTOR)		543						3			473
Link Speed (mph)	30				35			35		35	
Link Distance (ft)	591				758			1733		622	
Travel Time (s)	13.4				14.8			33.8		12.1	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.92	0.92	0.92	0.86	0.86
Heavy Vehicles (%)	0%	0%	33%	0%	1%	0%	2%	1%	0%	0%	2%
Adj. Flow (vph)	3	0	3	0	340	0	529	553	13	1	987
Shared Lane Traffic (%)											
Lane Group Flow (vph)	3	3	0	0	340	0	529	566	0	1	987
Turn Type	Prot	Prot		Prot	NA		Prot	NA		Prot	pt+ov
Protected Phases	4	4		1	6		5	2		3	3 5
Permitted Phases											
Detector Phase	4	4		1	6		5	2		3	3 5
Switch Phase											
Minimum Initial (s)	5.0	5.0		5.0	8.0		8.0	8.0		5.0	
Minimum Split (s)	11.0	11.0		11.0	14.0		14.0	14.0		11.0	
Total Split (s)	16.0	16.0		16.0	20.0		38.0	42.0		16.0	
Total Split (%)	17.8%	17.8%		17.8%	22.2%		42.2%	46.7%		17.8%	
Maximum Green (s)	10.0	10.0		10.0	14.0		32.0	36.0		10.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	
Lead/Lag	Lag	Lag		Lead	Lag		Lead	Lag		Lead	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	
Vehicle Extension (s)	3.0	3.0		3.0	4.0		4.0	4.0		4.0	
Recall Mode	None	None		None	C-Min		None	C-Min		None	
Act Effct Green (s)	5.8	5.8			16.3		42.4	64.7		10.8	58.0
Actuated g/C Ratio	0.06	0.06			0.18		0.47	0.72		0.12	0.64
v/c Ratio	0.03	0.01			0.53		0.68	0.22		0.00	0.83
Control Delay	40.0	0.0			37.6		23.4	2.2		36.0	14.2
Queue Delay	0.0	0.0			0.0		0.0	0.0		0.0	0.0
Total Delay	40.0	0.0			37.6		23.4	2.2		36.0	14.2
LOS	D	A			D		C	A		D	B

Lane Group	EBL	EBR	EBR2	NBL	NBT	NBR	SBL	SBT	SBR	NWL	NWR
Approach Delay	20.0				37.6			12.4		14.3	
Approach LOS	B				D			B		B	
Queue Length 50th (ft)	2	0			96		149	2		1	138
Queue Length 95th (ft)	9	0			123		#416	5		5	#455
Internal Link Dist (ft)	511				678			1653		542	
Turn Bay Length (ft)		50					775			100	
Base Capacity (vph)	187	608			646		778	2562		217	1188
Starvation Cap Reductn	0	0			0		0	0		0	0
Spillback Cap Reductn	0	0			0		0	0		0	0
Storage Cap Reductn	0	0			0		0	0		0	0
Reduced v/c Ratio	0.02	0.00			0.53		0.68	0.22		0.00	0.83

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 0 (0%), Referenced to phase 2:SBT and 6:NBT, Start of Yellow			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.83			
Intersection Signal Delay: 16.7		Intersection LOS: B	
Intersection Capacity Utilization 70.1%		ICU Level of Service C	
Analysis Period (min) 15			
Description: NHDOT Int. No.: S-229-04			

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

Splits and Phases: 1: River Road (Route 3A)/Lowell Road (Route 3A) & Dracut Road & Steele Road



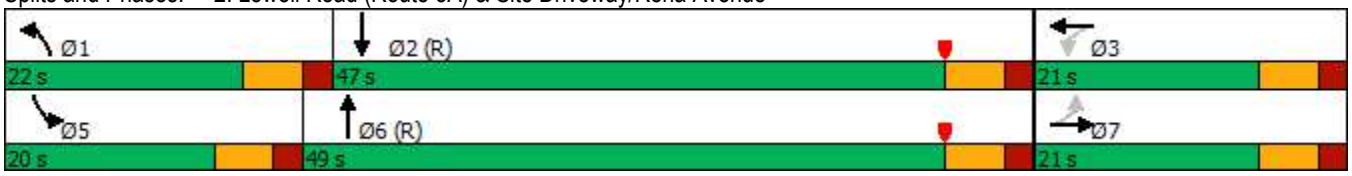
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	156	0	25	1	1	33	43	1126	2	7	987	241
Future Volume (vph)	156	0	25	1	1	33	43	1126	2	7	987	241
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	13	13	13	10	12	12	12	12	12
Storage Length (ft)	0		50	0		0	300		0	350		0
Storage Lanes	2		0	0		0	1		0	1		0
Taper Length (ft)	25			25			75			25		
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.850			0.872						0.971	
Flt Protected	0.950				0.999		0.950			0.950		
Satd. Flow (prot)	2971	1133	0	0	1659	0	1685	3538	0	1570	3410	0
Flt Permitted	0.730				0.995		0.950			0.950		
Satd. Flow (perm)	2283	1133	0	0	1653	0	1685	3538	0	1570	3410	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		316			39						44	
Link Speed (mph)		15			30			35			35	
Link Distance (ft)		510			557			1733			980	
Travel Time (s)		23.2			12.7			33.8			19.1	
Peak Hour Factor	0.80	0.80	0.80	0.85	0.85	0.85	0.85	0.85	0.85	0.95	0.95	0.95
Heavy Vehicles (%)	10%	0%	33%	9%	0%	3%	0%	2%	20%	15%	2%	6%
Adj. Flow (vph)	195	0	31	1	1	39	51	1325	2	7	1039	254
Shared Lane Traffic (%)												
Lane Group Flow (vph)	195	31	0	0	41	0	51	1327	0	7	1293	0
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		7			3		1	6		5	2	
Permitted Phases	7			3								
Detector Phase	7	7		3	3		1	6		5	2	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	11.0	11.0		11.0	11.0		11.0	16.0		11.0	16.0	
Total Split (s)	21.0	21.0		21.0	21.0		22.0	49.0		20.0	47.0	
Total Split (%)	23.3%	23.3%		23.3%	23.3%		24.4%	54.4%		22.2%	52.2%	
Maximum Green (s)	15.0	15.0		15.0	15.0		16.0	43.0		14.0	41.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0			0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0			6.0		6.0	6.0		6.0	6.0	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Recall Mode	None	None		None	None		None	C-Min		None	C-Min	
Act Effct Green (s)	13.1	13.1			11.4		9.1	62.1		7.0	55.0	
Actuated g/C Ratio	0.15	0.15			0.13		0.10	0.69		0.08	0.61	
v/c Ratio	0.59	0.07			0.17		0.30	0.54		0.06	0.62	
Control Delay	43.2	0.3			13.3		41.7	8.0		32.4	15.0	
Queue Delay	0.0	0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay	43.2	0.3			13.3		41.7	8.0		32.4	15.0	
LOS	D	A			B		D	A		C	B	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		37.3			13.3			9.2			15.1	
Approach LOS		D			B			A			B	
Queue Length 50th (ft)	53	0			1		29	134		4	120	
Queue Length 95th (ft)	76	0			26		m37	250		m7	222	
Internal Link Dist (ft)		430			477			1653			900	
Turn Bay Length (ft)							300			350		
Base Capacity (vph)	380	452			308		299	2441		244	2102	
Starvation Cap Reductn	0	0			0		0	0		0	0	
Spillback Cap Reductn	0	0			0		0	0		0	0	
Storage Cap Reductn	0	0			0		0	0		0	0	
Reduced v/c Ratio	0.51	0.07			0.13		0.17	0.54		0.03	0.62	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 51 (57%), Referenced to phase 2:SBT and 6:NBT, Start of Yellow			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.62			
Intersection Signal Delay: 14.0		Intersection LOS: B	
Intersection Capacity Utilization 56.9%		ICU Level of Service B	
Analysis Period (min) 15			
Description: NHDOT Int. No.: S-229-03			

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

Splits and Phases: 2: Lowell Road (Route 3A) & Site Driveway/Rena Avenue



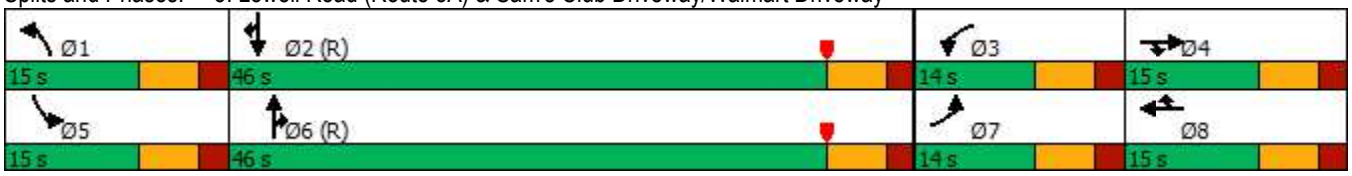
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	131	4	59	15	5	71	78	1215	27	85	1152	164
Future Volume (vph)	131	4	59	15	5	71	78	1215	27	85	1152	164
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	13	12	12	12	13	12	12	12	12	12	12
Storage Length (ft)	175		175	150		200	350		175	350		0
Storage Lanes	2		1	2		1	2		1	2		1
Taper Length (ft)	25			75			125			100		
Lane Util. Factor	0.97	1.00	1.00	0.97	1.00	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3213	1852	1568	3502	1900	1589	3467	3505	1583	3433	3539	1482
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3213	1852	1568	3502	1900	1589	3467	3505	1583	3433	3539	1482
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			182			182			182			182
Link Speed (mph)		30			30			35			30	
Link Distance (ft)		401			449			980			1189	
Travel Time (s)		9.1			10.2			19.1			27.0	
Peak Hour Factor	0.93	0.93	0.93	0.88	0.88	0.88	0.87	0.87	0.87	0.96	0.96	0.96
Heavy Vehicles (%)	9%	6%	3%	0%	0%	5%	1%	3%	2%	2%	2%	9%
Adj. Flow (vph)	141	4	63	17	6	81	90	1397	31	89	1200	171
Shared Lane Traffic (%)												
Lane Group Flow (vph)	141	4	63	17	6	81	90	1397	31	89	1200	171
Turn Type	Prot	NA	Prot	Prot	NA	Prot	Prot	NA	Prot	Prot	NA	Prot
Protected Phases	7	4	4	3	8	8	1	6	6	5	2	2
Permitted Phases												
Detector Phase	7	4	4	3	8	8	1	6	6	5	2	2
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0	11.0	11.0	16.0	16.0	11.0	16.0	16.0
Total Split (s)	14.0	15.0	15.0	14.0	15.0	15.0	15.0	46.0	46.0	15.0	46.0	46.0
Total Split (%)	15.6%	16.7%	16.7%	15.6%	16.7%	16.7%	16.7%	51.1%	51.1%	16.7%	51.1%	51.1%
Maximum Green (s)	8.0	9.0	9.0	8.0	9.0	9.0	9.0	40.0	40.0	9.0	40.0	40.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	6.0	6.0	4.0	6.0	6.0
Recall Mode	None	None	None	None	None	None	None	C-Min	C-Min	None	C-Min	C-Min
Act Effct Green (s)	7.9	12.9	12.9	7.0	6.9	6.9	8.7	47.6	47.6	8.7	47.6	47.6
Actuated g/C Ratio	0.09	0.14	0.14	0.08	0.08	0.08	0.10	0.53	0.53	0.10	0.53	0.53
v/c Ratio	0.50	0.02	0.17	0.06	0.04	0.28	0.27	0.75	0.03	0.27	0.64	0.20
Control Delay	45.6	36.5	0.9	38.7	38.8	2.4	44.0	16.8	0.1	48.9	17.6	1.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	45.6	36.5	0.9	38.7	38.8	2.4	44.0	16.8	0.1	48.9	17.6	1.0
LOS	D	D	A	D	D	A	D	B	A	D	B	A

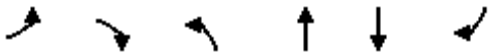
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		31.9			10.4			18.1			17.6	
Approach LOS		C			B			B			B	
Queue Length 50th (ft)	40	2	0	4	3	0	26	312	0	25	317	0
Queue Length 95th (ft)	70	12	0	14	15	0	50	194	m0	m48	407	7
Internal Link Dist (ft)		321			369			900			1109	
Turn Bay Length (ft)	175		175	150		200	350		175	350		
Base Capacity (vph)	285	280	391	311	190	322	361	1852	922	357	1870	869
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.49	0.01	0.16	0.05	0.03	0.25	0.25	0.75	0.03	0.25	0.64	0.20

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 51 (57%), Referenced to phase 2:SBT and 6:NBT, Start of Yellow			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.75			
Intersection Signal Delay: 18.5		Intersection LOS: B	
Intersection Capacity Utilization 57.1%		ICU Level of Service B	
Analysis Period (min) 15			
Description: NHDOT Int. No.: S-229-06			

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

Splits and Phases: 3: Lowell Road (Route 3A) & Sam's Club Driveway/Walmart Driveway





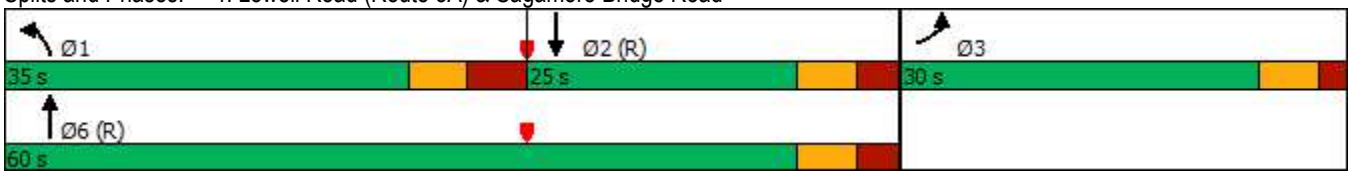
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	948	1095	1038	371	386	1517
Future Volume (vph)	948	1095	1038	371	386	1517
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	14	14	12	12	12	12
Storage Length (ft)	0	0	525			200
Storage Lanes	3	2	3			1
Taper Length (ft)	25		100			
Lane Util. Factor	0.94	0.88	0.94	0.95	0.95	0.88
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	5323	2915	4894	3539	3539	2760
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	5323	2915	4894	3539	3539	2760
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		1165				1173
Link Speed (mph)	35			30	30	
Link Distance (ft)	929			1189	999	
Travel Time (s)	18.1			27.0	22.7	
Peak Hour Factor	0.94	0.94	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	4%	4%	2%	2%	3%
Adj. Flow (vph)	1009	1165	1128	403	420	1649
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1009	1165	1128	403	420	1649
Turn Type	Prot	Free	Prot	NA	NA	Free
Protected Phases	3		1	6	2	
Permitted Phases		Free				Free
Detector Phase	3		1	6	2	
Switch Phase						
Minimum Initial (s)	10.0		7.0	10.0	10.0	
Minimum Split (s)	16.0		15.0	17.0	17.0	
Total Split (s)	30.0		35.0	60.0	25.0	
Total Split (%)	33.3%		38.9%	66.7%	27.8%	
Maximum Green (s)	24.0		27.0	53.0	18.0	
Yellow Time (s)	4.0		4.0	4.0	4.0	
All-Red Time (s)	2.0		4.0	3.0	3.0	
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	
Total Lost Time (s)	6.0		8.0	7.0	7.0	
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	4.0		4.0	4.0	4.0	
Recall Mode	None		None	C-Min	C-Min	
Act Effct Green (s)	23.0	90.0	26.2	54.0	19.8	90.0
Actuated g/C Ratio	0.26	1.00	0.29	0.60	0.22	1.00
v/c Ratio	0.74	0.40	0.79	0.19	0.54	0.60
Control Delay	34.5	0.4	28.0	2.2	34.8	1.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.5	0.4	28.0	2.2	34.8	1.0
LOS	C	A	C	A	C	A

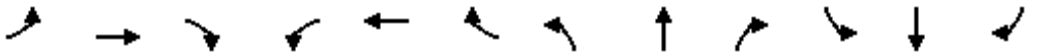
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Approach Delay	16.2			21.2	7.8	
Approach LOS	B			C	A	
Queue Length 50th (ft)	182	0	100	3	115	0
Queue Length 95th (ft)	230	0	173	m9	164	0
Internal Link Dist (ft)	849			1109	919	
Turn Bay Length (ft)			525			200
Base Capacity (vph)	1425	2915	1468	2128	783	2760
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.71	0.40	0.77	0.19	0.54	0.60

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 70 (78%), Referenced to phase 2:SBT and 6:NBT, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.79			
Intersection Signal Delay: 14.5		Intersection LOS: B	
Intersection Capacity Utilization 65.1%		ICU Level of Service C	
Analysis Period (min) 15			
Description: NHDOT Int. No.: S-229-02			

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

Splits and Phases: 4: Lowell Road (Route 3A) & Sagamore Bridge Road





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	65	28	282	614	41	30	303	811	188	15	1087	10
Future Volume (vph)	65	28	282	614	41	30	303	811	188	15	1087	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	11	11	11	12	12	12	12	12	12
Storage Length (ft)	0		250	200		75	575		275	175		300
Storage Lanes	0		1	1		1	0		1	1		1
Taper Length (ft)	25			50			175			75		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.91	0.91
Frt			0.850			0.850			0.850		0.999	
Flt Protected		0.966		0.950	0.958		0.950			0.950		
Satd. Flow (prot)	0	1835	1583	1641	1657	1501	1787	3539	1583	1752	5078	0
Flt Permitted		0.966		0.950	0.958		0.950			0.950		
Satd. Flow (perm)	0	1835	1583	1641	1657	1501	1787	3539	1583	1752	5078	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			53			53			198		1	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		805			586			999			1515	
Travel Time (s)		18.3			13.3			22.7			34.4	
Peak Hour Factor	0.81	0.81	0.81	0.94	0.94	0.94	0.95	0.95	0.95	0.87	0.87	0.87
Heavy Vehicles (%)	0%	0%	2%	1%	0%	4%	1%	2%	2%	3%	2%	6%
Adj. Flow (vph)	80	35	348	653	44	32	319	854	198	17	1249	11
Shared Lane Traffic (%)				47%								
Lane Group Flow (vph)	0	115	348	346	351	32	319	854	198	17	1260	0
Turn Type	Split	NA	pm+ov	Split	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	
Protected Phases	8	8	1	7	7	5	1	6	7	5	2	
Permitted Phases			8			7			6			
Detector Phase	8	8	1	7	7	5	1	6	7	5	2	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	10.0	5.0	5.0	10.0	
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0	11.0	11.0	16.0	11.0	11.0	16.0	
Total Split (s)	26.0	26.0	32.0	47.0	47.0	31.0	32.0	80.0	47.0	31.0	79.0	
Total Split (%)	14.1%	14.1%	17.4%	25.5%	25.5%	16.8%	17.4%	43.5%	25.5%	16.8%	42.9%	
Maximum Green (s)	20.0	20.0	26.0	41.0	41.0	25.0	26.0	74.0	41.0	25.0	73.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)		6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Lead/Lag	Lag	Lag	Lead	Lead	Lead	Lead	Lead	Lag	Lead	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	3.0	2.5	2.5	3.0	
Recall Mode	None	None	None	None	None	None	None	Min	None	None	Min	
Act Effct Green (s)		14.3	46.7	38.4	38.4	45.0	26.3	71.6	116.1	6.6	49.3	
Actuated g/C Ratio		0.09	0.31	0.25	0.25	0.29	0.17	0.47	0.76	0.04	0.32	
v/c Ratio		0.67	0.67	0.84	0.84	0.07	1.04	0.51	0.16	0.23	0.77	
Control Delay		88.3	47.6	73.7	73.9	2.3	121.3	31.1	1.0	83.0	50.2	
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay		88.3	47.6	73.7	73.9	2.3	121.3	31.1	1.0	83.0	50.2	
LOS		F	D	E	E	A	F	C	A	F	D	

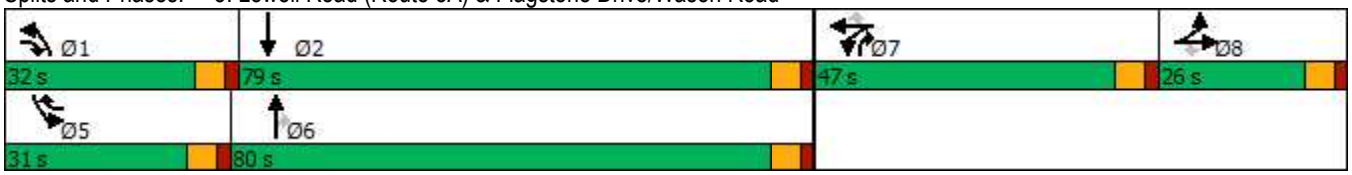
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		57.7			70.7			47.8			50.7	
Approach LOS		E			E			D			D	
Queue Length 50th (ft)		115	267	347	352	0	~356	329	0	17	424	
Queue Length 95th (ft)		177	362	#601	#609	8	#644	426	22	47	479	
Internal Link Dist (ft)		725			506			919			1435	
Turn Bay Length (ft)			250	200		75	575		275	175		
Base Capacity (vph)		243	521	446	450	657	308	1758	1279	290	2458	
Starvation Cap Reductn		0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn		0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn		0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio		0.47	0.67	0.78	0.78	0.05	1.04	0.49	0.15	0.06	0.51	

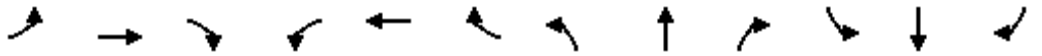
Intersection Summary			
Area Type:	Other		
Cycle Length: 184			
Actuated Cycle Length: 152.6			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.04			
Intersection Signal Delay: 54.3		Intersection LOS: D	
Intersection Capacity Utilization 77.8%		ICU Level of Service D	
Analysis Period (min) 15			

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

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

Splits and Phases: 5: Lowell Road (Route 3A) & Flagstone Drive/Wason Road





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	11	0	48	6	0	10	4	566	1	16	1317	3
Future Volume (vph)	11	0	48	6	0	10	4	566	1	16	1317	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	14	13	13	11	11	12	12	12	12
Storage Length (ft)	0		50	0		100	210		325	125		0
Storage Lanes	0		1	0		1	1		0	1		0
Taper Length (ft)	25			25			50			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00
Frt			0.850			0.850						
Flt Protected		0.950			0.950		0.950			0.950		
Satd. Flow (prot)	0	1719	1583	0	1865	1669	1745	3356	0	1805	1863	0
Flt Permitted		0.752			0.748		0.950			0.950		
Satd. Flow (perm)	0	1361	1583	0	1469	1669	1745	3356	0	1805	1863	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			91			55						
Link Speed (mph)		10			30			30			30	
Link Distance (ft)		598			262			1405			549	
Travel Time (s)		40.8			6.0			31.9			12.5	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.91	0.91	0.91	0.95	0.95	0.95
Heavy Vehicles (%)	5%	0%	2%	0%	0%	0%	0%	4%	0%	0%	2%	0%
Adj. Flow (vph)	14	0	60	8	0	13	4	622	1	17	1386	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	14	60	0	8	13	4	623	0	17	1389	0
Turn Type	Perm	NA	Prot	Perm	NA	pm+ov	Prot	NA		Prot	NA	
Protected Phases		8	8		4	5	1	6		5	2	
Permitted Phases	8			4		4						
Detector Phase	8	8	8	4	4	5	1	6		5	2	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	10.0		5.0	10.0	
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0	11.0	11.0	16.0		11.0	16.0	
Total Split (s)	16.0	16.0	16.0	16.0	16.0	16.0	16.0	116.0		16.0	116.0	
Total Split (%)	8.9%	8.9%	8.9%	8.9%	8.9%	8.9%	8.9%	64.4%		8.9%	64.4%	
Maximum Green (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	110.0		10.0	110.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.0	6.0		6.0	6.0	6.0	6.0		6.0	6.0	
Lead/Lag						Lead	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?						Yes	Yes	Yes		Yes	Yes	
Vehicle Extension (s)	1.5	1.5	1.5	1.5	1.5	1.5	1.0	1.5		1.5	1.5	
Recall Mode	None	None	None	None	None	None	None	C-Min		None	C-Min	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)		6.3	6.3		6.3	18.3	5.0	147.7		6.0	153.1	
Actuated g/C Ratio		0.04	0.04		0.04	0.10	0.03	0.82		0.03	0.85	
v/c Ratio		0.30	0.42		0.16	0.06	0.08	0.23		0.28	0.88	
Control Delay		100.2	12.4		90.2	0.5	89.0	5.8		95.9	18.7	

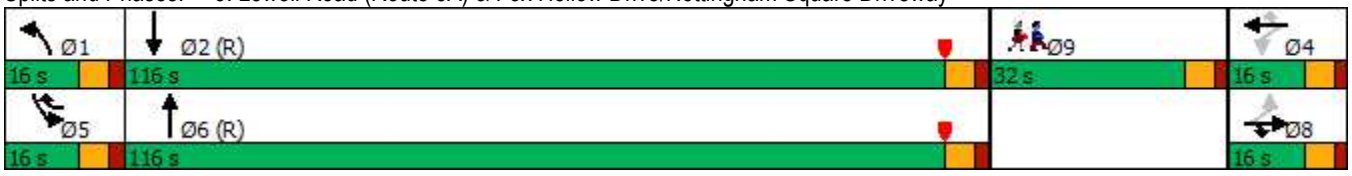
Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	32.0
Total Split (s)	32.0
Total Split (%)	18%
Maximum Green (s)	26.0
Yellow Time (s)	4.0
All-Red Time (s)	2.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	5.0
Flash Dont Walk (s)	21.0
Pedestrian Calls (#/hr)	5
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0		0.0	26.8	
Total Delay		100.2	12.4		90.2	0.5	89.0	5.8		95.9	45.4	
LOS		F	B		F	A	F	A		F	D	
Approach Delay		29.0			34.7			6.3			46.0	
Approach LOS		C			C			A			D	
Queue Length 50th (ft)		17	0		9	0	5	65		20	449	
Queue Length 95th (ft)		40	3		27	0	20	204		50	#2186	
Internal Link Dist (ft)		518			182			1325			469	
Turn Bay Length (ft)			50			100	210			125		
Base Capacity (vph)		75	173		81	254	96	2753		100	1585	
Starvation Cap Reductn		0	0		0	0	0	0		0	262	
Spillback Cap Reductn		0	0		0	0	0	0		0	0	
Storage Cap Reductn		0	0		0	0	0	0		0	0	
Reduced v/c Ratio		0.19	0.35		0.10	0.05	0.04	0.23		0.17	1.05	

Intersection Summary

Area Type: Other
Cycle Length: 180
Actuated Cycle Length: 180
Offset: 0 (0%), Referenced to phase 2:SBT and 6:NBT, Start of Yellow, Master Intersection
Natural Cycle: 150
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.88
Intersection Signal Delay: 33.6 Intersection LOS: C
Intersection Capacity Utilization 92.8% ICU Level of Service F
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 8: Lowell Road (Route 3A) & Fox Hollow Drive/Nottingham Square Driveway



Lane Group	Ø9
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

2022 Build with Improvements Weekday P.M.

Lane Group	EBL	EBR	EBR2	NBL	NBT	NBR	SBL	SBT	SBR	NWL2	NWL	NWR
Lane Configurations												
Traffic Volume (vph)	36	2	2	1	593	1	894	399	13	4	0	660
Future Volume (vph)	36	2	2	1	593	1	894	399	13	4	0	660
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	12	12	10	12	12	12	12	12
Storage Length (ft)	0	50		200		300	775		0		100	0
Storage Lanes	1	1		1		1	1		0		1	1
Taper Length (ft)	25			100			75				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00
Frt		0.850						0.995				0.850
Flt Protected	0.950			0.950			0.950				0.950	
Satd. Flow (prot)	1668	1507	0	1685	3610	0	1685	3557	0	0	1805	1615
Flt Permitted	0.950			0.950			0.950				0.950	
Satd. Flow (perm)	1668	1507	0	1685	3610	0	1685	3557	0	0	1805	1615
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		191						4				309
Link Speed (mph)	30				35			35			35	
Link Distance (ft)	591				758			1733			622	
Travel Time (s)	13.4				14.8			33.8			12.1	
Peak Hour Factor	0.80	0.80	0.80	0.91	0.91	0.91	0.90	0.90	0.90	0.91	0.91	0.91
Heavy Vehicles (%)	1%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%
Adj. Flow (vph)	45	3	3	1	652	1	993	443	14	4	0	725
Shared Lane Traffic (%)												
Lane Group Flow (vph)	45	6	0	1	653	0	993	457	0	0	4	725
Turn Type	Prot	Prot		Prot	NA		Prot	NA		Prot	Prot	pt+ov
Protected Phases	4	4		1	6		5	2		3	3	3 5
Permitted Phases												
Detector Phase	4	4		1	6		5	2		3	3	3 5
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	8.0		8.0	8.0		5.0	5.0	
Minimum Split (s)	11.0	11.0		11.0	14.0		14.0	14.0		11.0	11.0	
Total Split (s)	23.0	23.0		16.0	30.0		52.0	66.0		15.0	15.0	
Total Split (%)	19.2%	19.2%		13.3%	25.0%		43.3%	55.0%		12.5%	12.5%	
Maximum Green (s)	17.0	17.0		10.0	24.0		46.0	60.0		9.0	9.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0			0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0			6.0	
Lead/Lag	Lag	Lag		Lead	Lag		Lead	Lag		Lead	Lead	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	4.0		4.0	4.0		4.0	4.0	
Recall Mode	None	None		None	C-Min		None	C-Min		None	None	
Act Effct Green (s)	8.7	8.7		5.6	24.0		56.6	84.2			9.0	66.9
Actuated g/C Ratio	0.07	0.07		0.05	0.20		0.47	0.70			0.08	0.56
v/c Ratio	0.38	0.02		0.01	0.91		1.25	0.18			0.03	0.70
Control Delay	61.1	0.2		55.0	64.4		141.4	1.4			52.0	13.6
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0			0.0	0.0
Total Delay	61.1	0.2		55.0	64.4		141.4	1.4			52.0	13.6
LOS	E	A		D	E		F	A			D	B

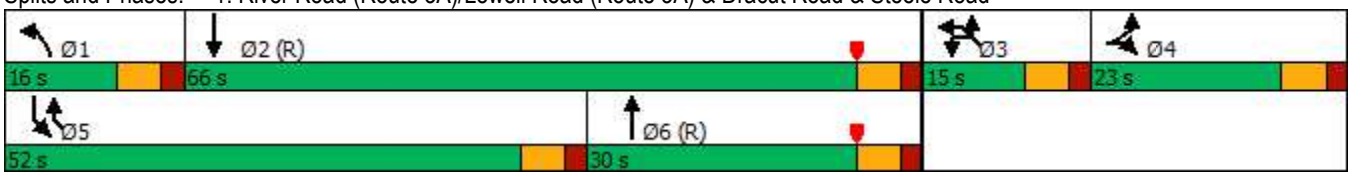
Lane Group	EBL	EBR	EBR2	NBL	NBT	NBR	SBL	SBT	SBR	NWL2	NWL	NWR
Approach Delay	53.9				64.4			97.3			13.8	
Approach LOS	D				E			F			B	
Queue Length 50th (ft)	34	0		1	262		~962	2			3	141
Queue Length 95th (ft)	63	0		7	#368		#1259	40			15	329
Internal Link Dist (ft)	511				678			1653			542	
Turn Bay Length (ft)		50		200			775				100	
Base Capacity (vph)	236	377		140	722		795	2496			136	1037
Starvation Cap Reductn	0	0		0	0		0	0			0	0
Spillback Cap Reductn	0	0		0	0		0	0			0	0
Storage Cap Reductn	0	0		0	0		0	0			0	0
Reduced v/c Ratio	0.19	0.02		0.01	0.90		1.25	0.18			0.03	0.70

Intersection Summary	
Area Type:	Other
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 5 (4%), Referenced to phase 2:SBT and 6:NBT, Start of Yellow	
Natural Cycle: 150	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.25	
Intersection Signal Delay: 67.9	Intersection LOS: E
Intersection Capacity Utilization 94.3%	ICU Level of Service F
Analysis Period (min) 15	
Description: NHDOT Int. No.: S-229-04	

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

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

Splits and Phases: 1: River Road (Route 3A)/Lowell Road (Route 3A) & Dracut Road & Steele Road



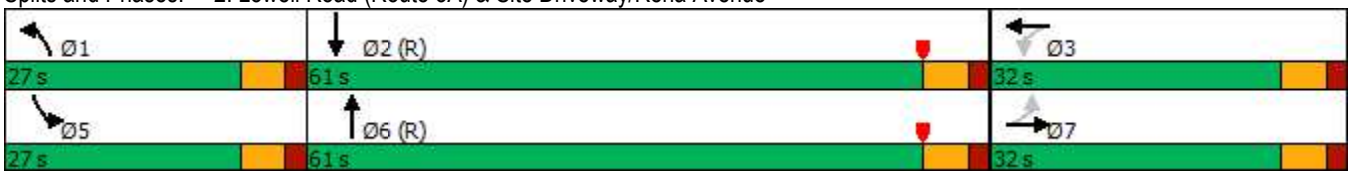
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	273	0	51	1	0	16	35	1267	5	24	1246	228
Future Volume (vph)	273	0	51	1	0	16	35	1267	5	24	1246	228
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	13	13	13	10	12	12	12	12	12
Storage Length (ft)	0		50	0		0	300		0	350		0
Storage Lanes	2		0	0		0	1		0	1		0
Taper Length (ft)	25			25			75			25		
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.850			0.871			0.999			0.977	
Flt Protected	0.950				0.998		0.950			0.950		
Satd. Flow (prot)	3143	1507	0	0	1707	0	1685	3606	0	1805	3479	0
Flt Permitted	0.744				0.992		0.950			0.950		
Satd. Flow (perm)	2461	1507	0	0	1696	0	1685	3606	0	1805	3479	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		314			82						23	
Link Speed (mph)		15			30			35			35	
Link Distance (ft)		510			557			1733			980	
Travel Time (s)		23.2			12.7			33.8			19.1	
Peak Hour Factor	0.84	0.84	0.84	0.80	0.80	0.80	0.93	0.93	0.93	0.90	0.90	0.90
Heavy Vehicles (%)	4%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	9%
Adj. Flow (vph)	325	0	61	1	0	20	38	1362	5	27	1384	253
Shared Lane Traffic (%)												
Lane Group Flow (vph)	325	61	0	0	21	0	38	1367	0	27	1637	0
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		7			3		1	6		5	2	
Permitted Phases	7			3								
Detector Phase	7	7		3	3		1	6		5	2	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	11.0	11.0		11.0	11.0		11.0	16.0		11.0	16.0	
Total Split (s)	32.0	32.0		32.0	32.0		27.0	61.0		27.0	61.0	
Total Split (%)	26.7%	26.7%		26.7%	26.7%		22.5%	50.8%		22.5%	50.8%	
Maximum Green (s)	26.0	26.0		26.0	26.0		21.0	55.0		21.0	55.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0			0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0			6.0		6.0	6.0		6.0	6.0	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Recall Mode	None	None		None	None		None	C-Min		None	C-Min	
Act Effct Green (s)	22.2	22.2			14.3		9.2	76.7		8.3	75.9	
Actuated g/C Ratio	0.18	0.18			0.12		0.08	0.64		0.07	0.63	
v/c Ratio	0.72	0.11			0.08		0.30	0.59		0.22	0.74	
Control Delay	54.8	0.4			0.5		65.6	13.7		58.0	10.4	
Queue Delay	0.0	0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay	54.8	0.4			0.5		65.6	13.7		58.0	10.4	
LOS	D	A			A		E	B		E	B	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		46.2			0.5			15.1			11.2	
Approach LOS		D			A			B			B	
Queue Length 50th (ft)	122	0			0		30	196		22	102	
Queue Length 95th (ft)	154	0			0		m38	m596		m30	214	
Internal Link Dist (ft)		430			477			1653			900	
Turn Bay Length (ft)							300			350		
Base Capacity (vph)	533	572			431		294	2303		315	2210	
Starvation Cap Reductn	0	0			0		0	0		0	0	
Spillback Cap Reductn	0	0			0		0	0		0	0	
Storage Cap Reductn	0	0			0		0	0		0	0	
Reduced v/c Ratio	0.61	0.11			0.05		0.13	0.59		0.09	0.74	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 74 (62%), Referenced to phase 2:SBT and 6:NBT, Start of Yellow			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.74			
Intersection Signal Delay: 16.6		Intersection LOS: B	
Intersection Capacity Utilization 66.2%		ICU Level of Service C	
Analysis Period (min) 15			
Description: NHDOT Int. No.: S-229-03			

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

Splits and Phases: 2: Lowell Road (Route 3A) & Site Driveway/Rena Avenue



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	357	13	129	88	20	244	110	1380	74	310	1287	300
Future Volume (vph)	357	13	129	88	20	244	110	1380	74	310	1287	300
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	13	12	12	12	13	12	12	12	12	12	12
Storage Length (ft)	175		175	150		200	350		175	350		0
Storage Lanes	2		1	2		1	2		1	2		1
Taper Length (ft)	25			75			125			100		
Lane Util. Factor	0.97	1.00	1.00	0.97	1.00	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3433	1963	1615	3502	1900	1669	3467	3574	1615	3502	3539	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3433	1963	1615	3502	1900	1669	3467	3574	1615	3502	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			147			218			191			251
Link Speed (mph)		30			30			35			30	
Link Distance (ft)		401			449			980			1189	
Travel Time (s)		9.1			10.2			19.1			27.0	
Peak Hour Factor	0.88	0.88	0.88	0.86	0.86	0.86	0.89	0.89	0.89	0.91	0.91	0.91
Heavy Vehicles (%)	2%	0%	0%	0%	0%	0%	1%	1%	0%	0%	2%	2%
Adj. Flow (vph)	406	15	147	102	23	284	124	1551	83	341	1414	330
Shared Lane Traffic (%)												
Lane Group Flow (vph)	406	15	147	102	23	284	124	1551	83	341	1414	330
Turn Type	Prot	NA	Prot	Prot	NA	Prot	Prot	NA	Prot	Prot	NA	Prot
Protected Phases	7	4	4	3	8	8	1	6	6	5	2	2
Permitted Phases												
Detector Phase	7	4	4	3	8	8	1	6	6	5	2	2
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0	11.0	11.0	16.0	16.0	11.0	16.0	16.0
Total Split (s)	29.0	20.0	20.0	21.0	12.0	12.0	23.0	58.0	58.0	21.0	56.0	56.0
Total Split (%)	24.2%	16.7%	16.7%	17.5%	10.0%	10.0%	19.2%	48.3%	48.3%	17.5%	46.7%	46.7%
Maximum Green (s)	23.0	14.0	14.0	15.0	6.0	6.0	17.0	52.0	52.0	15.0	50.0	50.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	6.0	6.0	4.0	6.0	6.0
Recall Mode	None	None	None	None	None	None	None	C-Min	C-Min	None	C-Min	C-Min
Act Effct Green (s)	19.8	19.2	19.2	9.8	9.2	9.2	10.6	52.3	52.3	14.7	56.4	56.4
Actuated g/C Ratio	0.16	0.16	0.16	0.08	0.08	0.08	0.09	0.44	0.44	0.12	0.47	0.47
v/c Ratio	0.72	0.05	0.39	0.36	0.16	0.87	0.41	1.00	0.10	0.79	0.85	0.38
Control Delay	54.7	44.5	10.5	55.1	56.6	40.3	56.6	44.5	0.5	75.7	30.2	2.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	54.7	44.5	10.5	55.1	56.6	40.3	56.6	44.5	0.5	75.7	30.2	2.5
LOS	D	D	B	E	E	D	E	D	A	E	C	A

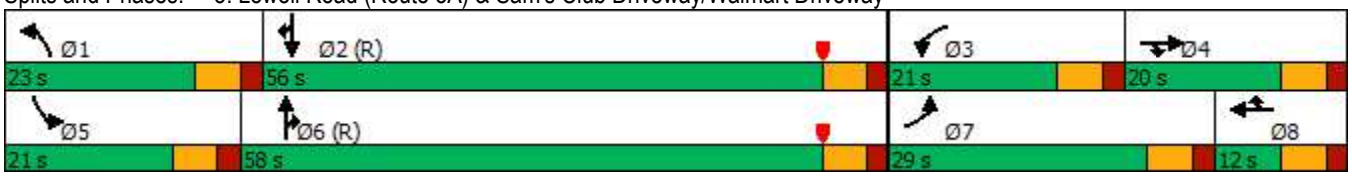
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		43.0			44.9			43.2			33.2	
Approach LOS		D			D			D			C	
Queue Length 50th (ft)	154	10	0	39	17	50	49	~404	0	137	544	0
Queue Length 95th (ft)	198	30	55	63	44	#200	78	#765	m4	m#194	652	m31
Internal Link Dist (ft)		321			369			900			1109	
Turn Bay Length (ft)	175		175	150		200	350		175	350		
Base Capacity (vph)	657	313	381	437	145	328	491	1556	811	437	1663	877
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.62	0.05	0.39	0.23	0.16	0.87	0.25	1.00	0.10	0.78	0.85	0.38

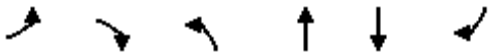
Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 64 (53%), Referenced to phase 2:SBT and 6:NBT, Start of Yellow
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.00
Intersection Signal Delay: 39.0 Intersection LOS: D
Intersection Capacity Utilization 78.8% ICU Level of Service D
Analysis Period (min) 15
Description: NHDOT Int. No.: S-229-06

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Lowell Road (Route 3A) & Sam's Club Driveway/Walmart Driveway





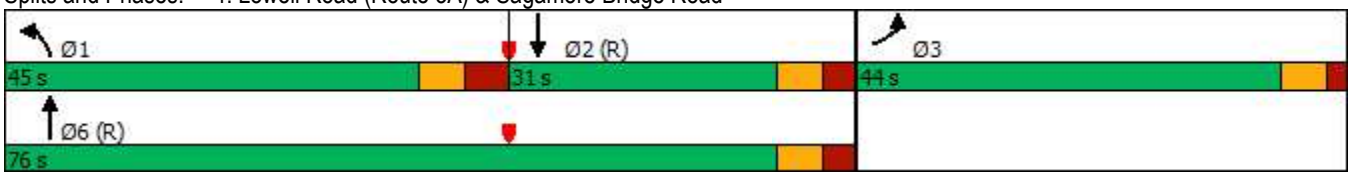
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	1479	1467	1331	684	500	1233
Future Volume (vph)	1479	1467	1331	684	500	1233
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	14	14	12	12	12	12
Storage Length (ft)	0	0	525			200
Storage Lanes	3	2	3			1
Taper Length (ft)	25		100			
Lane Util. Factor	0.94	0.88	0.94	0.95	0.95	0.88
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	5376	2972	5040	3610	3610	2814
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	5376	2972	5040	3610	3610	2814
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		924				1204
Link Speed (mph)	35			30	30	
Link Distance (ft)	929			1189	999	
Travel Time (s)	18.1			27.0	22.7	
Peak Hour Factor	0.96	0.96	0.94	0.94	0.89	0.89
Heavy Vehicles (%)	1%	2%	1%	0%	0%	1%
Adj. Flow (vph)	1541	1528	1416	728	562	1385
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1541	1528	1416	728	562	1385
Turn Type	Prot	Free	Prot	NA	NA	Free
Protected Phases	3		1	6	2	
Permitted Phases		Free				Free
Detector Phase	3		1	6	2	
Switch Phase						
Minimum Initial (s)	10.0		7.0	10.0	10.0	
Minimum Split (s)	16.0		15.0	17.0	17.0	
Total Split (s)	44.0		45.0	76.0	31.0	
Total Split (%)	36.7%		37.5%	63.3%	25.8%	
Maximum Green (s)	38.0		37.0	69.0	24.0	
Yellow Time (s)	4.0		4.0	4.0	4.0	
All-Red Time (s)	2.0		4.0	3.0	3.0	
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	
Total Lost Time (s)	6.0		8.0	7.0	7.0	
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	4.0		4.0	4.0	4.0	
Recall Mode	None		None	C-Min	C-Min	
Act Effct Green (s)	38.2	120.0	37.0	68.8	23.9	120.0
Actuated g/C Ratio	0.32	1.00	0.31	0.57	0.20	1.00
v/c Ratio	0.90	0.51	0.91	0.35	0.78	0.49
Control Delay	47.5	0.6	31.5	5.6	54.3	0.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.5	0.6	31.5	5.6	54.3	0.6
LOS	D	A	C	A	D	A

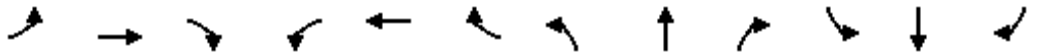
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Approach Delay	24.2			22.7	16.1	
Approach LOS	C			C	B	
Queue Length 50th (ft)	404	0	326	94	218	0
Queue Length 95th (ft)	#469	0	m350	m106	281	0
Internal Link Dist (ft)	849			1109	919	
Turn Bay Length (ft)			525			200
Base Capacity (vph)	1710	2972	1554	2075	722	2814
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.90	0.51	0.91	0.35	0.78	0.49

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 100 (83%), Referenced to phase 2:SBT and 6:NBT, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.91			
Intersection Signal Delay: 21.5		Intersection LOS: C	
Intersection Capacity Utilization 83.9%		ICU Level of Service E	
Analysis Period (min) 15			
Description: NHDOT Int. No.: S-229-02			

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Lowell Road (Route 3A) & Sagamore Bridge Road





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	2	25	31	0	48	27	1215	15	56	724	11
Future Volume (vph)	9	2	25	31	0	48	27	1215	15	56	724	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	14	13	13	11	11	12	12	12	12
Storage Length (ft)	0		50	0		100	210		325	125		0
Storage Lanes	0		1	0		1	1		0	1		0
Taper Length (ft)	25			25			50			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00
Frt			0.850			0.850		0.998			0.998	
Flt Protected		0.962			0.950		0.950			0.950		
Satd. Flow (prot)	0	1828	1583	0	1865	1669	1745	3449	0	1805	1878	0
Flt Permitted		0.746			0.748		0.950			0.950		
Satd. Flow (perm)	0	1417	1583	0	1469	1669	1745	3449	0	1805	1878	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			91			60		1			1	
Link Speed (mph)		10			30			30			30	
Link Distance (ft)		598			262			1405			549	
Travel Time (s)		40.8			6.0			31.9			12.5	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.99	0.99	0.99	0.94	0.94	0.94
Heavy Vehicles (%)	0%	0%	2%	0%	0%	0%	0%	1%	0%	0%	1%	0%
Adj. Flow (vph)	11	3	31	39	0	60	27	1227	15	60	770	12
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	14	31	0	39	60	27	1242	0	60	782	0
Turn Type	Perm	NA	Prot	Perm	NA	pm+ov	Prot	NA		Prot	NA	
Protected Phases		8	8		4	5	1	6		5	2	
Permitted Phases	8			4		4						
Detector Phase	8	8	8	4	4	5	1	6		5	2	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	10.0		5.0	10.0	
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0	11.0	11.0	16.0		11.0	16.0	
Total Split (s)	16.0	16.0	16.0	16.0	16.0	16.0	16.0	116.0		16.0	116.0	
Total Split (%)	8.9%	8.9%	8.9%	8.9%	8.9%	8.9%	8.9%	64.4%		8.9%	64.4%	
Maximum Green (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	110.0		10.0	110.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.0	6.0		6.0	6.0	6.0	6.0		6.0	6.0	
Lead/Lag						Lead	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?						Yes	Yes	Yes		Yes	Yes	
Vehicle Extension (s)	1.5	1.5	1.5	1.5	1.5	1.5	1.0	1.5		1.5	1.5	
Recall Mode	None	None	None	None	None	None	None	C-Min		None	C-Min	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)		8.1	8.1		8.1	20.7	6.6	140.9		8.8	146.5	
Actuated g/C Ratio		0.04	0.04		0.04	0.12	0.04	0.78		0.05	0.81	
v/c Ratio		0.22	0.20		0.59	0.25	0.42	0.46		0.68	0.51	
Control Delay		90.1	2.8		117.7	16.3	103.9	9.6		119.5	10.8	

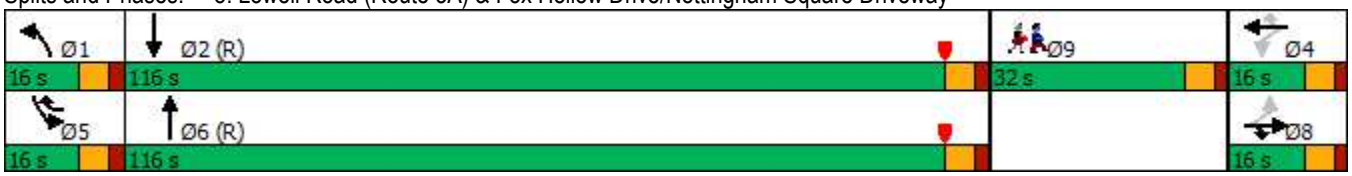
Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	32.0
Total Split (s)	32.0
Total Split (%)	18%
Maximum Green (s)	26.0
Yellow Time (s)	4.0
All-Red Time (s)	2.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	5.0
Flash Dont Walk (s)	21.0
Pedestrian Calls (#/hr)	5
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0		0.0	2.4	
Total Delay		90.1	2.8		117.7	16.3	103.9	9.6		119.5	13.2	
LOS		F	A		F	B	F	A		F	B	
Approach Delay		29.9			56.2			11.6			20.8	
Approach LOS		C			E			B			C	
Queue Length 50th (ft)		16	0		46	0	32	217		71	250	
Queue Length 95th (ft)		40	0		81	36	70	519		#134	741	
Internal Link Dist (ft)		518			182			1325			469	
Turn Bay Length (ft)			50			100	210			125		
Base Capacity (vph)		78	173		81	255	96	2700		100	1528	
Starvation Cap Reductn		0	0		0	0	0	0		0	588	
Spillback Cap Reductn		0	0		0	0	0	0		0	0	
Storage Cap Reductn		0	0		0	0	0	0		0	0	
Reduced v/c Ratio		0.18	0.18		0.48	0.24	0.28	0.46		0.60	0.83	

Intersection Summary

Area Type: Other
Cycle Length: 180
Actuated Cycle Length: 180
Offset: 0 (0%), Referenced to phase 2:SBT and 6:NBT, Start of Yellow, Master Intersection
Natural Cycle: 100
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.68
Intersection Signal Delay: 17.4 Intersection LOS: B
Intersection Capacity Utilization 64.9% ICU Level of Service C
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 8: Lowell Road (Route 3A) & Fox Hollow Drive/Nottingham Square Driveway



Lane Group	Ø9
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Appendix J

Capacity Analysis – 2032 Build with Improvements Traffic Conditions

2032 Build with Improvements Weekday A.M.

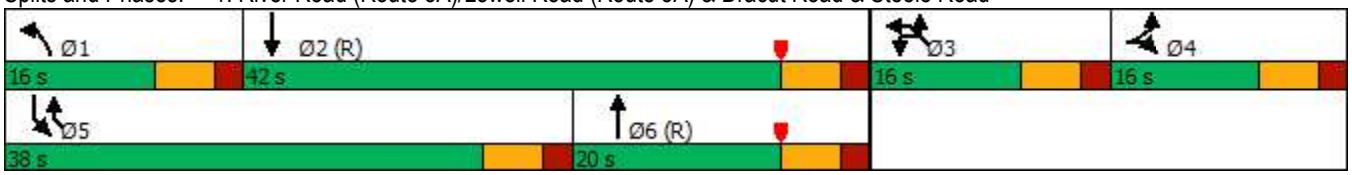
Lane Group	EBL	EBR	EBR2	NBL	NBT	NBR	SBL	SBT	SBR	NWL	NWR
Lane Configurations											
Traffic Volume (vph)	2	0	2	0	299	0	535	561	14	1	934
Future Volume (vph)	2	0	2	0	299	0	535	561	14	1	934
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	12	12	10	12	12	12	12
Storage Length (ft)	0	50		200		300	775		0	100	0
Storage Lanes	1	1		1		1	1		0	1	1
Taper Length (ft)	25			100			75			25	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00
Frt		0.850						0.996			0.850
Flt Protected	0.950						0.950			0.950	
Satd. Flow (prot)	1685	1133	0	1773	3574	0	1652	3561	0	1805	1583
Flt Permitted	0.950						0.950			0.950	
Satd. Flow (perm)	1685	1133	0	1773	3574	0	1652	3561	0	1805	1583
Right Turn on Red			Yes			Yes			Yes		Yes
Satd. Flow (RTOR)		524						3			464
Link Speed (mph)	30				35			35		35	
Link Distance (ft)	591				758			1733		622	
Travel Time (s)	13.4				14.8			33.8		12.1	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.92	0.92	0.92	0.86	0.86
Heavy Vehicles (%)	0%	0%	33%	0%	1%	0%	2%	1%	0%	0%	2%
Adj. Flow (vph)	3	0	3	0	374	0	582	610	15	1	1086
Shared Lane Traffic (%)											
Lane Group Flow (vph)	3	3	0	0	374	0	582	625	0	1	1086
Turn Type	Prot	Prot		Prot	NA		Prot	NA		Prot	pt+ov
Protected Phases	4	4		1	6		5	2		3	3 5
Permitted Phases											
Detector Phase	4	4		1	6		5	2		3	3 5
Switch Phase											
Minimum Initial (s)	5.0	5.0		5.0	8.0		8.0	8.0		5.0	
Minimum Split (s)	11.0	11.0		11.0	14.0		14.0	14.0		11.0	
Total Split (s)	16.0	16.0		16.0	20.0		38.0	42.0		16.0	
Total Split (%)	17.8%	17.8%		17.8%	22.2%		42.2%	46.7%		17.8%	
Maximum Green (s)	10.0	10.0		10.0	14.0		32.0	36.0		10.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	
Lead/Lag	Lag	Lag		Lead	Lag		Lead	Lag		Lead	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	
Vehicle Extension (s)	3.0	3.0		3.0	4.0		4.0	4.0		4.0	
Recall Mode	None	None		None	C-Min		None	C-Min		None	
Act Effct Green (s)	5.8	5.8			13.5		45.5	65.1		10.5	60.8
Actuated g/C Ratio	0.06	0.06			0.15		0.51	0.72		0.12	0.68
v/c Ratio	0.03	0.01			0.70		0.70	0.24		0.00	0.89
Control Delay	40.0	0.0			43.8		21.3	1.7		36.0	18.8
Queue Delay	0.0	0.0			0.0		0.0	0.0		0.0	0.0
Total Delay	40.0	0.0			43.8		21.3	1.7		36.0	18.8
LOS	D	A			D		C	A		D	B

Lane Group	EBL	EBR	EBR2	NBL	NBT	NBR	SBL	SBT	SBR	NWL	NWR
Approach Delay	20.0				43.8			11.2		18.8	
Approach LOS	B				D			B		B	
Queue Length 50th (ft)	2	0			106		152	2		1	215
Queue Length 95th (ft)	9	0			135		#488	5		5	#774
Internal Link Dist (ft)	511				678			1653		542	
Turn Bay Length (ft)		50					775			100	
Base Capacity (vph)	187	591			555		836	2575		210	1220
Starvation Cap Reductn	0	0			0		0	0		0	0
Spillback Cap Reductn	0	0			0		0	0		0	0
Storage Cap Reductn	0	0			0		0	0		0	0
Reduced v/c Ratio	0.02	0.01			0.67		0.70	0.24		0.00	0.89

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 0 (0%), Referenced to phase 2:SBT and 6:NBT, Start of Yellow			
Natural Cycle: 100			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.89			
Intersection Signal Delay: 18.9		Intersection LOS: B	
Intersection Capacity Utilization 76.1%		ICU Level of Service D	
Analysis Period (min) 15			
Description: NHDOT Int. No.: S-229-04			

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

Splits and Phases: 1: River Road (Route 3A)/Lowell Road (Route 3A) & Dracut Road & Steele Road



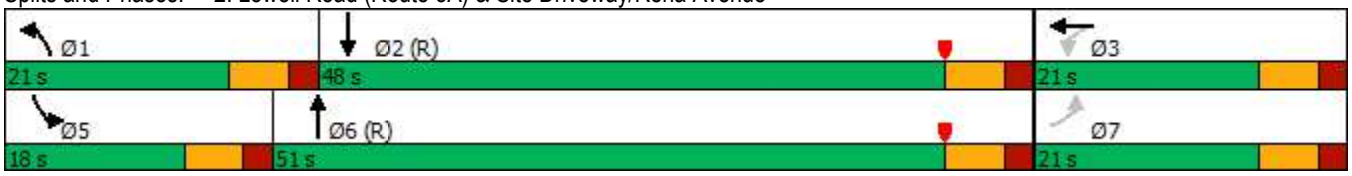
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	156	0	25	1	1	36	43	1242	2	8	1089	241
Future Volume (vph)	156	0	25	1	1	36	43	1242	2	8	1089	241
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	13	13	13	10	12	12	12	12	12
Storage Length (ft)	0		50	0		0	300		0	350		0
Storage Lanes	2		0	0		0	1		0	1		0
Taper Length (ft)	25			25			75			25		
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.850			0.871						0.973	
Flt Protected	0.950				0.999		0.950			0.950		
Satd. Flow (prot)	2971	1133	0	0	1657	0	1685	3538	0	1570	3419	0
Flt Permitted	0.728				0.999		0.950			0.950		
Satd. Flow (perm)	2277	1133	0	0	1657	0	1685	3538	0	1570	3419	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		449			42						39	
Link Speed (mph)		15			30			35			35	
Link Distance (ft)		510			557			1733			980	
Travel Time (s)		23.2			12.7			33.8			19.1	
Peak Hour Factor	0.80	0.80	0.80	0.85	0.85	0.85	0.85	0.85	0.85	0.95	0.95	0.95
Heavy Vehicles (%)	10%	0%	33%	9%	0%	3%	0%	2%	20%	15%	2%	6%
Adj. Flow (vph)	195	0	31	1	1	42	51	1461	2	8	1146	254
Shared Lane Traffic (%)												
Lane Group Flow (vph)	195	31	0	0	44	0	51	1463	0	8	1400	0
Turn Type	custom	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases					3		1	6		5	2	
Permitted Phases	7			3								
Detector Phase	7			3	3		1	6		5	2	
Switch Phase												
Minimum Initial (s)	5.0			5.0	5.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	11.0			11.0	11.0		11.0	16.0		11.0	16.0	
Total Split (s)	21.0			21.0	21.0		21.0	51.0		18.0	48.0	
Total Split (%)	23.3%			23.3%	23.3%		23.3%	56.7%		20.0%	53.3%	
Maximum Green (s)	15.0			15.0	15.0		15.0	45.0		12.0	42.0	
Yellow Time (s)	4.0			4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0			2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0				0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0				6.0		6.0	6.0		6.0	6.0	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	4.0			4.0	4.0		4.0	4.0		4.0	4.0	
Recall Mode	None			None	None		None	C-Min		None	C-Min	
Act Effct Green (s)	13.1	0.0			11.4		9.1	62.1		7.1	55.0	
Actuated g/C Ratio	0.15	0.00			0.13		0.10	0.69		0.08	0.61	
v/c Ratio	0.59	0.07			0.18		0.30	0.60		0.06	0.67	
Control Delay	43.2	0.3			13.1		40.6	8.5		31.8	16.5	
Queue Delay	0.0	0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay	43.2	0.3			13.1		40.6	8.5		31.8	16.5	
LOS	D	A			B		D	A		C	B	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		37.3			13.1			9.6			16.6	
Approach LOS		D			B			A			B	
Queue Length 50th (ft)	53	0			1		29	170		5	155	
Queue Length 95th (ft)	76	0			27		m32	278		m8	261	
Internal Link Dist (ft)		430			477			1653			900	
Turn Bay Length (ft)							300			350		
Base Capacity (vph)	379	449			311		280	2439		209	2105	
Starvation Cap Reductn	0	0			0		0	0		0	0	
Spillback Cap Reductn	0	0			0		0	0		0	0	
Storage Cap Reductn	0	0			0		0	0		0	0	
Reduced v/c Ratio	0.51	0.07			0.14		0.18	0.60		0.04	0.67	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 51 (57%), Referenced to phase 2:SBT and 6:NBT, Start of Yellow			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.67			
Intersection Signal Delay: 14.7		Intersection LOS: B	
Intersection Capacity Utilization 57.2%		ICU Level of Service B	
Analysis Period (min) 15			
Description: NHDOT Int. No.: S-229-03			

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

Splits and Phases: 2: Lowell Road (Route 3A) & Site Driveway/Rena Avenue



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	131	4	59	15	5	71	78	1325	27	85	1252	164
Future Volume (vph)	131	4	59	15	5	71	78	1325	27	85	1252	164
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	13	12	12	12	13	12	12	12	12	12	12
Storage Length (ft)	175		175	150		200	350		175	350		0
Storage Lanes	2		1	2		1	2		1	2		1
Taper Length (ft)	25			75			125			100		
Lane Util. Factor	0.97	1.00	1.00	0.97	1.00	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3213	1852	1568	3502	1900	1589	3467	3505	1583	3433	3539	1482
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3213	1852	1568	3502	1900	1589	3467	3505	1583	3433	3539	1482
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			182			182			182			182
Link Speed (mph)		30			30			35			30	
Link Distance (ft)		401			449			980			1189	
Travel Time (s)		9.1			10.2			19.1			27.0	
Peak Hour Factor	0.93	0.93	0.93	0.88	0.88	0.88	0.87	0.87	0.87	0.96	0.96	0.96
Heavy Vehicles (%)	9%	6%	3%	0%	0%	5%	1%	3%	2%	2%	2%	9%
Adj. Flow (vph)	141	4	63	17	6	81	90	1523	31	89	1304	171
Shared Lane Traffic (%)												
Lane Group Flow (vph)	141	4	63	17	6	81	90	1523	31	89	1304	171
Turn Type	Prot	NA	Prot	Prot	NA	Prot	Prot	NA	Prot	Prot	NA	Prot
Protected Phases	7	4	4	3	8	8	1	6	6	5	2	2
Permitted Phases												
Detector Phase	7	4	4	3	8	8	1	6	6	5	2	2
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0	11.0	11.0	16.0	16.0	11.0	16.0	16.0
Total Split (s)	14.0	15.0	15.0	14.0	15.0	15.0	16.0	48.0	48.0	13.0	45.0	45.0
Total Split (%)	15.6%	16.7%	16.7%	15.6%	16.7%	16.7%	17.8%	53.3%	53.3%	14.4%	50.0%	50.0%
Maximum Green (s)	8.0	9.0	9.0	8.0	9.0	9.0	10.0	42.0	42.0	7.0	39.0	39.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	6.0	6.0	4.0	6.0	6.0
Recall Mode	None	None	None	None	None	None	None	C-Min	C-Min	None	C-Min	C-Min
Act Effct Green (s)	7.9	12.9	12.9	7.0	6.9	6.9	8.7	48.1	48.1	8.1	47.5	47.5
Actuated g/C Ratio	0.09	0.14	0.14	0.08	0.08	0.08	0.10	0.53	0.53	0.09	0.53	0.53
v/c Ratio	0.50	0.02	0.17	0.06	0.04	0.28	0.27	0.81	0.03	0.29	0.70	0.20
Control Delay	45.6	36.5	0.9	38.7	38.8	2.4	44.6	18.2	0.0	49.5	18.7	0.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	45.6	36.5	0.9	38.7	38.8	2.4	44.6	18.2	0.0	49.5	18.7	0.9
LOS	D	D	A	D	D	A	D	B	A	D	B	A

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		31.9			10.4			19.3			18.5	
Approach LOS		C			B			B			B	
Queue Length 50th (ft)	40	2	0	4	3	0	27	354	0	25	355	0
Queue Length 95th (ft)	70	12	0	14	15	0	m46	#338	m0	m46	454	m6
Internal Link Dist (ft)		321			369			900			1109	
Turn Bay Length (ft)	175		175	150		200	350		175	350		
Base Capacity (vph)	285	280	391	311	190	322	390	1873	930	312	1869	868
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.49	0.01	0.16	0.05	0.03	0.25	0.23	0.81	0.03	0.29	0.70	0.20

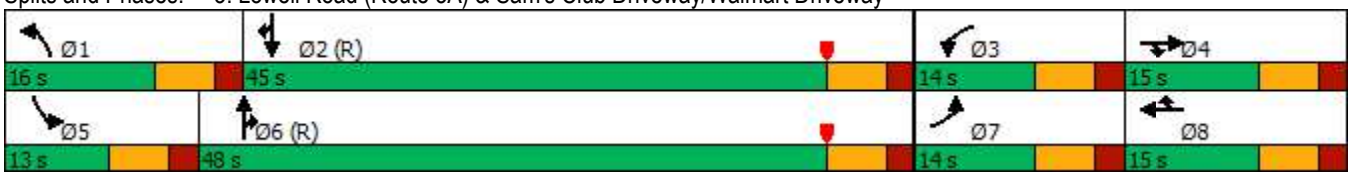
Intersection Summary

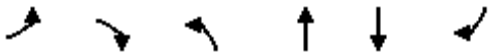
Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 51 (57%), Referenced to phase 2:SBT and 6:NBT, Start of Yellow
Natural Cycle: 70
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.81
Intersection Signal Delay: 19.5 Intersection LOS: B
Intersection Capacity Utilization 60.2% ICU Level of Service B
Analysis Period (min) 15
Description: NHDOT Int. No.: S-229-06

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

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

Splits and Phases: 3: Lowell Road (Route 3A) & Sam's Club Driveway/Walmart Driveway





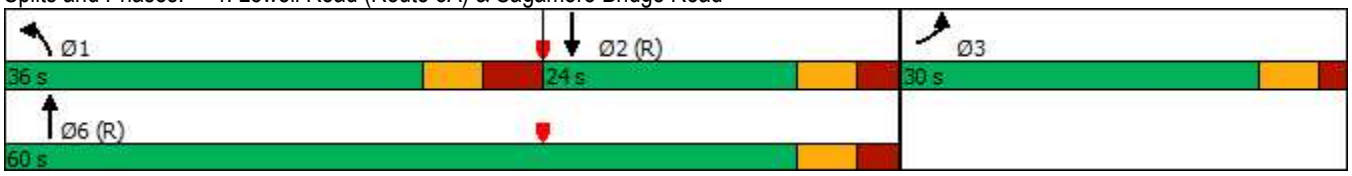
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	1045	1184	1131	405	420	1673
Future Volume (vph)	1045	1184	1131	405	420	1673
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	14	14	12	12	12	12
Storage Length (ft)	0	0	525			200
Storage Lanes	3	2	3			1
Taper Length (ft)	25		100			
Lane Util. Factor	0.94	0.88	0.94	0.95	0.95	0.88
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	5323	2915	4942	3539	3539	2760
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	5323	2915	4942	3539	3539	2760
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		1260				1144
Link Speed (mph)	35			30	30	
Link Distance (ft)	929			1189	999	
Travel Time (s)	18.1			27.0	22.7	
Peak Hour Factor	0.94	0.94	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	4%	3%	2%	2%	3%
Adj. Flow (vph)	1112	1260	1229	440	457	1818
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1112	1260	1229	440	457	1818
Turn Type	Prot	Free	Prot	NA	NA	Free
Protected Phases	3		1	6	2	
Permitted Phases		Free				Free
Detector Phase	3		1	6	2	
Switch Phase						
Minimum Initial (s)	10.0		7.0	10.0	10.0	
Minimum Split (s)	16.0		15.0	17.0	17.0	
Total Split (s)	30.0		36.0	60.0	24.0	
Total Split (%)	33.3%		40.0%	66.7%	26.7%	
Maximum Green (s)	24.0		28.0	53.0	17.0	
Yellow Time (s)	4.0		4.0	4.0	4.0	
All-Red Time (s)	2.0		4.0	3.0	3.0	
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	
Total Lost Time (s)	6.0		8.0	7.0	7.0	
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	4.0		4.0	4.0	4.0	
Recall Mode	None		None	C-Min	C-Min	
Act Effct Green (s)	23.8	90.0	27.5	53.2	17.7	90.0
Actuated g/C Ratio	0.26	1.00	0.31	0.59	0.20	1.00
v/c Ratio	0.79	0.43	0.81	0.21	0.66	0.66
Control Delay	35.6	0.5	28.1	2.5	38.8	1.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	35.6	0.5	28.1	2.5	38.8	1.2
LOS	D	A	C	A	D	A

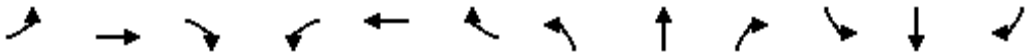
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Approach Delay	17.0			21.4	8.8	
Approach LOS	B			C	A	
Queue Length 50th (ft)	207	0	125	5	128	0
Queue Length 95th (ft)	257	0	199	m11	181	0
Internal Link Dist (ft)	849			1109	919	
Turn Bay Length (ft)			525			200
Base Capacity (vph)	1431	2915	1538	2101	705	2760
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.78	0.43	0.80	0.21	0.65	0.66

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 70 (78%), Referenced to phase 2:SBT and 6:NBT, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.81			
Intersection Signal Delay: 15.2		Intersection LOS: B	
Intersection Capacity Utilization 69.7%		ICU Level of Service C	
Analysis Period (min) 15			
Description: NHDOT Int. No.: S-229-02			

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

Splits and Phases: 4: Lowell Road (Route 3A) & Sagamore Bridge Road





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	67	29	303	677	45	33	328	895	208	17	1194	11
Future Volume (vph)	67	29	303	677	45	33	328	895	208	17	1194	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	11	11	11	12	12	12	12	12	12
Storage Length (ft)	0		250	200		75	575		275	175		300
Storage Lanes	0		1	1		1	0		1	1		1
Taper Length (ft)	25			50			175			75		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.91	0.91
Frt			0.850			0.850			0.850		0.999	
Flt Protected		0.966		0.950	0.958		0.950			0.950		
Satd. Flow (prot)	0	1835	1583	1641	1657	1501	1787	3539	1583	1752	5078	0
Flt Permitted		0.966		0.950	0.958		0.950			0.950		
Satd. Flow (perm)	0	1835	1583	1641	1657	1501	1787	3539	1583	1752	5078	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			53			89			219		1	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		805			586			999			1515	
Travel Time (s)		18.3			13.3			22.7			34.4	
Peak Hour Factor	0.81	0.81	0.81	0.94	0.94	0.94	0.95	0.95	0.95	0.87	0.87	0.87
Heavy Vehicles (%)	0%	0%	2%	1%	0%	4%	1%	2%	2%	3%	2%	6%
Adj. Flow (vph)	83	36	374	720	48	35	345	942	219	20	1372	13
Shared Lane Traffic (%)				47%								
Lane Group Flow (vph)	0	119	374	382	386	35	345	942	219	20	1385	0
Turn Type	Split	NA	pm+ov	Split	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	
Protected Phases	8	8	1	7	7	5	1	6	7	5	2	
Permitted Phases			8			7			6			
Detector Phase	8	8	1	7	7	5	1	6	7	5	2	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	10.0	5.0	5.0	10.0	
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0	11.0	11.0	16.0	11.0	11.0	16.0	
Total Split (s)	24.0	24.0	31.0	58.0	58.0	21.0	31.0	71.0	58.0	21.0	71.0	
Total Split (%)	13.0%	13.0%	16.8%	31.5%	31.5%	11.4%	16.8%	38.6%	31.5%	11.4%	38.6%	
Maximum Green (s)	18.0	18.0	25.0	52.0	52.0	15.0	25.0	65.0	52.0	15.0	65.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)		6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Lead/Lag	Lag	Lag	Lead	Lead	Lead	Lead	Lead	Lag	Lead	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	3.0	2.5	2.5	3.0	
Recall Mode	None	None	None	None	None	None	None	Min	None	None	Min	
Act Effct Green (s)		14.7	46.3	43.8	43.8	50.9	25.5	77.4	127.3	7.0	56.1	
Actuated g/C Ratio		0.09	0.28	0.27	0.27	0.31	0.15	0.47	0.77	0.04	0.34	
v/c Ratio		0.73	0.77	0.88	0.88	0.07	1.25	0.57	0.17	0.27	0.80	
Control Delay		101.0	60.7	79.9	79.8	0.2	192.6	35.4	0.9	91.7	53.7	
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay		101.0	60.7	79.9	79.8	0.2	192.6	35.4	0.9	91.7	53.7	
LOS		F	E	E	E	A	F	D	A	F	D	

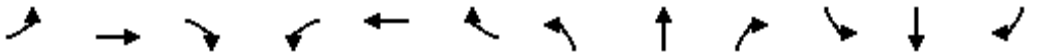
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		70.4			76.4			66.4			54.3	
Approach LOS		E			E			E			D	
Queue Length 50th (ft)		133	347	433	437	0	~508	420	0	23	520	
Queue Length 95th (ft)		195	440	#632	#636	0	#777	532	22	55	578	
Internal Link Dist (ft)		725			506			919			1435	
Turn Bay Length (ft)			250	200		75	575		275	175		
Base Capacity (vph)		204	483	528	533	596	276	1701	1346	162	2043	
Starvation Cap Reductn		0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn		0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn		0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio		0.58	0.77	0.72	0.72	0.06	1.25	0.55	0.16	0.12	0.68	

Intersection Summary			
Area Type:	Other		
Cycle Length: 184			
Actuated Cycle Length: 164.6			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.25			
Intersection Signal Delay: 64.7		Intersection LOS: E	
Intersection Capacity Utilization 83.1%		ICU Level of Service E	
Analysis Period (min) 15			

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

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

Splits and Phases: 5: Lowell Road (Route 3A) & Flagstone Drive/Wason Road



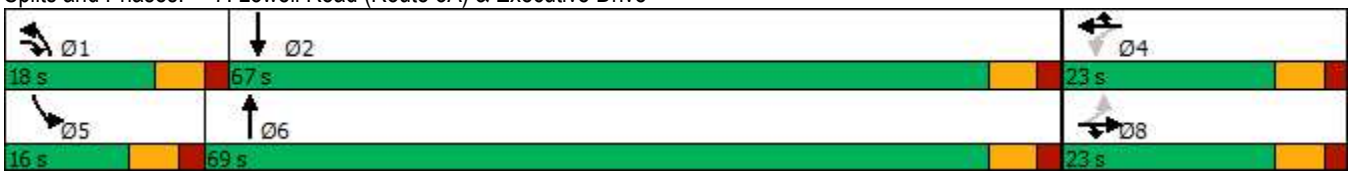
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	2	11	141	30	101	181	497	60	107	1154	224
Future Volume (vph)	40	2	11	141	30	101	181	497	60	107	1154	224
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	15	12	12	13	11	12	12	11	12	12
Storage Length (ft)	0		225	0		80	350		0	150		0
Storage Lanes	0		1	0		1	1		0	1		0
Taper Length (ft)	25			25			50			50		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850			0.850		0.984			0.976	
Flt Protected		0.955			0.961		0.950			0.950		
Satd. Flow (prot)	0	1576	1558	0	1811	1620	1711	3419	0	1728	3454	0
Flt Permitted		0.416			0.728		0.950			0.950		
Satd. Flow (perm)	0	686	1558	0	1372	1620	1711	3419	0	1728	3454	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			30			98		21			34	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		492			577			1791			1168	
Travel Time (s)		11.2			13.1			40.7			26.5	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	12%	0%	14%	1%	0%	3%	2%	4%	3%	1%	2%	2%
Adj. Flow (vph)	50	3	14	176	38	126	199	546	66	118	1268	246
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	53	14	0	214	126	199	612	0	118	1514	0
Turn Type	Perm	NA	pt+ov	Perm	NA	Prot	Prot	NA		Prot	NA	
Protected Phases		8	8 1		4	4	1	6		5	2	
Permitted Phases	8			4								
Detector Phase	8	8	8 1	4	4	4	1	6		5	2	
Switch Phase												
Minimum Initial (s)	3.0	3.0		5.0	5.0	5.0	3.0	8.0		3.0	8.0	
Minimum Split (s)	9.0	9.0		11.0	11.0	11.0	9.0	14.0		9.0	14.0	
Total Split (s)	23.0	23.0		23.0	23.0	23.0	18.0	69.0		16.0	67.0	
Total Split (%)	21.3%	21.3%		21.3%	21.3%	21.3%	16.7%	63.9%		14.8%	62.0%	
Maximum Green (s)	17.0	17.0		17.0	17.0	17.0	12.0	63.0		10.0	61.0	
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.0			6.0	6.0	6.0	6.0		6.0	6.0	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	2.0	2.0		2.0	2.0	2.0	2.0	3.0		2.0	3.0	
Recall Mode	None	None		None	None	None	None	Min		None	Min	
Act Effct Green (s)		14.3	31.1		17.1	17.1	12.1	55.3		9.3	52.5	
Actuated g/C Ratio		0.14	0.31		0.17	0.17	0.12	0.55		0.09	0.53	
v/c Ratio		0.54	0.03		0.91	0.35	0.96	0.32		0.74	0.83	
Control Delay		61.9	3.7		83.6	15.8	100.4	12.0		72.7	23.7	
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		61.9	3.7		83.6	15.8	100.4	12.0		72.7	23.7	
LOS		E	A		F	B	F	B		E	C	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		49.7			58.5			33.7			27.2	
Approach LOS		D			E			C			C	
Queue Length 50th (ft)		32	0		140	16	132	102		76	394	
Queue Length 95th (ft)		67	5		#252	55	#296	135		#172	488	
Internal Link Dist (ft)		412			497			1711			1088	
Turn Bay Length (ft)			225			80	350			150		
Base Capacity (vph)		117	569		235	359	207	2181		174	2138	
Starvation Cap Reductn		0	0		0	0	0	0		0	0	
Spillback Cap Reductn		0	0		0	0	0	0		0	0	
Storage Cap Reductn		0	0		0	0	0	0		0	0	
Reduced v/c Ratio		0.45	0.02		0.91	0.35	0.96	0.28		0.68	0.71	

Intersection Summary			
Area Type:	Other		
Cycle Length: 108			
Actuated Cycle Length: 99.9			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.96			
Intersection Signal Delay: 33.3		Intersection LOS: C	
Intersection Capacity Utilization 80.1%		ICU Level of Service D	
Analysis Period (min) 15			

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

Splits and Phases: 7: Lowell Road (Route 3A) & Executive Drive



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	11	0	48	6	0	10	4	620	1	16	1447	3
Future Volume (vph)	11	0	48	6	0	10	4	620	1	16	1447	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	14	13	13	11	11	12	12	12	12
Storage Length (ft)	0		50	0		100	210		325	125		0
Storage Lanes	0		1	0		1	1		0	1		0
Taper Length (ft)	25			25			50			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00
Frt			0.850			0.850						
Flt Protected		0.950			0.950		0.950			0.950		
Satd. Flow (prot)	0	1719	1583	0	1865	1669	1745	3356	0	1805	1863	0
Flt Permitted		0.752			0.748		0.950			0.950		
Satd. Flow (perm)	0	1361	1583	0	1469	1669	1745	3356	0	1805	1863	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			91			55						
Link Speed (mph)		10			30			30			30	
Link Distance (ft)		598			262			1405			549	
Travel Time (s)		40.8			6.0			31.9			12.5	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.91	0.91	0.91	0.95	0.95	0.95
Heavy Vehicles (%)	5%	0%	2%	0%	0%	0%	0%	4%	0%	0%	2%	0%
Adj. Flow (vph)	14	0	60	8	0	13	4	681	1	17	1523	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	14	60	0	8	13	4	682	0	17	1526	0
Turn Type	Perm	NA	Prot	Perm	NA	pm+ov	Prot	NA		Prot	NA	
Protected Phases		8	8		4	5	1	6		5	2	
Permitted Phases	8			4		4						
Detector Phase	8	8	8	4	4	5	1	6		5	2	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	10.0		5.0	10.0	
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0	11.0	11.0	16.0		11.0	16.0	
Total Split (s)	16.0	16.0	16.0	16.0	16.0	16.0	16.0	116.0		16.0	116.0	
Total Split (%)	8.9%	8.9%	8.9%	8.9%	8.9%	8.9%	8.9%	64.4%		8.9%	64.4%	
Maximum Green (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	110.0		10.0	110.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.0	6.0		6.0	6.0	6.0	6.0		6.0	6.0	
Lead/Lag						Lead	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?						Yes	Yes	Yes		Yes	Yes	
Vehicle Extension (s)	1.5	1.5	1.5	1.5	1.5	1.5	1.0	1.5		1.5	1.5	
Recall Mode	None	None	None	None	None	None	None	C-Min		None	C-Min	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)		6.3	6.3		6.3	18.3	5.0	147.7		6.0	153.1	
Actuated g/C Ratio		0.04	0.04		0.04	0.10	0.03	0.82		0.03	0.85	
v/c Ratio		0.30	0.42		0.16	0.06	0.08	0.25		0.28	0.96	
Control Delay		100.2	12.4		90.2	0.5	89.0	5.9		95.9	28.4	

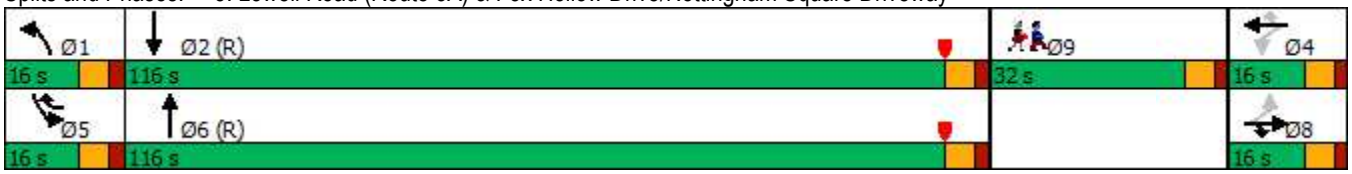
Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	32.0
Total Split (s)	32.0
Total Split (%)	18%
Maximum Green (s)	26.0
Yellow Time (s)	4.0
All-Red Time (s)	2.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	5.0
Flash Dont Walk (s)	21.0
Pedestrian Calls (#/hr)	5
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0		0.0	35.1	
Total Delay		100.2	12.4		90.2	0.5	89.0	5.9		95.9	63.5	
LOS		F	B		F	A	F	A		F	E	
Approach Delay		29.0			34.7			6.4			63.9	
Approach LOS		C			C			A			E	
Queue Length 50th (ft)		17	0		9	0	5	73		20	695	
Queue Length 95th (ft)		40	3		27	0	20	227		50	#2516	
Internal Link Dist (ft)		518			182			1325			469	
Turn Bay Length (ft)			50			100	210			125		
Base Capacity (vph)		75	173		81	254	96	2753		100	1585	
Starvation Cap Reductn		0	0		0	0	0	0		0	175	
Spillback Cap Reductn		0	0		0	0	0	0		0	0	
Storage Cap Reductn		0	0		0	0	0	0		0	0	
Reduced v/c Ratio		0.19	0.35		0.10	0.05	0.04	0.25		0.17	1.08	

Intersection Summary

Area Type: Other
Cycle Length: 180
Actuated Cycle Length: 180
Offset: 0 (0%), Referenced to phase 2:SBT and 6:NBT, Start of Yellow, Master Intersection
Natural Cycle: 150
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.96
Intersection Signal Delay: 45.5 Intersection LOS: D
Intersection Capacity Utilization 99.7% ICU Level of Service F
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 8: Lowell Road (Route 3A) & Fox Hollow Drive/Nottingham Square Driveway



Lane Group	Ø9
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

2032 Build with Improvements Weekday P.M.

Lane Group	EBL	EBR	EBR2	NBL	NBT	NBR	SBL	SBT	SBR	NWL2	NWL	NWR
Lane Configurations												
Traffic Volume (vph)	40	2	2	1	653	1	984	439	15	5	0	726
Future Volume (vph)	40	2	2	1	653	1	984	439	15	5	0	726
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	12	12	10	12	12	12	12	12
Storage Length (ft)	0	50		200		300	775		0		100	0
Storage Lanes	1	1		1		1	1		0		1	1
Taper Length (ft)	25			100			75				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00
Frt		0.850						0.995				0.850
Flt Protected	0.950			0.950			0.950				0.950	
Satd. Flow (prot)	1668	1507	0	1685	3610	0	1685	3558	0	0	1805	1615
Flt Permitted	0.950			0.950			0.950				0.950	
Satd. Flow (perm)	1668	1507	0	1685	3610	0	1685	3558	0	0	1805	1615
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		191						6				86
Link Speed (mph)	30				35			35			35	
Link Distance (ft)	591				758			1733			622	
Travel Time (s)	13.4				14.8			33.8			12.1	
Peak Hour Factor	0.80	0.80	0.80	0.91	0.91	0.91	0.90	0.90	0.90	0.91	0.91	0.91
Heavy Vehicles (%)	1%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%
Adj. Flow (vph)	50	3	3	1	718	1	1093	488	17	5	0	798
Shared Lane Traffic (%)												
Lane Group Flow (vph)	50	6	0	1	719	0	1093	505	0	0	5	798
Turn Type	Prot	Prot		Prot	NA		Prot	NA		Prot	Prot	pt+ov
Protected Phases	4	4		1	6		5	2		3	3	3 5
Permitted Phases												
Detector Phase	4	4		1	6		5	2		3	3	3 5
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	8.0		8.0	8.0		5.0	5.0	
Minimum Split (s)	11.0	11.0		11.0	14.0		14.0	14.0		11.0	11.0	
Total Split (s)	13.0	13.0		12.0	31.0		63.0	82.0		13.0	13.0	
Total Split (%)	10.8%	10.8%		10.0%	25.8%		52.5%	68.3%		10.8%	10.8%	
Maximum Green (s)	7.0	7.0		6.0	25.0		57.0	76.0		7.0	7.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0			0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0			6.0	
Lead/Lag	Lag	Lag		Lead	Lag		Lead	Lag		Lead	Lead	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	4.0		4.0	4.0		4.0	4.0	
Recall Mode	None	None		None	C-Min		None	C-Min		None	None	
Act Effct Green (s)	6.7	6.7		5.6	25.0		59.6	88.2			7.0	67.8
Actuated g/C Ratio	0.06	0.06		0.05	0.21		0.50	0.74			0.06	0.56
v/c Ratio	0.54	0.02		0.01	0.96		1.31	0.19			0.05	0.84
Control Delay	76.2	0.2		55.0	70.9		163.6	0.9			54.6	28.7
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0			0.0	0.0
Total Delay	76.2	0.2		55.0	70.9		163.6	0.9			54.6	28.7
LOS	E	A		D	E		F	A			D	C

Lane Group	EBL	EBR	EBR2	NBL	NBT	NBR	SBL	SBT	SBR	NWL2	NWL	NWR
Approach Delay	68.1				70.9			112.2			28.9	
Approach LOS	E				E			F			C	
Queue Length 50th (ft)	38	0		1	292		~1099	2			4	297
Queue Length 95th (ft)	72	0		7	#414		#1360	m12			17	#535
Internal Link Dist (ft)	511				678			1653			542	
Turn Bay Length (ft)		50		200			775				100	
Base Capacity (vph)	97	267		84	752		836	2616			105	949
Starvation Cap Reductn	0	0		0	0		0	0			0	0
Spillback Cap Reductn	0	0		0	0		0	0			0	0
Storage Cap Reductn	0	0		0	0		0	0			0	0
Reduced v/c Ratio	0.52	0.02		0.01	0.96		1.31	0.19			0.05	0.84

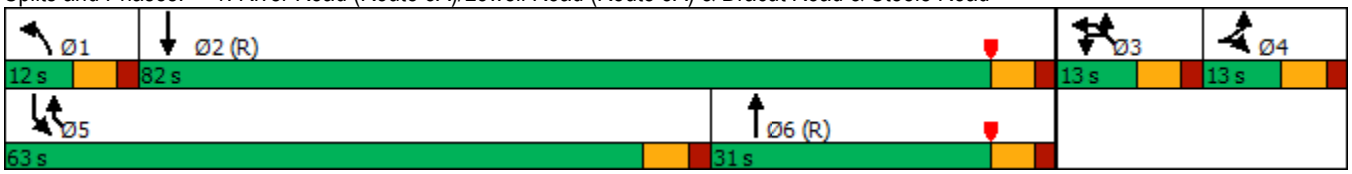
Intersection Summary	
Area Type:	Other
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 5 (4%), Referenced to phase 2:SBT and 6:NBT, Start of Yellow	
Natural Cycle: 150	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.31	
Intersection Signal Delay: 81.0	Intersection LOS: F
Intersection Capacity Utilization 100.9%	ICU Level of Service G
Analysis Period (min) 15	
Description: NHDOT Int. No.: S-229-04	

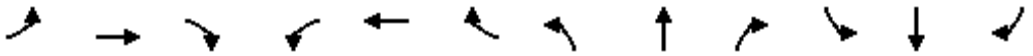
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

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

Splits and Phases: 1: River Road (Route 3A)/Lowell Road (Route 3A) & Dracut Road & Steele Road





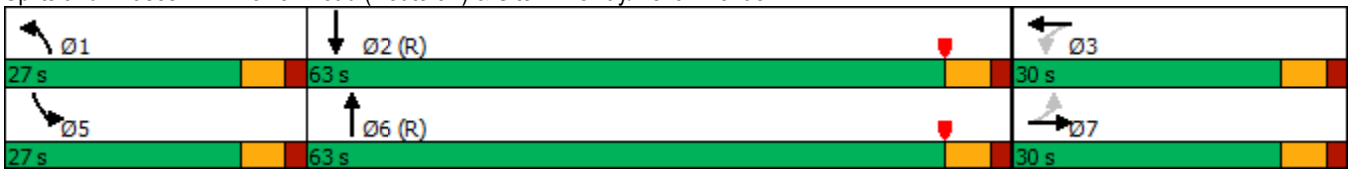
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	273	0	51	1	0	17	35	1397	6	26	1374	228
Future Volume (vph)	273	0	51	1	0	17	35	1397	6	26	1374	228
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	13	13	13	10	12	12	12	12	12
Storage Length (ft)	0		50	0		0	300		0	350		0
Storage Lanes	2		0	0		0	1		0	1		0
Taper Length (ft)	25			25			75			25		
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.850			0.871			0.999			0.979	
Flt Protected	0.950				0.998		0.950			0.950		
Satd. Flow (prot)	3143	1507	0	0	1707	0	1685	3606	0	1805	3475	0
Flt Permitted	0.743				0.992		0.950			0.950		
Satd. Flow (perm)	2458	1507	0	0	1696	0	1685	3606	0	1805	3475	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		303			82						21	
Link Speed (mph)		15			30			35			35	
Link Distance (ft)		510			557			1733			980	
Travel Time (s)		23.2			12.7			33.8			19.1	
Peak Hour Factor	0.84	0.84	0.84	0.80	0.80	0.80	0.93	0.93	0.93	0.90	0.90	0.90
Heavy Vehicles (%)	4%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	12%
Adj. Flow (vph)	325	0	61	1	0	21	38	1502	6	29	1527	253
Shared Lane Traffic (%)												
Lane Group Flow (vph)	325	61	0	0	22	0	38	1508	0	29	1780	0
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		7			3		1	6		5	2	
Permitted Phases	7			3								
Detector Phase	7	7		3	3		1	6		5	2	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	11.0	11.0		11.0	11.0		11.0	16.0		11.0	16.0	
Total Split (s)	30.0	30.0		30.0	30.0		27.0	63.0		27.0	63.0	
Total Split (%)	25.0%	25.0%		25.0%	25.0%		22.5%	52.5%		22.5%	52.5%	
Maximum Green (s)	24.0	24.0		24.0	24.0		21.0	57.0		21.0	57.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0			0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0			6.0		6.0	6.0		6.0	6.0	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Recall Mode	None	None		None	None		None	C-Min		None	C-Min	
Act Effct Green (s)	21.4	21.4			16.7		9.2	77.3		8.5	76.7	
Actuated g/C Ratio	0.18	0.18			0.14		0.08	0.64		0.07	0.64	
v/c Ratio	0.74	0.12			0.07		0.30	0.65		0.23	0.80	
Control Delay	57.4	0.5			0.4		61.1	16.7		63.0	9.4	
Queue Delay	0.0	0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay	57.4	0.5			0.4		61.1	16.7		63.0	9.4	
LOS	E	A			A		E	B		E	A	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		48.4			0.4			17.8			10.3	
Approach LOS		D			A			B			B	
Queue Length 50th (ft)	122	0			0		29	575		23	109	
Queue Length 95th (ft)	158	0			0		m32	m666		m34	#181	
Internal Link Dist (ft)		430			477			1653			900	
Turn Bay Length (ft)							300			350		
Base Capacity (vph)	491	543			404		294	2324		315	2229	
Starvation Cap Reductn	0	0			0		0	0		0	0	
Spillback Cap Reductn	0	0			0		0	0		0	0	
Storage Cap Reductn	0	0			0		0	0		0	0	
Reduced v/c Ratio	0.66	0.11			0.05		0.13	0.65		0.09	0.80	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 74 (62%), Referenced to phase 2:SBT and 6:NBT, Start of Yellow			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.80			
Intersection Signal Delay: 17.2		Intersection LOS: B	
Intersection Capacity Utilization 69.7%		ICU Level of Service C	
Analysis Period (min) 15			
Description: NHDOT Int. No.: S-229-03			

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Lowell Road (Route 3A) & Site Driveway/Rena Avenue



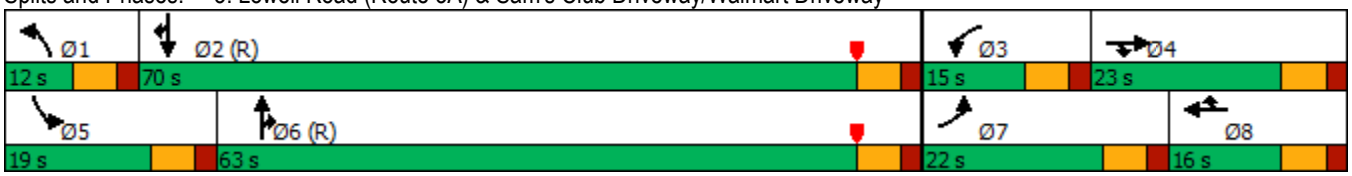
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	357	13	129	88	20	244	110	1500	74	310	1398	300
Future Volume (vph)	357	13	129	88	20	244	110	1500	74	310	1398	300
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	13	12	12	12	13	12	12	12	12	12	12
Storage Length (ft)	175		175	150		200	350		175	350		0
Storage Lanes	2		1	2		1	2		1	2		1
Taper Length (ft)	25			75			125			100		
Lane Util. Factor	0.97	1.00	1.00	0.97	1.00	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3433	1963	1615	3502	1900	1669	3467	3574	1615	3502	3539	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3433	1963	1615	3502	1900	1669	3467	3574	1615	3502	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			191			245			245			289
Link Speed (mph)		30			30			35			30	
Link Distance (ft)		401			449			980			1189	
Travel Time (s)		9.1			10.2			19.1			27.0	
Peak Hour Factor	0.88	0.88	0.88	0.86	0.86	0.86	0.89	0.89	0.89	0.91	0.91	0.91
Heavy Vehicles (%)	2%	0%	0%	0%	0%	0%	1%	1%	0%	0%	2%	2%
Adj. Flow (vph)	406	15	147	102	23	284	124	1685	83	341	1536	330
Shared Lane Traffic (%)												
Lane Group Flow (vph)	406	15	147	102	23	284	124	1685	83	341	1536	330
Turn Type	Prot	NA	Prot	Prot	NA	Prot	Prot	NA	Prot	Prot	NA	Prot
Protected Phases	7	4	4	3	8	8	1	6	6	5	2	2
Permitted Phases												
Detector Phase	7	4	4	3	8	8	1	6	6	5	2	2
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0	11.0	11.0	16.0	16.0	11.0	16.0	16.0
Total Split (s)	22.0	23.0	23.0	15.0	16.0	16.0	12.0	63.0	63.0	19.0	70.0	70.0
Total Split (%)	18.3%	19.2%	19.2%	12.5%	13.3%	13.3%	10.0%	52.5%	52.5%	15.8%	58.3%	58.3%
Maximum Green (s)	16.0	17.0	17.0	9.0	10.0	10.0	6.0	57.0	57.0	13.0	64.0	64.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	6.0	6.0	4.0	6.0	6.0
Recall Mode	None	None	None	None	None	None	None	C-Min	C-Min	None	C-Min	C-Min
Act Effct Green (s)	16.0	16.2	16.2	8.7	8.9	8.9	7.0	57.2	57.2	13.9	64.1	64.1
Actuated g/C Ratio	0.13	0.14	0.14	0.07	0.07	0.07	0.06	0.48	0.48	0.12	0.53	0.53
v/c Ratio	0.89	0.06	0.38	0.40	0.16	0.81	0.62	0.99	0.09	0.84	0.81	0.34
Control Delay	73.3	45.4	5.4	58.1	54.2	29.1	64.7	39.6	0.2	78.4	22.5	1.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	73.3	45.4	5.4	58.1	54.2	29.1	64.7	39.6	0.2	78.4	22.5	1.1
LOS	E	D	A	E	D	C	E	D	A	E	C	A

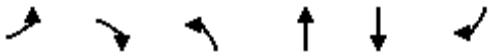
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		55.0			37.8			39.6			28.0	
Approach LOS		D			D			D			C	
Queue Length 50th (ft)	161	10	0	39	17	29	48	240	0	139	566	0
Queue Length 95th (ft)	#239	30	23	65	42	#125	m#86	#817	m0	m#203	m652	m6
Internal Link Dist (ft)		321			369			900			1109	
Turn Bay Length (ft)	175		175	150		200	350		175	350		
Base Capacity (vph)	457	278	392	262	158	363	201	1704	898	405	1891	980
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.89	0.05	0.38	0.39	0.15	0.78	0.62	0.99	0.09	0.84	0.81	0.34

Intersection Summary	
Area Type:	Other
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 64 (53%), Referenced to phase 2:SBT and 6:NBT, Start of Yellow	
Natural Cycle: 100	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.99	
Intersection Signal Delay: 36.1	Intersection LOS: D
Intersection Capacity Utilization 82.2%	ICU Level of Service E
Analysis Period (min) 15	
Description: NHDOT Int. No.: S-229-06	

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Lowell Road (Route 3A) & Sam's Club Driveway/Walmart Driveway





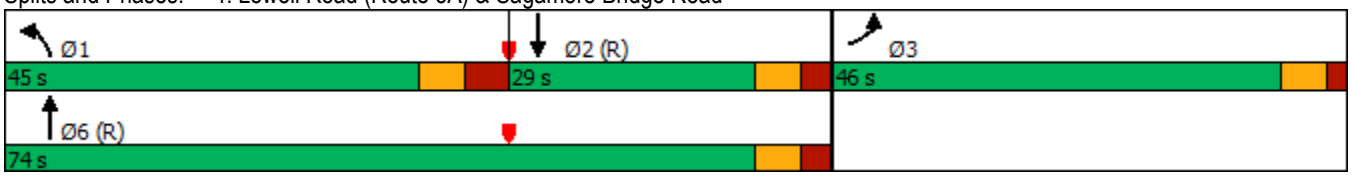
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	1633	1593	1442	749	546	1360
Future Volume (vph)	1633	1593	1442	749	546	1360
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	14	14	12	12	12	12
Storage Length (ft)	0	0	525			200
Storage Lanes	3	2	3			1
Taper Length (ft)	25		100			
Lane Util. Factor	0.94	0.88	0.94	0.95	0.95	0.88
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	5376	2972	5040	3610	3610	2814
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	5376	2972	5040	3610	3610	2814
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		908				1203
Link Speed (mph)	35			30	30	
Link Distance (ft)	929			1189	999	
Travel Time (s)	18.1			27.0	22.7	
Peak Hour Factor	0.96	0.96	0.94	0.94	0.89	0.89
Heavy Vehicles (%)	1%	2%	1%	0%	0%	1%
Adj. Flow (vph)	1701	1659	1534	797	613	1528
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1701	1659	1534	797	613	1528
Turn Type	Prot	Free	Prot	NA	NA	Free
Protected Phases	3		1	6	2	
Permitted Phases		Free				Free
Detector Phase	3		1	6	2	
Switch Phase						
Minimum Initial (s)	10.0		7.0	10.0	10.0	
Minimum Split (s)	16.0		15.0	17.0	17.0	
Total Split (s)	46.0		45.0	74.0	29.0	
Total Split (%)	38.3%		37.5%	61.7%	24.2%	
Maximum Green (s)	40.0		37.0	67.0	22.0	
Yellow Time (s)	4.0		4.0	4.0	4.0	
All-Red Time (s)	2.0		4.0	3.0	3.0	
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	
Total Lost Time (s)	6.0		8.0	7.0	7.0	
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	4.0		4.0	4.0	4.0	
Recall Mode	None		None	C-Min	C-Min	
Act Effct Green (s)	40.0	120.0	37.0	67.0	22.0	120.0
Actuated g/C Ratio	0.33	1.00	0.31	0.56	0.18	1.00
v/c Ratio	0.95	0.56	0.99	0.40	0.93	0.54
Control Delay	51.5	0.8	40.6	7.2	69.6	0.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.5	0.8	40.6	7.2	69.6	0.8
LOS	D	A	D	A	E	A

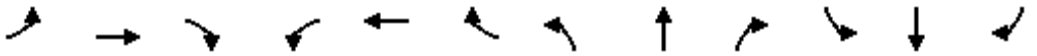
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Approach Delay	26.5			29.2	20.5	
Approach LOS	C			C	C	
Queue Length 50th (ft)	453	0	392	124	248	0
Queue Length 95th (ft)	#554	0	m#465	m143	#350	0
Internal Link Dist (ft)	849			1109	919	
Turn Bay Length (ft)			525			200
Base Capacity (vph)	1792	2972	1554	2015	661	2814
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.95	0.56	0.99	0.40	0.93	0.54

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 100 (83%), Referenced to phase 2:SBT and 6:NBT, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.99			
Intersection Signal Delay: 25.6		Intersection LOS: C	
Intersection Capacity Utilization 90.2%		ICU Level of Service E	
Analysis Period (min) 15			
Description: NHDOT Int. No.: S-229-02			

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Lowell Road (Route 3A) & Sagamore Bridge Road





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	2	25	31	0	48	27	1335	15	56	793	11
Future Volume (vph)	9	2	25	31	0	48	27	1335	15	56	793	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	14	13	13	11	11	12	12	12	12
Storage Length (ft)	0		50	0		100	210		325	125		0
Storage Lanes	0		1	0		1	1		0	1		0
Taper Length (ft)	25			25			50			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00
Frt			0.850			0.850		0.998			0.998	
Flt Protected		0.962			0.950		0.950			0.950		
Satd. Flow (prot)	0	1828	1583	0	1865	1669	1745	3449	0	1805	1878	0
Flt Permitted		0.746			0.748		0.950			0.950		
Satd. Flow (perm)	0	1417	1583	0	1469	1669	1745	3449	0	1805	1878	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			91			60		1			1	
Link Speed (mph)		10			30			30			30	
Link Distance (ft)		598			262			1405			549	
Travel Time (s)		40.8			6.0			31.9			12.5	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.99	0.99	0.99	0.94	0.94	0.94
Heavy Vehicles (%)	0%	0%	2%	0%	0%	0%	0%	1%	0%	0%	1%	0%
Adj. Flow (vph)	11	3	31	39	0	60	27	1348	15	60	844	12
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	14	31	0	39	60	27	1363	0	60	856	0
Turn Type	Perm	NA	Prot	Perm	NA	pm+ov	Prot	NA		Prot	NA	
Protected Phases		8	8		4	5	1	6		5	2	
Permitted Phases	8			4		4						
Detector Phase	8	8	8	4	4	5	1	6		5	2	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	10.0		5.0	10.0	
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0	11.0	11.0	16.0		11.0	16.0	
Total Split (s)	16.0	16.0	16.0	16.0	16.0	16.0	16.0	116.0		16.0	116.0	
Total Split (%)	8.9%	8.9%	8.9%	8.9%	8.9%	8.9%	8.9%	64.4%		8.9%	64.4%	
Maximum Green (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	110.0		10.0	110.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.0	6.0		6.0	6.0	6.0	6.0		6.0	6.0	
Lead/Lag						Lead	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?						Yes	Yes	Yes		Yes	Yes	
Vehicle Extension (s)	1.5	1.5	1.5	1.5	1.5	1.5	1.0	1.5		1.5	1.5	
Recall Mode	None	None	None	None	None	None	None	C-Min		None	C-Min	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)		8.1	8.1		8.1	20.7	6.6	140.9		8.8	146.5	
Actuated g/C Ratio		0.04	0.04		0.04	0.12	0.04	0.78		0.05	0.81	
v/c Ratio		0.22	0.20		0.59	0.25	0.42	0.50		0.68	0.56	
Control Delay		90.1	2.8		117.7	16.3	103.9	10.3		119.5	11.9	

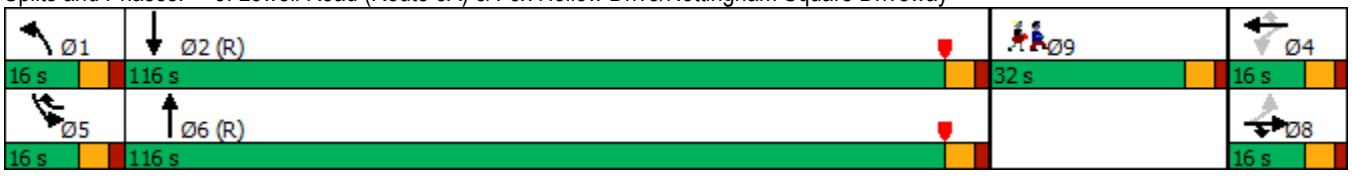
Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	32.0
Total Split (s)	32.0
Total Split (%)	18%
Maximum Green (s)	26.0
Yellow Time (s)	4.0
All-Red Time (s)	2.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	5.0
Flash Dont Walk (s)	21.0
Pedestrian Calls (#/hr)	5
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0		0.0	3.1	
Total Delay		90.1	2.8		117.7	16.3	103.9	10.3		119.5	14.9	
LOS		F	A		F	B	F	B		F	B	
Approach Delay		29.9			56.2			12.1			21.8	
Approach LOS		C			E			B			C	
Queue Length 50th (ft)		16	0		46	0	32	252		71	294	
Queue Length 95th (ft)		40	0		81	36	70	600		#134	870	
Internal Link Dist (ft)		518			182			1325			469	
Turn Bay Length (ft)			50			100	210			125		
Base Capacity (vph)		78	173		81	255	96	2700		100	1528	
Starvation Cap Reductn		0	0		0	0	0	0		0	546	
Spillback Cap Reductn		0	0		0	0	0	0		0	0	
Storage Cap Reductn		0	0		0	0	0	0		0	0	
Reduced v/c Ratio		0.18	0.18		0.48	0.24	0.28	0.50		0.60	0.87	

Intersection Summary

Area Type: Other
Cycle Length: 180
Actuated Cycle Length: 180
Offset: 0 (0%), Referenced to phase 2:SBT and 6:NBT, Start of Yellow, Master Intersection
Natural Cycle: 100
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.68
Intersection Signal Delay: 17.8 Intersection LOS: B
Intersection Capacity Utilization 65.7% ICU Level of Service C
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 8: Lowell Road (Route 3A) & Fox Hollow Drive/Nottingham Square Driveway



Lane Group	Ø9
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary